Welsh Government

M4 Corridor around Newport

Environmental Statement Volume 3: Appendix 10.8 Otter and Water Vole Survey 2014

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1 Introduction

Ove Arup & Partners Ltd has been commissioned by Welsh Government to undertake baseline ecological surveys to inform proposals for the M4 Corridor around Newport. This report provides information to inform the development of the scheme, including a Design Manual for Road and Bridges (DMRB) Stage 3 environmental assessment (HA, 1993).

This report identifies the presence of important habitat areas for European otter (*Lutra lutra*) and water vole (*Arvicola amphibius*). Where appropriate, recommendations are made for further surveys to inform the development of the scheme.

1.1 Background to the Project

The M4 in South Wales forms part of the Trans-European Transport Network (TEN-T), which provides connections throughout Europe by road, rail, sea and air. The M4 plays a key strategic role in connecting South Wales with the rest of Europe, providing links to Ireland via the ports in South West Wales and England and mainland Europe to the east. It is a key east-west route being the main gateway into South Wales and also one of the most heavily used roads in Wales.

Providing a facility for transporting goods, linking people to jobs and employment sites as well as serving the Welsh tourism industry, the M4 is critical to the Welsh economy. Cardiff, Newport and Swansea have ambitious regeneration strategies and Monmouthshire County Council is developing areas around Junction 23A of the M4. Rhondda Cynon Taff has important gateways onto the motorway at Junctions 32 and 34. Bridgend is served by M4 Junctions 35 and 36. Neath Port Talbot straddles the motorway and gets important access from Junctions 38 to 43. Congestion on the M4 causing unreliable journey times and reduced service levels will therefore hinder economic development in South Wales.

The M4 between Junctions 28 and 24 was originally designed as the 'Newport Bypass' with further design amendments in the 1960s to include the first motorway tunnels to be built in the UK.

The M4 Motorway between Magor and Castleton does not meet modern motorway design standards. This section of the M4 has many lane drops and lane gains, resulting in some two-lane sections, an intermittent hard shoulder and frequent junctions.

It is often congested, especially during weekday peak periods resulting in slow and unreliable journey times and stop-start conditions with incidents frequently causing delays.

This is why problems with congestion and unreliable journey times have been a fact of life on the M4 around Newport for many years. The motorway and surrounding highway network does not cope with sudden changes in demand or operation, for example as a result of accidents or extreme weather events. These issues are worse at times of peak travel (rush hour) and have worsened as the number of users on the network has increased.

Since 1991, much assessment and consultation has been undertaken to develop a preferred solution to the problems on the motorway around Newport. A detailed history is documented in the M4 Corridor around Newport WelTAG (WG, 2008) Stage 1 (Strategy Level) Appraisal Report (Ove Arup & Partners Ltd, 2013). This included the adoption of a revised TR111 route¹ in April 2006, which remains protected for planning purposes. The alignment of this proposed new section of motorway has been developed following extensive consultation, investigation and analysis. The aim was to minimise the impact on the environment, whilst fully meeting motorway design and safety standards. The main element of the draft Plan (the Black Route) largely follows this TR111 alignment.

The survey design is informed by the Route Options defined in the Stage 2 DRMB Environmental Report (Ove Arup & Partners Ltd, 2014).

The proposed route includes a large area of the Gwent Levels, which includes four Sites of Special Scientific Interest (SSSIs) and also crosses the River Usk and River Ebbw. The River Usk is designated as a SSSI and as a European Designated Site (Special Area of Conservation, Special Protected Area and Ramsar site). An extensive otter population is known to inhabit the River Usk SSSI, and the otter is a designated feature of the site. The River Usk / Afon Wysg Special Area of Conservation (SAC) is an important site for otters in Wales, and they are an Annex 2 Species that are 'a primary reason for selection' of the site as a SAC. The River Usk SAC provides a key movement corridor for otters between mid-Wales and south-east Wales, the function of this aspect of the site should be protected through the maintenance of suitable resting sites through the major urban centre of Newport. They are believed to be using most parts of the main river, from Newport upstream, and in recent years signs of otters have increased. Otters and water voles share similar habitats therefore the surveys were combined.

1.2 Survey Objectives

The aims and objectives of the surveys were to:

- Determine the presence and distribution, or likely absence of both otters and water voles within the study area.
- Assess suitability of habitat within the study area for these two species.

1.3 Study Area

The study area for the purpose of this survey was based on a 500m buffer around the physical extents of the previous scheme studied in 2007/8, including the route alignment, potential junctions and water treatment areas. It is anticipated that any proposed route that might be taken forward would be within this corridor. The Preferred Route announced by

¹ Once a preferred route is announced, Welsh Government serves a statutory notice (TR111) on the local planning authorities requiring the line to be protected from development. This is enacted under Article 19 of The Town & Country Planning (Development Management Procedure) (Wales) Order 2012.

Welsh Government in July 2014 is located within the centre of this corridor as shown in Figure 1. Figure 1 The 2014 Preferred Route within the Study area shown in red.



1.4 Legislation

1.4.1 Otters

The otter is protected as a European Protected Species (EPS), under the Conservation of Habitats and Species Regulations 2010 (as amended), commonly referred to as the Habitats Regulations. Under this legislation it is an offence to:

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

The otter is also fully protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended). Legal protection makes it an offence to:

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

Otters are a feature of the River Usk SAC, and River Usk SSSI.

Otters have also been identified as a species that are a priority for nature conservation (Priority Species) within the 'UK Post-2010 Biodiversity Framework' Biodiversity Action Plan (UKBAP), which is reflected in their inclusion on lists produced under requirements of Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006. The NERC Act places a duty on statutory authorities to have 'due regard' for Biodiversity in exercising their functions.

1.4.2 Water Voles

The water vole is fully protected under Schedule 5 and Section 9 of the Wildlife and Countryside Act 1981. Legal protection makes it an offence to:

- intentionally kill, injure or take (capture) a water vole;
- possess or control alive or dead water vole, or any part of a water vole;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or disturb water voles while they are using such a place;
- sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);
- advertise for buying or selling.

The water vole is a species of 'priority conservation concern' within the 'UK Post-2010 Biodiversity Framework' because of its declining status in the UK and is also a Section 42 species of 'principal importance' in Wales.

2 Methodology

The approach and broad methodology for the surveys was discussed and agreed with Natural Resources Wales prior to the commencement of surveys.

2.1 Desk Study

Previous data obtained from surveys undertaken in 2007/8 for the New M4 Project has been reviewed in the preparation of these surveys.

Both riparian species are included in the local biodiversity action plan, as they have previously been recorded on the Gwent Levels and River Usk.

A revised biodiversity information search was commissioned from the local biological records centre, South East Wales Biological Records Centre (SEWBReC), this report was dated 5th December 2013.

2.2 Survey methods

Information was recorded using standard recording sheets in the field using iPads, 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 water body, which included those water bodies that were dried up (defunct), or inaccessible. In those instances where the water body 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 1442 water bodies that were identified from Ordnance Survey data. For the purposes of this watercourse/water body type is defined as:

- **Estuary** the mouth of a river leading into a larger river or the sea e.g. River Usk estuary leading into the River Severn estuary;
- **River** Major natural watercourse always in flow and subject to flooding events e.g. River Usk;
- Stream Minor natural watercourse which is usually in flow but can dry out in places but also subject to flooding events e.g. Monk's Ditch;
- **Pond** A semi-stagnant and isolated water body, using filled by a stream or by man-made means and which can dry out e.g. Tata Steel-works settlement ponds;
- **Reen** Major man-made drainage channel or canalised stream which stays dry for the majority of the year e.g. Rush Wall reen;
- **Ditch** Minor man-made drainage channel which dries out on a regular basis e.g. field ditches.

The fieldwork was carried out between April and October 2014, and aimed to include all water bodies and watercourses within the study area. For each water body that was surveyed, a recording sheet was completed and any field signs photographed and location recorded. 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.

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 authoritive sources and best practice survey guidelines (Chanin, 2003); (Crawford, 2003)).

2.2.1.1 Presence / absence survey – Otters

The field signs that were searched for were: 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 water bodies, 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). Natal dens are usually found away from the coast, and indeed the majority of the study area was inland.

2.2.1.2 Habitat Suitability Assessment - Otters

Although a riparian mammal, otters will travel overland to reach other water bodies. They prefer to shelter where there is little disturbance and some cover provided by bankside vegetation.

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 water-body/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 water-body/watercourse potentially resulting in negative impacts upon otters, e.g. canalisation or realignment.
- Levels of site disturbance, e.g. proximity to public rights of way, farm vehicle access tracks or road traffic.
- Levels of visible pollution potentially impacting upon prey species.
- Potential for otters to use culverts, bridges and dry watercourses for foraging, commuting and dispersal.

Otters use terrestrial vegetation as corridors and for breeding (e.g. holts) and this habitat requirement was included in the habitat suitability assessment.

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, canals, pools, lakes, reed beds 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.

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 the public e.g.	Watercourse with slow to moderate flow velocity and less than 1m deep.	'Fair' or below chemical or biological water quality.

Table 1: Habitat Suitability Criteria

Habitat Suitability	Shelter Requirements	Food Supply	Modification & Disturbance	Hydrology	Pollutants
			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 water body present on site.	Low water quality with indications of pollution.

2.2.1.3 Camera traps

At locations where fresh footprints or fresh spraint had been recorded adjacent to optimal habitat for otters camera traps were set up to record activity. The equipment used was a Bushnell Camera trap and these were left in situ for periods of several days.

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 water bodies were surveyed from a minimum of 2 metres from the waters' edge, and where the water body was inaccessible the survey was carried out up to 4 metres from the top of the bank.

2.2.2.1 **Presence / absence survey – Water voles**

At each water body a search for the following field signs was undertaken: faeces, latrines, feeding stations, burrows, footprints. Droppings are the most distinctive field sign to indicate recent use of a water body by water voles (Strachan, Moorhouse, & Gelling, 2011). A thorough search of the bankside vegetation was performed at each water body until a latrine was found, thereafter point checks were performed.

2.2.2.2 Habitat Suitability Assessment – Water voles

Assessment of the 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 water body, 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 bankside 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 (Strachan, Moorhouse, & Gelling, 2011), and the promotion of scrub or planting of trees is detrimental to them (Chanin, 2003).

Habitat suitability assessments were carried out at each water body/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 water body to dry out.
- Suitability of bank substrates for burrowing.
- 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 water body 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 water body 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.

2.2.3 Kayak surveys

The size and depth of some water bodies prevented the safe search of the bank by surveyors during the initial survey. In these instances a kayak was use as a floating platform from which to search for field signs of otter and water vole.

2.3 Surveyors

All surveys were undertaken by two surveyors, one of whom was an experienced ecologist familiar with the ecology and field signs of both otter and water vole.

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 agreed with Natural Resources Wales prior to commencement of the survey.

Prior to the survey a desk study was carried out to identify water bodies and assign reference numbers which were then used when allocating areas to survey.

Where there were limitations, surveyors still strove to collect as much relevant information within the survey criteria as possible. The details of the limitations experienced during the survey are detailed in Appendix B. The main limitations of the survey were:

- Dense vegetation including vegetation growing in and adjacent to water body;
- Security fencing stopping access to water body;
- No access permission granted at time of survey;
- Health and safety concerns with regard to situations such as dangerous animals (e.g. cattle, horses, dogs);
- Poaching of bankside occluding field signs;
- Steep banks and deep water (although where possible a kayak was used to overcome this constraint);
- Heavy rain resulting in survey being cancelled.
- Rain showers wetting field signs

Access permission was not granted to all the water bodies within the proposed survey area. However, where water bodies were adjacent to public rights of way, or bordered by a field block which had access permission, then the water body was surveyed from an available viewing point.

Management of the bankside vegetation acted as a hindrance to survey effort in some instances. This was dependent on the extent of the works, which varied from strimming of the bank side vegetation, to bank re-profiling. In some instances it was recorded that the management of the bankside vegetation had hindered the survey effort. During the 2014 survey, there were instances where although the bankside vegetation had recently been managed, evidence for water voles was found. Poaching of banksides were another limitation to survey, as the poached ground was difficult to survey and field signs could have been destroyed.

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 water body 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 water body, then an informed assessment could not be made.

Due to the nature of the Gwent Levels as a managed site, the water level fluctuates. Therefore, not all of the water bodies 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 water body would not be suitable for water voles or otters. Other neighbouring water bodies could act as a corridor to aid dispersal.

Due to the unusually dry and warm autumn months the survey was able to continue into October.

There were a number of health & safety issues which limited the survey progress. There were water bodies where the channel contained contaminated water. Where dangerous animals such as young bullocks, bulls, mares with foals were present in the field, then these water bodies were marked to be surveyed on another occasion during 2014.

3 Results

3.1 **Desk** study **Results**

Records of both otter and water vole were identified within 500m of the study area, and these have been noted in Appendix A. Included in this report were 68 records of otter and 10 records of water voles. There were five records of water voles from the area of Magor Marsh reserve and nineteen records of otters in this area. In the Coedkernew area of the study area there are seven previous recent records of otters including Duffryn Pond (NRW Protected Species records), Tredegar Park, Percoed Reserve and along Percoed Reen There were recent records of otter on the Afon Ebbw, both spraints and footprints in 2000 and 2002. There are three previous records for otters in the area of Llanwern Steelworks and also records in the location of Blackwall and Monk's ditch. There were eleven records of dead otters mainly road casualties within the study area.

3.2 Field Surveys

All data were collected on site using iPads and the recording sheets generated from the surveys are provided in Appendix D. Of the 1442 water bodies identified during the desk study, 998 were surveyed. Some of these were surveyed on more than one occasion, this was due to being resurveyed after initial difficulty in accessing and subsequently a boat survey being carried out. Where a GPS reference was unable to be recorded (either due to human error or technological issues) then the water body reference was recorded and accuracy checked.

3.2.1 Weather

The details of the weather recorded during the survey period is detailed in Appendix B, this was generally recorded at the beginning of the day. Due to the nature of the interconnected ditch and reen system, during times of heavy rain this did not always affect all the water bodies uniformly as the water dispersed across the Gwent Levels site. During survey days where there had been rain, surveyors were told to abandon surveying any water bodies where it was obvious that rain had caused the water level to rise and cover any field signs.

3.2.2 Otter field signs

Otter field signs were found on 18 of the water bodies surveyed, as detailed in Table 3. The presence and absence of otter field signs are shown in drawings at the end of this report. The water bodies where otters were found to be present, ranged from a lake, a river, two streams, reens and ditches. One of the steams had a fast flow, but the other water bodies ranged from still to sluggish flows. The lake was over 20metres wide, but the other water bodies ranged from 1m to 10m in width. Depth of water ranged from 0.5m to over 2m. The vegetation recorded at these sites ranged from scrub and ruderal species on the bankside, to submerged vegetation within the water bodies (333) had post and rail fencing which made the site accessible to otters, and water body 944 (along Mill Reen) near the Junction 28A also had access points.

Date	Water body reference number	Field sign	GPS latitude	GPS longitude
15-08-2014	1129	Spraints;	51.565893	-2.88329
28-08-2014	944	Spraints; Slides; Laying up;	51.587898	-2.83245
08-09-2014	42	Spraints;	51.545477	-3.034294
30-09-2014	333	Footprints;	51.563682	-2.970409
30-09-2014	332	Slides;	51.563847	-2.972831
10-10-2014	6114	Slides;	51.560504	-2.939156
15-10-2014	1279	Spraints;	51.571253	-2.91453
20-10-2014	862	Spraints;	51.547886	-3.04133
20-10-2014	1384	Spraints;	51.548311	-3.041964
20-10-2014	55	Spraints;	51.546905	-3.036827
21-10-2014	1288	Slides;	51.566333	-2.909885
21-10-2014	321	Spraint with fish bones and feathers.	51.551237	-2.997363
21-10-2014	650	Slides; Laying up;	51.573747	-2.862647
23-10-2014	906	Footprints;	51.575276	-2.854565
23-10-2014	747	Spraints; Slides; Laying up;	51.575276	-2.854565
28-10-2014	578	Spraints; Slides;	51.571114	-2.914249
30-10-2014	935	Spraints	Not recorded	Not recorded
31-10-2014	867	Spraints;	51.571495	-2.845724

Table 3 Otter field signs recorded during the survey in 2014.

Field signs were recorded in the Coedkernew area and along Percoed Reen (waterbody 42). Three of the records were found on water bodies adjacent to a disused road South of the Imperial Park development (water bodies 1384, 862 and 55. There is dense vegetation and good quality water contained in water bodies, which appears to offer suitable habitat for otters.

There was a spraint found on a culvert crossing a stream adjacent to the Afon Ebbw (water body 321).

Field signs were found on two water bodies (332 and 333) adjacent to the River Usk which is known to support otters. To the east of this area, an otter slide was recorded going into a ditch adjacent to Broadstreet Common on water body 6114). This is an area where there is a good quality of ditches interconnecting with Julian's Reen.

Otter field signs were found as far north as the A4810 Queens Way road adjacent to Monk's Ditch on water body 1279, and along the ditch running south to the Black Wall reen (water body 578). There was also a field sign found along water body 1288 behind the electricity substation. Although there is heavy industry in this area, and also visually contaminated water bodies (e.g. water body 1295), there is also fresh water available in the Gwent Levels reen and ditch network, and vegetation cover provided in-between the industry. The dense vegetation is in areas that have limited human disturbance, which would be suitable for otters to use for places of refuge.

Field signs were also found on water body 1129 along with numerous mammal paths in adjacent vegetation within Tata steelworks. Much of the vegetation and water bodies in this area show heavy contamination, but interspersed there are water bodies with apparently better water quality such as 1129 with moderate flow, and also dense vegetation. There is also suitable scrub to the west and south which could be used by otters for a holt, refuge or as a corridor to move to more suitable areas. A camera trap was deployed at two locations along reen 1129.

Further to the east near Bareland Reen, there were three field signs for otters found in land adjacent to an industrial unit (water bodies 650, 747 and 906). The area to the north of Bareland Street has relatively low human disturbance as it is overgrown with dense vegetation, but with a water source of good water quality in Bareland Street Reen and interconnecting water bodies. There are hedgerows and ditches in this area which could also provide corridors for otters to move around the local landscape.

Field signs were found on the Mill Reen water body (935 and 944) near Junction 23A. Adjacent to Mill Reen there is vegetation which could be used as a corridor for otters to use to move to the Magor Marsh which is further south. However, the route south passes through the residential area of Magor, which would have high human disturbance. It is likely that otters would disperse north where there would be less human disturbance, however they could move through Magor at night.

3.2.3 Habitat suitability for Otters

A total of 998 water bodies were surveyed for their habitat suitability for otters. The results of this assessment are shown in Figure 2. Drawings illustrating the locations of these water bodies are included at the end of this report.

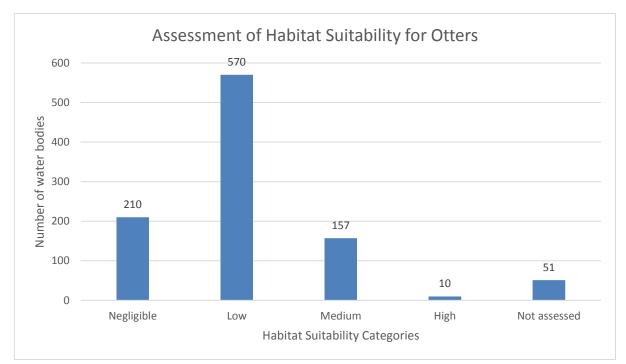


Figure 2 Assessment of Habitat Suitability of water bodies surveyed for otters.

The majority of the water bodies were assigned assessed as being of low suitability for otters (total of 570 waterbodies), with only 10 water bodies assessed as being highly suitable for use by otters. Water bodies described as not assessed were in situations where access to the land parcel was granted, but the water body itself could not be assessed, this was mainly due to dense vegetation making the water body inaccessible.

The River Usk (water body 2500) and River Ebbw (water body 2508) provided the most suitable habitat for otters, due to a relatively fast flow and high abundance of prey items (fish) available. These areas are also known to support otters (CCW, 2008). Culverts and bridges on streams running from the River Ebbw, which could be used as laying up sites and have low levels of human activity also increase the suitability of the Ebbw for use by otters. There are ponds (water bodies 322, 330, 333) and ditches (331, 332) running along the Eastern edge of the River Usk which were assessed as being moderate suitability for otters, this was due to the proximity to the River Usk SAC and also the cover with which these areas might provide for otters. A large section of woodland and scrub adjacent to water body 332 and 333, would be one of the only areas of refuge along the river for otters to. Recent fresh footprints and slides were found adjacent to these water bodies. Water body 335 adjacent to an access track in this area was assessed as being low due to high fencing and low water levels. A settlement ditch adjacent to the footpath and pond 330, which was assessed as being negligible due to the visibly poor water quality.

It is clear from the habitat suitability mapping that the majority of the water bodies which were assessed as having high or medium suitability for otters were reens or main ditches which were interconnected or managed as part of the Gwent Levels system. For example, Petty Reen (water body 875) and Stutwall Reen (water body 671) to the east of the study area which are interconnected and were classed as being of medium and high suitability. There are water bodies in the vicinity of these reens which were also assessed as being of high and medium suitability (e.g. water bodies 847, 922 and 921).

An isolated pond near Castleton (water body 4) was classed as being of medium suitability which was due to the presence of suitable habitat for both foraging and commuting. However, in this area only three (water bodies 6, 7, 8) other water bodies were surveyed as having low potential due to the low water levels, and these were not interconnected. The other three water bodies surveyed in this area were of low potential due to the low water levels in these ponds, but presence of potential habitat for refuge or for dispersal.

In the area of Parc Golf Club, many of the water bodies (including water bodies 12, 13, 14, 17, 18, 26 and 1383) were actively managed by the Golf Club, with vegetation such as trees and scrub on the site which could provide refuge for otters. Water quality in the ponds and ditches was good, and these water bodies contained potential food source for otters. The other water bodies surveyed in this area were assessed as being of low potential (including water bodies 15, 16, 25, 30, 31) this was due to low water levels and inaccessibility due to dense vegetation which would hinder otters utilising these water bodies for foraging.

Percoed Reen (water body 43) was assessed as having medium potential for otters, as this water body was deep (more than 2m) and between 2-5metres wide. Water body 42 which runs parallel to Percoed reen was also assessed as being of medium potential. However, the water bodies that interconnected with this water body were assessed as being of low potential for otters (including 45, 47, 49 to the north, and 46, 48 to the south), this was due to factors such as fencing up to the reen obstructing access and poaching from livestock grazing adjacent land.

To the north of Percoed Reen, towards the Imperial Park there are water bodies which had trees and scrub growing adjacent to them. This vegetation could provide laying up sites for otters, and water bodies 60, 862, 1391 were all assessed as being of medium potential for otters due to the potential for foraging and vegetation cover. There were also water bodies that were assessed as being of negligible and low potential for otters. For example, water body 59 was assessed as being negligible for otters as there was no water present and there was also evidence of fly tipping at this location.

In the area to the south of the Duffryn Estate, there are two water bodies which were assessed as being medium (water bodies 127 and 289), with the surrounding water bodies in this area being of low and negligible habitat suitability. Factors affecting the suitability for otters were low water level, low water quality, dense vegetation such as double hedged ditches. There are also settlement ditches (such as 112 and 254) which are negligible due to the pollution from the railway line adjacent, low water level and dense vegetation making the water body unsuitable.

There are water bodies (198, 206, 207, 210, 239, 242) to the east of Lighthouse Road which were recorded as being medium suitability for otters. These ditches were managed which meant that they were deep and had moderate water quality. Four waterbodies (ie. 185, 194, 218 and 240) were assessed as being negligible due to these being dry ditches or field grips with only damp ground. The other water bodies in this area were assessed as being low potential (such as 212, 215) which were densely overgrown, but still contained a low water level with a Phragmites reed bed. The ditches in this area are in amongst farmland mainly used for cattle grazing. The areas of scrub and reedbed in this area could provide cover for commuting otters.

Along Pont y Cwcw Reen running parallel to the Afon Ebbw, water bodies 317, 320, 321 and 686 were assessed as being of both high and medium potential for otters to use. This was due to the good water quality and presence of fish and potentially other prey items. There was vegetation cover in the vicinity which otters could use for cover. One water body (687) adjacent to Heol Pont y Cwcw was assessed as being negligible due to being dry and overgrown with bramble and nettles.

Within the Solutia nature reserve there are interconnecting water bodies which were assessed as being of medium potential for otters, including ditches 430, 441, 443 and 445 which is a pond on the edge of a woodland. Water body 419 was of medium potential as a damp ditch that is in amongst dense woodland and could provide habitat for laying up and a holt. There are also water bodies of low potential (439 and 442) due to the dense vegetation and the water body drying up in places, and one water body of negligible potential (418) due to this ditch being dry with shallow bank profile.

To the north of this area the water bodies were assessed as being low and negligible habitat suitability. For example, water bodies 6106 and 6107 which are assessed as being negligible due to being areas of marshy grassland. Water bodies with low potential included 392 which was heavily poached and held only a small amount of water.

In the Pye Corner area, there were a number of water bodies along Julian's Reen which were assessed as being of medium potential for otters, these included water bodies 451, 469 and 465 as these are managed water bodies with suitable habitat adjacent which could be used by otters for refuge. Along Broad Street Common to the south-east there are also water bodies of medium potential (i.e. 497, 499, 503) which are similar to those of Julian's Reen. Water body 450 was assessed as being negligible due to being double hedged and inaccessible. To the north-east of Broad Street Common there are water bodies which interconnect of medium potential for otters (including 495, 1094), however to the north of this cluster the water bodies were mainly assessed as being of low and negligible potential.

Main water bodies interconnecting with Blackwall reen (water body 1298) were assessed as being of medium suitability. Waterbody 516 running south from the A4810 ending at Llanwern steelworks was also considered to be of medium suitability. Water bodies adjacent to Broadstreet Common and a section of Julian's Reen were also considered to be of medium suitability for otters. The settlement ditch (waterbody 1295) which runs along the perimeter of the Tarmac site was assessed as being negligible due to the visibly polluted water.

Water bodies which ran parallel to the A4810 were assessed as being of negligible (e.g. 1267, 1321) and of low potential (e.g. 1204, 1273). This was due to these water bodies acting as settlement ditches from the adjacent land use resulting in a low water quality.

There were areas within the Tata Steelworks land which included reedbed, ditches and reens, which were assessed as being high and medium suitability for otters, such as water bodies 1129, 1141, 1210. In these water bodies there was moderate flow of water (on the ditches and reens) and prey availability, along with relatively undisturbed stretches and dense vegetation which could be used as

refuge. Within this area there were heavily contaminated settlement pools which were assessed as being negligible (e.g. 1184, 1226, 1228). Reens and ditches in this area were also assessed as being of low potential (such as 1067) due to being inaccessible because of dense woodland. To the west of this area there are ponds which were dried out (e.g. 790, 1206, 1220).

In the area near the sub-station below the Tata steelworks, there is water body 1251 which is of medium potential for otters, as it could provide a corridor for movement and is an open ditch. The water bodies surrounding the substation are of low potential due to the heavy livestock grazing, dense hedgerows occluding the water body and poor water quality. On the edge of the Tata steelworks land lie water bodies 1250 and 1257 which have poor water quality and are overgrown, therefore assessed as being of negligible potential habitat for otters. To the south of these water bodies there are many negligible water bodies (e.g. 561, 567, 537) in areas which are heavily poached and these water bodies are unmanaged, with low water quality. These water bodies could be influenced by and connected to 1250 and 1257. During the survey there was evidence of heavy flytipping adjacent to water body 560 which was of low potential for otters.

Water body 537 which again runs along the edge of the Tata steelworks, was of negligible suitability due to being a dry and overgrown ditch. There are two large pools (1141 and 1210) to the east of this water body which contained areas of Phragmites reed bed and also scrub habitat. These were assessed as being of medium potential for otters. Adjacent to these ponds there is one pond of negligible potential (water body 1138) which was a reed bed which was inaccessible and had low water level, and another pond (water body 1139) which was of low potential.

The water bodies (including 638, 639, 652, 971, 648) adjacent to the industrial buildings at Bareland Street were assessed as being medium habitat suitability. This was due to the open water bodies, with good water quality which could provide foraging opportunities for otters. There are areas of scrub and woodland in this area which could provide refuge for otters. Along Bareland Street there is a ditch (waterbody 644) of negligible potential as there was no water and the site was densely overgrown with terrestrial vegetation. To the north of Bareland Street is an area of overgrown land with tall ruderals and hedgerows. In this area there is a water body of medium potential (930, 969) due to the water body being of good water quality, amongst the terrestrial vegetation there are low potential areas (including water bodies 927, 928, 931) due to being overgrown hedges holding little water but with potential to be used as refuge and as a corridor for otters. Water body 747 is of high potential for otters, due to the presence of field signs for otters.

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little water but with potential to be used as refuge and as a corridor for otters. Water body 747 is of high potential for otters, due to the presence of field signs for otters.

To the south of the A4810 lies Stutwall Reen, a sections of which (water body 671) was assessed as high, with another high potential water body within 200m to the south (water body 950); both had adjacent vegetation to act as a corridor and potential availability of food source. Petty Reen lies to the south, and sections of this (water bodies 850, 921, 950) were assessed as being of medium potential. In this area there are interconnecting water bodies of negligible and low potential, however otters are capable of travelling across land for foraging. Adjacent to the negligible water body 845 there is an area of wet woodland which could be utilised by otters for refuge, or a holt. They could also use the vegetation along the A4810 as a corridor. Adjacent to Junction 23A there is Mill Reen (935, 936, 944) which was assessed as being of medium quality for otters. This water body is well connected to other water bodies in the Gwent Levels system. Connecting with these water bodies to the north there is water body 693 which has a low water level and is an overgrown hedge but could act as a potential corridor for otter. Water body 692 also connects to Mill Reen to the north, but is dry, hedged and fence providing no food source or accessibility for otters, therefore was assessed as being negligible.

At the eastern extent of the study area, Prat reen (water body 726) was assessed as being of medium quality with an interconnecting dry ditch (water body 718) being of low potential along with a ditch adjacent to the M4 (water body 704) which interconnects with three other water bodies (water bodies 699, 701, 722) of medium potential. The ditches that were surveyed between these water bodies (e.g. 710, 712), were assessed to be of low potential for otters, due to low water level and the vegetation present was nettles and grasses.

3.2.4 Camera trap results

Camera traps were set up at locations where fresh field signs for otter had been found. Table 4 gives details of these locations.

Dates camera trap was deployed	Location description	GPS Latitude	GPS Longitude
25/04/2014 - 28/04/2014	Steel Access Road Culvert	51.57252	-2.85475
17/06/2014 - 04/07/2014	Adjacent to River Usk	51.564245	-2.974158
12/06/2014 - 17/06/2014	On cycle path near Solutia	51.561287	-2.955688
01/09/2014 - 02/09/2014	Steelworks reen	51.564778	-2.886917
09/09/2014 - 13/09/2014	Steelworks sluice gate camera	51.564581	-2.974928
16/09/2014 - 24/09/2014	Steelwork Reen bridge (High on fence)	51.56478	-2.886949
09/10/2014 - 24/10/2014	Drainage pond next to River Usk	51.563557	-2.970669
14/10/2014 - 20/10/2014	Steelwork Reen bridge (Low on fence)	51.56478	-2.886949

Table 4 Locations of camera traps

Video footage captured by the camera traps were individually analysed and species were identified that had triggered the camera to record. Otters were only recorded at two locations. Both observations were made on land within land owned by (and historically used by) the Tata steelworks. Details of the observations made of otters are summarised in Table 5 and images shown in Figures 3 to 6.

Table 5	Results	from camera traps	
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Location description	Date	Time	Observation	GPS Latitude	GPS Longitude
Steelworks reen bridge (low on fence)	15/10/2014	20:57	Otter walking in front of camera into distance.	51.56478	-2.886949
	15/10/2014	20:58	Otter sniffing camera.	51.56478	-2.886949
Steelworks sluice gate camera	09/09/2014	18:11	Otter walking directly in front of camera onto bank, walking and appears to be foraging.	51.564581	-2.974928
	09/09/2014	18:13	Otter walking across bank in front of camera.	51.564581	-2.974928



Figure 3 - Steelworks reen bridge 15/10/2014 20:57



Figure 4 - Steelworks reen bridge 15/10/2014 20:58

An adult otter is seen walking in front of the camera at the Steelworks Reen bridge location (Figures 5 and 6). This is within 100 metres of the other camera location at the Steelworks sluice gate camera, where an adult otter was also recorded Within 10 metres of the two camera locations (steelworks sluice gate and steelworks reen bridge), there are areas of dense vegetation with suitable habitat for otter holts or refuge. As the water quality of the managed reen system of the Gwent Levels is good, the reen system could provide food sources for otter.



Figure 5 Steelworks sluice gate camera 18:11



Figure 6 Steelworks sluice gate camera 18:13

3.2.5 Water vole field signs

Water vole field signs were found on 126 of the 1442 water bodies. Drawings illustrating the locations at which field signs were found are provided at the end of this report, and details are provided in Table 6. Detailed recording sheets can be found in Appendix D. The water bodies where water voles were present, flow of water was either still, sluggish or slow. Two streams and three ponds had field signs, but the rest of the water bodies were either reens or ditches, many of these

were regularly managed. There was a range of bank side profiles (from $<10^{\circ}$ to vertical / undercut) and depth of water (from between <0.5m to >2m) and width of between 1m to more than 20m. There was also a range of vegetation recorded at each water body, from lush reed sweet-grass (*Glyceria maxima*), to *Phragmites* reed bed, to areas of grassland and ruderal with little ditch vegetation. As water voles require a range of plants for both food and cover (Strachan, Moorhouse, & Gelling, 2011), it is considered that the best sites for water voles would offer a continuous swathe of tall and luxuriant riparian plants (at least 60% bank-side ground vegetation).

Date	Water body reference number	Field sign	GPS Longitude	GPS Latitude
04/07/2014	258	Pathways; Feeding Stations;	51.547802	-3.01653
05/08/2014	1238	Feeding Stations;	51.571102	-2.89987
05/08/2014	1244	Feeding Stations;	51.571002	-2.89923
05/08/2014	1243	Feeding Stations;	Not recorded	Not recorded
05/08/2014	1243	Latrines; Pathways; Feeding Stations;	51.571008	-2.89856
05/08/2014	1205	Feeding Stations;	51.570815	-2.89451
05/08/2014	1204	Feeding Stations;	51.570762	-2.89332
05/08/2014	1185	Feeding Stations;	51.570764	-2.89295
05/08/2014	1194	Feeding Stations;	51.570666	-2.89102
05/08/2014	1237	Latrines; Pathways; Feeding Stations;	Not recorded	Not recorded
05/08/2014	1196	Pathways; Feeding Stations; Latrines;	Not recorded	Not recorded
05/08/2014	1198	Pathways; Feeding Stations;	Not recorded	Not recorded
05/08/2014	1197	Pathways; Feeding Stations;	Not recorded	Not recorded
05/08/2014	1273	Latrines; Feeding Stations;	Not recorded	Not recorded
06/08/2014	1152	Pathways; Feeding Stations;	51.565402	-2.89102
06/08/2014	566	Feeding Stations;	51.563046	-2.90708
06/08/2014	559	Feeding Stations;	51.564124	-2.89896
06/08/2014	560	Sighting	51.564782	-2.89969
07/08/2014	1350	Feeding Stations;	51.564325	-2.8772
07/08/2014	1068	Latrines;	Not recorded	Not recorded
07/08/2014	1148	Feeding Stations;	51.562037	-2.8743
12/08/2014	612	Pathways; Feeding Stations;	51.565961	-2.86879
12/08/2014	901	Feeding Stations; Pathways	51.562957	-2.86492
12/08/2014	631	Lawns;	51.569811	-2.85795
12/08/2014	978	Burrows; Feeding Stations;	51.564763	-2.86347
12/08/2014	899	Feeding Stations;	51.565595	-2.86153
12/08/2014	787	Feeding station.	51.570883	-2.85424
12/08/2014	981	Pathways; Feeding Stations;	51.567374	-2.86018
13/08/2014	950	Feeding Stations;	51.572342	-2.84622

Table 6** Water vole field signs recorded during the survey in 2014.

Date	Water body reference number	Field sign	GPS Longitude	GPS Latitude
13/08/2014	880	Feeding Stations;	51.570548	-2.84465
14/08/2014	1135	Latrines; Feeding Stations; Sighting;	51.568587	-2.88503
14/08/2014	1200	Feeding Stations;	51.570471	-2.88428
15/08/2014	1129	Latrines; Burrows;	51.565893	-2.88329
15/08/2014	1211	Latrines; Feeding stations;	51.564916	-2.88701
15/08/2014	1229	Latrines;	51.56604	-2.88796
15/08/2014	1350	Pathways; Feeding Stations;	51.56447	-2.87728
20/08/2014	555	Feeding stations.	51.561295	-2.89546
20/08/2014	557	Pathways; Feeding Stations;	51.562279	-2.89691
21/08/2014	845	Pathways; Feeding Stations;	51.57446	-2.85013
21/08/2014	676	Latrines; Burrows; Pathways; Feeding Stations; Lawns;	51.570374	-2.86252
26/08/2014	876	Latrines; Pathways; Feeding Stations;	51.575782	-2.84587
26/08/2014	850	Feeding Stations;	51.573374	-2.84646
26/08/2014	915	Pathways; Feeding Stations;	51.572297	-2.84481
27/08/2014	845	Feeding Stations;	51.573477	-2.85028
28/08/2014	701	Pathways;	51.582289	-2.78839
28/08/2014	704	Pathways;	51.582176	-2.79109
28/08/2014	700	Sightings; Latrines; Lawns;	51.583313	-2.79229
29/08/2014	722	Latrines; Burrows;	51.577815	-2.80762
02/09/2014	60	Latrines; Feeding Stations;	51.550194	-3.04566
02/09/2014	861	Latrines; Pathways; Feeding Stations;	51.547702	-3.04142
02/09/2014	861	Latrines; Pathways; Feeding Stations;	51.547847	-3.04139
02/09/2014	862	Latrines; Feeding Stations;	51.547323	-3.04075
02/09/2014	1390	Latrines; Pathways; Feeding Stations;	51.547449	-3.0405
02/09/2014	42	Latrines; Pathways;	51.542207	-3.04529
08/09/2014	42	Latrines; Burrows; Feeding Stations;	51.542906	-3.04225
15/09/2014	27	Burrows;	51.546653	-3.05346
15/09/2014	1383	Pathways;	51.545964	-3.05123
15/09/2014	24	Pathways; Feeding Stations;	51.54392	-3.05164
15/09/2014	26	Sighting;	Not recorded	Not recorded
16/09/2014	146	Feeding Stations;	51.552864	-3.011
16/09/2014	125	Pathways; Feeding Stations;	51.549973	-3.0185
17/09/2014	1313	Latrines;	51.573293	-2.9334
17/09/2014	797	Feeding Stations;	51.571329	-2.92933
17/09/2014	794	Sightings; Feeding Stations;	51.571197	-2.92935
17/09/2014	797	Feeding Stations;	51.569474	-2.93265

Date	Water body reference number	Field sign	GPS Longitude	GPS Latitude
24/09/2014	305	Feeding Stations; Burrows;	51.54332	-3.02199
24/09/2014	43	Sightings; Burrows;	51.545344	-3.03472
25/09/2014	244	Latrines; Pathways; Feeding Stations;	51.54596	-3.01004
25/09/2014	242	Pathways; Feeding Stations;	51.54594	-3.00838
26/09/2014	181	Sighting;	51.555537	-3.00724
26/09/2014	210	Latrines;	51.54711	-3.00572
01/10/2014	822	Latrines; Pathways; Feeding Stations;	51.543122	-3.04912
06/10/2014	479	Latrines; Feeding Stations;	51.564584	-2.94925
07/10/2014	1312	Latrines; Burrows; Feeding Stations	51.567995	-2.93517
07/10/2014	1180	Feeding Stations;	51.570922	-2.93533
07/10/2014	1327	Feeding Stations;	51.570673	-2.93516
07/10/2014	1183	Feeding Stations;	51.567843	-2.93527
07/10/2014	503	Feeding Stations;	51.558417	-2.94135
07/10/2014	452	Feeding Stations;	51.562966	-2.94048
07/10/2014	505	Latrines; Feeding Stations;	51.559126	-2.9389
08/10/2014	1118	Latrines; Feeding Stations;	Not recorded	Not recorded
09/10/2014	1107	Latrines; Feeding Stations;	51.56454	-2.92631
09/10/2014	447	Burrows;	51.561292	-2.94508
09/10/2014	552	Feeding stations;	51.558726	-2.89827
09/10/2014	547	Latrines.	51.558365	-2.89773
10/10/2014	622	Latrines; Burrows; Pathways; Feeding Stations;	51.566161	-2.86784
13/10/2014	516	Feeding station	Not recorded	Not recorded
13/10/2014	573	Feeding Stations;	51.564285	-2.91093
13/10/2014	1288	Latrines; Pathways; Feeding Stations;	51.56633	-2.90988
14/10/2014	587	Latrines; Burrows; Pathways; Feeding Stations;	51.561375	-2.88446
14/10/2014	1300	Feeding Stations;	51.567826	-2.92214
15/10/2014	213	Burrows;	51.549133	-3.00833
16/10/2014	1359	Feeding Stations;	51.565365	-2.8791
16/10/2014	1352	Feeding Stations;	51.565304	-2.88009
20/10/2014	861	Latrines; Pathways; Feeding Stations;	51.547886	-3.04143
21/10/2014	495	Latrines; Feeding Stations;	51.561371	-2.9346
21/10/2014	320	Feeding Stations;	51.551751	-2.99899
21/10/2014	321	Latrines;	51.551237	-2.99736
22/10/2014	788	Feeding Stations;	51.561805	-2.87154
22/10/2014	619	Latrines; Burrows;	51.562679	-2.86545
22/10/2014	638	Feeding Stations;	51.574681	-2.85467

Date	Water body reference number	Field sign	GPS Longitude	GPS Latitude
23/10/2014	1329	Latrines; Feeding Stations;	51.56736	-2.93894
27/10/2014	579	Latrines; Feeding Stations;	51.565668	-2.91197
28/10/2014	578	Sightings; Latrines; Burrows; Feeding Stations;	51.571114	-2.91425
29/09/2014	476	Feeding Stations	51.5637	-2.94845
29/10/2014	957	Feeding Stations;	51.56802	-2.85208
29/10/2014	847	Sightings;	51.574166	-2.84716
30/10/2014	971	Feeding Stations;	51.571076	-2.86173
30/10/2014	844	Latrines; Feeding Stations;	Not recorded	Not recorded
30/10/2014	1382	Feeding Stations; Latrines.	51.570455	-2.86435
30/10/2014	636	Latrines; Burrows; Footprints; Pathways; Feeding Stations;	51.575521	-2.84978
30/10/2014	4	Feeding station; Latrines;	51.545025	-3.08408
31/10/2014	885	Latrines; Burrows; Footprints; Pathways; Feeding Stations; Lawns;	Not recorded	Not recorded
31/10/2014	867	Latrines; Burrows; Footprints; Pathways; Feeding Stations; Lawns;	51.571495	-2.84572
31/10/2014	915	Latrines; Burrows; Pathways; Feeding Stations; Lawns;	51.572067	-2.84587
31/10/2014	859	Latrines; Burrows; Footprints; Pathways; Feeding Stations; Lawns;	51.573276	-2.84649
31/10/2014	962	Latrines; Burrows; Footprints; Pathways; Feeding Stations; Lawns;	51.57278	-2.84664
31/10/2014	881	Feeding Stations;	51.573478	-2.84433
31/10/2014	875	Latrines; Burrows; Footprints; Pathways; Feeding Stations; Lawns;	51.572017	-2.84889
31/10/2014	921	Pathways; Feeding Stations;	Not recorded	Not recorded
31/10/2014	950	Latrines; Burrows; Pathways; Feeding Stations;	51.572443	-2.84632
31/10/2014	877	Latrines; Burrows; Feeding Stations;	51.571062	-2.84557
31/10/2014	880	Latrines; Burrows; Pathways; Feeding Stations; Lawns;	Not recorded	Not recorded
31/10/2014	889	Feeding Stations;	51.57242	-2.84209
31/10/2014	922	Feeding Stations;	51.571377	-2.84203

Water vole field signs were recorded in a marshy area with a small pond near Castleton (water body 4) where there does not appear to be any connecting water bodies in this area. At Parc Golf Club field signs were found on water bodies 24, 26, 27, 1383, the water bodies are managed on this site with suitable plants such as reed sweet-grass and common reed present.

In the area of Coedkernew and Percoed Reen (water body 43) there were over five locations where fields signs such as water vole latrines, pathways and feeding stations were recorded on water bodies 60, 861, 1382, 1390 which were in close

proximity to each other. To the south of Percoed Reen on water body 305 both burrows and feeding stations were found. It is possible that as with the otters, water voles use the Percoed Reen as a corridor for dispersal along the Gwent Levels.

Water vole field signs were found in ditches located to the West of the Afon Ebbw, to the south of the Duffryn Estate where water vole field signs were found on water bodies 125, 242, 244, 258, plus burrows on water body 213. On water bodies adjacent to Heol Pont-y-Cwcw, on water bodies 181, 320 and 321 field signs were also found. Here the reen and field ditches are managed and open providing interconnectivity.

Water vole field signs were found on water bodies 476 and 479 adjacent to Nash Road which were managed and interconnected. Near Pye Corner on Julian's Reen burrows were found on water body 447 which had been recently managed, this burrow had been plugged with vegetation by the water vole. Feeding signs of water voles were found along Julian's Reen (water body 452, 1183) and nearby ditches to the south-east (water bodies 495, 503, 505, 1329). Field signs were found on water bodies 1107 and 1118 which are north of Common Reen. Interconnected to these is water body 516 where feeding stations were also found. Many of these ditches and the reens are managed which maintains the openness, connectivity and good water quality.

Field signs for water vole were found in the area around Llanwern Steelworks. These field signs were confined to managed water bodies, such as Wainbridge Reen (water body 573), Bowleaze Reen (water body 559), Monkscroft Reen (water body 566), Black Wall Reen (waterbody578), and on the reen (water body 1273) which runs parallel to the A4810 Queens Way road. All these water bodies are regularly managed. The other interconnecting ditches where water voles field signs were found, are also regularly managed by the landowners. Within an area of land owned by Tata steelworks to the south of the A4810, water vole field signs were found on water bodies (1129, 1211, 1350) which are regularly managed. These are open water bodies which have healthy vegetation suitable for water voles.

Feeding stations were also found along Wilcrick Moor Reen (water body 971), which lies adjacent to an industrial building; which is bordered by Bareland Street (water body 638), where water vole field signs were also found. Latrines, burrows, footprints, pathways, feeding stations were also found on the reen 636 which is located to North of Bareland Street within 10 metres of water body 638. To the south-west of Wilcrick Moor Reen water bodies 676 and 844 fresh field signs (including latrines) were found.

Along Petty Reen (water bodies 915, 921, 950, 962) there were also field signs (including latrines, burrows, pathways, feedings stations and lawns), and also along the interconnecting ditches (water bodies 880, 881, 899). This reen joins with Pwll Uffern, a reen which travels within the Magor Marsh Wildlife Trust site, where there is a water vole release programme being carried out. It is possible that water voles from this release programme have used the reens to disperse West along such reens as Petty Reen. Water vole field signs were found north of the M4 on ponds and ditches (water bodies 700, 701, 704). This area is approximately 2 km from the Magor Marsh Wildlife Trust site, where water voles have been released. There were also field signs found on Prat Reen (water body 722, which is within 1 km of Magor Marsh.

3.2.6 Habitat suitability for Water Voles

Habitat suitability for water voles was assessed on 998 of the water bodies. The results are shown in Figure 7. Drawings illustrating the location of these water bodies are provided at the end of the report.

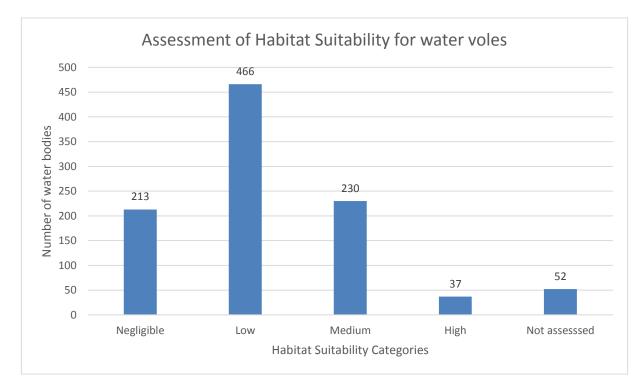


Figure 7 Habitat Suitability of water bodies surveyed for water voles

The majority of the water bodies (total of 466) were assessed as having a low habitat suitability for water voles, and a total of 37 of the water bodies were assessed as being high. The low suitability was primarily due to disturbance immediately adjacent to the watercourse, and also due to the lack of luxuriant vegetation for shelter, food and also low water quality. The reasons for water bodies being assessed as being of negligible quality were as follows: infilled, dry, dense vegetation smothering the water body, low water quality, heavily shaded or disturbed by farming. Water bodies described as not assessed were in situations where access to the land parcel was granted, but the water body itself could not be assessed, this was mainly due to dense vegetation making the water body inaccessible.

Water body 4 which is an isolated pond in the Castleton area was assessed as being of medium potential. The other three water bodies (5, 6, 7) surveyed which are in close proximity were assessed as being low (5, 6) as they were wooded and overgrown water bodies but had potential to be used as a corridor; and water body 7 was negligible due to being low water level with fly-tipping adjacent. Other water bodies close by which were not surveyed in 2014 could provide connectivity to other areas to the east.

There are a cluster of water bodies which are interconnected or in close proximity to each other (including 12, 13, 14, 15, 16, 17, 19, 20, 25) with medium suitability for water voles on the Parc Golf Club land. Waterbody 26 and 24 which are ponds were also assessed as being of high suitability. The ponds and ditches in this area

are regularly managed and contain plenty of suitable food sources such as reed sweet-grass and water mint *Mentha aquatica* but also bankside cover to provide protection from predators. There were only three water bodies which were assessed as being of low potential at Parc Golf Club (water bodies 23, 30, 31). Percoed Reen (water body 43) which lies to the south of Parc Golf Club was also assessed as having high potential for water voles, and this water body could provide a corridor for movement of dispersing water voles across the Gwent Levels. The water bodies that interconnected with water body 43 were assessed as being of medium potential (e.g. 44, 45, 48, 49) due to the presence of suitable foraging (reed sweet-grass, bulrush).

Adjacent to a disused road in Coedkernew, there were ditches and ponds assessed as being medium potential for water voles (water bodies 55, 60, 862, 1389, 1391) which are interconnected with Percoed Reen (water body 43). This area has little human disturbance, and the vegetation has been allowed to become naturally wild providing cover for wildlife. Water body 59 in this area, was of negligible potential due to no water present in the concrete banked ditch, and fly-tipping adjacent to the water body. There would be no potential for burrowing on this water body. Within the industrial land, water bodies 9960 and 64 were of low potential, with water body 62 of negligible potential. Water body 62 was a dry ditch.

There is a large area south of the Duffyn Estate where the water bodies were assessed as being of low and negligible potential habitat for water voles, for example water bodies 101, 111, 138, 230. Many of these water bodies were double hedged and overshaded. Water quality is poor in this area, especially in those water bodies which acted as drainage from the railway lines and roads – these water bodies were assessed as being of negligible value to water voles. However, in this area there are also some water bodies that were assessed as being of high potential (water bodies 258 and 261) and medium potential (water bodies 125, 127, 256 and 263).

There are water bodies to the east of Lighthouse Road which have medium suitability for water voles (including 206, 210, 213, 217, 244, 806) and water body 242 was of high suitability (these are in close proximity to each other). There are also water bodies interconnected with these which are of low and negligible potential, with heavy poaching and low water quality. This area is mainly used for horse and other livestock grazing. Similar water bodies along Heol Pont-y-Cwcw (water bodies 179, 188), which are interconnected with Ponty-Cwcw Reen have both high (water body 321) and medium (water body 320) potential as habitat for water voles. Seawall reen (water body 170) is also of medium potential. The water bodies that were assessed as being medium or high suitability were open and obviously managed regularly, with a range of submerged and bankside plant species which could provide a food source for water voles. The water quality of these water bodies was assessed as being good. However, the ditches on the land in between the Pont-y-Cwcw Reen and the Seawall Reen are of low potential as they have low water levels and are overshaded (e.g. water body 173) or dry (e.g. 175).

The River Ebbw and River Usk are assessed as being of negligible potential for use by water voles, due to the relatively fast flow of water compared to the Gwent Levels ditch network, very deep water, large width of the water bodies and lack of food sources. On the eastern bank of the River Usk there is a footpath where there are catchment ditches (e.g. water bodies 331, 332) and ponds (e.g. water bodies 330, 333) which collect water from the industry adjacent. Due to the low water quality and lack of interconnecting habitat suitable for use by water voles, these water bodies are assessed to have low potential for water voles.

In the Solutia reserve there are ditches that were assessed as being of medium potential for water voles, for example water bodies 428, 441, 443. The reason that water bodies in this area were assessed as medium, was mainly due to the fact that many were not open throughout the water body, and with hedgerow overshading. It appears that the ditches are regularly managed, with suitable plants for water voles to feed upon. There are water bodies in this area that were double-hedged and inaccessible to survey (e.g. water bodies 429, 442). The land is grazed by cattle and the banks were heavily poached in places.

To the north of Solutia there are interconnecting ditches which are of low and negligible potential for water voles. For example, water bodies 478, 480, 833 which are interconnected are all dry ditches. There are two sections of a reen (water bodies 473, 476) which are of medium potential because of presence of food source and suitable habitat for burrowing.

There are reens and interconnecting ditches near Pye Corner and to the east that have medium potential, for example water bodies 499, 500, 503 837. These are connected with Julian's Reen (water body 447, 451, 452) which travels towards the north-east and had sections of medium potential for water vole, and one section (water body 1180) of high potential. Water body 447, had been recently managed, but during the survey burrows and pathways were found under the cut vegetation. In some instances following bankside management, it was possible to uncover field signs if the vegetation that had been cleared was not trampled onto the bank. However, on other water bodies the bankside management had included stripping the bank of vegetation leaving only the substrate visible and only remnants of the vegetation present. In the Pye Corner area there were also water bodies that were assessed as being low and negligible. For example, water body 450, 497 which had a low water level, double-hedged and assessed as being low potential.

To the east of Julian's Reen, there are interconnecting water bodies of medium potential (e.g. 794, 795, 1334) and high potential (e.g. water bodies 1107, 1118, 1164, 1338). Interconnecting with these however, are both water bodies of low and negligible potential for water voles. In close proximity to the south is Common Reen (water body 513) of medium potential.

In the area of Llanwern Steelworks there are water bodies of medium potential including Blackwall reen (water body 578). The water body that runs along the periphery of the site (water body 1295) is of negligible potential due to low water quality. There are also ponds (water bodies 1264, 1280) which are negligible for water voles, because they are dried out with no suitable food source. Interconnecting with water body 578 to the north there are water bodies 1196, 1197, 1273. There are also water bodies interconnecting with Blackwall Reen to the south which are of medium potential, such as water bodies 1178, 1288. There is pond of high potential (water body 1314) which is a large deep pond with good water quality, however the water bodies adjacent were of low and negligible potential. The water bodies that run parallel to the A4810 to the west (e.g. water bodies 1284, 1316, 1321) are of low potential due to man-made banks (i.e. concrete) on one side of the reen.

Sections of Bowleaze Reen were considered to be of high potential (water body 560), with water bodies of medium potential interconnecting (e.g. water body 557, 563). These water bodies are to the south of Tata Steelworks. Within the Steelworks land there are ditches and reens of medium potential, such as water bodies 1170, and Newcut Reen (water body 603) which is also of medium potential. There is also a water body (1129) which was assessed as having high potential. All these water bodies are maintained as open and have suitable vegetation (e.g. willowherb species and reed sweet-grass) for water voles to forage. Water body 587 was also assessed as being of high potential, which has water bodies (e.g. 586, 1060) of medium potential interconnecting. However, there are water bodies running along the periphery of the Tata Steelworks (e.g. water bodies 1250, 1257) which are of negligible potential for water voles due to poor water quality. There are also ponds within the Tata Steelworks land which are of negligible potential for water voles, for example waterbody 790, 1206, 1220, which are dry ponds with overgrown banks within contaminated minespoil.

To the east of this section of the Tata Steelworks there are reed beds (e.g. waterbody 1138, 1210) of low potential due to containing shallow water but Phragmites which could be a food sources for water voles. To the south east of Tata Steelworks Cock Street Reen (water bodies 622, 619) had high potential, and contained reed canary grass (*Phalaris arundinacea*) and yellow flag iris (Iris pseudacorus). Cock Street Reen is connected with other water bodies of medium potential (618, 901).

Along Bareland Street there are industrial buildings, surrounding this site are water bodies which are of medium potential (including 639, 1342). They are managed, with good water quality suitable for water voles. Walcrick Moor Reen (water bodies 842, 960) runs from north to south along an access road in this industrial area, and is a managed water body. Interconnecting with this reen is Bareland Street Reen, and sections of this water body (646, 647) were assessed as being of medium potential. The ditch which runs parallel to Bareland Street is of negligible potential due to being overgrown with dense terrestrial vegetation. To the north, connecting with Bareland Street Reen, there is a managed ditch running parallel to the A4810 which is of high potential (water body 636). Although to the east of this high suitability water body, the water bodies were assessed as being negligible and low, due to dense vegetation and low water level. To the South of the industrial site the water bodies lie within land which is heavily grazed by livestock and these water bodies were mainly considered to be of low and negligible suitability. To the east there is Stutwall Reen (water body 671) which is of high potential and connected with other main water bodies on the Gwent Levels. Along a lane which connects to the A4810, the water body 666 and 662 were of low water quality and heavily shaded, therefore were assessed as being negligible and low (respectively).

To the south of this area there are ditches which run parallel to the A4810, where one section is managed and of high potential (water body 676). Along Petty Reen there are water bodies (including 921, 962, 950) of high potential, with interconnecting water bodies of high and medium potential. The Petty Reen is connected to Pwll Uffern Reen, which crosses the Magor Marsh Wildlife Trust Reserve where water voles have recently been released.

Mill Reen (water bodies 935, 944) near to Junction 28A, was assessed as being of low potential for water voles. This was due to the low water level and reen being heavily poached by cattle grazing adjacent land. The water bodies nearby were of negligible suitability, this included 934 which had no suitable burrowing areas as the banks of the water body were manmade. Water bodies to the north such as 690 had no suitable food plants for water voles or a dry ditch, fenced with hedgerow (e.g. 692).

At the eastern extent of the study area, Prat reen (water bodies 722, 726) was assessed as being of medium quality. Prat reen is connected with other main water bodies which travel through the Magor Marsh Reserve. To the east of these water bodies there are water bodies 710, 712, 724 which are of medium potential. Connected with this water body are water bodies 711 and 713 which are of low potential due to being double fenced, overgrown and with low water level Adjacent to the M4 there are water bodies which were assessed as being of medium potential for water voles, which were water bodies 699, 701, 703, 704, and waterbody 705 which is of negligible suitability as it has concrete banks

4 Conclusions and Recommendations

4.1 Conclusions

Otter field signs were recorded across the majority of the study area. No field signs were found in the Castleton area, however in an area at nearby Coedkernew which experiences little human disturbance, presence of otter was found. It appears that the otters use the main reen network, for example Percoed Reen, due to their high water quality and connectivity to other favourable habitat. Spraint was found on a reen adjacent to the River Ebbw. Slides and footprints were seen on water bodies adjacent to the River Usk SAC, of which Otters are a feature. A slide was also found heading into a field ditch near Pye Corner. Otter presence was found in the area of Llanwern Steelworks. Field signs were also found on Mill Reen on the Eastern extent of the study area.

In the study area, otters are finding a niche amongst the industry, housing and farming, utilising suitable habitat which has good water quality, prey availability and provides cover.

Water vole field signs were found on 126 of the 1442 water bodies across the entire study area. These were mainly on water bodies which were managed such as reens which are part of the Gwent Levels ditch system. The current management regime allows for a mosaic of habitats for water voles to utilise, with areas of open water body, good water quality, a bank for burrowing, marginal vegetation, vegetative cover from predators and emergent vegetation for foraging. Through habitat suitability mapping both high and medium potential habitat was identified; the majority of these water bodies were interconnected with other suitable habitat allowing corridors for water voles to disperse. Water voles have recently been released at Magor Marsh, and could be using the interconnecting water bodies within the study area to disperse across the Gwent Levels. Water vole field signs were found adjacent to water bodies with low water potential in the Tata steelworks land, utilising marginal habitat.

4.2 **Recommendations**

In line with the guidance in DMRB, it is recommended that where otters and water vole are likely to be affected, mitigation and/or compensation, should be incorporated into the design of any scheme. Consideration with regard to fragmentation of the current habitat should be considered, and also consideration not only to the water bodies but the vegetation adjacent that support the two species of concern.

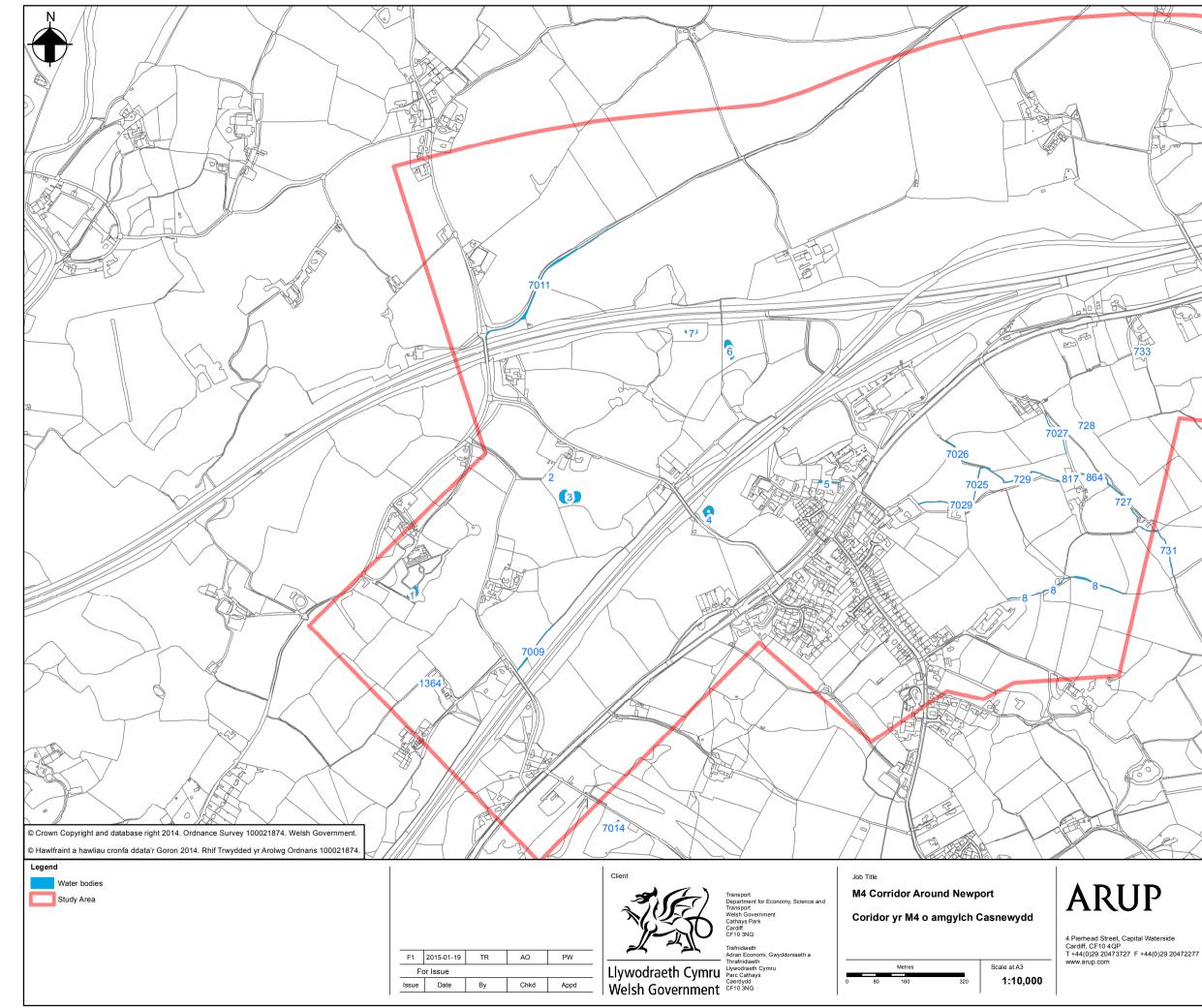
It is recommended that an additional survey during the spring/summer (June / July) would allow for a more thorough understanding of how water voles and otters use the water bodies in the survey area throughout the year (*pers comm* with Derek Gow). It is also recommended that future surveys to inform the new M4 design should include those water bodies which could not be surveyed in 2014.

Finally, it is also recommended that commitments be incorporated in to any scheme to undertake pre-construction surveys to inform any subsequent licence applications that might be required.

References

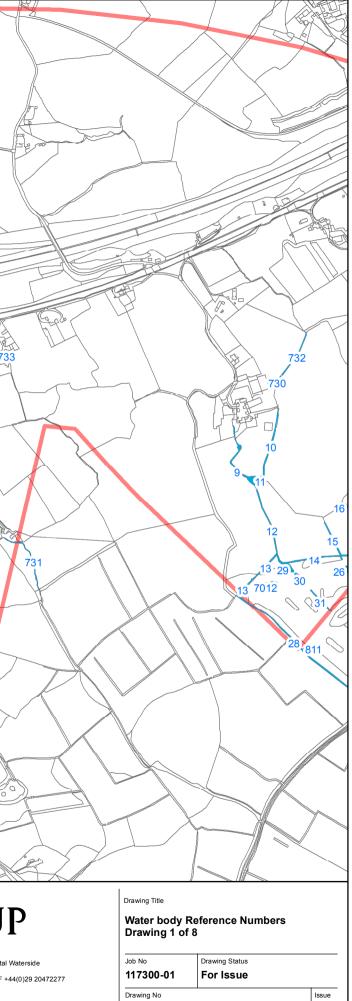
- Chanin, P. (2003). Ecology of the European Otter. Conserving Nature 2000 Rivers, Ecology Series No 10. EN, CCW, EA, SEPA, SNH & SNIFFER.
- Crawford. (2003). Forth Otter Survey of England 2000 2002. Environment Agency.
- HA. (1993). Part 4 Ecology and Nature Conservation. In HA, Design Manual for Roads and Bridges (Vol. 11). Highways Agency.
- HA. (2005). *Mitigating Against Effects on Badgers: Badger Surveys*. DMRB Volume 10, Section 1, Part 5 HA 59/92.
- Harris, S., Cresswell, P., & Jefferies, D. (1989). Surveying Badgers.
- Ove Arup & Partners Ltd. (2013). *M4 Corridor Around Newport, WelTAG Appraisal Report Stage 1 (Strategy Level).* Cardiff: Welsh Government.
- Ove Arup & Partners Ltd. (2014). *M4 Corridor Around Newport, Stage 2 Environmental Report.* Cardiff: Welsh Government.
- Strachan, R., & Jefferies, D. J. (1996). Otter Survey of England 1991-1994: A report on the decline and recovery of otter in England and on its distribution, status and conservation.
- Strachan, M., Moorhouse, T., & Gelling, M. (2011). *Water Vole Conservation Handbook* (3rd ed.). Oxford: Wildcru.
- Strachan, R., & Moorhouse, T. (2006). *Water Vole Conservation Handbook* (2nd ed.). Oxford: Wildlife Conservation Reseach Unit.
- WG. (2008). Welsh Transport Planning and Appraisal Guidance (WelTAG). Cardiff: Welsh Assembly Government.

Drawings



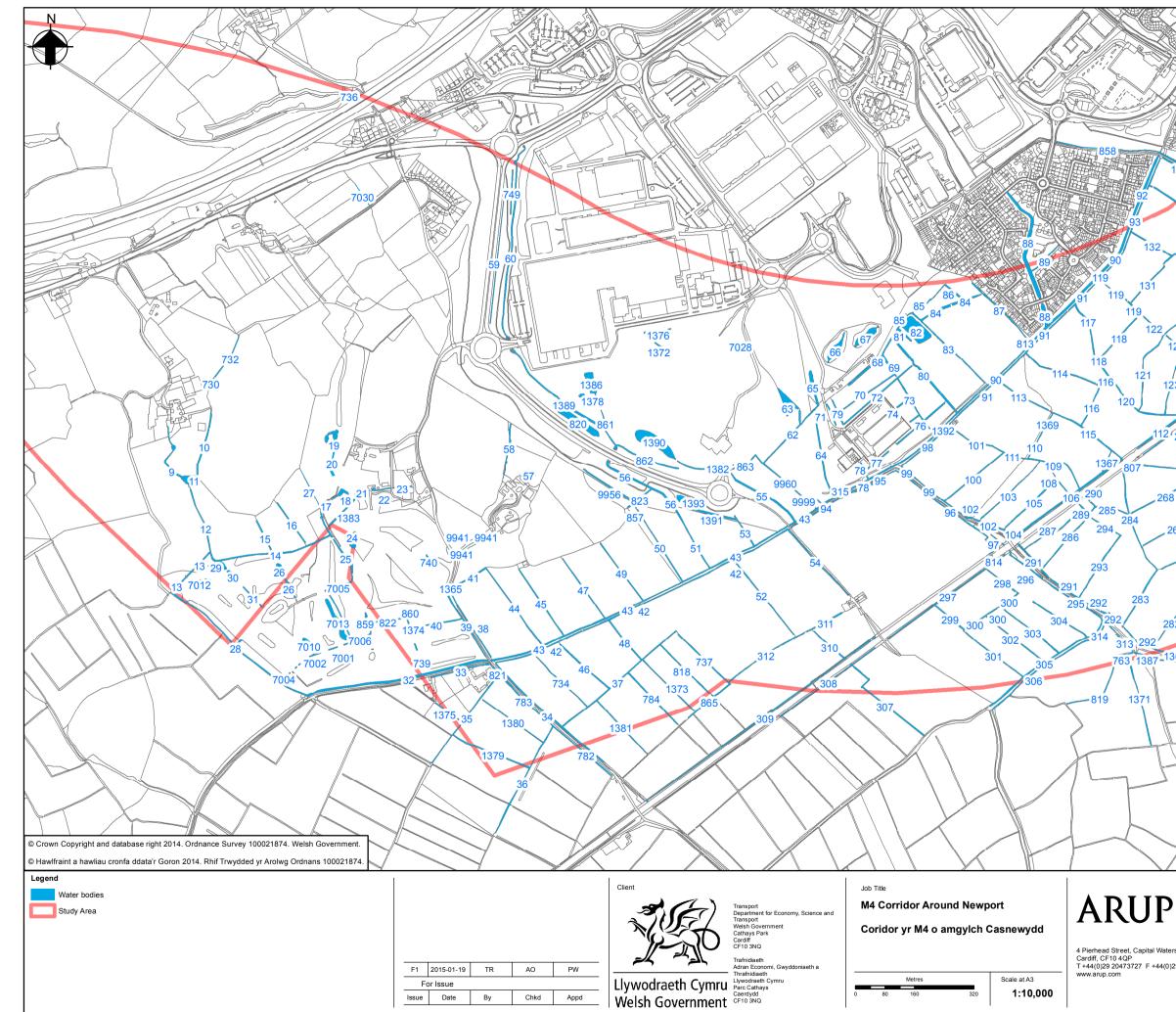
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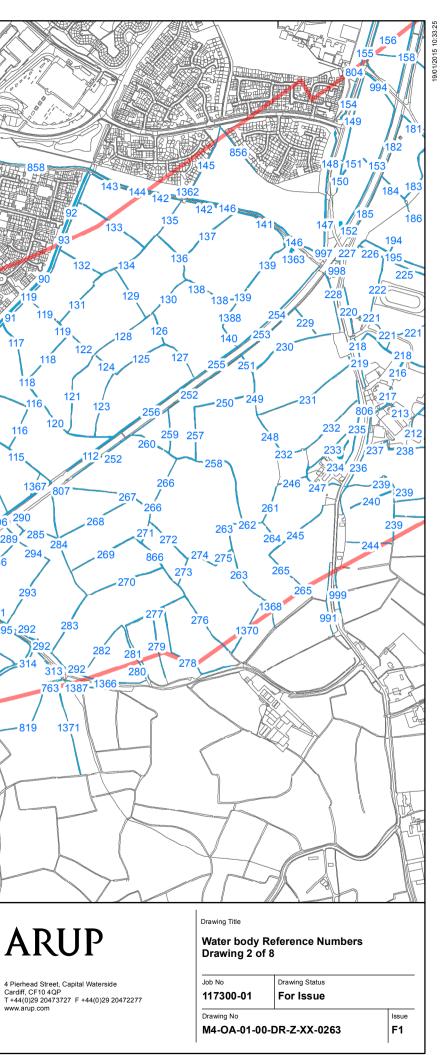




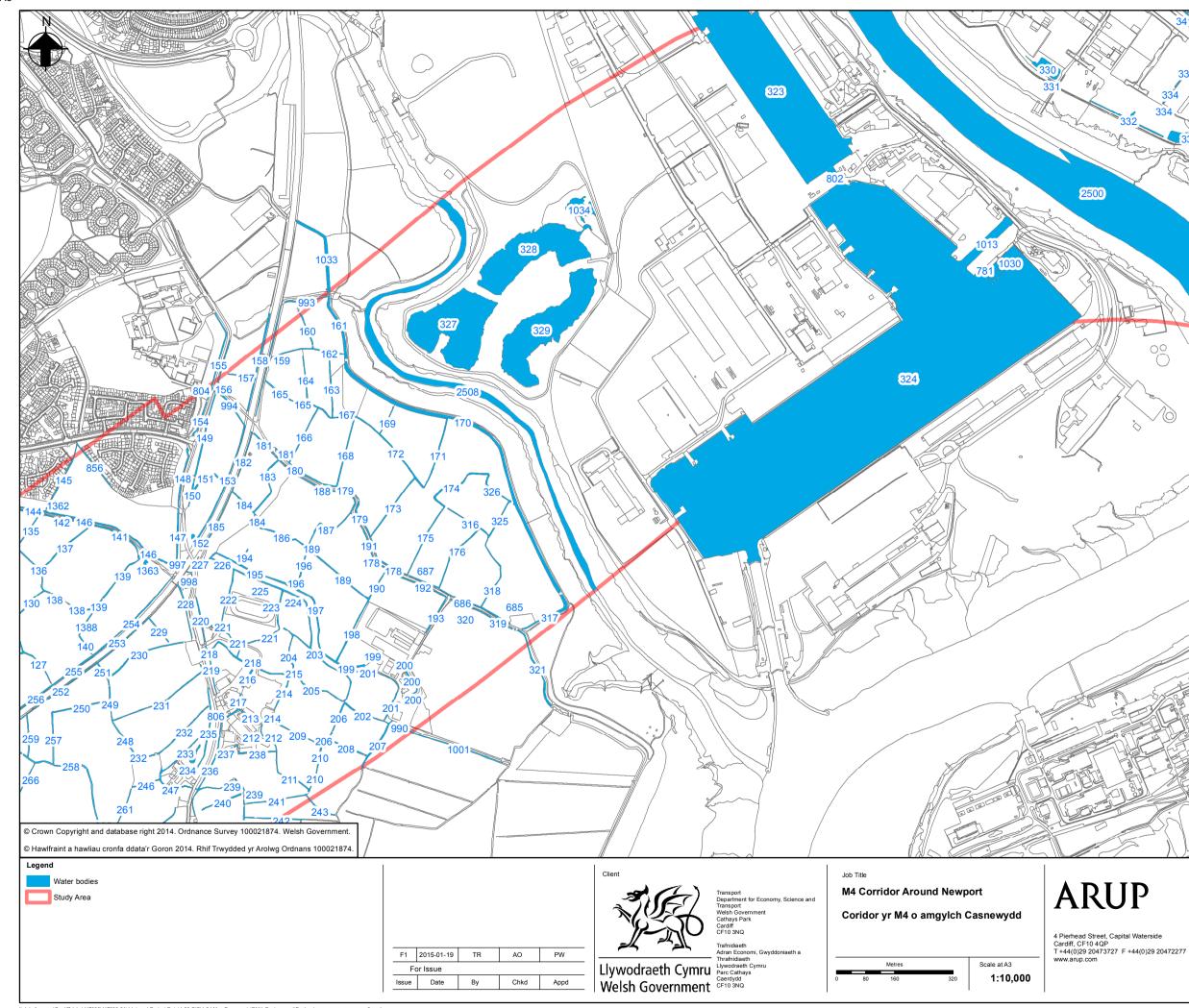
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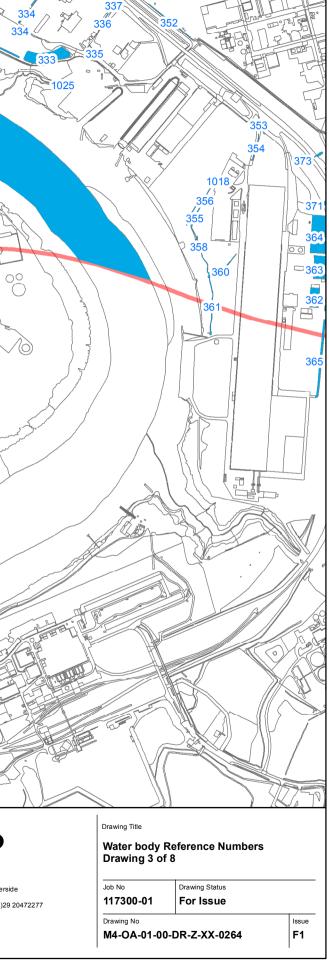


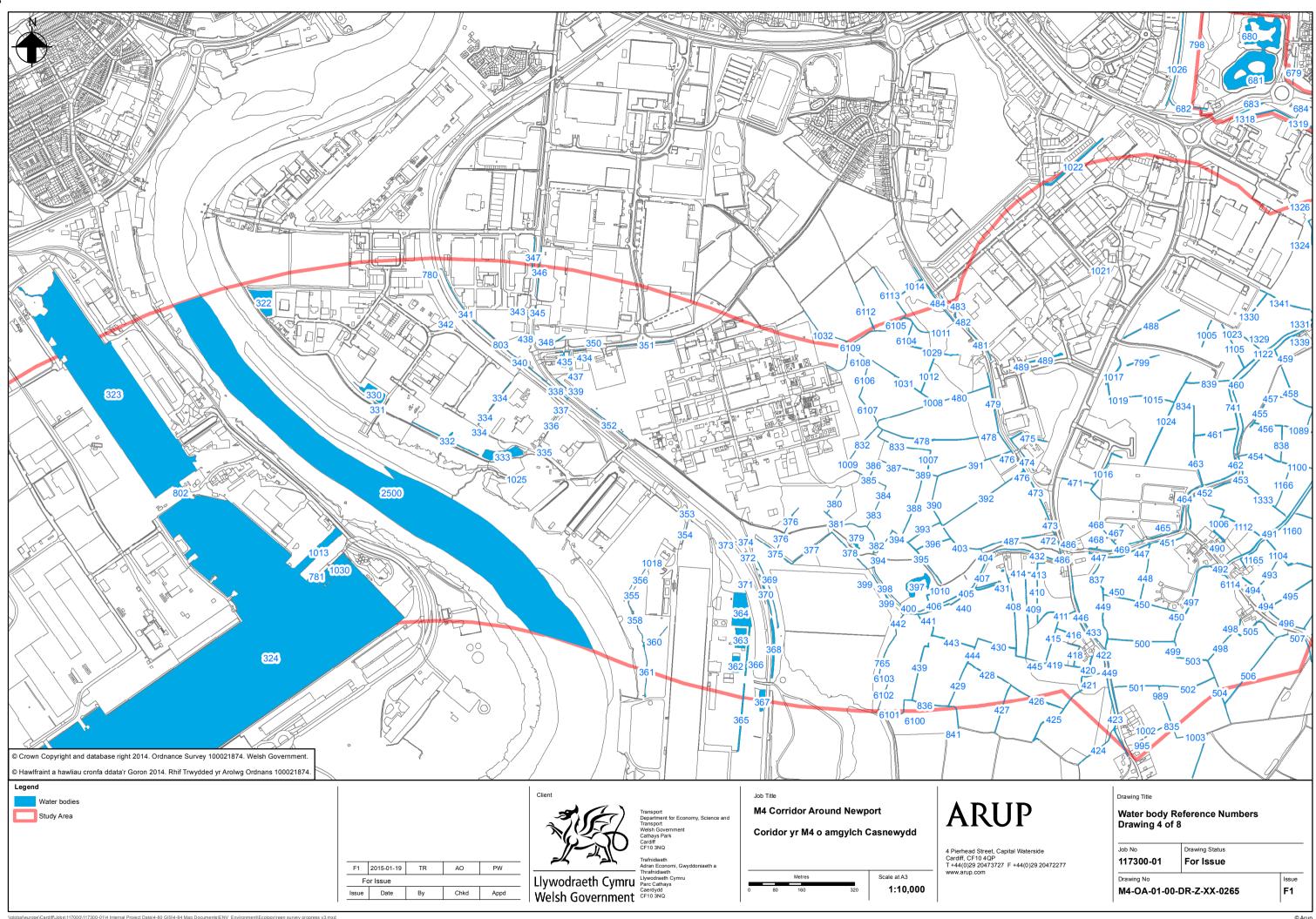


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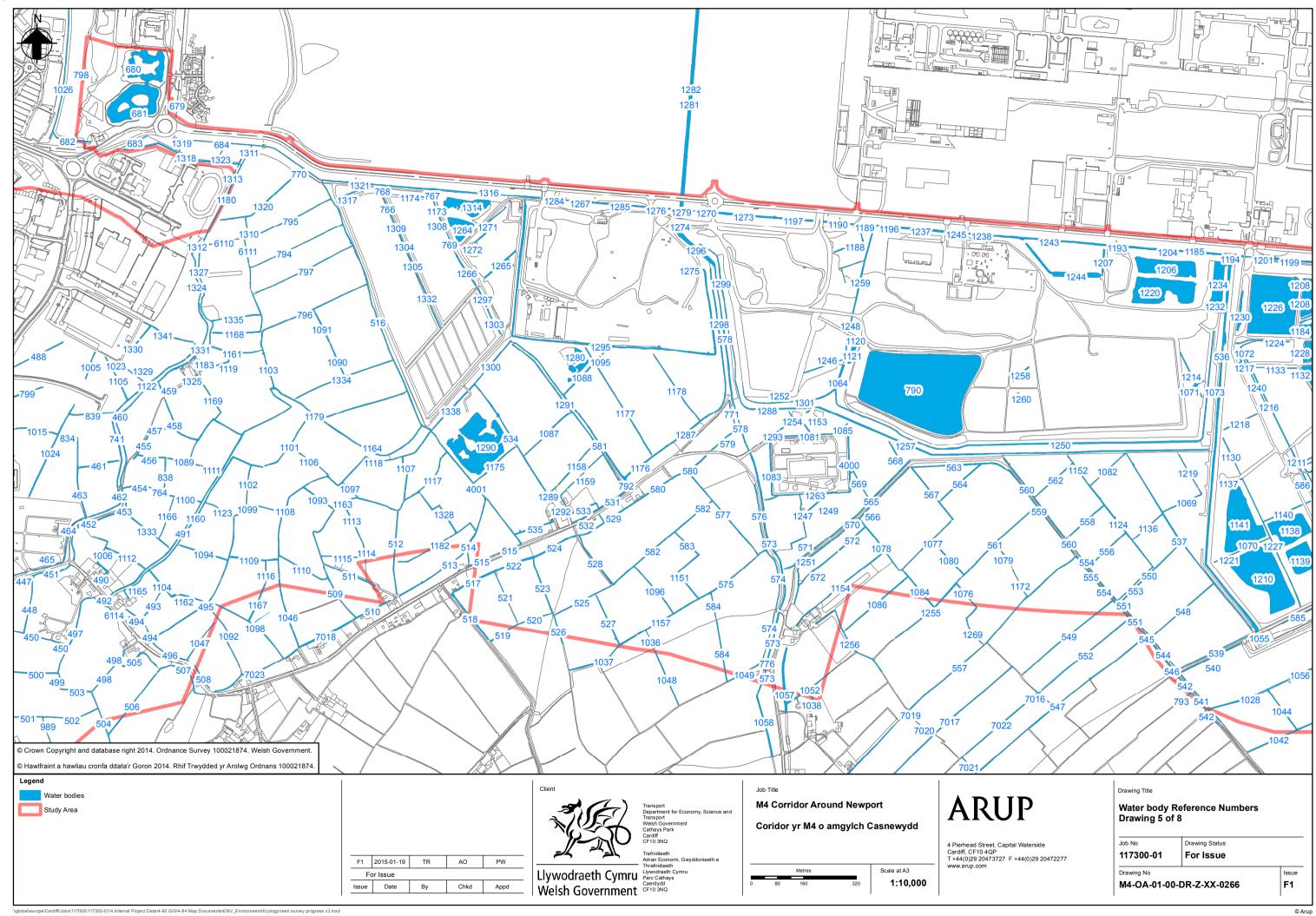


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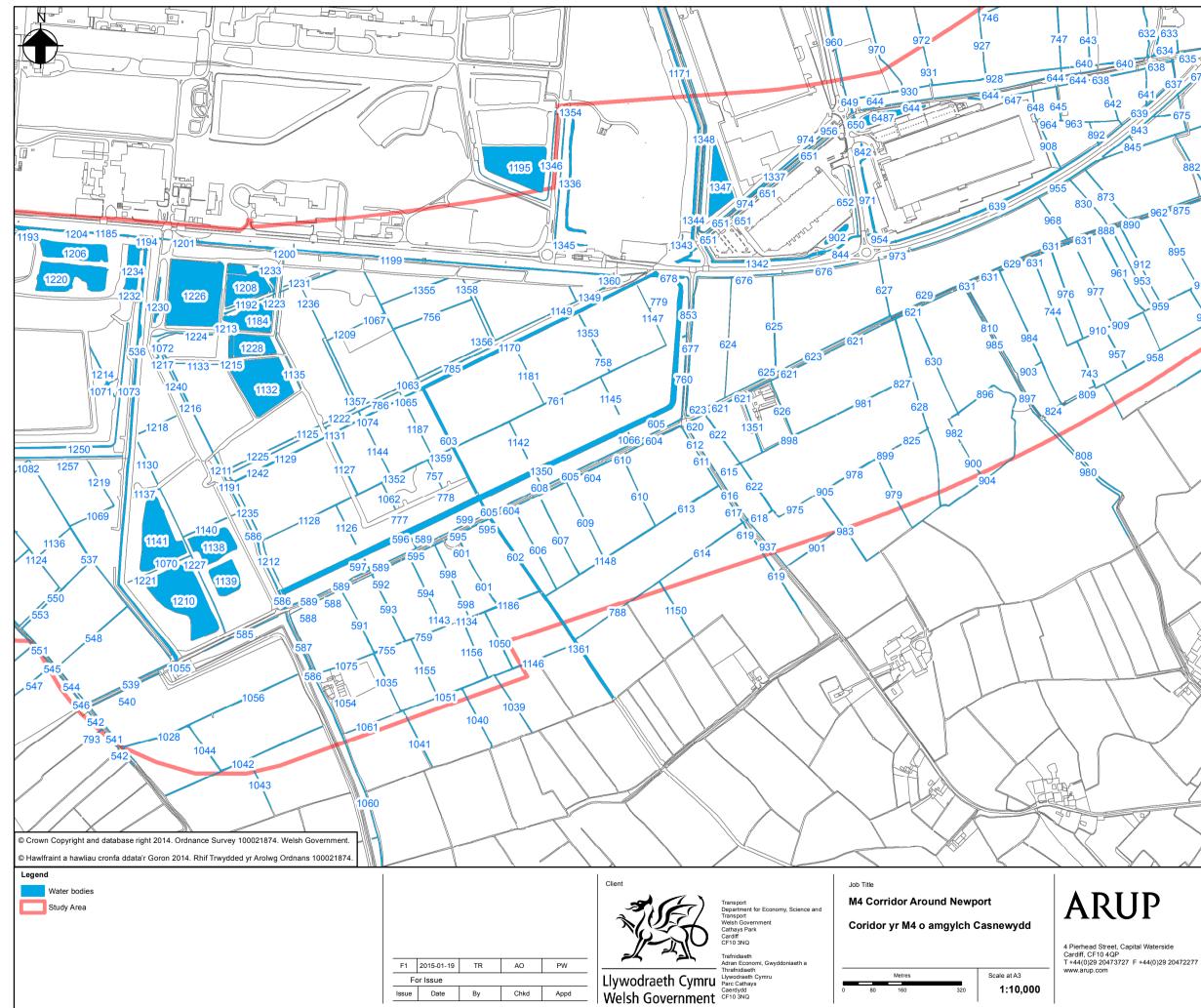






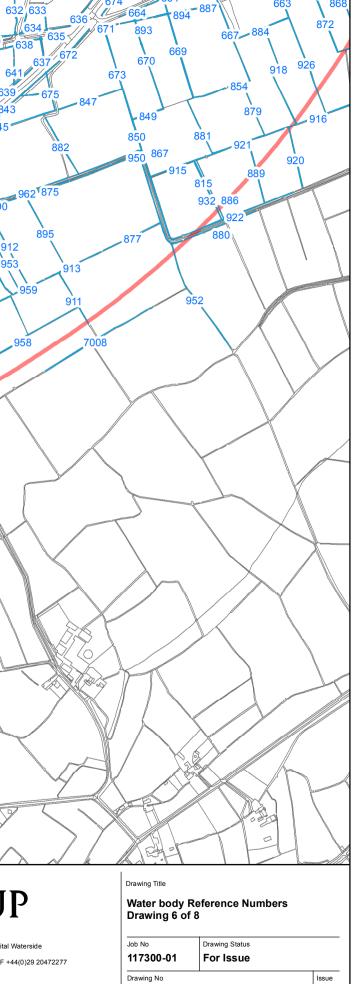






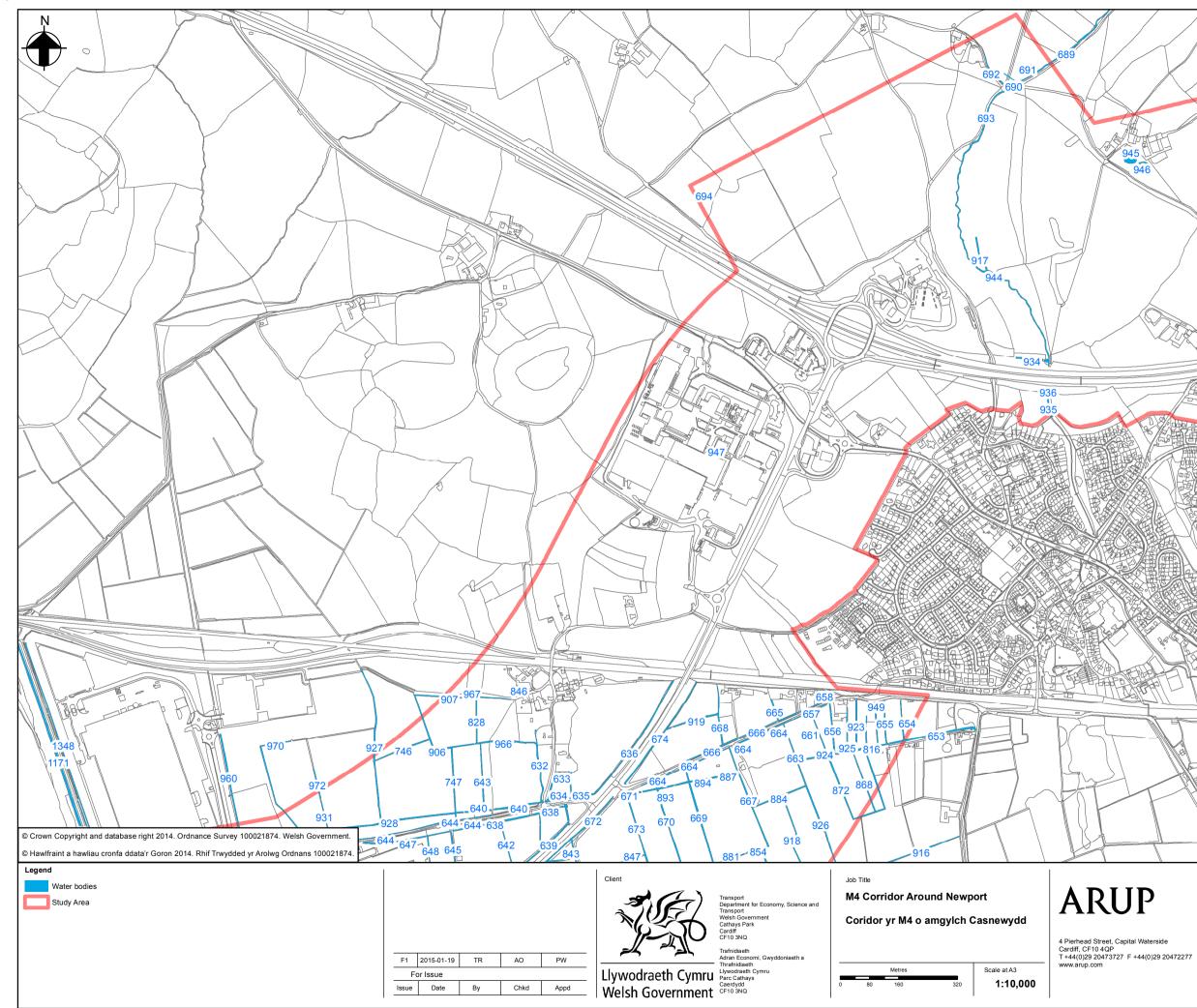
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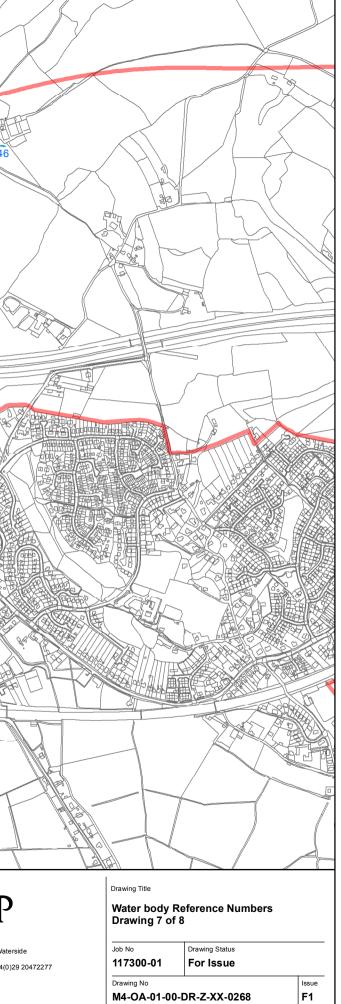


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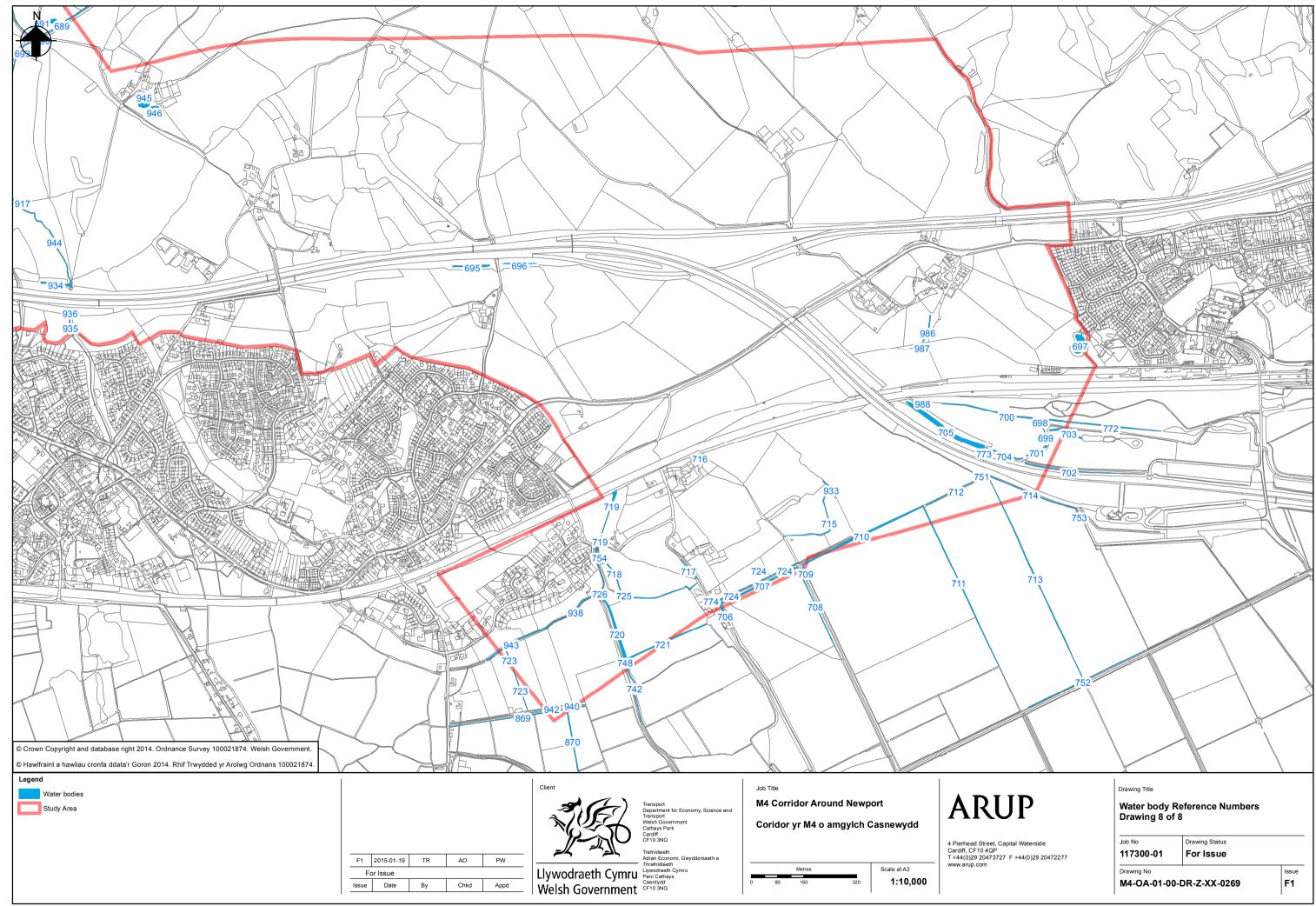
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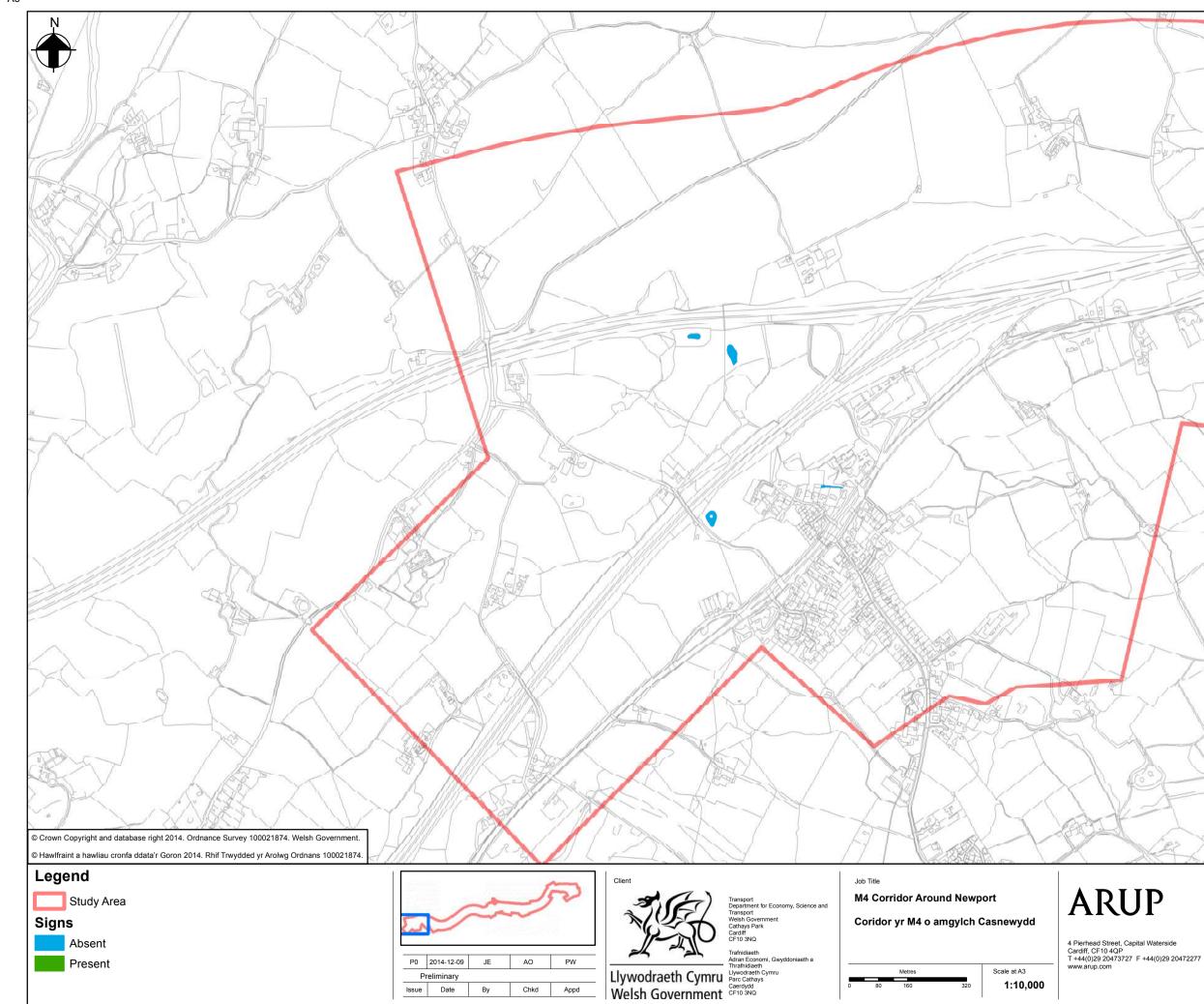


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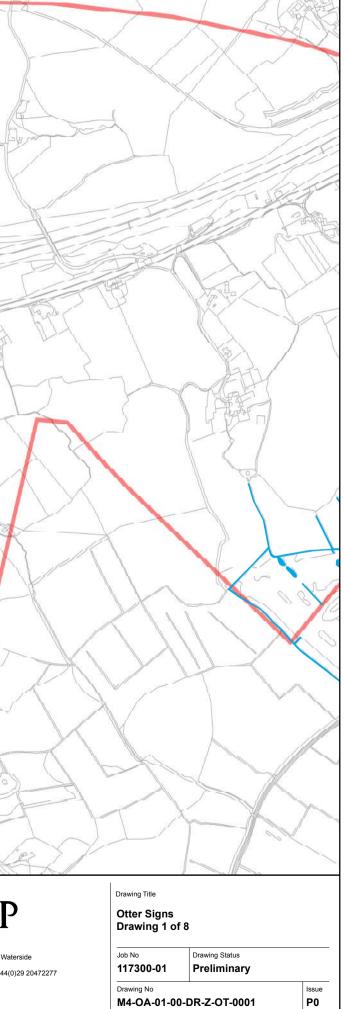


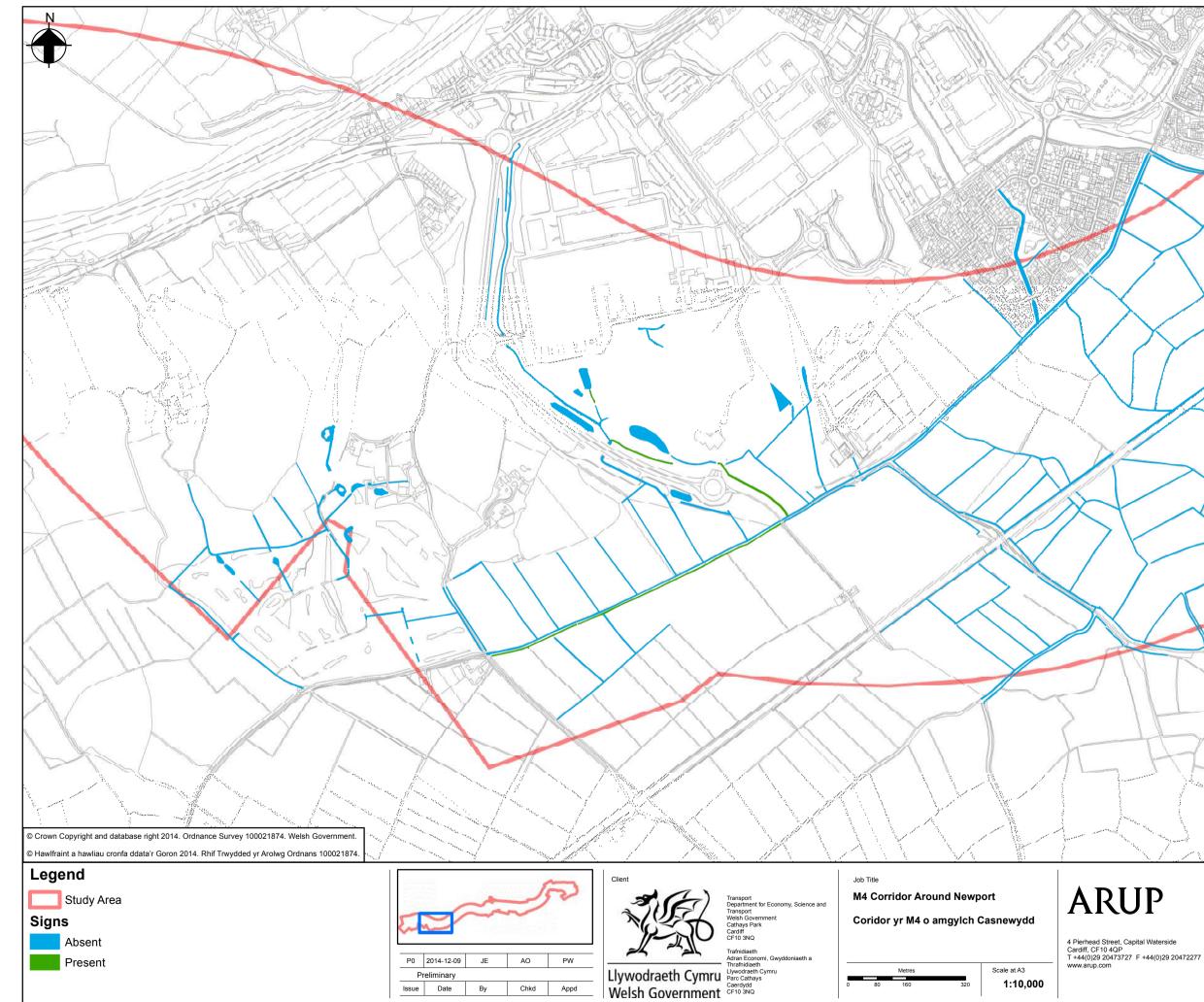
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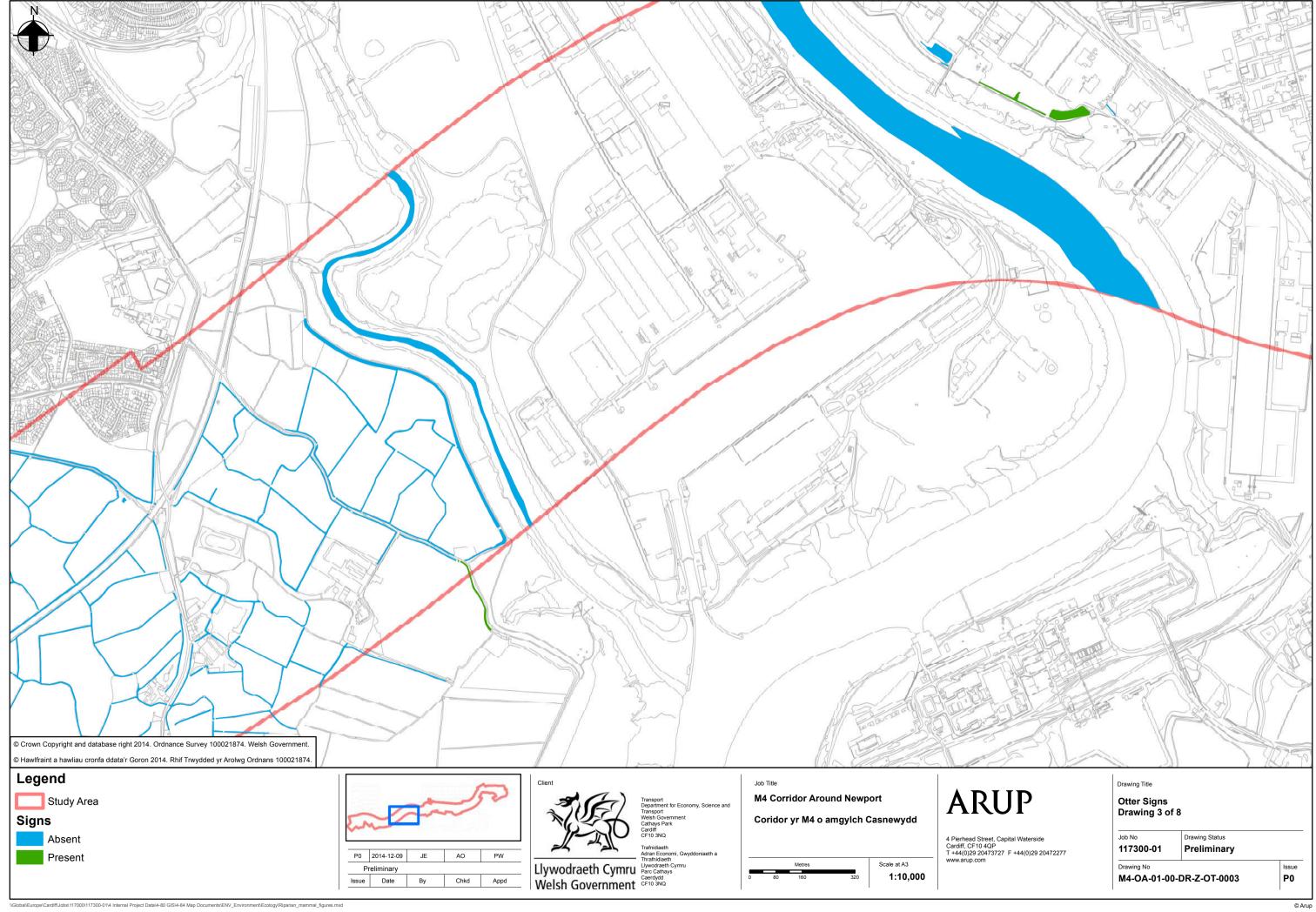




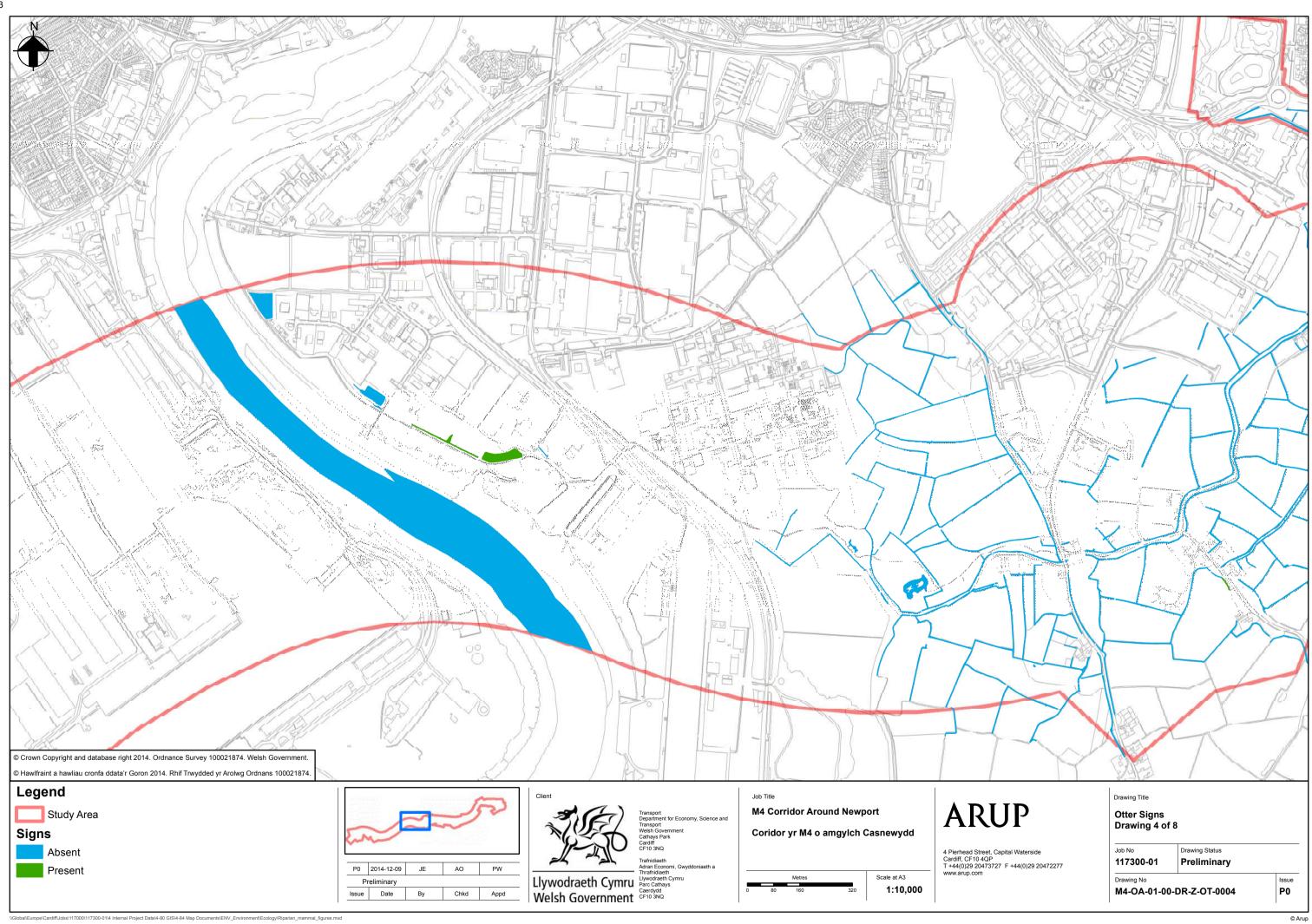




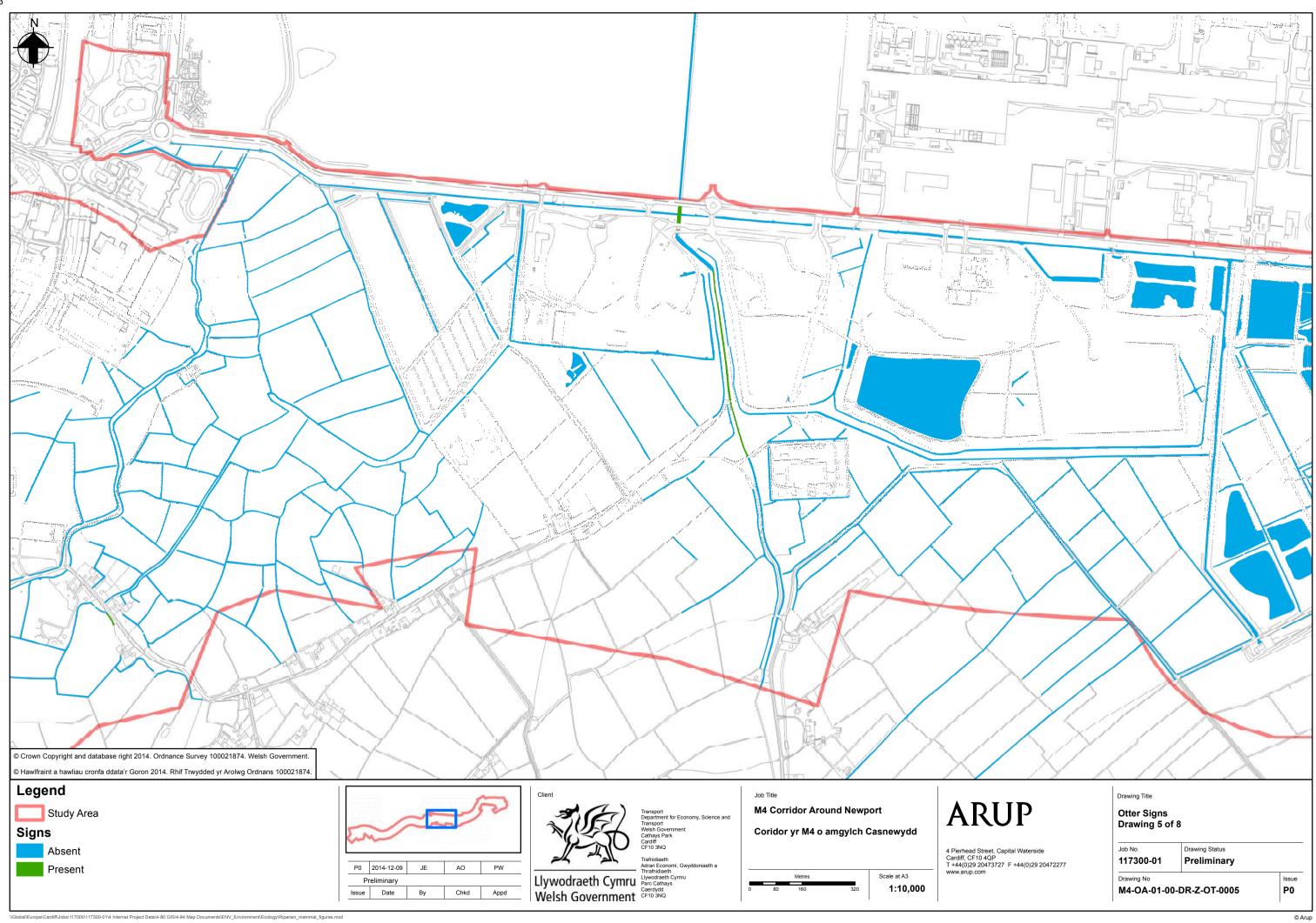
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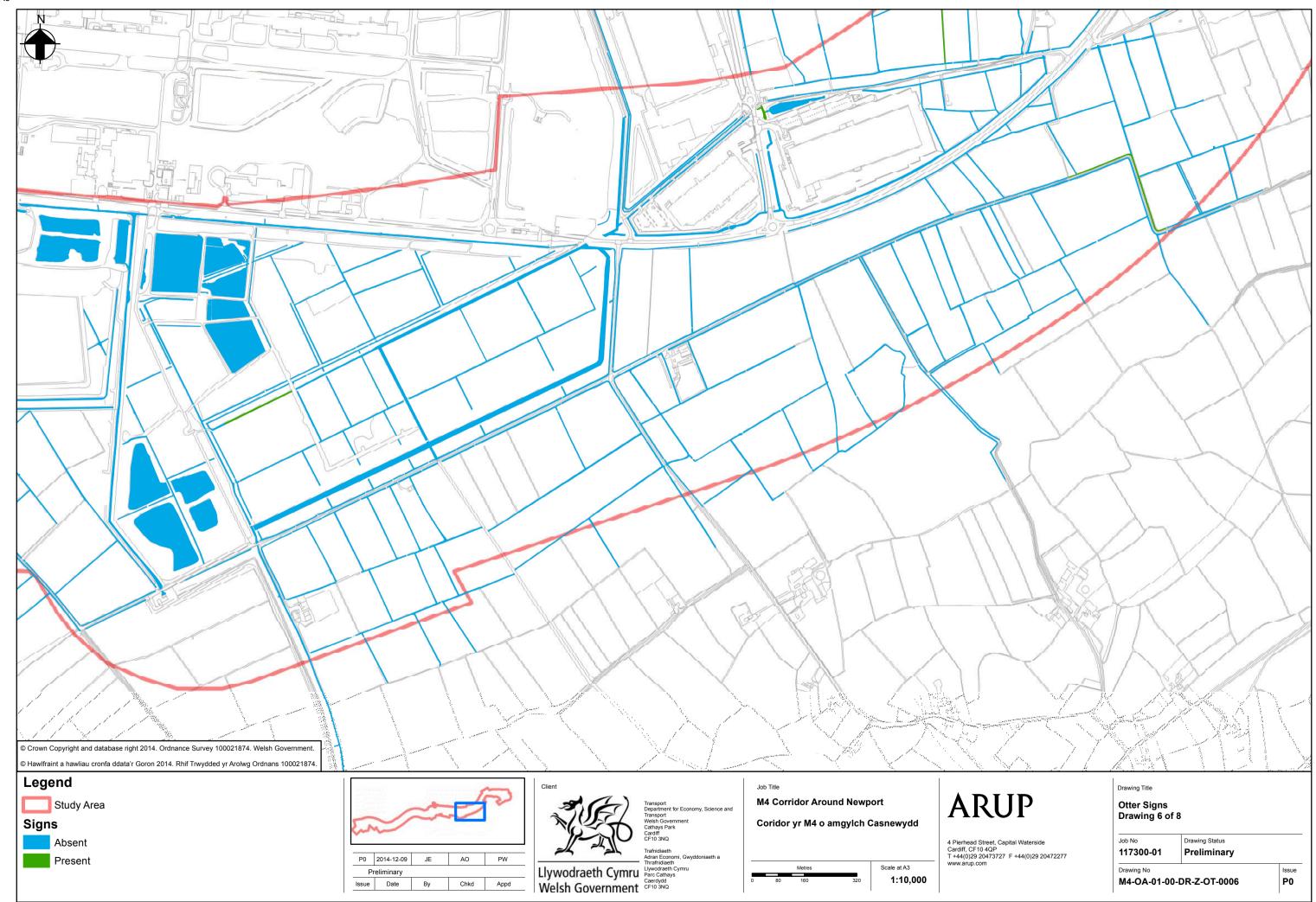




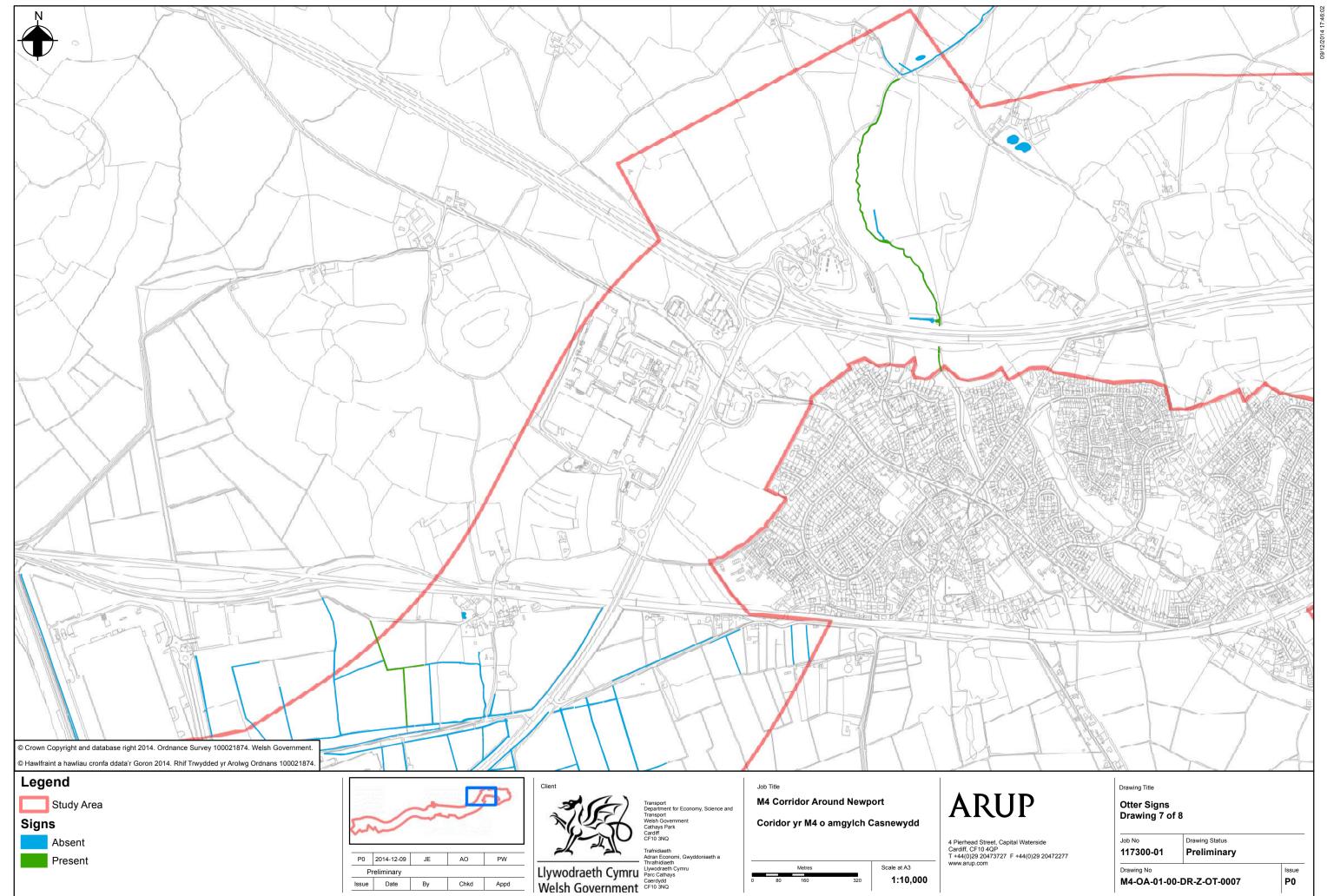


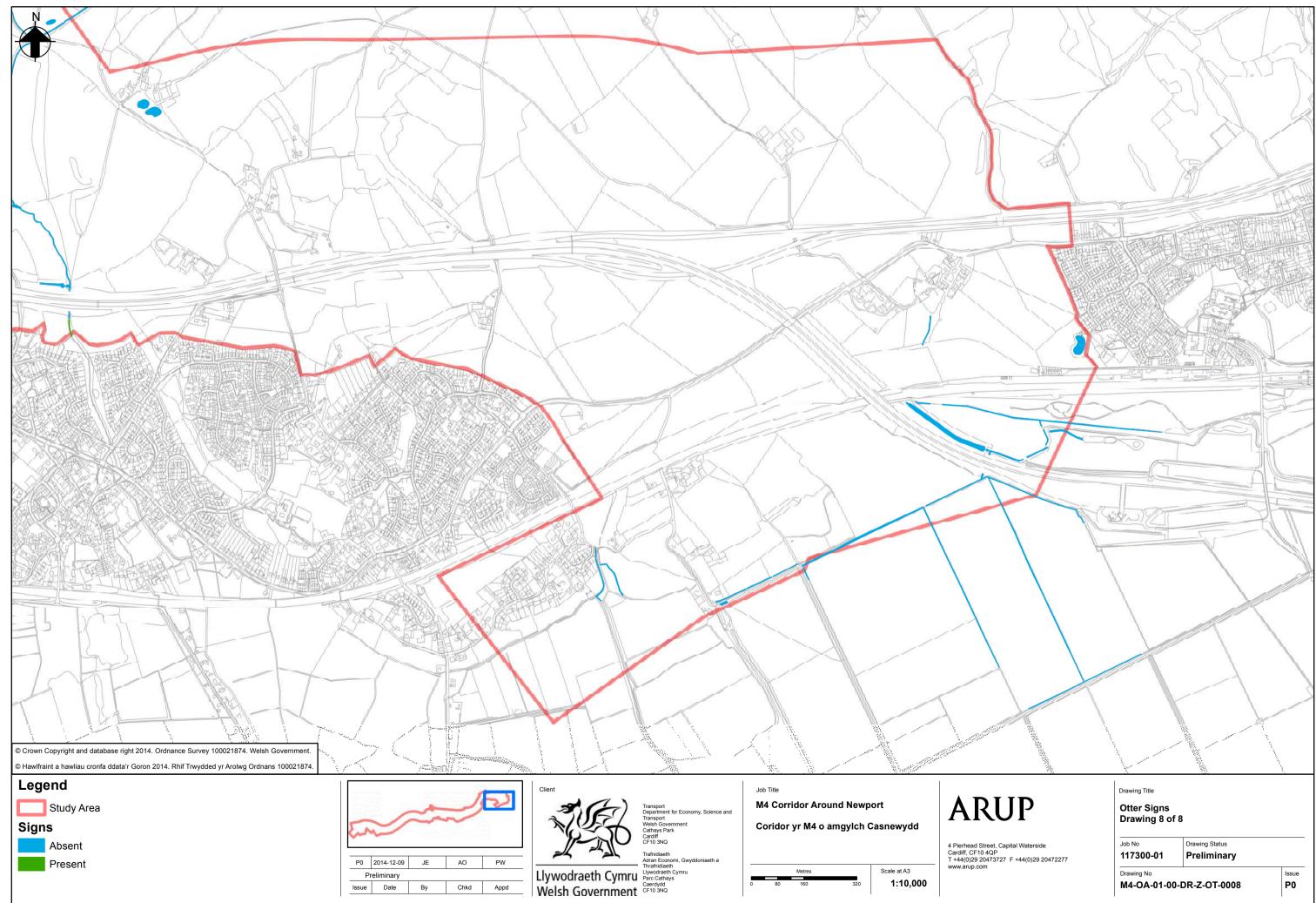




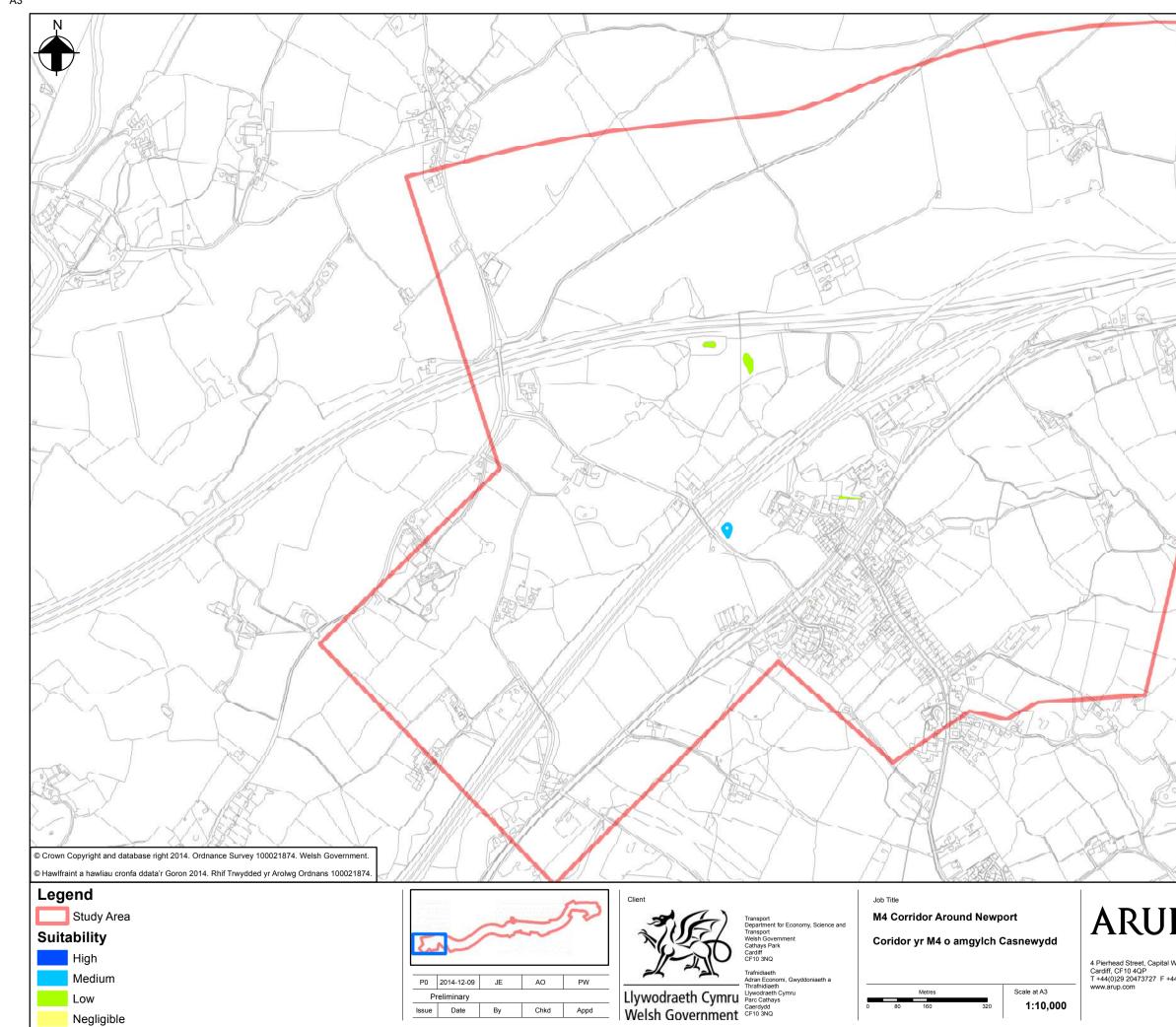






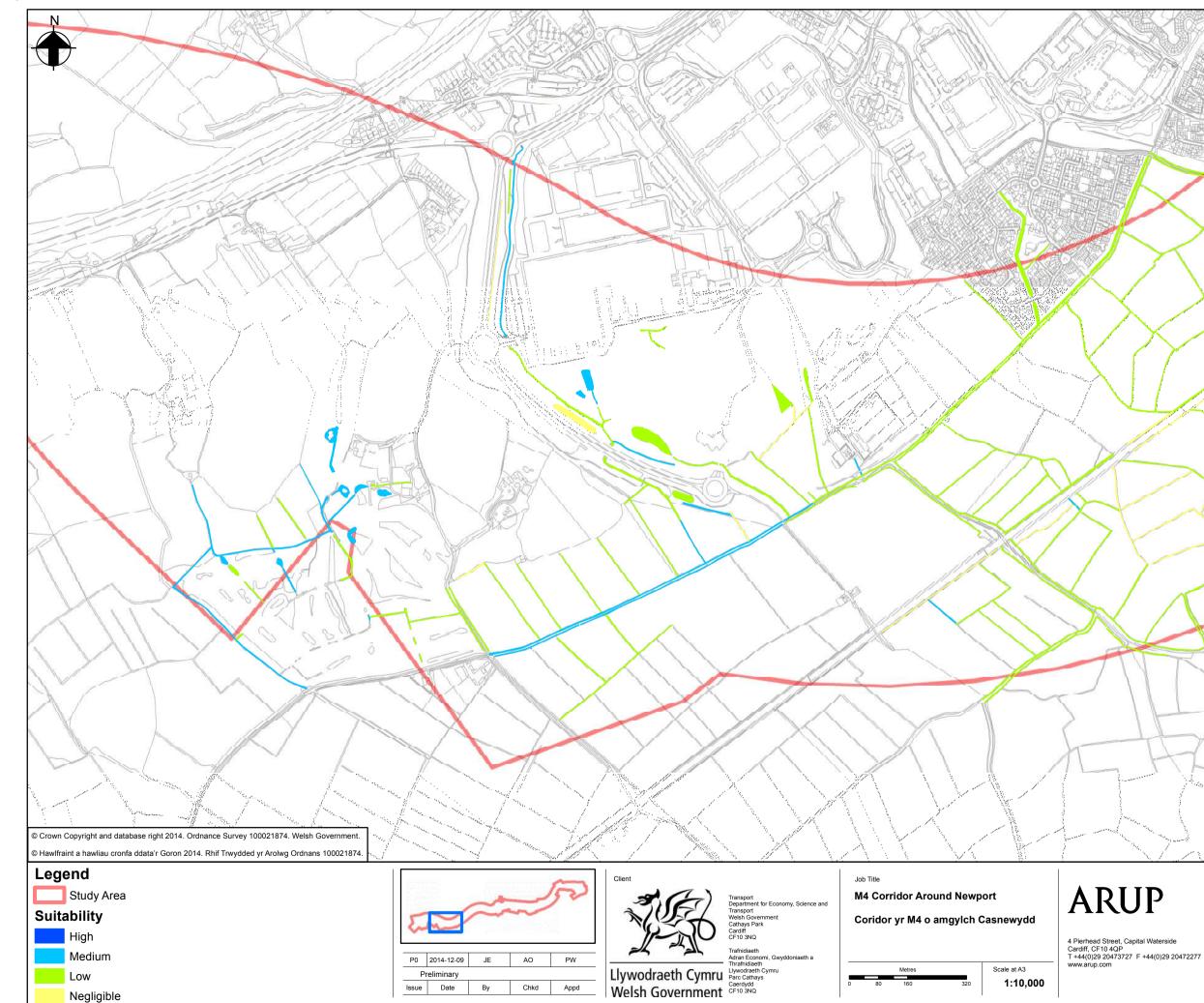




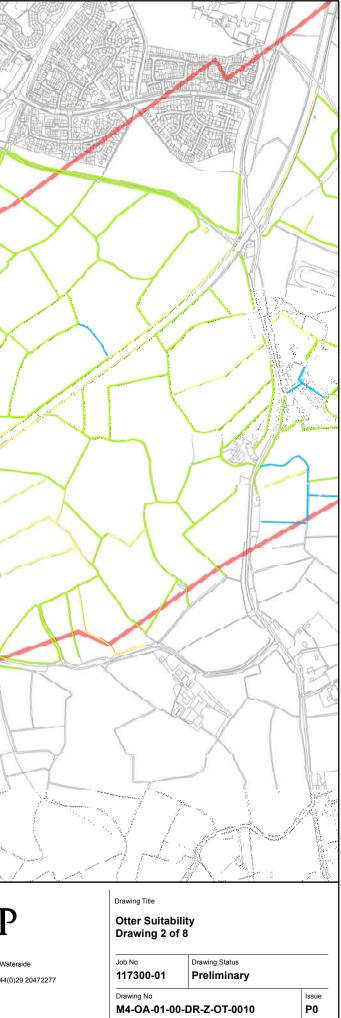




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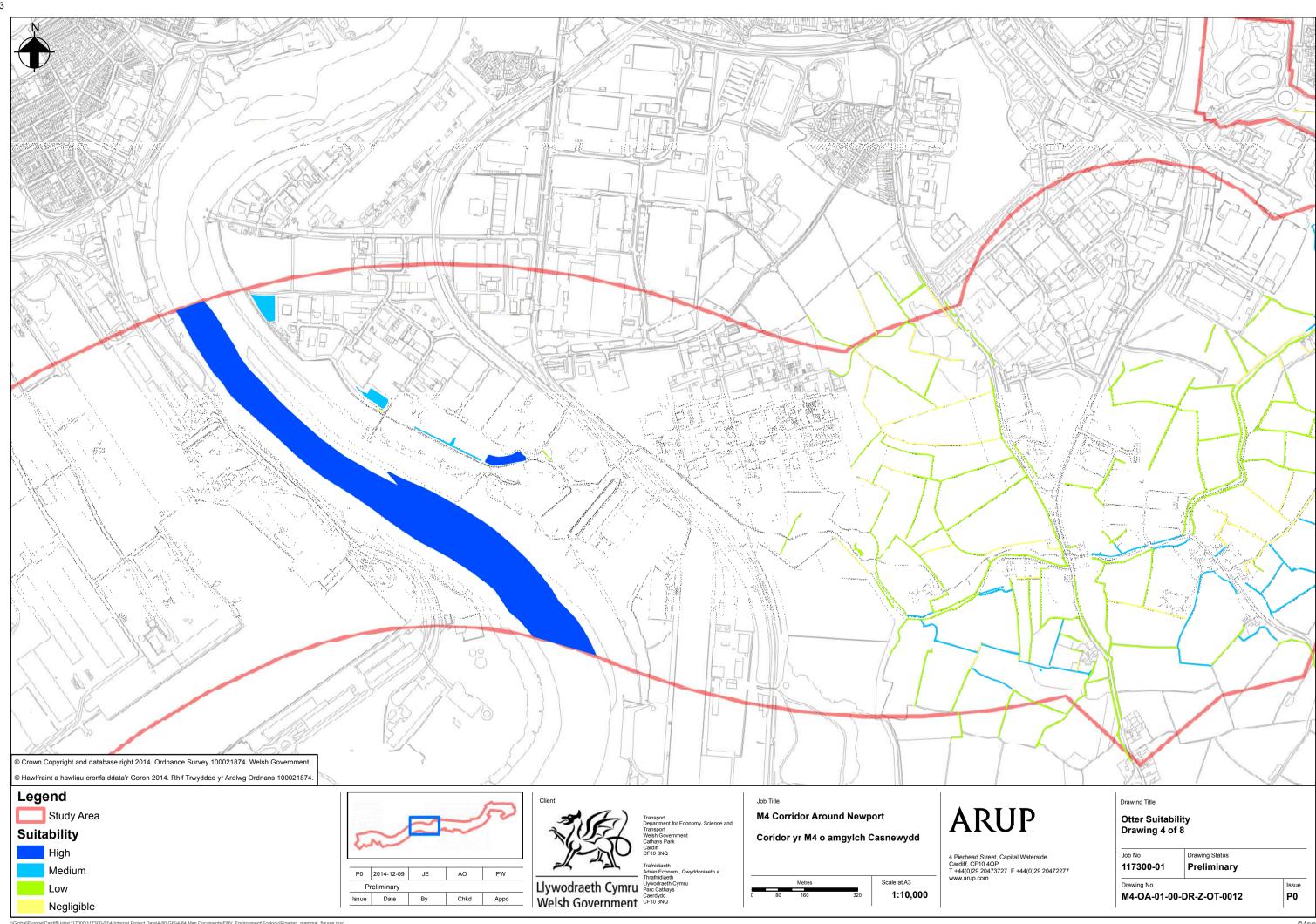






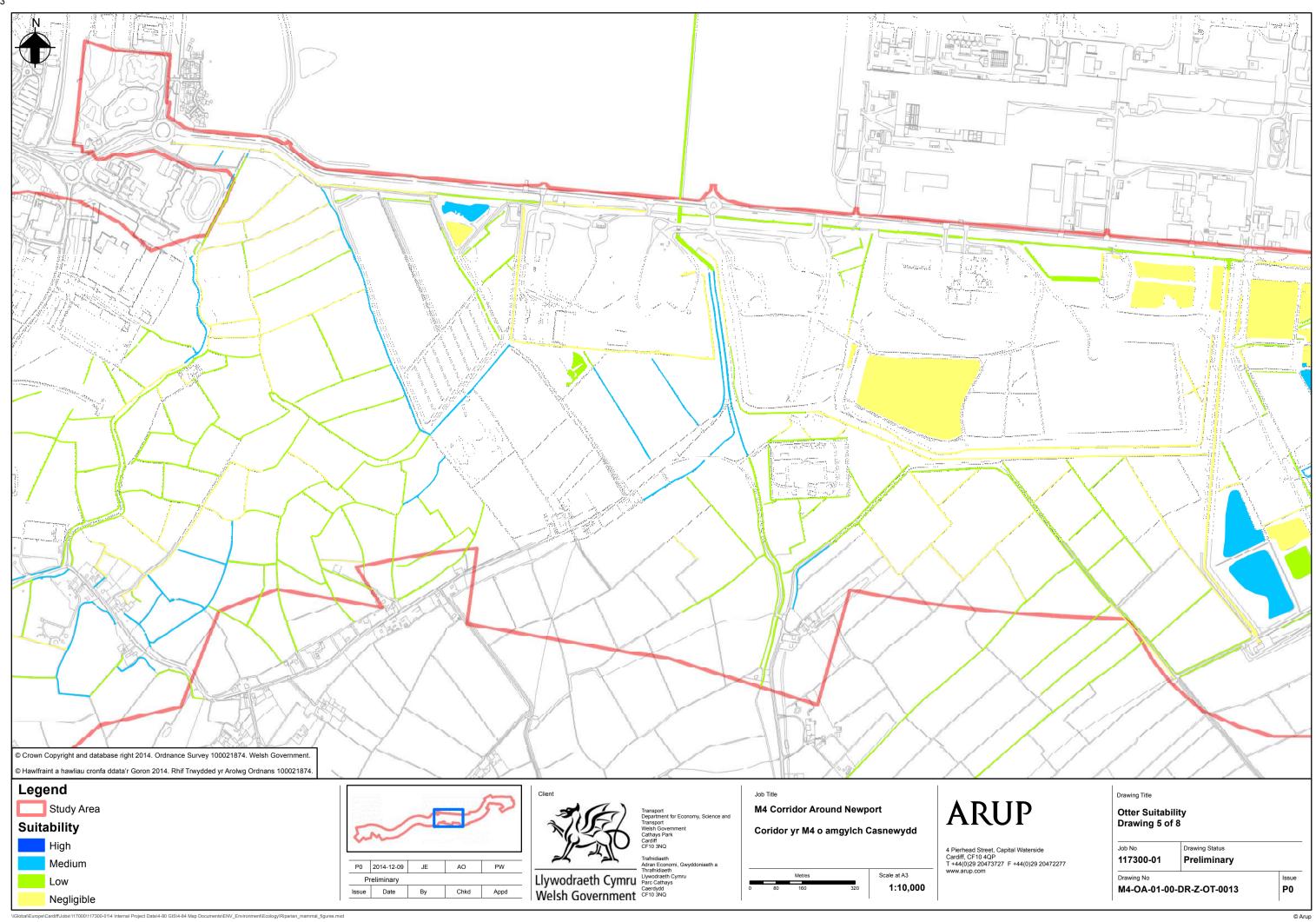
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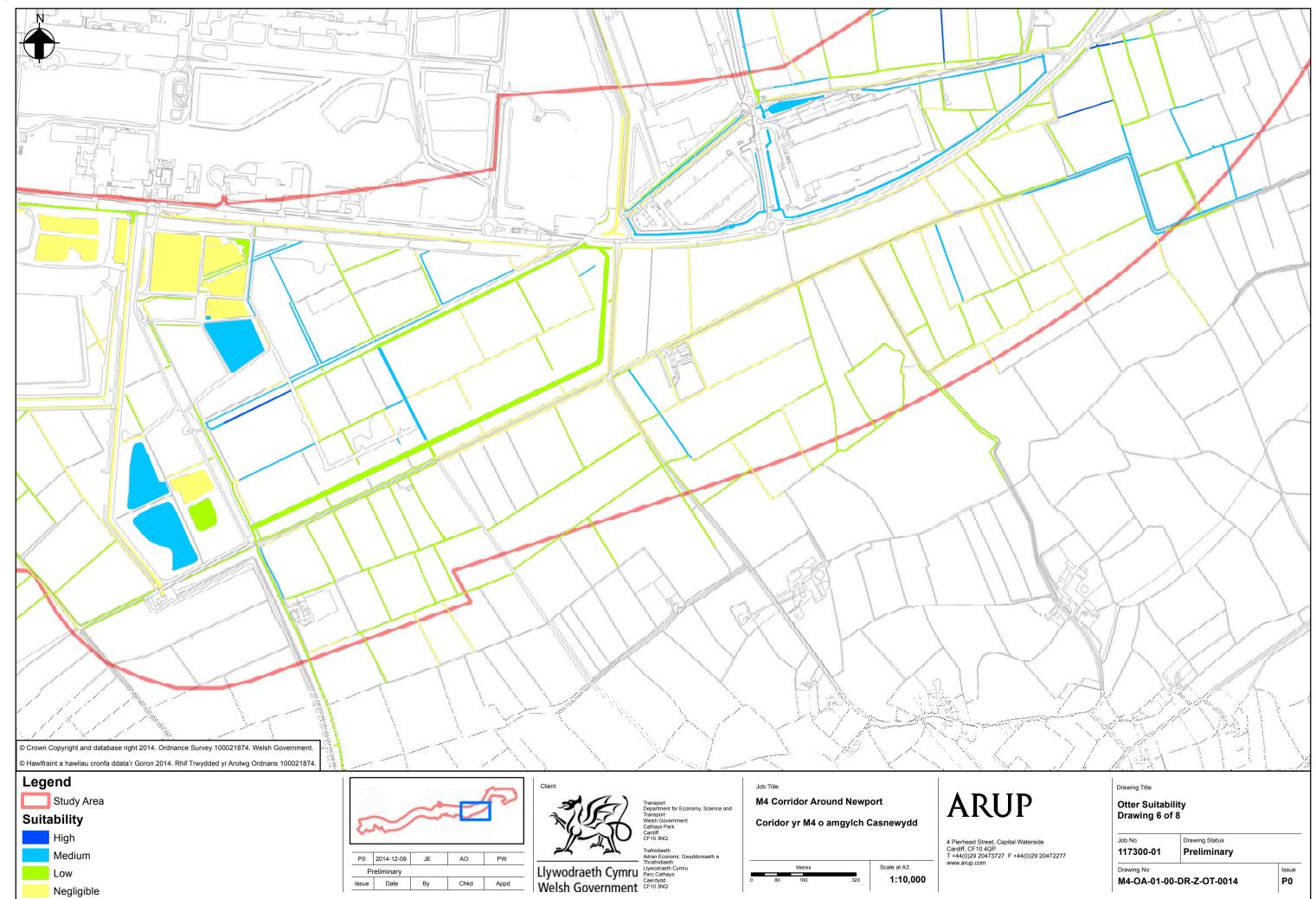


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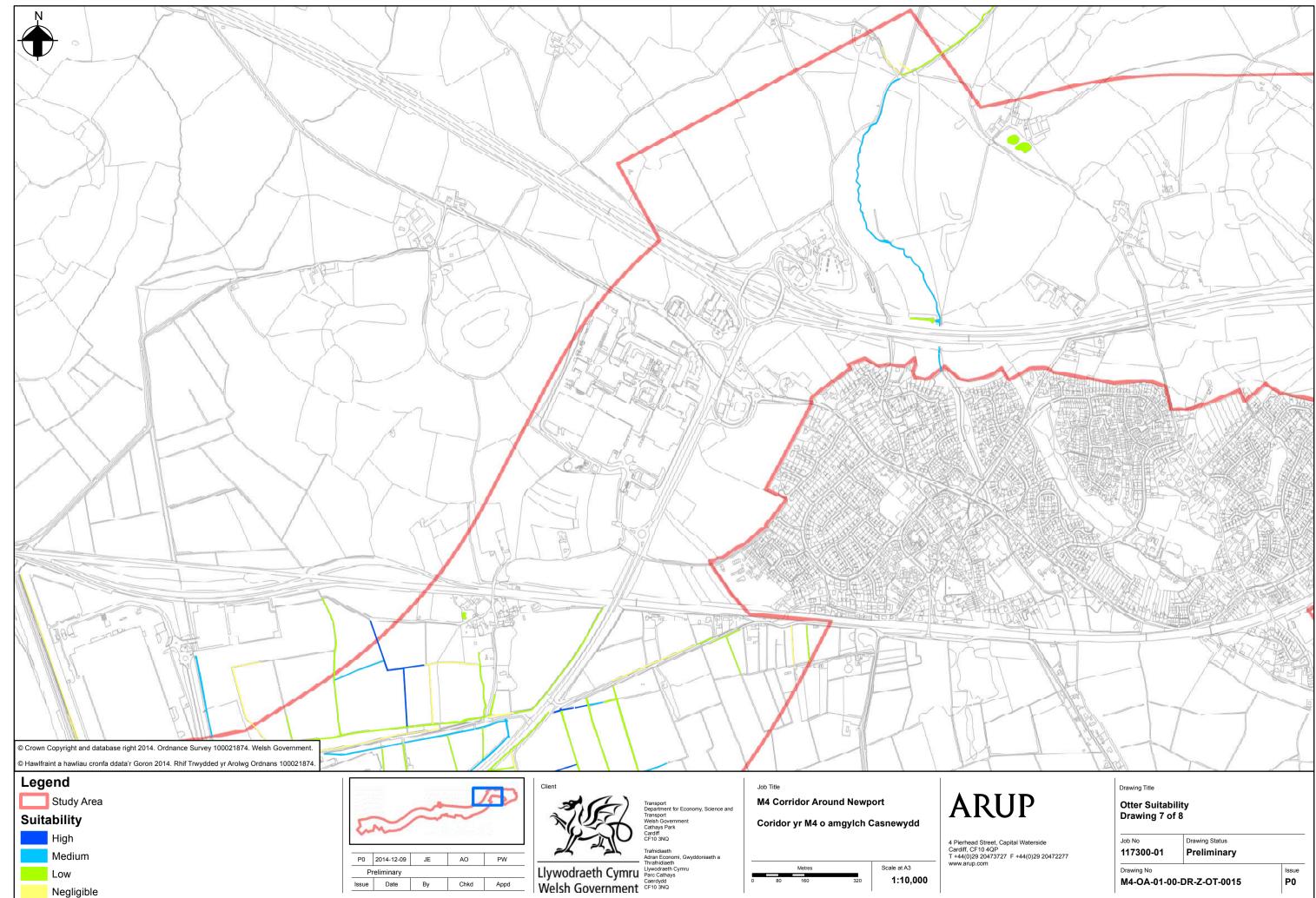




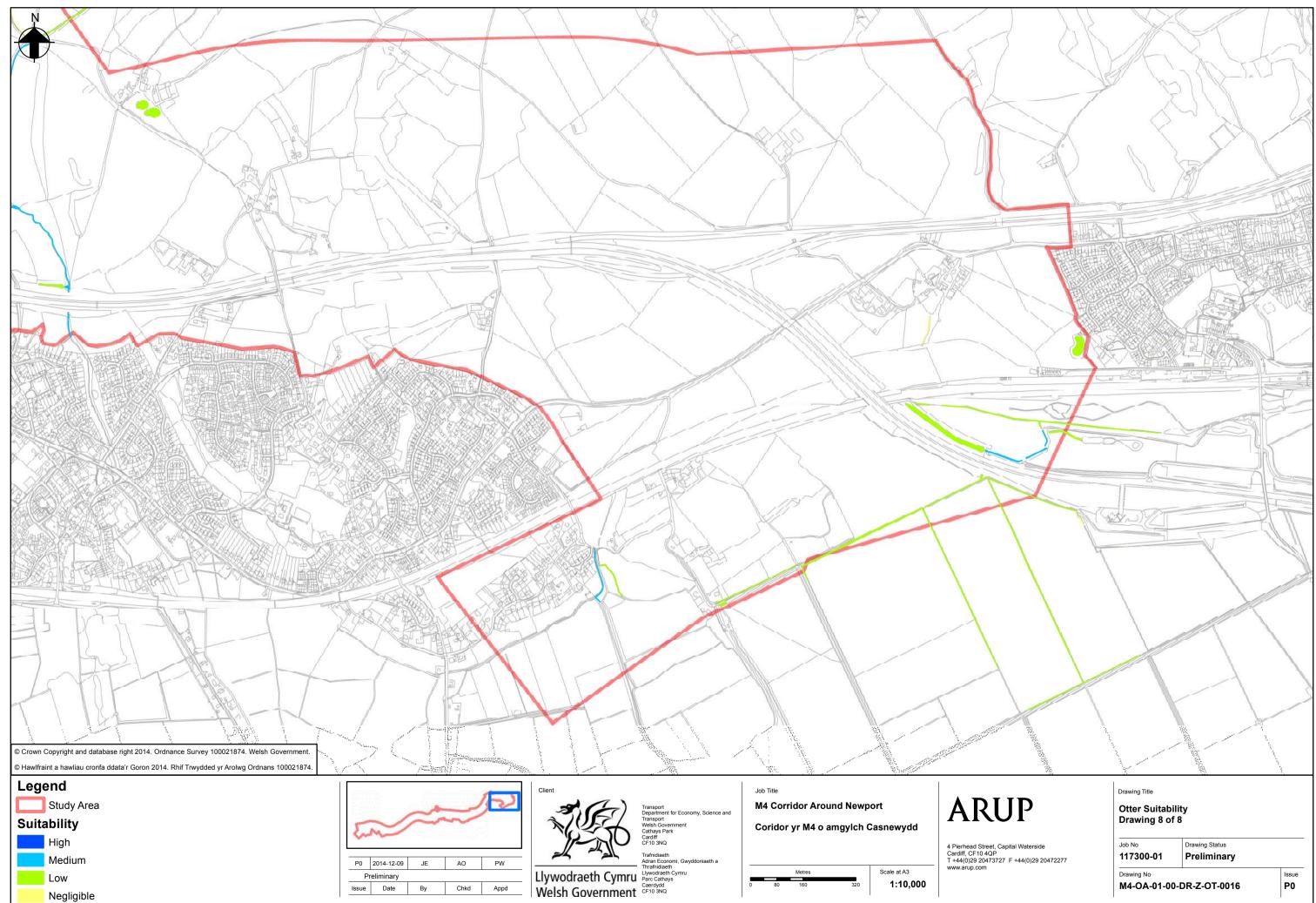
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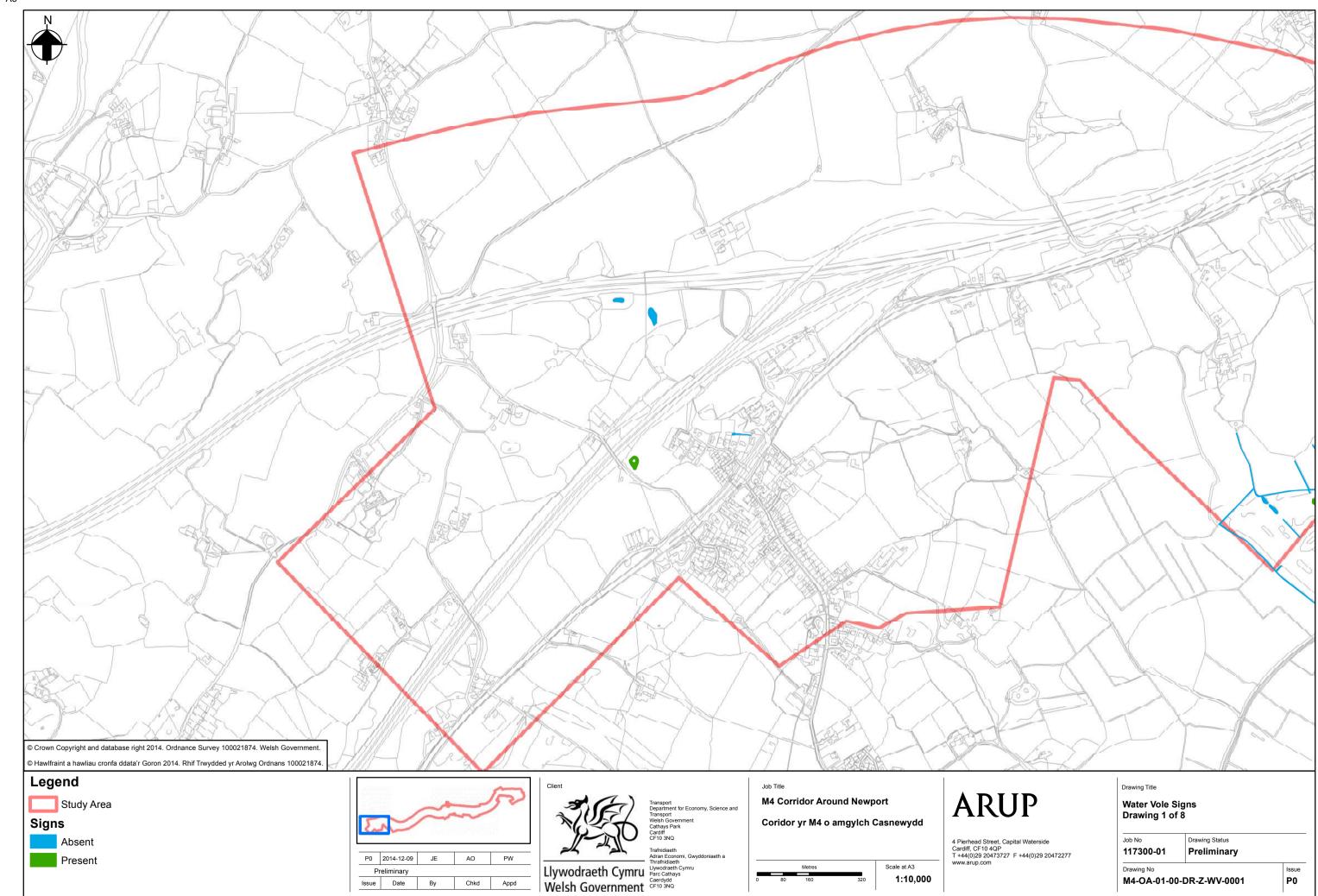




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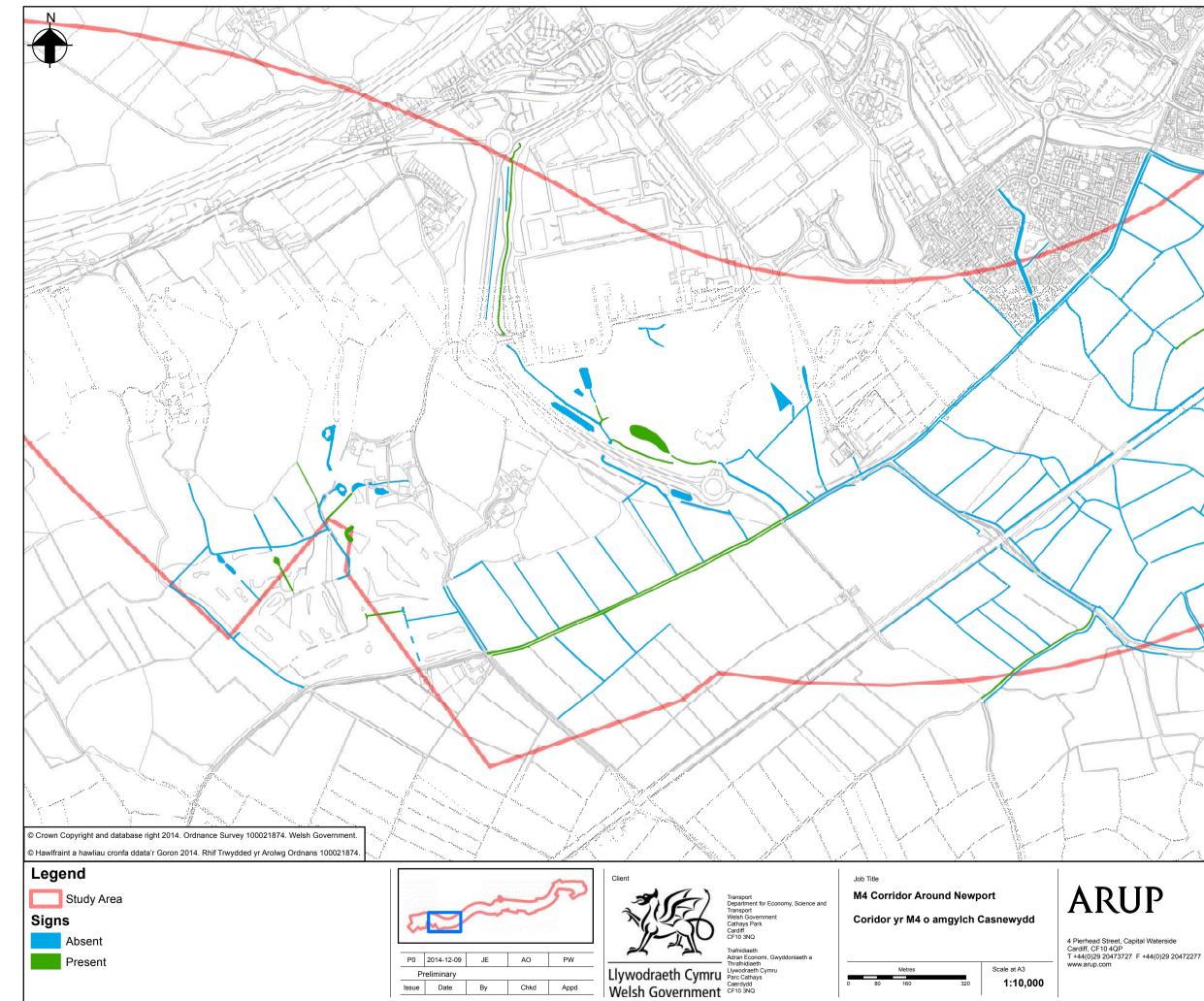


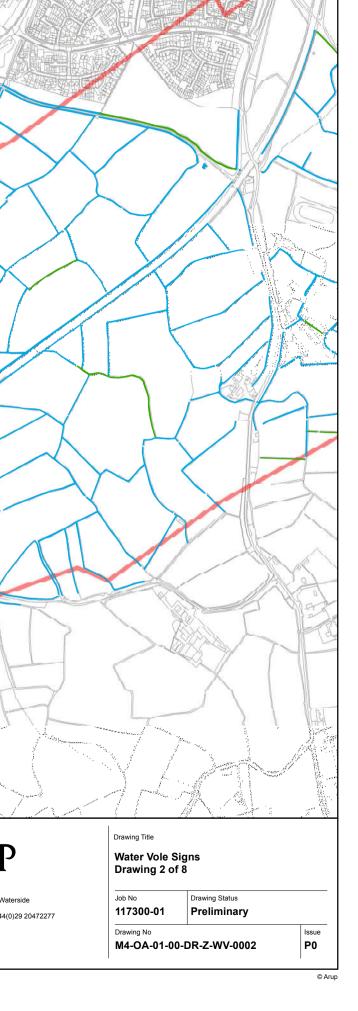




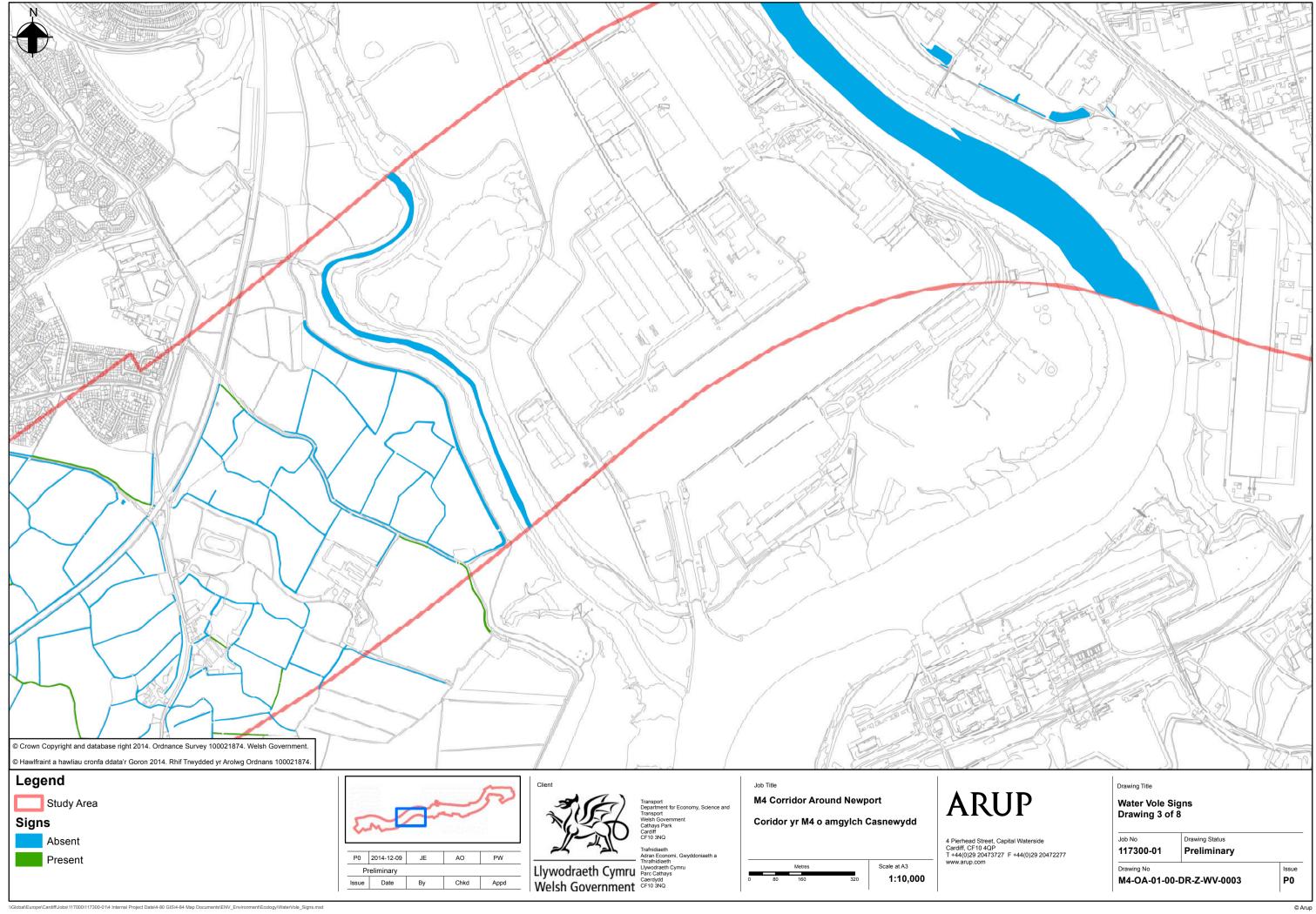
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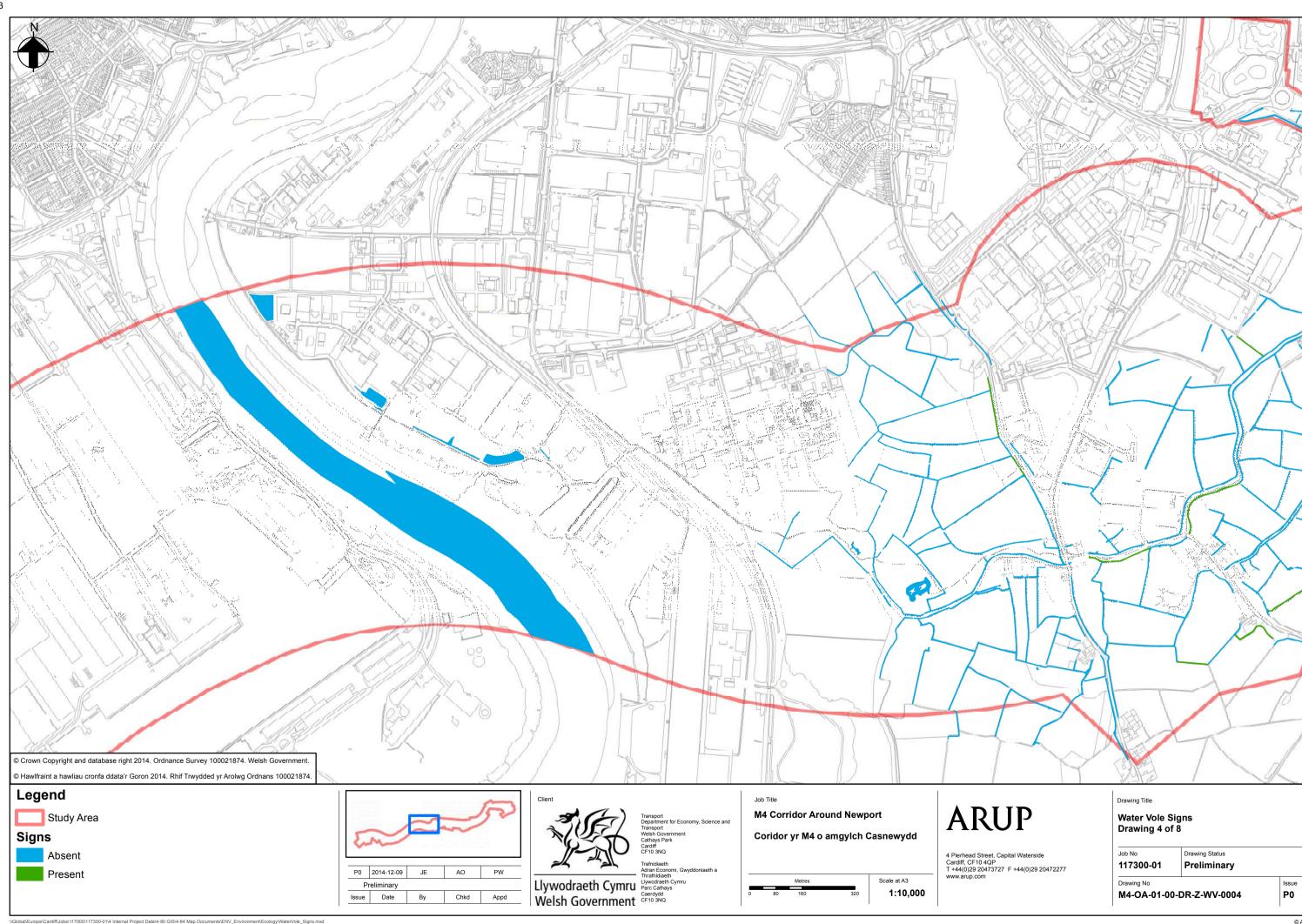




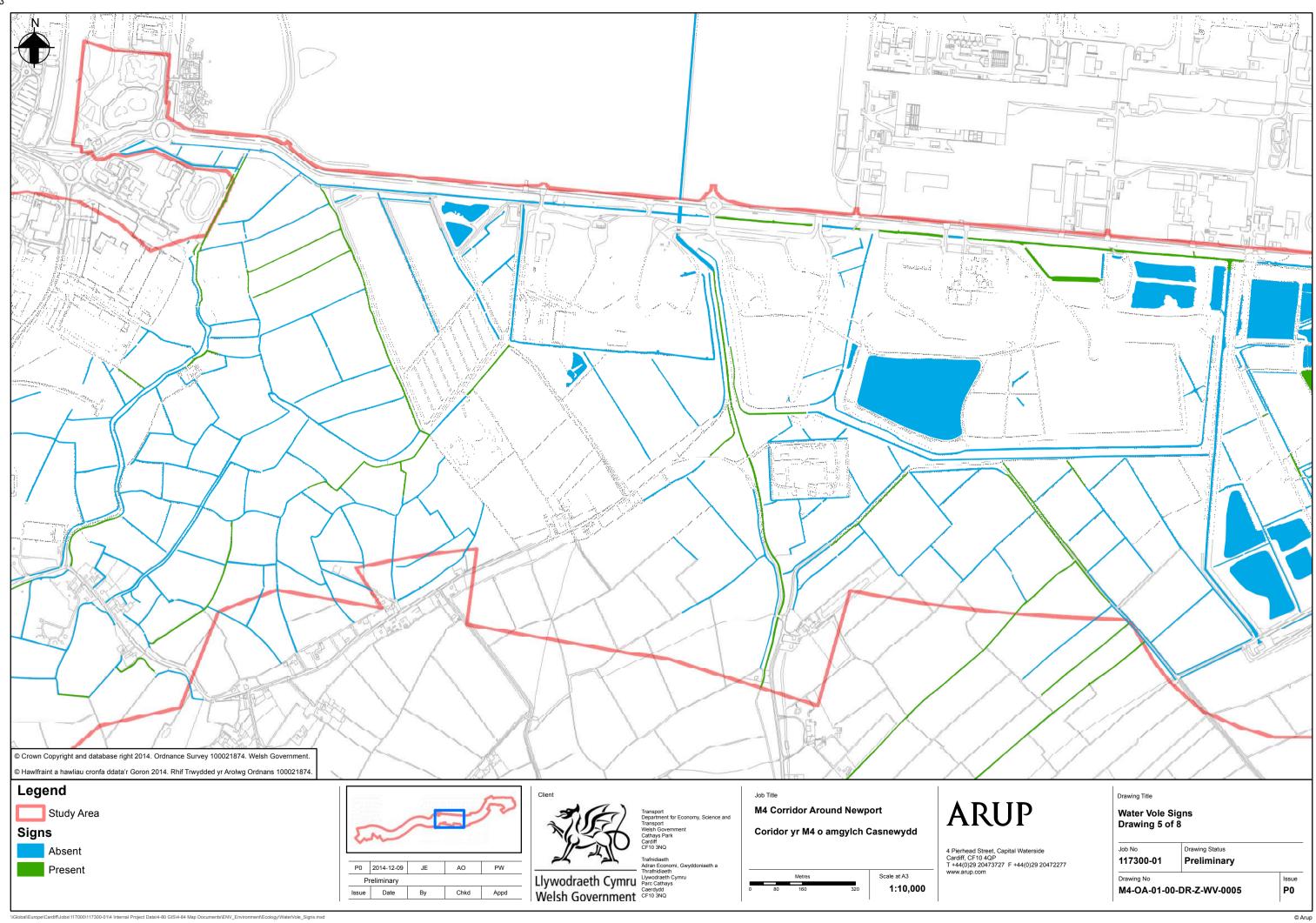
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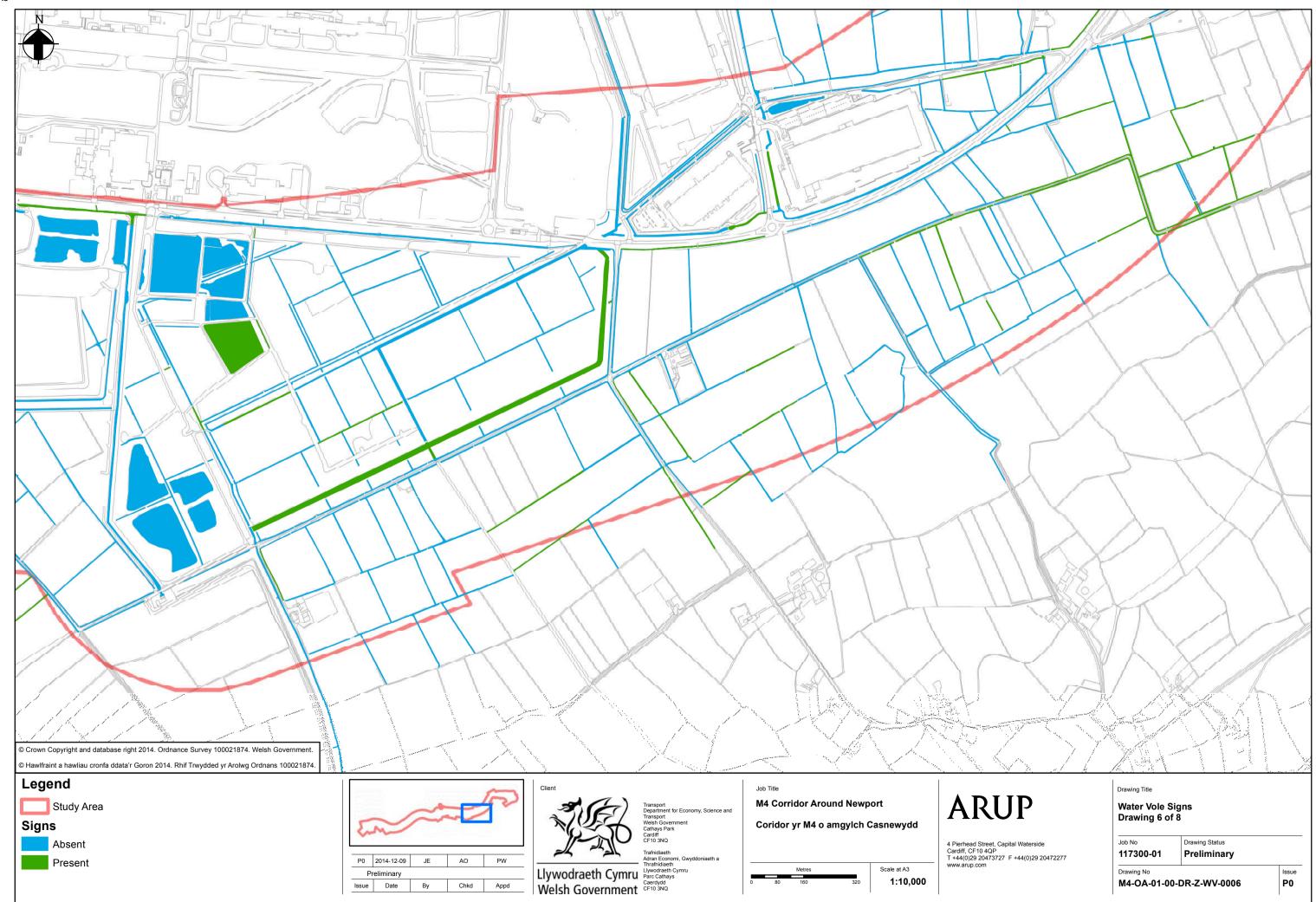




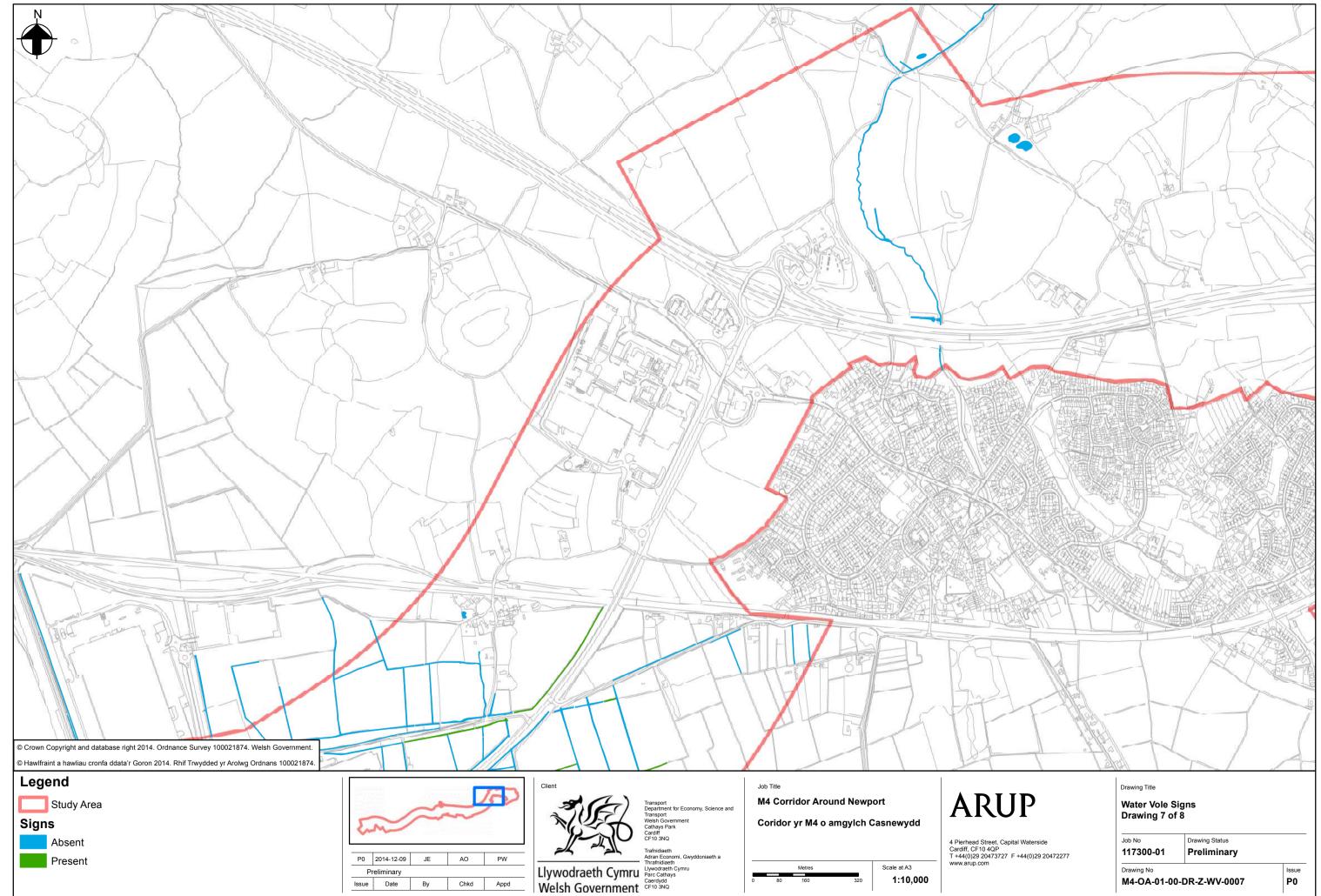






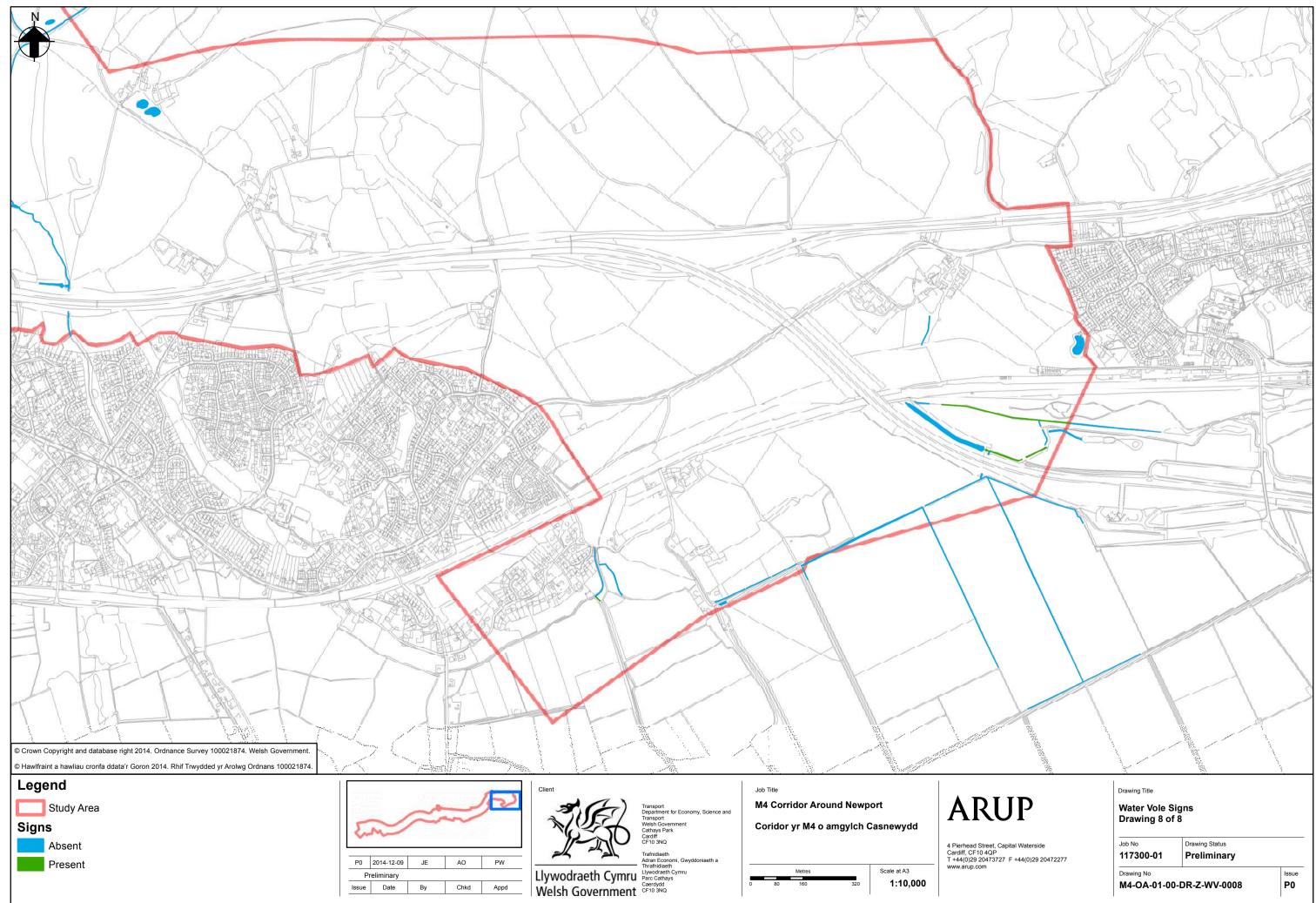




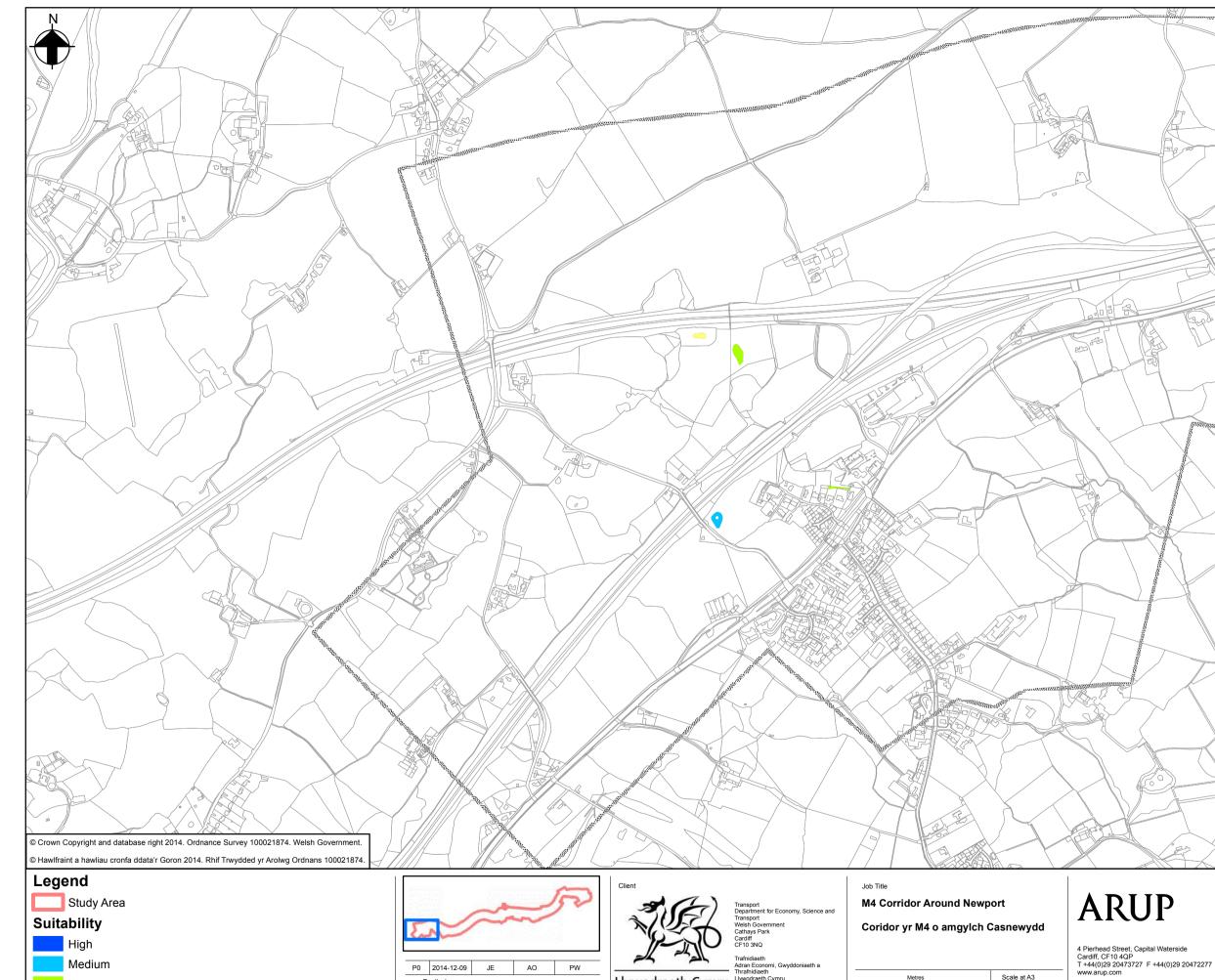


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Drawing Title Water Vole Suitability Drawing 1 of 8



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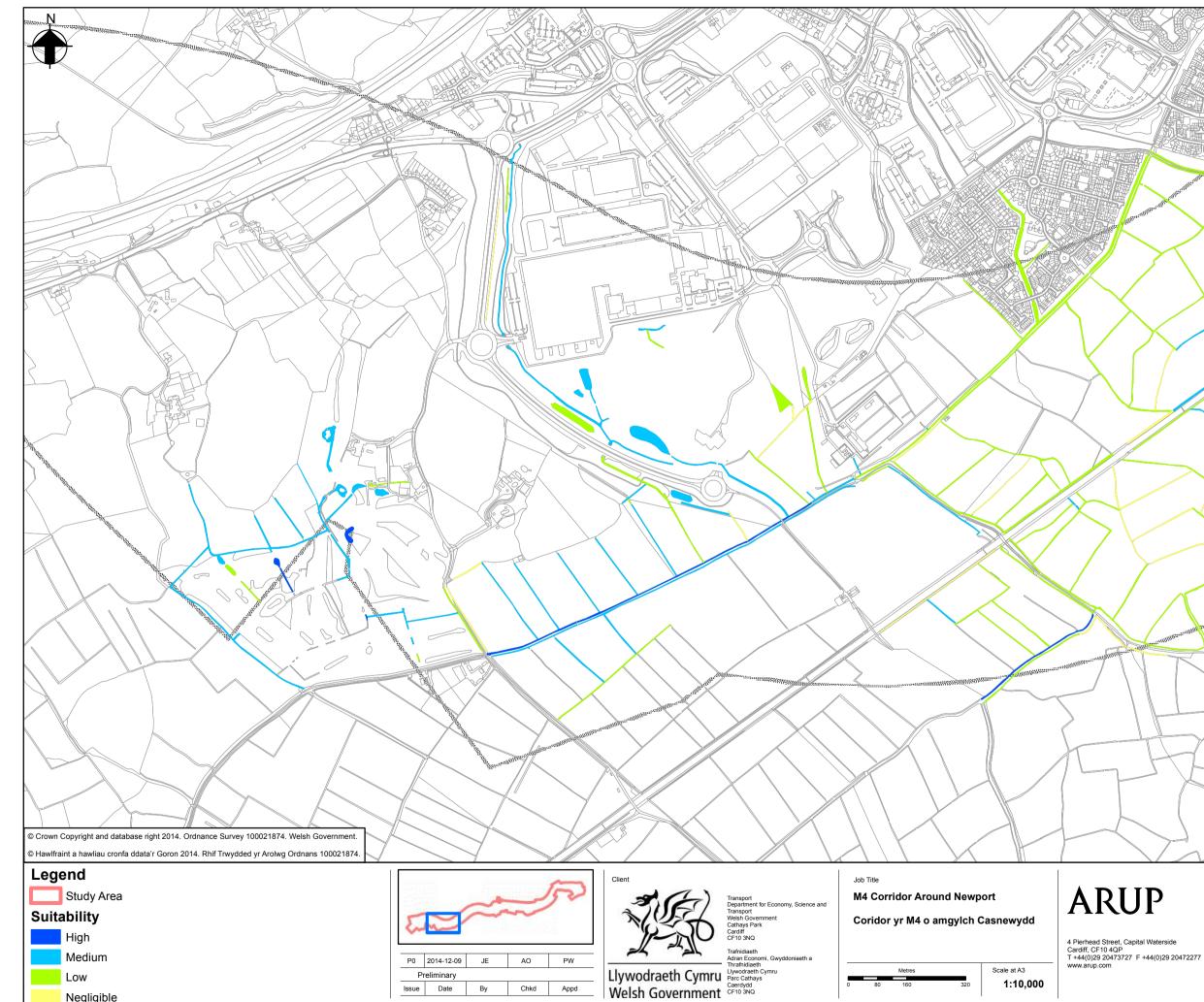
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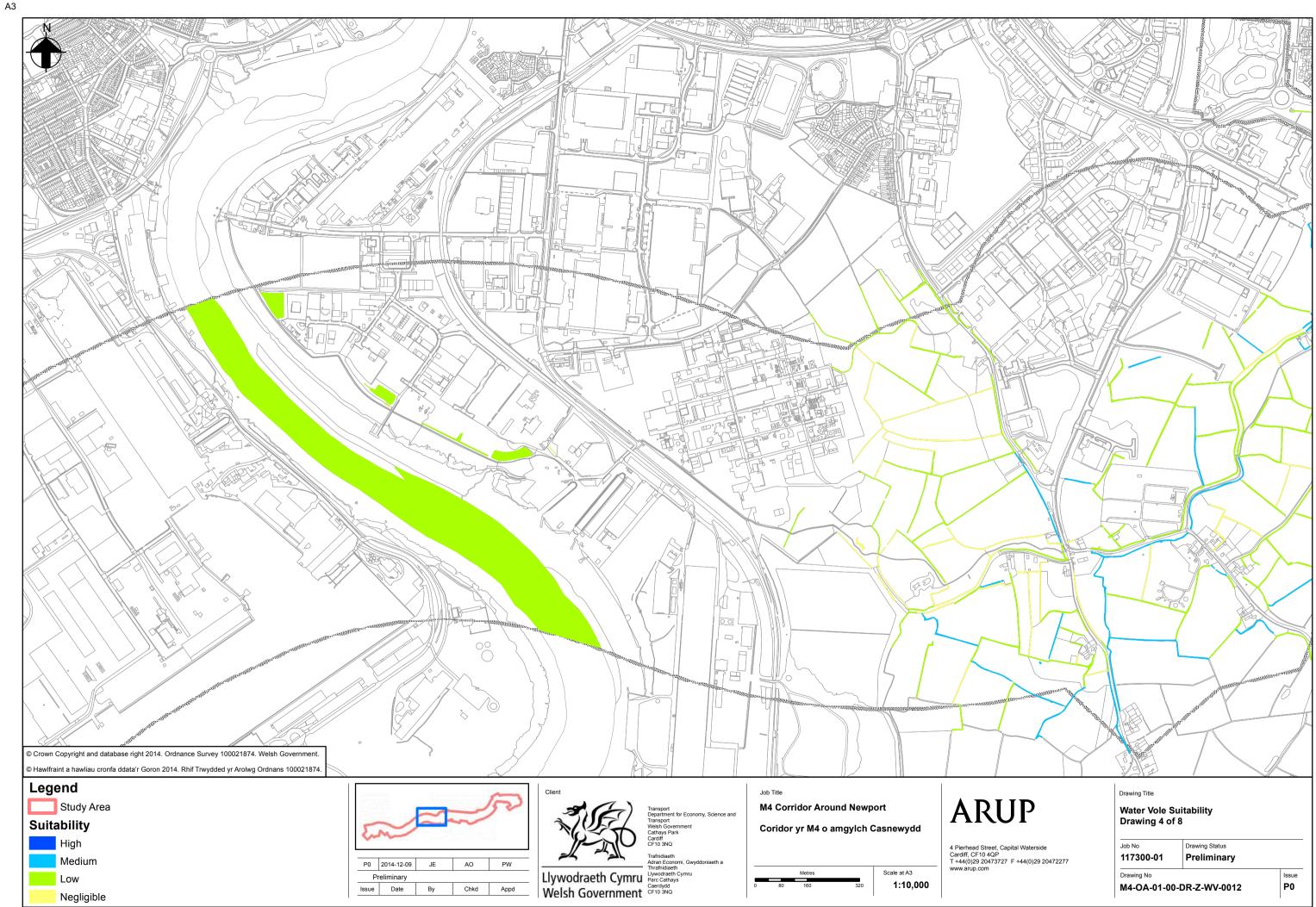


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Water Vole Suitability Drawing 3 of 8

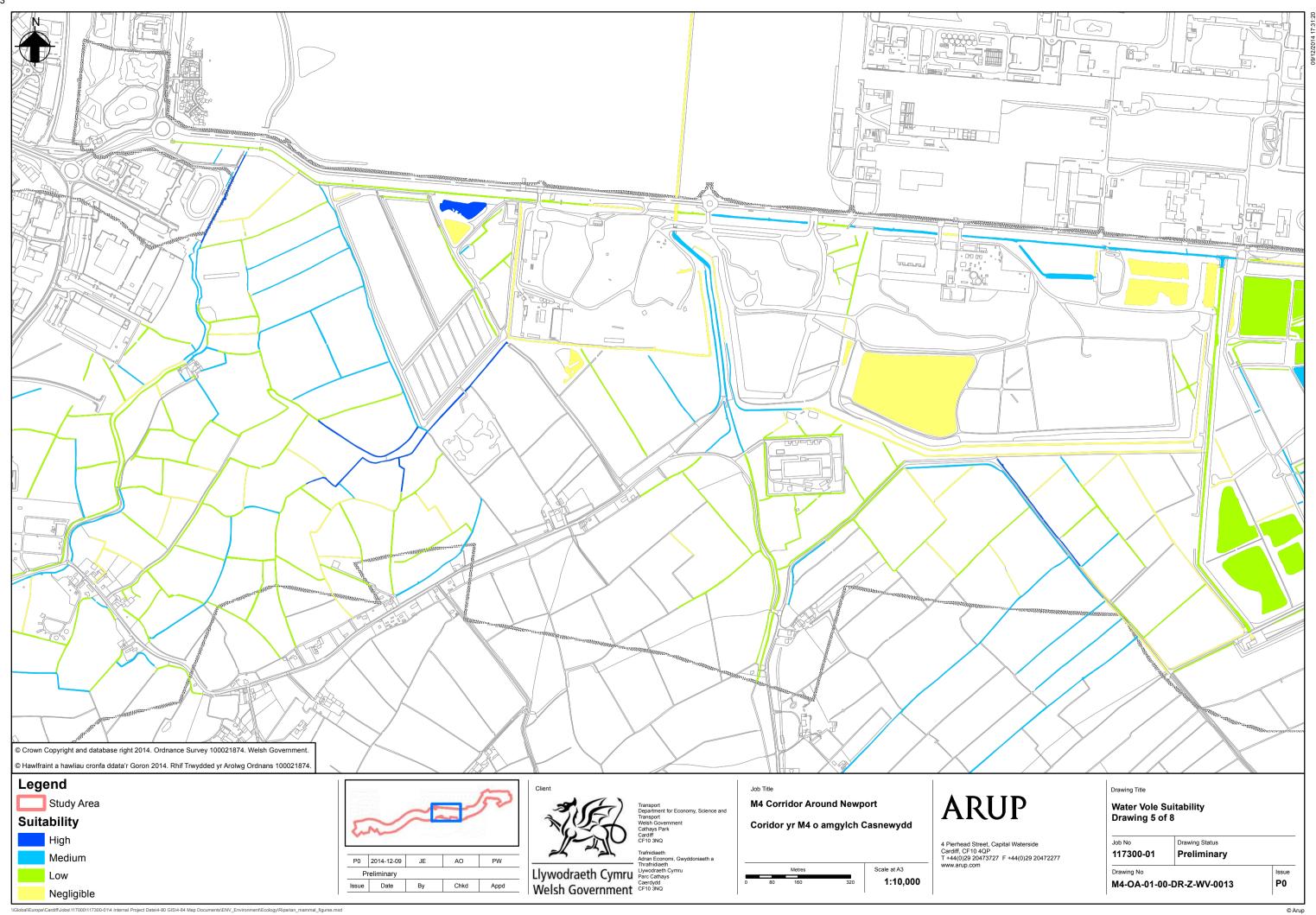
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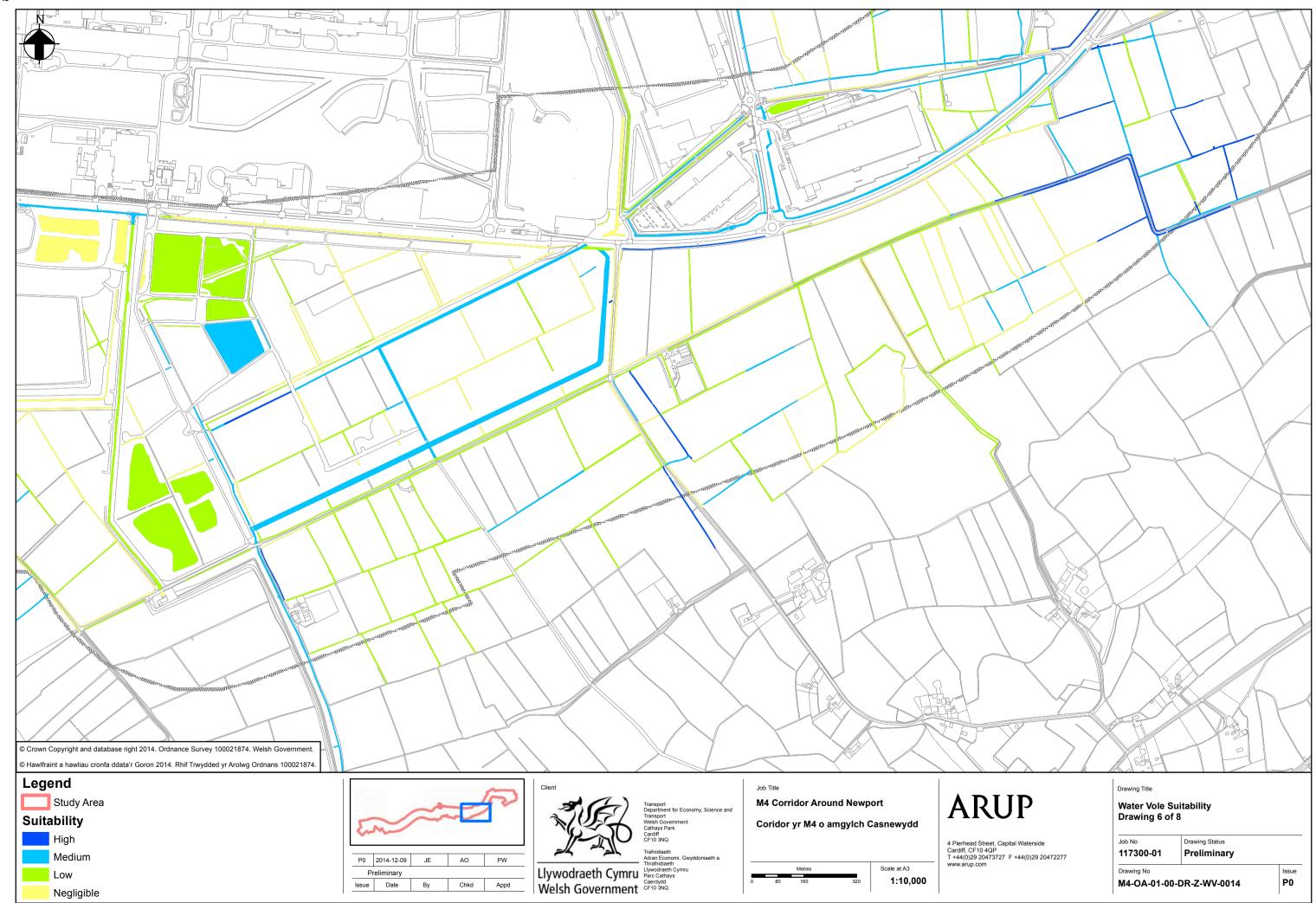
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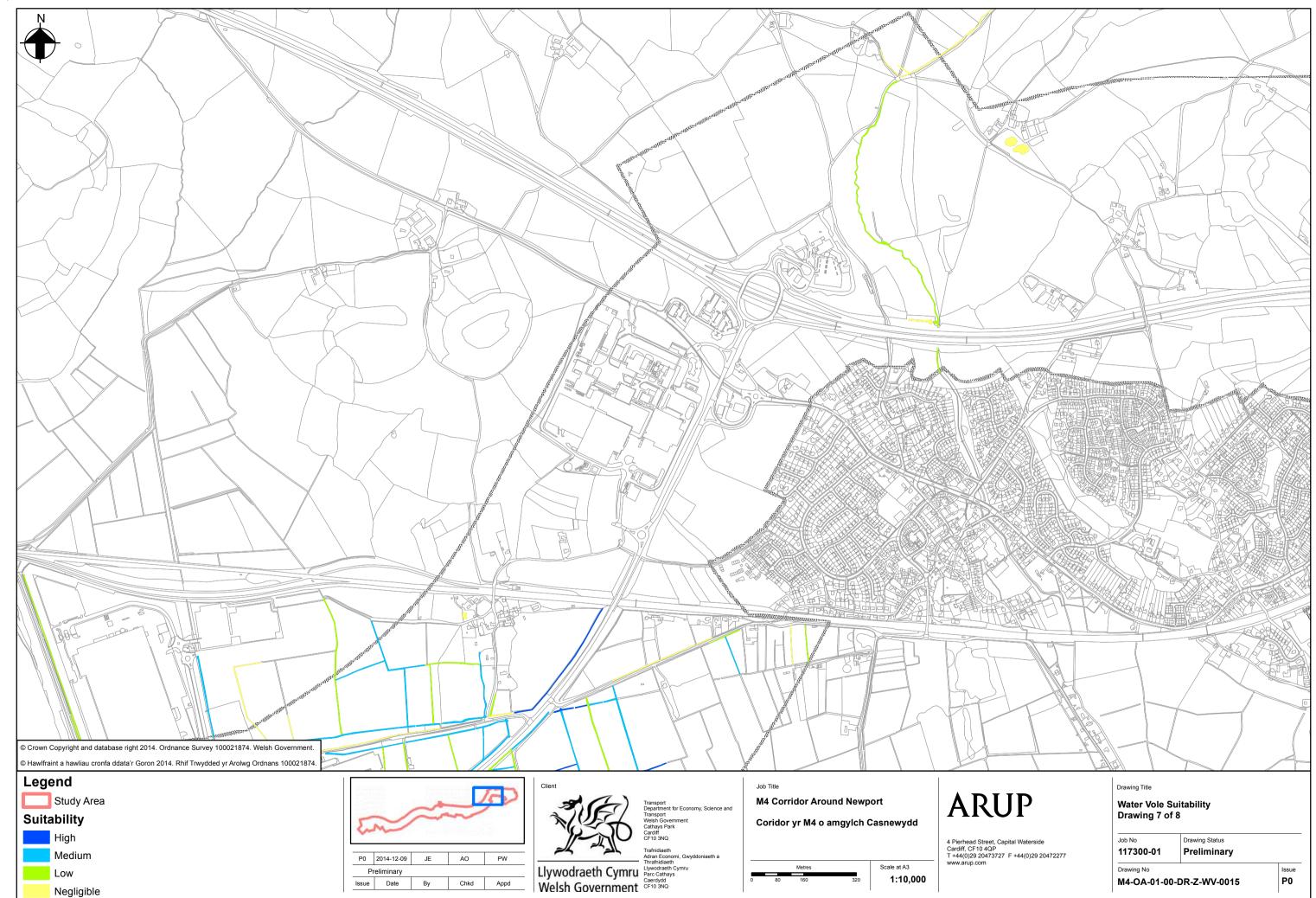
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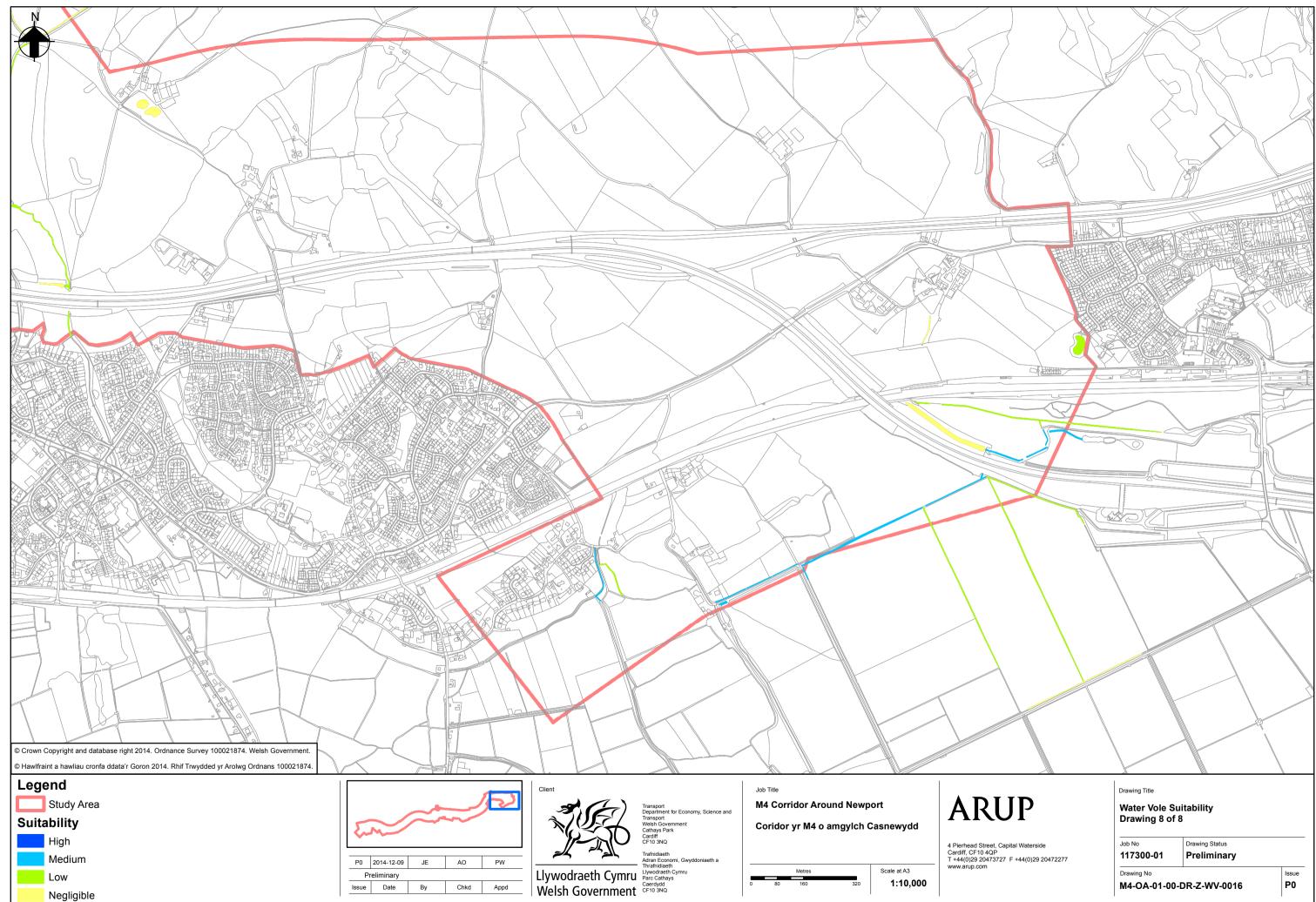
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Appendix A

Otter and water vole records from SEWBReC

A1 Otter and water vole records extracted from SEWBReC data search (dated 5 December 2014)

Species	Date	Count	Description	Location
Otter	03/02/2008	1	Dead otter	M4, Near Cefn Mably
Otter	03/02/2008	1	Dead otter	M4, near Began Farm
Otter	03/02/2008	1	Dead otter	
Otter	18/02/2006	1	Sub-adult male. Dead on road	A48 Trunk Road, St Mellons
Otter	18/05/2004	1	Adult	
Otter	17/03/2000		Footprint	River Rhumney
Otter	17/03/2000		Footprint	River Rhumney
Otter	1990 to 1999		Spraint	Wentloog levels
Otter	1990 to 1999		Spraint	Wentloog levels
Otter	20/12/1997	1	Dead male otter	Castleton. ST2690083500
Otter	07/01/1993 to 19/01/1993		Spraint	Percoed reserve, Gwent Levels
Otter	20/09/2007		Dead on grass verge	Cardiff Road, Newport. Near ONS building, by Tredegar Park Roundabout.
Otter	06/10/2007			Tredegar House, Newport
Otter	27/10/2000		Spraint	High Cross near Canal Bridge
Otter	17/03/2000		Spraint	Percoed reen
Otter	20/09/2007	1	Adult male, dead.	A48, maes glas
Otter	07/04/2000		Spraint	Duffryn Pond * NRW Cardiff Protected Species Data
Otter	19/04/2000		Spraint	Duffryn Pond * NRW Cardiff Protected Species Data
Otter	22/06/2000		Spraint	Duffryn Pond * NRW Cardiff Protected Species Data
Otter	19/08/1991		Site key: Usk 23	
Otter	23/08/2002		Site key: Usk 24	
Otter	23/08/2002		Field signs, otter spraints.	River Ebbw, Newport
Otter	07/04/2000 to 12/10/2000		NRW Protected Species Data	Blackwall reen, Newport

Species	Date	Count	Description	Location
Otter	08-Oct-08		Seen from car, along the Sealand Reen.	Along edge of the B4239, St Brides, Wentlooge
Otter	07 Apr 2000 to 13 Oct 2000		Spraint (9 in total)& prints.	River Ebbw, Maesglas - Rogerstone* NRW Protected Species Data
Otter	15/02/2009	1	Live sighting. Large dog otter, just under railway bridge.	North-west of Newport landfill
Otter	20/12/2000		Spraints & prints, east bank.	George St. Bridge
Otter	23/06/2008		Field signs, otter spraint (1, recent).	SDR Bridge, right bank shoreline
Otter	12/11/2007			Newport Wetlands, Reed Bed 6
Otter	01/07/2001			Newport Wetlands, Perry Lane
Otter	27/11/2001			Newport Wetlands, Field R2
Otter	09/11/2001			Newport Wetlands, Field R2
Otter	22/06/2001			Newport Wetlands, Field R2
Otter	13/01/2008		Otter prints on mink raft.	Newport Wetlands, Field R8
Otter	26/06/2000		Sighting, date when told and not sighting date. GR approx.	Gwent Levels Wetland Reserve
Otter	26/06/2000		Sighting, date when told and not sighting date. GR approx.	Gwent Levels Wetland Reserve* NRW Protected Species Data
Otter	Sep 1999 to Oct 1999		Latrines and feeding remains observed.	Caldicot Level
Otter	Sep 1999 to Oct 1999		Latrines and feeding remains observed.	Caldicot Level
Otter	1999			Access road to Llanwern Steelworks
Otter	1990 to 2005		RTA, access road to works.	Llanwern Steelworks* NRW Protected Species Data
Otter	20-Apr-93		Sighting	Red House Reen
Otter	20-Apr-93		Sighting.	Red House Reen*NRW Protected Species Data
Water Vole	Sep 1999 to Oct 1999		Latrines and feeding remains observed.	Caldicot Level
Otter	12/06/2006	1	Adult female (lactating). Dead on road	Newport Wetlands
Otter	19/09/2000		Spraint	Monk's Ditch, Whitson Arch

Species	Date	Count	Description	Location
Otter	19/09/2000		Spraint.	Monk's Ditch, Whitson Arch* NRW Protected Species Data
Water Vole	16/04/2007			Near Half Acre Corner, Caldicot Level
Otter	02/05/2007	2	One female with single weaned young, seen chasing swans and playing (7.40 am).	Near Half Acre Corner, Caldicot Level
Otter	10/03/2013	1	Otter footprints under bridge on Yoke Reen. Very clear, recent prints in mud. Large adult otter.	Cock Street Nr Redwick
Otter	16/09/1999	1	Killed by truck.	Road to Llanwern Steelworks
Otter	17/01/2008	1	Female. Dead on road	Newport Wetlands
Otter	08/09/2004			Magor
Otter	15/05/2004			Magor
Otter	15/05/2004			Link to M4 J32, Magor
Otter	28/04/2008			M4, Junction 23A
Otter	03/09/2005		Spraint*Grid ref estimated*	Magor Marsh
Water Vole	28/11/2006		Near hide on bridge going into hide	Magor Marsh Reserve
Water Vole	23/07/2003		Live sighting	Magor Marsh Reserve
Water Vole	Mar 1978 to Feb 1979			Magor Marsh
Water Vole	1968 to 1973		In comments section of BTO register form.	Magor Reserve
Otter	23/01/2013			Magor Marsh
Otter	01/02/2013			Magor Marsh
Otter	01/03/2010			Magor Marsh
Water Vole	13/12/2007		Sighted at approx 2.30pm at the banks of a freshwater pond within Magor Marsh reserve, estimated length 18- 20cm. Sighted from distance of c.4-5 metres.	Magor Marsh Nature Reserve
Otter	10/03/2013	1	Male on pond. Caught & ate fish in front of recorder.	Magor Marsh
Otter	06/01/2012		In reen	Magor Marsh
Otter	01/12/2000		On right side of Island in Artificial otter holt.	Magor Marsh Reserve
Otter	01/02/1999			Magor Marsh
Otter	21/06/1905		Sighting, outside Newport boundary	Magor Marsh

Species	Date	Count	Description	Location
Water Vole	1965 to 1971		pSSSI site report.	Blackwall Reen NR, Magor
Otter	24/01/2006			Whitewall
Otter	24/01/2006	1	Adult. Dead on road	Whitewall Common
Water Vole	Sep 1999 to Oct 1999		Latrines and feeding remains observed.	Caldicot Level
Water Vole	Sep 1999 to Oct 1999	1	1 live water vole / latrines and feeding remains observed.	Caldicot Level

Appendix B

Dates of survey and weather conditions

B1 Dates of survey and weather conditions

Date	Temperature °C	Wind Speed (Beaufort wind scale)	Wind Direction	Cloud Cover	Description of conditions
02/04/2014	10	2	SE	100	Steady rain
02/07/2014	20	2	SW	60	Sunny
04/07/2014	18	1	SW	60	Dry
05/08/2014	17	3	S	100	Dry
05/08/2014	22	2	SW	20	Sunny
06/08/2014	19	3	SW	20	Sunny
07/08/2014	17	1	Е	30	Sunny
12/08/2014	18	3	W	50	Dry
13/08/2014	19	1	Ν	50	Dry
14/08/2014	18	2	S	70	Dry
15/08/2014	14	2	SE	40	Sunny
19/08/2014	14	2	SE	40	Sunny
20/08/2014	14	2	NW	70	Dry
21/08/2014	13	2	NW	95	Light drizzle
26/08/2014	18	3	NW	99	Light drizzle
27/08/2014	17	1	SE	40	Sunny
28/08/2014	17.5	1	SW	100	Dry
29/08/2014	16	4	NW	90	Dry
02/09/2014	20	2	SW	50	Dry
08/09/2014	19	1	SE	10	Sunny
09/09/2014	22	1	SW	0	Sunny
10/09/2014	19	1	SE	0	Sunny
11/09/2014	18	2	S	0	Sunny
15/09/2014	18	1	SW	50	Dry
16/09/2014	14	1	Е	60	Dry
17/09/2014	18	2	Е	40	Sunny
22/09/2014	18	1	SW	10	Sunny
24/09/2014	18	3	SW	40	Dry
25/09/2014	15	3	SE	60	Dry
25/09/2014	20	1	SW	30	Sunny
26/09/2014	17	2	SW	40	Sunny
29/09/2014	18	1	SW	80	Dry
30/09/2014	18	2	S	30	Dry
01/10/2014	16	1	SW	95	Light showers

Date	Temperature °C	Wind Speed (Beaufort wind scale)	Wind Direction	Cloud Cover	Description of conditions
06/10/2014	16	1	W	65	Dry
07/10/2014	12	2	SE	50	Heavy showers
08/10/2014	14	2	SW	100	Light showers
09/10/2014	15	3	SW	50	Light showers
10/10/2014	16	3	SE	30	Sunny
13/10/2014	14	4	SW	100	Light drizzle
14/10/2014	14	1	SW	100	Steady rain
15/10/2014	13	3	S	100	Light drizzle
16/10/2014	17	1	SW	40	Sunny
17/10/2014	15	3	SW	30	Sunny
20/10/2014	16	3	SW	95	Light drizzle
21/10/2014	14	3	SW	60	Dry
22/10/2014	13	3	W	70	Dry
23/10/2014	13	3	SW	70	Dry
24/10/2014	14	3	SW	100	Light drizzle
27/10/2014	14	2	SE	80	Dry
28/10/2014	19	1	SW	20	Sunny
29/10/2014	9	1	W	100	Light drizzle
30/10/2014	17	1	SW	40	Dry
31/10/2014	13	1	SW	25	Sunny

Appendix C

Details of limitations of the survey

C1 Details of limitations of the survey

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
02/07/2014	268	Reed choked with dense vegetation.	Yes
04/07/2014	112	Inaccessible, due to dense vegetation enclosing ditch.	Yes
04/07/2014	266	Overgrown ditch but adjacent to good ditch.	Yes
04/07/2014	218	Dry ditch	Yes
04/07/2014	231	Dry ditch	Yes
04/07/2014	249	Wet ditch enclosed by hedge.	Yes
04/07/2014	257	Densely vegetated and overgrown by hedge.	Yes
05/08/2014	1190	Bank recently managed by IDB.	Yes
05/08/2014	1238	Water body is quite inaccessible due to overgrown reeds and also dense vegetation near bridge.	Yes
05/08/2014	1234	Bad water quality	Yes
05/08/2014	536	Poor water quality	Yes
05/08/2014	1207	Bad water quality, polluted, not suitable	Yes
05/08/2014	1220	Dry pond	Yes
05/08/2014	1206	Dry pond with overgrown banks	Yes
05/08/2014	1250	Overgrown. Bad water quality.	Yes
05/08/2014	1071	Dry	Yes
05/08/2014	1257	Overgrown by Phragmites. Bad water quality.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
05/08/2014	1241	No access	No
05/08/2014	1260	Inaccessible due to dense vegetation	No
05/08/2014	790	Dry	Yes
05/08/2014	1121	Overgrown, bad water quality, no access	Yes
05/08/2014	1120	Inaccessible, overgrown	Yes
05/08/2014	1248	Overgrown, inaccessible, bad water quality	Yes
05/08/2014	1259	Polluted/bad water quality, open reen.	Yes
05/08/2014	1258	Inaccessible due to dense vegetation	No
05/08/2014	1245	Poor water quality.	Yes
05/08/2014	1196	Reen is inaccessible due to being overgrown vegetation.	Yes
05/08/2014	1259	Reen vegetation in process of being cut by IDB. Due to health and safety risks of surveying whilst heavy machinery is in use, suggest returning at a later date.	Yes
05/08/2014	1197	Inaccessible from one side	Yes
05/08/2014	1273	IDB have cut vegetation back on both sides.	Yes
05/08/2014	1270	Poor water quality. Banksides have recently been managed by the IDB.	Yes
06/08/2014	1152	Moderate water quality.	Yes
06/08/2014	536	Poor water quality	Yes
06/08/2014	1286	Moderate water quality	Yes
06/08/2014	1296	Moderate water quality. On the unmanaged side of reen (west) difficult to access but surveyed 50m. Surveying along managed/cut side (east) no evidence due to management but cannot discount presence.	Yes
06/08/2014	578	Moderate water quality.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
06/08/2014	1299	Inaccessible. Overgrown reen.	Yes
06/08/2014	1152	Inaccessible, overgrown.	Yes
06/08/2014	1082	Field ditch, double sided hedge. Moderate water quality.	Yes
06/08/2014	1124	Inaccessible, double hedged, overgrown field ditch.	Yes
06/08/2014	555	Poor water quality	Yes
06/08/2014	562	Inaccessible, double hedged, field ditch	Yes
06/08/2014	1188	Inaccessible reed bed	Yes
06/08/2014	1246	Inaccessible reed bed	No
06/08/2014	1259	Inaccessible reed bed	No
06/08/2014	1299	Inaccessible reed bed	No
06/08/2014	588	Inaccessible, double hedged, adjacent fields have been cut and rolled into sileage	Yes
06/08/2014	564	Dry ditch	Yes
06/08/2014	1077	Inaccessible in most parts	Yes
06/08/2014	1079	Heavily vegetated and encroached by hedgerow	
06/08/2014	1080	Heavily vegetated by reeds, encroached by hedgerow	
06/08/2014	1172	Inaccessible due to dense hedgerow and dense vegetation.	Yes
06/08/2014	579	Moderate water quality.	Yes
07/08/2014	537	Dry ditch.	Yes
07/08/2014	544	Dry ditch.	Yes
07/08/2014	1060	Reen has been recently managed by IDB	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
07/08/2014	601	Double hedge ditch.	Yes
07/08/2014	1050	Inaccessible due to dense vegetation.	Yes
07/08/2014	1146	Unmanaged field ditch, inaccessible.	Yes
07/08/2014	596	Inaccessible, overgrown	No
07/08/2014	600	Inaccessible, overgrown	No
07/08/2014	598	Dry, inaccessible.	Yes
07/08/2014	595	Inaccessible because of brambles and vegetation. Overgrown, dry ditch.	Yes
07/08/2014	605	Inaccessible, overgrown.	Yes
07/08/2014	594	Intermittent hedge	Yes
07/08/2014	608	Dry, unsuitable	Yes
07/08/2014	1066	Overgrown, inaccessible.	Yes
07/08/2014	759	Mainly double hedged.	Yes
07/08/2014	1155	Unmanaged, dry ditch.	Yes
07/08/2014	678	Poor water quality, high nutrients / eutrophic.	Yes
07/08/2014	853	Dry	Yes
07/08/2014	611	Reen has recently been managed by the IDB and is dry.	Yes
07/08/2014	614	Double hedged.	Yes
07/08/2014	1343	Moderate water quality. Recently managed.	Yes
07/08/2014	1344	Dry	Yes
07/08/2014	853	Dry	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
07/08/2014	676	Poor water quality, north side managed / cut. On southern side the bank is covered by scrub.	Yes
07/08/2014	583	Overgrown, difficult to access.	Yes
07/08/2014	1148	Section of water body is being managed by the IDB at time of survey.	Yes
12/08/2014	825	Double hedge, makes ditch inaccessible to assess.	Yes
12/08/2014	901	Only 10 metres of bankside was able to be surveyed due to dense hedgerow limiting access.	Yes
12/08/2014	625	Recently cut bankside vegetation. Poor water quality.	Yes
12/08/2014	623	Unsuitable, bad water quality, almost dry, overgrown ditch.	Yes
12/08/2014	621	Possible mink spraint. Heavy duckweed cover. Rat burrow. Mink rafts previously seen in this ditch network.	Yes
12/08/2014	631	Bank could not be checked due to cattle in field.	Yes
12/08/2014	898	Inaccessible, unable to carry out assessment of the water body.	Yes
12/08/2014	976	Unsuitable. Densely vegetated. Heavily shaded. Low water quality. Heavy duckweed cover.	Yes
12/08/2014	744	Unsuitable. Densely vegetated. Heavily shaded. Low water quality. Heavy duckweed cover	Yes
12/08/2014	961	Unsuitable. Densely vegetated. Heavily shaded. Low water quality. Heavy duckweed cover	Yes
12/08/2014	953	Unsuitable. Densely vegetated. Heavily shaded. Low water quality. Heavy duckweed cover	Yes
12/08/2014	895	Unsuitable. Densely vegetated. Heavily shaded. Low water quality. Heavy duckweed cover	Yes
12/08/2014	962	Quite recent mink spraint. No small mammal bones found in spraint.	Yes
12/08/2014	873	Unsuitable. Dense vegetation. High Lemna sp. cover. Shaded.	Yes
12/08/2014	830	Unsuitable. Dense vegetation. High duckweed cover. Shaded.	Yes
12/08/2014	968	Unsuitable. Dense vegetation. High duckweed cover. Shaded.	Yes
12/08/2014	787	Bankside vegetation has recently been managed.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
12/08/2014	628	Dense vegetation.	Yes
12/08/2014	903	Unsuitable. Overgrown. Shaded.	Yes
12/08/2014	985	Unsuitable. Overgrown. Shaded.	Yes
12/08/2014	897	Unsuitable. Overgrown. Dry.	Yes
13/08/2014	896	Inaccessible to be able to carry out a proper assessment of the water body.	Yes
13/08/2014	982	Difficult to assess ditch due to dense hedgerow.	Yes
13/08/2014	900	Difficult to access ditch due to dense hedgerow.	Yes
13/08/2014	904	Difficult to assess ditch due to dense hedgerow.	Yes
13/08/2014	980	Double hedged with copse woodland.	Yes
13/08/2014	952	Dense vegetation hinders survey effort, spot checks made along full length where possible.	Yes
13/08/2014	897	Dry ditch	Yes
13/08/2014	984	Double hedged, inaccessible, low water quality	Yes
13/08/2014	743	Inaccessible due to dense vegetation obstructing access. Dry ditch, it is more like a copse than ditch.	Yes
13/08/2014	913	Very low suitability, overgrown by hedge and low water depth and quality at time of survey, heavily over shaded	Yes
13/08/2014	911	Very low suitability, overgrown by hedge and low water depth and quality at time of survey, heavily over shaded. Heavy duckweed cover	Yes
13/08/2014	958	Very low suitability, overgrown by hedge and low water depth and quality at time of survey, heavily over shaded. Heavy duckweed cover	Yes
13/08/2014	1351	Inaccessible in sections.	Yes
13/08/2014	981	Double hedged making inaccessible to survey	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
14/08/2014	1201	Didn't survey entire length because of health and safety concern regarding contaminated water.	Yes
14/08/2014	1226	Poor water quality. Trees and shrubs growing in centre of reed bed - these areas are inaccessible. Banks predominantly stone with earth banks.	Yes
14/08/2014	1208	Banks mainly man made stone with earth. Poor water quality.	Yes
14/08/2014	1184	Bad water quality. Channel inaccessible. Rest of reed bed overgrown.	Yes
14/08/2014	1200	Bad water quality-polluted.	Yes
14/08/2014	1200	Contaminated water.	Yes
14/08/2014	1072	Moderate water quality	Yes
15/08/2014	1125	Unsuitable, poor water quality.	Yes
15/08/2014	786	Inaccessible due to dense vegetation and woodland.	Yes
15/08/2014	1063	Inaccessible, due to dense vegetation.	Yes
15/08/2014	1127	Poor water quality.	Yes
15/08/2014	1211	Recently managed eastern bank.	Yes
15/08/2014	1062	Overgrown with dense vegetation - inaccessible.	Yes
15/08/2014	757	Inaccessible. Overgrown with dense bramble, nettles, hawthorn, ivy, white willow.	Yes
15/08/2014	1240	Moderate water quality.	Yes
15/08/2014	1133	Inaccessible due to dense vegetation	Yes
15/08/2014	1212	Poor water quality.	Yes
19/08/2014	1130	Poor water quality. Surface covered entirely by duckweed. Overgrown. Difficult to access	Yes
19/08/2014	1137	Dry ditch, unsuitable	Yes

Date	ate Waterbody number Limitation to survey		Was a complete assessment carried out?	
19/08/2014	1140	Woody debris/ branches lying across ditch. Low -moderate water quality. 10m has water, looks like other parts are dry.	Yes	
19/08/2014	1138	Reed bed only 10m surveyed due to dense vegetation, difficulty in accessing whole pond	Yes	
19/08/2014	1139	Reed bed inaccessible, dense vegetation a barrier. Attempted from north, east and south.	Yes	
19/08/2014	603	Boat survey recommended, western bank difficult to access. Eastern bank appears recently managed and poached.	Yes	
19/08/2014	761	Inaccessible in most places. Spot checks made where possible.	Yes	
19/08/2014	1142	Banks poached by cattle. Overgrown ditch. Inaccessible for most parts, spot check where possible	Yes	
19/08/2014	673	Fence present on West Bank, difficult to access due to brambles, boat survey recommended. Only 20m surveyed due to fence/brambles	Yes	
19/08/2014	675	Moderate water quality	Yes	
20/08/2014	555	Old Feeding station found, hedge on other side with hawthorn and blackthorn. Poached on field side of reen in the southern.	Yes	
20/08/2014	672	Difficult to access the reen from either side as dense vegetation.	Yes	
21/08/2014	955	Inaccessible to carry out assessment, too overgrown.	Yes	
21/08/2014	973	Ditch largely inaccessible to survey due to dense bankside vegetation.	Yes	
21/08/2014	874	No access permission from South. Inaccessible to walk into the ditch as the sediment is a thin layer over water, too boggy.		
21/08/2014	845	Low water (below 0.5metres) and overgrown with mature trees.	Yes	
21/08/2014	843	On the northern side of the ditch there is a barbed wire fence which makes the bank inaccessible. Other bank sides are densely overgrown which makes survey near impossible.	Yes	
21/08/2014	678	Maybe best surveyed from Southern side of reen due to dense vegetation.	Yes	

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
26/08/2014	849	Inaccessible. Potential use by otters as corridor.	Yes
26/08/2014	850	Old water vole feeding remains, soggy droppings (because of heavy rain difficult to tell if water vole). Inaccessbile in places due to dense vegetation.	Yes
26/08/2014	666	Low water quality, fly tipping in and adjacent to ditch.	Yes
26/08/2014	669	Ditch mainly inaccessible due to dense vegetation.	Yes
26/08/2014	915	Inaccessible to survey some areas of ditch due to dense vegan.	Yes
27/08/2014	636	Western end of reen- vegetation recently cut on south bank. No access to north bank. Mink trap in reen. Reen on SDR and extending to north east to be surveyed by kayak as vegetation and bank slope too difficult to access.	Yes
27/08/2014	633	Largely inaccessible due to steep bank covered with vegetation. West side surveyed, east no access. Adjacent road on west side.	Yes
27/08/2014	845	Field cut very close to reen, including reeds. Western end fenced.	Yes
27/08/2014	873	50% inaccessible. Full length surveyed, inaccessible areas of low suitability.	Yes
27/08/2014	882	Adjacent field grazed right up to reen edge. Southern 50m section inaccessible due to dense vegetation. Water flooding out onto field.	Yes
27/08/2014	874	Dense vegetation hinders survey effort, spot checks made along full length where possible.	Yes
27/08/2014	603	Bank submerged due to recent flooding. Full length of reen walked and surveyed where possible. Further survey recommended when water level has dropped.	
27/08/2014	1181	Dense vegetation on either side of ditch making it unsuitable for otters and water voles.	Yes
27/08/2014	1353	Largely inaccessible due to vegetation.	Yes
27/08/2014	758	Largely inaccessible due to vegetation.	Yes
27/08/2014	1147	Flooding over field. Dry ditch in places completely unsuitable.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
27/08/2014	779	Completely inaccessible.	Yes
28/08/2014	944	Reen is heavily poached on both sides. Access to the reen near the M4 side constrained in parts by dense vegetation.	Yes
28/08/2014	705	Unsuitable for water vole as has concrete banks.	Yes
28/08/2014	988	Largely inaccessible	Yes
28/08/2014	709	Hard to access due to fence and nettles adjacent to bank.	Yes
27/08/2014	1145	Inaccessible due to dense vegetation dominating the ditch	Yes
29/08/2014	1060	Heavily grazed banks.	Yes
29/08/2014	928	Recently dredged and cut grass bankside	Yes
29/08/2014	641	Recently dredged and north bank strimmed. Rest of the reen is inaccessible.	Yes
29/08/2014	632	Hedge on east side cut for half section of reen	Yes
29/08/2014	640	Bank cut on one side.	Yes
29/08/2014	643	Overgrown	Yes
29/08/2014	1039	Largley inaccessible due to dense vegetation.	Yes
29/08/2014	1039	Over grown with dense vegetation.	Yes
29/08/2014	1040	Largely inaccessible	Yes
29/08/2014	753	Largely inaccessible	Yes
02/09/2014	861	Ditch dried out after 10m	Yes
02/09/2014	56	Mainly inaccessible	Yes
08/09/2014	59	No water at time of survey, fly tipping evident. Concrete banks.	Yes
08/09/2014	862	Ditch dries up as it travels east. Very little water. Trash in ditch.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
08/09/2014	1382	Mainly inaccessible due to steep banks.	Yes
08/09/2014	55	Deeper water depth in parts.	Yes
08/09/2014	42	Water body difficult to access due to dense vegetation.	Yes
08/09/2014	43	Reen to south of Percoed Lane. Largely inaccessible due to dense vegetation.	Yes
08/09/2014	43	Very little water	Yes
09/09/2014	101	Water body is mainly inaccessible due to dense bankside vegetation. Ditch could be used by an otter as a corridor.	Yes
09/09/2014	98	Most of bank disturbed due to farming operations. Ditch dries up in places.	Yes
09/09/2014	103	Dry ditch.	Yes
09/09/2014	109	Dry ditch.	Yes
09/09/2014	105	Dry ditch.	Yes
09/09/2014	9956	Inaccessible, dry difficult to access. Potential use by Otters as a corridor.	Yes
09/09/2014	49	Dry ditch northwards.	Yes
09/09/2014	47	Mainly inaccessible	Yes
09/09/2014	41	Dry ditch.	Yes
09/09/2014	48	Very little water, very difficult to access water body due to dense vegetation. Access permission only granted on one side of the ditch.	Yes
09/09/2014	37	Field vole latrine.	Yes
10/09/2014	94	Very overgrown.	Yes
10/09/2014	9960	Inaccessible due to thick vegetation	Yes
10/09/2014	94	Limited access due to dense vegetation.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
10/09/2014	95	Largely inaccessible due to vegetation	Yes
10/09/2014	812	Areas of bank disturbed due to track widening.	Yes
10/09/2014	291	Largely inaccessible due to dense vegetation. Accessible sections have been poached by cattle.	Yes
10/09/2014	292	Largely inaccessible due to dense vegetation	Yes
10/09/2014	294	Largely inaccessible due to vegetation.	Yes
10/09/2014	283	Dry ditch	Yes
10/09/2014	281	Mostly inaccessible due to dense vegetation	Yes
10/09/2014	277	Largely inaccessible due to dense vegetation	Yes
10/09/2014	376	Limited access due to dense vegetation	Yes
10/09/2014	276	Very shallow water, dries in places	Yes
10/09/2014	273	Very little water	Yes
10/09/2014	273	Barely any water	Yes
10/09/2014	272	Limited accessibility due to dense vegetation	Yes
11/09/2014	87	Limited access due to dense vegetation.	Yes
11/09/2014	233	Access limited and heavily poached where possible	Yes
11/09/2014	232	Heavily poached and dries up in sections	Yes
11/09/2014	235	Ditch covered by hedge, access limited, ditch dries up in places	Yes
11/09/2014	230	Hedge covering ditch.	Yes
11/09/2014	253	No access due to fencing and thick shrub. Dry ditch.	Yes
11/09/2014	249	Access very limited due to fence and thick scrub	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
11/09/2014	250	Poached in places access limited due to bramble	Yes
11/09/2014	1370	Limited access	Yes
11/09/2014	91	Sheltered completely by trees	Yes
11/09/2014	90	Has trees lining south bank	Yes
15/09/2014	27	Entire reen was not surveyed because the bank was too narrow and steep (H&S concerns). The bankside vegetation has very recently been managed. Suggest resurveying when vegetation has recovered.	Yes
15/09/2014	17	One side of bank (eastern edge is heavily vegetated with sycamore and crack willow, brambles). Recently cut, so suggest returning when bankside has recovered. Both sides of bank surveyed.	Yes
15/09/2014	14	Recently cut, suggest returning when vegetation has recovered.	Yes
15/09/2014	22	Only surveyed edge of pond adjacent to golf course, as didn't have access permission to other bankside.	Yes
15/09/2014	1383	Boat survey would be useful due to open water and limited access to bankside.	Yes
15/09/2014	25	Reen has been recently managed, hardly any bankside vegetation present.	Yes
15/09/2014	14	Northern side of bank recently managed.	Yes
15/09/2014	30	Bankside vegetation recently cut.	Yes
16/09/2014	15	Access difficult due to dense vegetation	Yes
16/09/2014	12	East bank recently managed	Yes
16/09/2014	13	Golf course on south side. North bank recently managed	Yes
16/09/2014	28	Inaccessible due to bramble hedge. No land access on west bank. Recently managed on west bank.	Yes
16/09/2014	147	Fly tipping in the water channel. Low water quality.	Yes
16/09/2014	20	Banks recently managed.	Yes
16/09/2014	19	Banks recently managed	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
16/09/2014	146	Poor water quality (bad odour).	Yes
16/09/2014	44	Difficult access, fenced right up to reen edge, spot checks where possible	Yes
16/09/2014	45	Fenced up to reen, difficult to access.	Yes
16/09/2014	47	Difficult to access. Fenced up to reen edge.	Yes
16/09/2014	49	Dense hedgerow, limited access	Yes
16/09/2014	50	Fenced up to edge of reen	Yes
16/09/2014	141	Poor water quality.	Yes
16/09/2014	48	Fenced up to ditch edge	Yes
16/09/2014	37	Limited accessibility due to fencing and dense vegetation	Yes
16/09/2014	46	Limited accessibility	Yes
16/09/2014	997	Poor water quality, fly tipping, ditch directly adjacent to railway line.	Yes
16/09/2014	254	A wall of nettles makes water body inaccessible	Yes
16/09/2014	255	Drainage ditch for railway, very little water	Yes
16/09/2014	256	Overgrown railway drainage ditch.	Yes
16/09/2014	123	Inaccessible to properly survey due to dense vegetation.	Yes
17/09/2014	459	Dry ditch	Yes
17/09/2014	1167	Mostly inaccessible.	Yes
17/09/2014	1108	Water level low, ditch is inaccessible in most parts.	Yes
17/09/2014	1046	Ditch is mostly inaccessible.	Yes
17/09/2014	764	Cannot access reen over fence.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
17/09/2014	456	Part of the ditch is dry	Yes
17/09/2014	455	Inaccessible due to dense vegetation	Yes
17/09/2014	1179	Dry ditch in places.	Yes
17/09/2014	415	Inaccessible in places - too overgrown or no entry point. Dried up in parts.	Yes
17/09/2014	684	Hard clay banks. Poor water quality. Southern bank cut, northern bank	Yes
17/09/2014	770	Dry ditch, lack of food, poached by livestock	Yes
17/09/2014	795	Bank of ditch poached by livestock.	Yes
17/09/2014	426	Densely overgrown on both banks. Inaccessible predominantly	Yes
17/09/2014	408	Inaccessible. Reen not in view	Yes
17/09/2014	407	Inaccessible due to dense hawthorn on bankside.	Yes
17/09/2014	797	Moderate water quality.	Yes
17/09/2014	441	Fence down one side. Predominantly inaccessible due to dense bramble scrub.	Yes
17/09/2014	443	Predominantly inaccessible. Spot checks made where accessible.	Yes
17/09/2014	1310	Poor water quality. Poached.	Yes
17/09/2014	1161	Poor water quality	Yes
17/09/2014	1168	Dry ditch	Yes
17/09/2014	1100	Access limited due to dense vegetation (bramble).	Yes
22/09/2014	176	Dry ditch	Yes
22/09/2014	99	Inaccessible due to overgrown vegetation both sides.	Yes
22/09/2014	175	Dry ditch	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
22/09/2014	318	Access limited due to fence and hedge	Yes
22/09/2014	98	Inaccessible due to dense undergrowth.	Yes
22/09/2014	686	Dry ditch	Yes
22/09/2014	101	Dense undergrowth along length makes water body inaccessible.	Yes
22/09/2014	100	Densely overgrown each side, mostly inaccessible.	Yes
22/09/2014	687	Dry ditch	Yes
22/09/2014	102	Dense undergrowth each side of ditch, mostly innaccessible.	Yes
22/09/2014	103	Dry ditch	Yes
22/09/2014	109	Low water quality near railway line	Yes
22/09/2014	179	Access limited due to hedge	Yes
22/09/2014	108	Inaccessible. Heavily overgrown.	Yes
22/09/2014	105	Dry at time of survey.	Yes
24/09/2014	96	Some areas inaccessible. Would be good to have another look from opposite bank if land access possible.	Yes
24/09/2014	295	Inaccessible due to dense vegetation	Yes
24/09/2014	296	Inaccessible due to dense vegetation	Yes
24/09/2014	306	Becomes deeper, steeper on one bank so difficult to survey.	Yes
24/09/2014	314	Dry at time of survey	Yes
24/09/2014	313	Shaded, no food items suitable for water vole	Yes
24/09/2014	286	Inaccessible due to dense vegetation	Yes
24/09/2014	94	Steep bank mostly inaccessible, dog walkers	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
24/09/2014	1387	Fenced on one side, and dense vegetation inhibits complete survey of water body.	Yes
25/09/2014	244	Access permission to other side of ditch not permitted, possibly need to survey from other side. But ditch is mainly double hedged both sides. Poached in places - cows grazing opposite side of ditch (Southern side of ditch).	Yes
25/09/2014	242	Sections of water body inaccessible due to dense vegetation.	Yes
25/09/2014	241	Hedged section (blackthorn / bramble).	Yes
25/09/2014	236	The ditch turns into a small section of woodland which could provide a corridor / refuge for otters. Mainly the ditch is inaccesible due to dense vegetation.	Yes
25/09/2014	235	Poor water quality poor.	Yes
25/09/2014	136	Quite inaccessible due to dense vegetation on bankside.	Yes
25/09/2014	134	Quite inaccessible due to dense bramble on bankside.	Yes
25/09/2014	144	Reen has recently been cleared by IDB.	Yes
25/09/2014	42	Section of ditch is very shaded, shallow ditch with not a lot of vegetation	Yes
25/09/2014	48	Dry in some places	Yes
25/09/2014	46	Inaccessible in some areas, poaching on bankside.	Yes
25/09/2014	1388	Inaccessible in some areas	Yes
25/09/2014	126	Inaccessible in areas	Yes
25/09/2014	137	Inaccessible in some areas.	Yes
26/09/2014	181	Poaching on banks.	Yes
26/09/2014	182	Scrubbed over	Yes
26/09/2014	237	Poor water quality, bank on farm field side heavily poached and silted.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
26/09/2014	238	Field side heavily poached, with poor water quality and fewer aquatic plants. Large building to other side between which is a dense but narrow margin of vegetation.	Yes
26/09/2014	185	Dry	Yes
26/09/2014	227	Shallow banks of no opportunities for borrowing could be used as corridor.	Yes
26/09/2014	195	No bank	Yes
26/09/2014	198	Decent bank on one side, but with scrub which makes inaccessible.	Yes
26/09/2014	197	Open - no banks for burrowing, good foraging.	Yes
26/09/2014	205	Dry ditch, overgrown with grass	Yes
26/09/2014	275	Inaccessible, dry.	Yes
26/09/2014	274	Largely inaccessible, dry.	Yes
26/09/2014	215	Inaccessible due to dense vegetation	Yes
29/09/2014	400	Overgrown difficult to access in places, dries up in places	Yes
29/09/2014	404	Considerable amount of rubbish. Secluded areas of shelter, dense scrub.	Yes
29/09/2014	395	Limited access, dry ditch	Yes
29/09/2014	394	Dry ditch	Yes
29/09/2014	441	Inaccessible from east field which is the route we have access from.	Yes
29/09/2014	801	Dry ditch	Yes
29/09/2014	378	Dry ditch	Yes
29/09/2014	379	Dry	Yes
29/09/2014	430	Inaccessible from north side	Yes
29/09/2014	393	Limited access, ditch dry in places	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
29/09/2014	388	Dry ditch, limited access	Yes
29/09/2014	833	Dry ditch	Yes
29/09/2014	832	Dry ditch	Yes
29/09/2014	426	Very poor water quality at western end	Yes
29/09/2014	386	Dry ditch	Yes
29/09/2014	840	Inaccessible from west side, east side has no access permission	Yes
29/09/2014	415	Water dries in places	Yes
29/09/2014	408	Very limited accessibility due to dense vegetation	Yes
29/09/2014	375	Inaccessible. Brambles and hawthorn	No
29/09/2014	376	Inaccessible. Bramble and hawthorn	No
29/09/2014	377	Inaccessible -brambles, hawthorn	No
29/09/2014	429	Limited accessibility due to dense vegetation. Dry in several locations	Yes
29/09/2014	841	Low water quality	Yes
29/09/2014	427	Limited accessibility due to dense vegetation	Yes
29/09/2014	478	Mostly dry	Yes
29/09/2014	480	Dry ditch	Yes
29/09/2014	1008	Dry ditch	Yes
29/09/2014	1012	Not accessible -bramble, hawthorn, willow, dry ditch	Yes
30/09/2014	1116	Limited accessibility due to dense vegetation	Yes
30/09/2014	1110	Limited accessibility due to dense vegetation. Ditch dry in places. Bank poached in areas.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
30/09/2014	509	Poaching, dry ditch, damp in places, getting wetter to north. Debris in ditch, limited accessibility due to dense vegetation.	Yes
30/09/2014	1093	Limited accessibility due to dense hedgerow.	Yes
30/09/2014	454	Limited accessibility due to hedgerow. Becomes very shallow water depth to east.	Yes
30/09/2014	457	Limited accessibility due to hedgerow	Yes
30/09/2014	1339	Inaccessible due to dense scrub and hedgerow	No
30/09/2014	335	Inaccessible. Directly adjacent to industrial site and main road.	Yes
30/09/2014	1331	Pathways through duckweed. Difficult to acces bank - West bank over 45 degree angle, east side less than 45 degree angle in steepness.	Yes
30/09/2014	333	Water body was surveyed from the banks adjacent to footpath on Southern edge, this was due to security fencing & deep water limiting access to water body.	Yes
30/09/2014	332	Poor water quality in ditch, there is fly tipping in ditch. Water body was surveyed from the banks adjacent to footpath on Southern edge,	Yes
01/10/2014	1374	Bankside vegetation has recently been managed.	Yes
01/10/2014	1385	One side of bank has recently been managed.	Yes
01/10/2014	19	Pond dry with marginal vegetation gone over and covering pond base. Note length of 20m specified, but really a pond 20x20m.	Yes
01/10/2014	20	Recently dug out with spoil mounded against edge of pond 19 this open area is moderate.	Yes
01/10/2014	392	Only first 2m with water. Ditch is poached.	Yes
01/10/2014	749	Dry at time of survey but wet in winter as reported by golf club staff.	Yes
01/10/2014	479	Rubbish laden	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
01/10/2014	40	Half of ditch unsuitable with trees and scrub.	Yes
01/10/2014	860	Recently flailed. Poor water quality, evidence of oil pollution	Yes
01/10/2014	1029	No access due to dense vegetation.	Yes
01/10/2014	1029	No access due to dense vegetation.	Yes
01/10/2014	1029	No access due to dense vegetation.	Yes
06/10/2014	439	Access difficult due to dense vegetation. Ditch mostly dry with some ponded areas.	Yes
06/10/2014	392	Ditch dries up in places access limited by vegetation	Yes
06/10/2014	390	Access limited by vegetation	Yes
06/10/2014	474	Access limited	Yes
06/10/2014	765	No access due to dense bramble and vegetation. Ditch set back from fence a fair way	No
06/10/2014	442	Limited accessibility due to dense hedgerow	Yes
06/10/2014	486	Overgrown vegetation with some areas of open banks adjacent to inaccessible areas.	Yes
06/10/2014	418	Dry ditch	Yes
06/10/2014	433	Limited access due to dense vegetation	Yes
06/10/2014	472	Dry ditch	Yes
06/10/2014	411	Limited access due to dense vegetation, dry ditch	Yes
06/10/2014	487	Dry ditch	Yes
06/10/2014	6105	Access limited due to vegetation	Yes
06/10/2014	6113	Access very limited due to vegetation, bank vole runs found	Yes
06/10/2014	425	Poached, probably managed on east bank	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
06/10/2014	403	Totally overgrown with dense scrub. Inaccessible for survey apart from one small gap. Should be viewed from adjacent sheep pasture but unlikely to yield field signs due to dense scrub for potential otter lying up.	Yes
06/10/2014	395	Totally inaccessible due to dense bramble scrub with shading by white willow and other willow sp.	Yes
06/10/2014	402	Inaccessible for survey.	Yes
06/10/2014	507	Ditch dries up adjacent to house, doesn't connect with other ditch.	Yes
06/10/2014	398	Vegetation too dense and impenetrable to survey other than one small access point, where photos taken.	Yes
06/10/2014	399	Vegetation too dense and impenetrable to survey for most of its length.	Yes
06/10/2014	406	Vegetation too dense and shaded to survey for parts of its length. Recent pipe works undertaken with channel and bank disturbance.	Yes
06/10/2014	1010	Vegetation too dense and impenetrable to survey.	Yes
06/10/2014	401	Vegetation too dense and impenetrable to survey. Heavily shaded.	Yes
06/10/2014	402	Vegetation too dense to survey.	Yes
06/10/2014	405	Very densely shaded but surveyed intermittently along length where access permitted.	Yes
06/10/2014	414	No longer functioning as a ditch just a boggy area of ground with mounds of spoil in places.	Yes
07/10/2014	1031	Inaccessible in the majority of the stretch, bramble hawthorn. Dry ditch in area where access was possible.	Yes
07/10/2014	1102	Access limited due to double hedgerow	Yes
07/10/2014	6104	Inaccessible ditch Heavily dense vegetation hinders access	Yes
07/10/2014	6106	Inaccessible due to dense vegetation.	Yes
07/10/2014	6107	Inaccessible due to dense vegetation.	Yes
07/10/2014	6108	Inaccessible due to dense vegetation.	Yes
07/10/2014	465	Water depth varies, access to ditch limited because of dense vegetation.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
07/10/2014	468	Inaccessible due to dense hedgerow at south end. North end opens up and has been poached.	Yes
07/10/2014	467	Very overgrown	Yes
07/10/2014	1016	Dry ditch. Poached in places. Inaccessible in places	Yes
07/10/2014	471	Barely any water at present	Yes
07/10/2014	492	Heavy rain last night. Poached bank on field side. Only 50m visible, the rest is overgrown with bramble.	Yes
07/10/2014	1019	Accessibility limited due to dense vegetation.	Yes
07/10/2014	497	Overshaded ditch with no emergent vegetation.	Yes
07/10/2014	1017	Completely inaccessible due to dense vegetation.	Yes
07/10/2014	799	Traveller site adjacent to water body. Survey abandoned due to health and safety concerns.	Yes
07/10/2014	1005	Dense vegetation, inaccessible	Yes
07/10/2014	6112	Double hedged with mature trees and Phragmites, difficult to access due to dense vegetation in and adjacent to water body.	Yes
07/10/2014	1023	No access due to dense vegetation	No
07/10/2014	1105	No access due to dense vegetation	Yes
07/10/2014	499	Poached banks on one side, hawthorn hedge on west bank.	Yes
07/10/2014	839	Dry ditch, mostly inaccessible	Yes
07/10/2014	741	Dry in places	Yes
07/10/2014	461	Limited access due to dense vegetation. Poached in places	Yes
07/10/2014	463	Poached in places	Yes
07/10/2014	834	Limited access due to vegetation	Yes
07/10/2014	464	Limited accessibility due to dense vegetation.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
07/10/2014	498	Mostly overgrown, small open section with soft rush and hard rush.	Yes
07/10/2014	389	Grassland banks cut and managed, ditch has very low water in parts, 10cm.	Yes
07/10/2014	387	Dry in parts very low water level.	Yes
07/10/2014	1106	Heavy shading by dense hedge cover.	Yes
07/10/2014	1166	Inaccessible and dry, dense scrub. Poached no food plants in open areas.	Yes
07/10/2014	1112	Poached in open areas. Dense inaccessible hedge.	Yes
07/10/2014	1006	Inaccessible but unsuitable.	Yes
08/10/2014	432	Road on south bank. Grass verge recently cut but banks not managed.	Yes
08/10/2014	420	Dry ditch	Yes
08/10/2014	420	Ditch opens up to pond filled with duckweed - no access to pond area	Yes
08/10/2014	512	Shaded, cattle poached	Yes
08/10/2014	1117	Shaded, by hedgerow each time	Yes
08/10/2014	410	Dry ditch.	Yes
08/10/2014	4001	Shaded by dense blackthorn	Yes
08/10/2014	423	Adjacent to road. Very overgrown, limited access due to verge hedgerow, grassland on west side.	Yes
08/10/2014	1328	Little water, very shaded	Yes
08/10/2014	422	Adjacent road. Very overgrown, verge managed but not bank	Yes
08/10/2014	449	Adjacent to road. Livestock grazing and Poached on east side.	Yes
08/10/2014	511	Shaded, little water	Yes
08/10/2014	1114	Overgrown with willow saplings, overshaded.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
08/10/2014	1115	Almost no water, very overgrown	Yes
08/10/2014	446	Very little water, dry in places, overgrown, verge cut, unmanaged ditch	Yes
08/10/2014	1163	Overgrown, very shaded. Difficult to access.	Yes
08/10/2014	1113	Overgrown, shaded. Difficult to access.	Yes
08/10/2014	556	Access was only granted from Northern side, which was hedged. Southern side open and poached with livestock in field. Spot checks made at gaps in hedge.	Yes
08/10/2014	560	Recently managed on north bank. South side adjacent to road. Water level previously approx 50cm higher (duckweed level on bank)	Yes
08/10/2014	558	Dense vegetation with Phragmites completely covering ditch and bank, dry in places, low water level. Access through Phragmites limited due to some areas interweaves with thick bramble.	Yes
08/10/2014	516	Cows in field (quick survey due to H&S concerns)	Yes
09/10/2014	1107	Latrines found and feeding station, some washed away by heavy rain	Yes
09/10/2014	447	Recently managed within last week. Boat survey possible. Old water vole burrow plugged with vegetation. Part of reen has dense scrub on one side.	Yes
09/10/2014	551	Banks recently managed and cut. A small section (5m) poached by cattle. Water level lower, duckweed line 20cm lower than high watermark.	Yes
09/10/2014	837	Animal poached recently managed, part of field side been reprofiled	Yes
09/10/2014	449	Reen has been recently managed, with grass cut and re-profiling in areas. Signs of cattle poaching on bankside.	Yes
09/10/2014	547	Lots of tree branches fallen into ditch. Cattle grazed field, poached banks.	Yes
09/10/2014	554	Adjacent to road and overgrown with trees. Where there is water, level very low <15cm. Dry in parts, inaccessible.	Yes
09/10/2014	446	Dry ditch on roadside verge	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
09/10/2014	545	Dry ditch, inaccessible, overgrown. Patches where water is present, <10cm	Yes
09/10/2014	451	Recently managed so field signs might be destroyed. Section of ditch inaccessible because of dense scrub including bramble, this could be used by otters for refuge.	Yes
10/10/2014	492	Inaccessible due to dense vegetation	Yes
10/10/2014	6114	Sections of ditch are double hedged, so inaccessible.	Yes
10/10/2014	497	Woody areas could provide cover / refuge for otters. Bankside heavily vegetated. Poached in areas.	Yes
10/10/2014	503	Bankside recently been managed, poached edges. One side of ditch is hedged.	Yes
10/10/2014	498	Inaccessible in places due to dense vegetation / hedge. Heavily poached in the open sections.	Yes
10/10/2014	505	Wide hedge (small copse) could be refuge for otters. Heavily poached bank adjacent to field.	Yes
10/10/2014	610	No vegetation present as ditch has recently been dredged and banks re profiled.	Yes
13/10/2014	1311	Good water quality, woodland margin along western bank, likely location of burrows if present. Eastern bank poached.	Yes
13/10/2014	1321	Hard clay banks. Poor water quality. Southern bank cut.	Yes
13/10/2014	1320	Dry ditch, lack of food, poached by livestock.	Yes
13/10/2014	516	Moderate water quality.	No
13/10/2014	1249	No access due to thick scrub	Yes
13/10/2014	1326	Inaccessible due to dense vegetation	No
13/10/2014	6110	Bank of ditch poached by livestock.	Yes
13/10/2014	6111	Poor water quality. Poached.	Yes
13/10/2014	1064	Inaccessible due to dense vegetation	No
13/10/2014	1083	Access limited due to thick vegetation	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
13/10/2014	1081	Limited access due to hawthorn	Yes
13/10/2014	1293	Access limited	Yes
13/10/2014	1254	Dry ditch even following rain	Yes
13/10/2014	4000	Very low water quality access limited	Yes
13/10/2014	568	Limited access dry in places	Yes
13/10/2014	1153	Mainly dry, access limited due to dense vegetation.	Yes
14/10/2014	1143	Inaccessible due to dense vegetation.	Yes
14/10/2014	540	Road side ditch, hedged northern side, fenced on southern banks of which are poached.	Yes
14/10/2014	1055	Inaccessible, locked, managed man made reen.	Yes
14/10/2014	585	Overgrown in parts, dry in parts, litter, roadside grass verge recently mown.	Yes
14/10/2014	1075	Hedged and fenced. Rain might have affected banks, poached by cattle in places, not much bank profile.	Yes
14/10/2014	1338	Northern bank managed during survey - tractor cut vegetation to the ground, no cover left.	Yes
14/10/2014	591	Fenced, scrub and overgrown bramble hindering access, not much bank profile, poached by cattle in places	Yes
14/10/2014	590	Hedged and fenced, not much bank profile, low water level, poached by cattle.	Yes
14/10/2014	589	Difficult to access road side, road ditch, poor quality water. Water level appears lower (at least 30cm). Litter and fly tipping evidence. Recently managed/cut verge.	Yes
14/10/2014	592	Overgrown in sections, difficult to access, roadside verge	Yes
14/10/2014	597	Litter bags in ditch, inaccessible and overgrown with bramble and scrub	Yes
14/10/2014	1303	Ditch/reen location difficult to find/inaccessible	Yes
14/10/2014	1297	Adjacent to reed beds. Banks appear made of waste material. Lack of suitable burrowing material. Completely shaded. Occasional bridge over ditch with concrete channel	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
14/10/2014	599	Cattle poached north, poor water quality, litter in ditch, roadside verge on south side.	Yes
14/10/2014	1266	Adjacent to reed beds. Banks appear made of waste material. Lack of suitable burrowing material. Completely shaded. Occasional bridge over ditch with concrete channel	Yes
14/10/2014	1268	Adjacent to reed beds. Banks appear made of waste material. Lack of suitable burrowing material. Completely shaded. Occasional bridge over ditch with concrete channel	Yes
14/10/2014	769	Adjacent to reed beds. Banks appear made of waste material. Lack of suitable burrowing material. Completely shaded. Occasional bridge over ditch with concrete channel	Yes
14/10/2014	1308	Adjacent to reed beds. Banks appear made of waste material. Lack of suitable burrowing material. Completely shaded. Occasional bridge over ditch with concrete channel	Yes
14/10/2014	767	Section of ditch is canalised in concrete channel, sluice and bridge.	Yes
14/10/2014	1264	Redundant pond, dry, open, no food plants, banks of pond slag/earth mix	Yes
15/10/2014	1271	Ditch is part of reed/sedge bed. Very low water depth throughout.	Yes
15/10/2014	1317	Dry ditch.	Yes
15/10/2014	1295	Ditch runs round the perimeter of the cement works. Poor water quality, very cloudy. Fenced on cement works perimeter.	Yes
15/10/2014	303	Inaccessible mostly	Yes
15/10/2014	1265	Incorporated into reed bed. Inaccessible.	Yes
15/10/2014	300	Mostly inaccessible	Yes
15/10/2014	1064	Inaccessible reed bed	No
15/10/2014	299	Inaccessible due to dense vegetation	Yes
15/10/2014	297	Very dry ditch	Yes
15/10/2014	1284	Man-made hard banks to south, earth to north. Water very cloudy and turbid, poor quality.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
15/10/2014	1267	Man-made hard banks to south, earth to north. Water very cloudy and turbid, poor quality.	Yes
15/10/2014	1285	Man-made hard banks to south, earth to north. Water very cloudy and turbid, poor quality.	Yes
15/10/2014	301	Completely inaccessible	No
15/10/2014	1276	Man-made hard banks to south, earth to north. Water very cloudy and turbid, poor quality.	No
15/10/2014	1280	Concrete channel taking watercourse through St Modwens Glan Llyn site.	Yes
15/10/2014	1281	Concrete channel taking watercourse through St Modwens Glan Llyn site.	Yes
15/10/2014	1279	Concrete channel taking watercourse through steelworks and lagoon area.	Yes
15/10/2014	1275	Holding pond for adjacent works	Yes
15/10/2014	1298	Dry ditch located between natural water course and pollution ditch around perimeter of concrete works.	Yes
15/10/2014	1193	Inaccessible - appears to be dry pond with overgrown banks from aerial	Yes
15/10/2014	1232	Bad water quality	Yes
15/10/2014	1214	Inaccessible but appears to be dry	Yes
15/10/2014	1073	Inaccessible but appears dry	Yes
15/10/2014	677	Dry	Yes
15/10/2014	1230	Overgrown and dry.	Yes
15/10/2014	212	Mostly inaccessible, thick bramble	Yes
15/10/2014	1224	Incorporated as part of reed bed	Yes
15/10/2014	1213	Poor water quality. Trees and shrubs growing in centre of reed bed. These areas are inaccessible. Banks predominantly stone with earth banks.	Yes
15/10/2014	1192	Bad water quality. Channel accessible. Rest or reed bed overgrown.	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
15/10/2014	1223	Banks mainly man made stone with earth. Poor water quality. Now engulfed by reed beds, so not a distinguishable ditch	Yes
15/10/2014	1233	Dry reed end pond with damp ditch leading to/from it. Reed beds and scrubby woodland adjacent	Yes
15/10/2014	855	No water.	Yes
16/10/2014	931	Very inaccessible and overgrown by dense vegetation.	Yes
16/10/2014	972	Completely inaccessible	No
16/10/2014	1355	Over shaded and no suitable food plants for water voles.	Yes
16/10/2014	1358	Over shaded, dense duck weed in wet sections, dry sections at ends	Yes
16/10/2014	1349	Dry. Dense impenetrable vegetation along majority of ditch. Visible from end. Over shaded. Unsuitable.	Yes
16/10/2014	1360	Dry over shaded unsuitable	Yes
16/10/2014	1149	Low water level.	Yes
16/10/2014	1356	Low water level.	Yes
16/10/2014	785	Dry but woodland has holt potential.	Yes
16/10/2014	970	Very overgrown, dry.	Yes
16/10/2014	773	Inaccessible and no land access.	No
16/10/2014	772	Steep drop to reen, bank side overgrown with nettles and brambles makes access in reen difficult.	Yes
16/10/2014	1209	Inaccessible due to dense vegetation	No
16/10/2014	1067	Inaccessible due to dense vegetation	No
16/10/2014	756	Inaccessible due to dense vegetation	No
16/10/2014	1353	Inaccessible due to dense vegetation	No
16/10/2014	758	Inaccessible due to dense vegetation	No

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
16/10/2014	1222	Dry ditch, it is a woodland but has potential to be used by otters for refuge.	Yes
16/10/2014	1131	Mainly dry but woodland has holt potential.	Yes
16/10/2014	965	Hawthorn hedgerow makes access difficult	Yes
16/10/2014	1357	Most of ditch is over shaded and inaccessible.	Yes
16/10/2014	644	Dry ditch. Nothing there	Yes
16/10/2014	1074	Semi dry and over grown and shaded.	Yes
16/10/2014	1065	Dry and over shaded	Yes
16/10/2014	713	Field ditch / no water. Field recently managed. Short section of bull rush but overgrown.	Yes
16/10/2014	1187	Inaccessible overshaded	No
16/10/2014	1144	Inaccessible due to dense vegetation	No
16/10/2014	1199	Polluted throughout entire length.	Yes
17/10/2014	752	Dry ditch cattle grazing arable field recently managed.	Yes
17/10/2014	711	Inaccessible due to double fencing and hedge. cattle grazed.	Yes
17/10/2014	714	Double fenced, overgrown and inaccessible. No access allowed from north (motorway verge) and steep banks.	Yes
17/10/2014	662	Dry ditch, road on north, tall ruderal/scrub south. No access permission from south. A small stretch 10m has water.	Yes
17/10/2014	661	Sheep grazed. Survey aborted after 10m due to presence of aggressive sheep.	Yes
17/10/2014	657	Overgrown with bramble. Very low water level but adjacent to a deeper more open reen.	Yes
17/10/2014	654	No access from east field. West fenced, overgrown banks with nettles, bramble. Difficult to access. Hand search on west side of fence. Horse grazed.	Yes
20/10/2014	63	Limited access due to scrub	Yes

Date	Waterbody number	Limitation to survey	Was a complete assessment carried out?
20/10/2014	64	Limited access due to dense scrub	Yes
20/10/2014	62	Dry ditch limited access	Yes
20/10/2014	9999	Limited access due to bramble.	Yes
20/10/2014	863	Ditch inaccessible	No
21/10/2014	1391	Water body surrounded by scrub.	Yes
21/10/2014	51	Recently managed on east bank. Scrubby woodland to east, fields to west. Reen flowing, water turbid and brown. Water quality unknown due to high sediment load.	Yes
21/10/2014	53	Inaccessible due to thick vegetation on both banks. Adjacent to scrubby woodland	Yes
21/10/2014	78	Recently managed, all potential evidence destroyed by the bank management. Works to the north.	Yes
21/10/2014	494	Heavily poached by livestock. Ditch running through livestock field.	Yes
21/10/2014	493	Dense vegetation limits survey. Where there are gaps in the vegetation, the bankside has been poached. Livestock grazing on both sides	Yes
21/10/2014	1094	Largely inaccessible due to dense vegetation. Where open, highly poached by cattle	Yes
21/10/2014	1165	Adjacent and through to farm and run down sheds. Ditch virtually dry. Shaded.	Yes
21/10/2014	321	High banks, sometimes vertical. Following storms water level has risen.	Yes
21/10/2014	1104	Poached in areas. Livestock on both sides.	Yes
21/10/2014	1162	Unfenced on north side, poached by livestock and managed.	Yes
21/10/2014	1001	Recently managed reen.	Yes
21/10/2014	639	Bank not very accessible, steep and well vegetated, platform on southern bank too steep to inspect	Yes
21/10/2014	650	Bank not very accessible, steep and well vegetated.	Yes
21/10/2014	842	Bank not very accessible, steep and well vegetated.	Yes

Date	Ate Waterbody number Limitation to survey		Was a complete assessment carried out?	
21/10/2014	954	Bank not very accessible, steep and well vegetated, bridge checked for signs	Yes	
21/10/2014	971	Bank not very accessible, steep and well vegetated.	Yes	
21/10/2014	686	Dry ditch, inaccessible in places due to double hedge.	Yes	
21/10/2014	319	Steep almost vertical banks make areas of ditch inaccessible. Heavily poached, steep bank and raised water level limited survey.	Yes	
22/10/2014	6487	Fenced, full access not gained, survey done from other side of fence.	Yes	
22/10/2014	615	Dry ditch. Low potential for commuting otters. Shetland ponies grazing field	Yes	
22/10/2014	634	No water present/overgrown.	Yes	
22/10/2014	644	No water present/overgrown	Yes	
22/10/2014	951	No water present/overgrown	Yes	
22/10/2014	613	Managed reen. Field recently cut. Aquatic plants not present.	Yes	
22/10/2014	647	Steep banks but little food. Recently managed reen.	Yes	
22/10/2014	648	Dry offshoot to 647, then becomes shallow and covered in duckweed.	Yes	
22/10/2014	1150	Mainly dry	Yes	
22/10/2014	908	Overgrown, little water, not very accessible due to bramble.	Yes	
22/10/2014	937	Recently managed on west bank. Mostly dry. Where water present it is less then 15cm deep	Yes	
22/10/2014	892	Inaccessible due to barb wire/bramble	Yes	
22/10/2014	963	Largely inaccessible - bramble	Yes	
22/10/2014	778	Manmade banks not suitable for burrows.	Yes	

Date	e Waterbody number Limitation to survey		Was a complete assessment carried out?	
22/10/2014	777	Overgrown by trees and scrub - inaccessible. Neighbouring banks manmade not suitable for burrows	Yes	
22/10/2014	1128	Approached from the east and surveyed for 10m until dense vegetation hindered access.	Yes	
22/10/2014	1126	Inaccessible due to dense vegetation	No	
22/10/2014	638	Dense scrub limits access. Ditch managed, common reed has been cut back recently.	Yes	
22/10/2014	990	Recently managed ditch. Does not appear to hold as much water as the section further South. Phragmites	Yes	
22/10/2014	1132	Tops of banks man-made - rubble	Yes	
23/10/2014	661	Only short section surveyed due to presence of aggressive sheep.	Yes	
23/10/2014	846	Stone banks present in sections of the water body	Yes	
23/10/2014	1316	South bank has a layer of manmade rubble/tarmac - potential constraint to burrowing.	Yes	
23/10/2014	465	Heavily overgrown double hedged in places.	Yes	
23/10/2014	768	Inaccessible from north due to overgrown brambles. Manmade structures present.	No	
23/10/2014	1174	Inaccessible banks. Spot check on bridge. Concrete banks present to support bridge.	Yes	
23/10/2014	766	Inaccessible due to dense vegetation	No	
23/10/2014	1309	Inaccessible due to dense vegetation	No	
23/10/2014	1304	Inaccessible due to dense vegetation	No	
23/10/2014	1305	Inaccessible due to dense vegetation	No	
23/10/2014	1332	Inaccessible due to dense vegetation	No	
23/10/2014	1318	Inaccessible, no access	No	
23/10/2014	1319	Inaccessible, no access	No	

Date	ate Waterbody number Limitation to survey		Was a complete assessment carried out?	
23/10/2014	831	Inaccessible due to land access. Spot check from north vantage point carried out. Sheep present in field.	No	
23/10/2014	1340	Flooded ditch, sheep present, poached bank	Yes	
24/10/2014	987	Inaccessible and overgrown. Horses in field, bulrush present in damp field.	No	
24/10/2014	986	Dry field ditch. Horse grazed field.	Yes	
24/10/2014	789	Surveyed from road verge - no access to field. Litter in reen. Road verge managed. Phragmites cut.	Yes	
24/10/2014	1132	Unidentified droppings due to water/rain washing away. East of the pond dense with bramble scrub. Water vole feeding station.	Yes	
24/10/2014	1225	Shaded habitat. Scrub hindering access to whole length of reen.	Yes	
24/10/2014	1242	No access, thick bramble and scrub	No	
27/10/2014	1217	Inaccessible due to dense vegetation	No	
27/10/2014	1217	Inaccessible due to dense vegetation	No	
27/10/2014	1216	Inaccessible due to dense vegetation	No	
27/10/2014	1218	Inaccessible due to dense vegetation	No	
27/10/2014	1235	Inaccessible due to dense vegetation	No	
27/10/2014	779	Inaccessible (traveller site close by). Managed recently on west bank.	Yes	
27/10/2014	576	Inaccessible, fence on west and thick scrub on east. Spot checks done where possible. Some stretches overgrown with Phragmites.	Yes	
27/10/2014	577	Sheep grazed, access difficult from east due to dense scrub cover from brambles. Spot checks done where possible.	Yes	
27/10/2014	574	Reen has been recently managed on the side close to the road, litter in reen, potential corridor for otter.	Yes	
28/10/2014	1251	Cows present in field with signs of poaching present. Roadside verge recently managed.	Yes	

Date	Waterbody number Limitation to survey		Was a complete assessment carried out?	
28/10/2014	570	Cattle grazing. Overgrown difficult to access due to fencing.	Yes	
28/10/2014	570	Cattle grazing. Overgrown difficult to access due to fencing.	Yes	
28/10/2014	572	Inaccessible due to hedges and fence and no land access on south side.	No	
28/10/2014	557	Boat survey. Both banks managed. Poached.	Yes	
28/10/2014	580	Livestock grazing though none currently present. Banks recently managed.	Yes	
28/10/2014	565	No boat survey carried out due to low water level and poor water quality. Adjacent to road.	Yes	
28/10/2014	566	Boat survey not carried out due to low water level and access (bull in field). Moderate water quality. Adjacent to road.	Yes	
28/10/2014	578	Boat survey. At time of survey bankside management was being carried out.	Yes	
28/10/2014	1095	Inaccessible due to scrub. Treeline and hedge. Spot checks undertaken where possible.	Yes	
28/10/2014	1177	Poached banks. Stretches of ditch covered on both side by scrub (bramble and young trees).	Yes	
28/10/2014	1178	Bank has been recently managed.	Yes	
29/10/2014	470	Inaccessible due to dense vegetation.	Yes	
29/10/2014	683	Boat survey not carried out due to lowered water level in reen and dense Macrophyte cover.	No	
29/10/2014	1170	Boat survey not carried out due to lowered water level in reen and dense. Macrophyte cover.	No	
29/10/2014	786	Boat survey not carried out due to lowered water level in reen and dense Macrophyte cover.	No	
29/10/2014	652	Boat survey not conducted. Lowered water level. Dense aquatic vegetation.	No	
29/10/2014	639	Boat survey not carried out. Lowered water level in a stretch, dense aquatic vegetation. No suitable entry location.	No	
29/10/2014	421	Dry ditch in and adjacent to woodland.	Yes	
29/10/2014	957	Cattle poached in some crossing points, little water - more damp/marshy.	Yes	

Date	ate Waterbody number Limitation to survey		Was a complete assessment carried out?	
29/10/2014	850	Boat survey not conducted due to poor tracks leading to site - hindering transportation to reen.	No	
29/10/2014	6140	Difficult to survey due to dense vegetation. Potential use of water body as corridor / foraging site.	Yes	
29/10/2014	1132	Boat survey not carried out due to suspected water contamination. (Sulphur)	Yes	
29/10/2014	808	Little water, very shaded	Yes	
29/10/2014	909	Only accessible in small gaps	Yes	
29/10/2014	959	Only accessible in small gaps	Yes	
29/10/2014	910	Only accessible at end because bramble covers 90% of it	Yes	
29/10/2014	910	Only accessible at end because bramble covers 90% of it	Yes	
29/10/2014	14 490 Dry ditch. Could be used by Otters as a corridor / refuge. Ditch is located between two residential houses so thorough survey was not possible.		Yes	
30/10/2014	936	Continuation of 935. Inaccessible on parts due to concrete banks and fast flow of water	Yes	
30/10/2014	944	Spot checks done where possible. Overgrown by nettle and trees in stretches. Land access not granted. Done from PRoW.Poached banks. Natural dam from log piles	Yes	
30/10/2014	917	No land access. Horses in field.	No	
30/10/2014	849	Mostly inaccessible	Yes	
30/10/2014	1382	Boat survey undertaken. Difficult to get to northern bank due to dense sweet reed grass cover.	Yes	
30/10/2014	692	Dry ditch. Fencing with hedgerow.	Yes	
30/10/2014	689	Hedge on south west/road side. No access from north West Bank (private land). Inaccessible but spot checks carried out where possible.	Yes	
30/10/2014	691	Difficult to assess banks due to no land access away from PRoW.	No	
30/10/2014	639	Boat surveys undertaken. Water quality very anoxic sediments.	Yes	

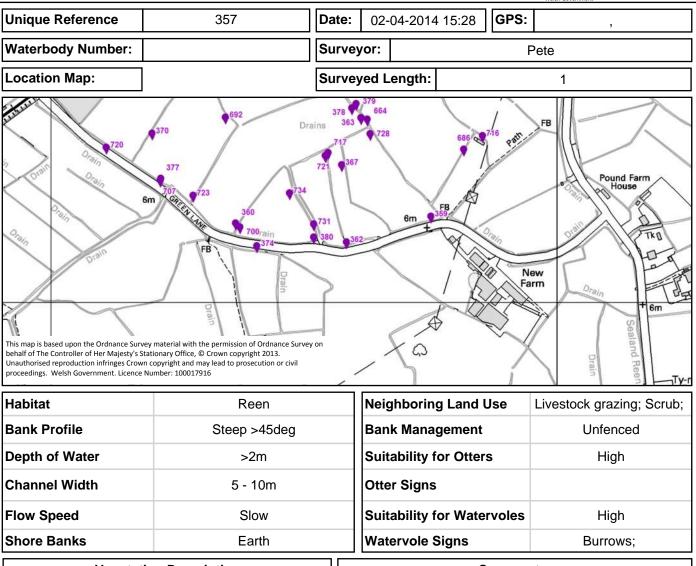
Date	Waterbody number		Was a complete assessment carried out?
30/10/2014	815	Mostly inaccessible, dry	Yes
30/10/2014	885	Dry ditch	Yes
30/10/2014	7	Low water levels, damp and dry in places. Near woodland, next to motorway. Cow pats in field indicate that the land is used for grazing. Litter dumped in field.	Yes
30/10/2014	932	Very overgrown, mostly inaccessible	Yes
31/10/2014	1141	Inaccessible due to scrub. Very shallow banks so less suitable for water vole	Yes
31/10/2014	1210	Inaccessible. Surveyed for GCN 2010. Very shallow banks.	Yes
31/10/2014	1070	Inaccessible due to scrub	No
31/10/2014	1221	Inaccessible due to dense vegetation	No
31/10/2014	1227	Inaccessible due to scrub	No
31/10/2014	881	Barb wire fence and bramble prevented searching bank, evidence found 1-2m from Ditch. Little water in ditch itself. Survey constrained by limited access to ditch / dense vegetation	Yes
31/10/2014	1218	Inaccessible due to scrub	No
31/10/2014	1217	Inaccessible due to scrub	No
31/10/2014	1235	Inaccessible due to scrub	No
31/10/2014	1295	Poor water quality. Water is a creamy-grey colour. Potential use of marginal vegetation by otters but due to poor water quality, the water body has negligible use by Otter & Water Vole in its current state.	Yes
31/10/2014	922	Recently dredged limited the survey effort.	Yes
31/10/2014	451	No boat survey undertaken as too low water and clogged up	No
31/10/2014	322	Pond surrounded by security fencing, so water body was surveyed from PRoW.	Yes
31/10/2014	447	No boat survey undertaken as too low water and clogged up	No

Date	Waterbody number		
31/10/2014	485	No boat survey undertaken as too low water and clogged up.	No
31/10/2014	330	Pond is inaccessible due to security fencing and dense scrub bordering water body.	Yes
31/10/2014	685	Poached bankside.	Yes
31/10/2014	317	Poached on one side of bank, hedgerow on other bank. Sea Wall Reen.	Yes

Appendix D

Recording sheets from the Riparian Mammal surveys 2014

D1 Recording sheets from the Riparian Mammal surveys 2014



Vegetation Description	Comments:
Grass recently cut	Poss water vole burrow on far bank seen during ex phase survey

Photo 1



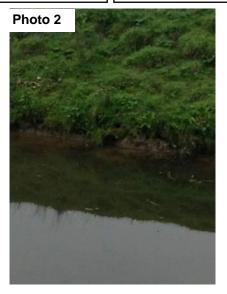
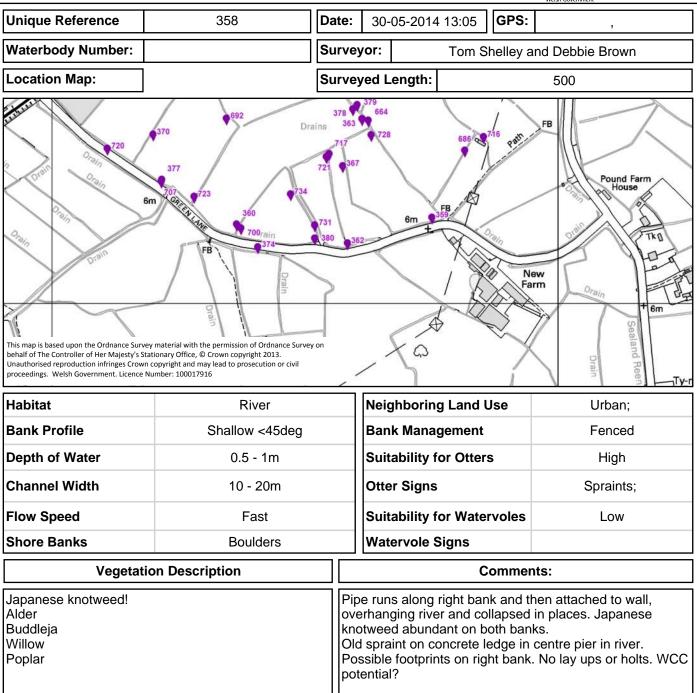


Photo 3















						Welsh Government
Unique Reference	359	Date:	02-	07-2014 16:27	GPS:	51.543029, -3.01438
Waterbody Number:	276	Survey	/or:			Pip
Location Map:			∕ed L	ength:		40
Fin them Fin						nd Farm ouse Tkg Drain Tkg New House Farm
Habitat	Ditch	ل,	Neiç	hboring Land	Use	Livestock grazing;
Bank Profile	Flat <10 degrees		Ban	k Management		Unfenced
Depth of Water	<0.5m		Suit	ability for Otter	S	Negligible
Channel Width	1 - 2m		Otte	r Signs		
Flow Speed	Still		Suit	ability for Wate	rvoles	Negligible
Shore Banks	Earth		Wate	ervole Signs		
Vegetation Description				C	commer	nts:
Reed choked						
Photo 1	Photo 2			Ph	oto 3	

Photo 1

Photo 2



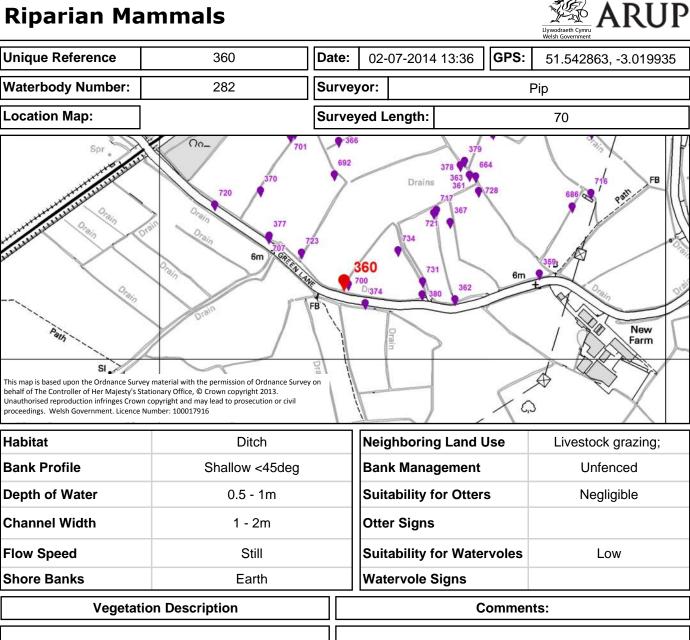


Photo 1

Photo 2



361

277

5

37:

701

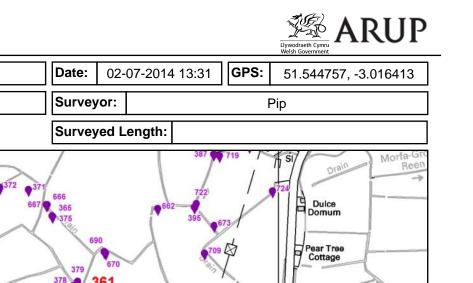
Unique Reference

Location Map:

FB

Waterbody Number:

Oo



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Habitat	Ditch	Neighboring Land Use	Livestock grazing;
Bank Profile	Flat <10 degrees	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Negligible
Shore Banks	Earth	Watervole Signs	

Vegetation Description Comments:

Photo 1

Photo 2





Unique Reference	362	Date:	02-07-2014 15:54	GPS:	Welsh Government 51.542557, -3.016778
Waterbody Number:	279	Survey	· · · · · · · · · · · · · · · · · · ·		
				F	Pip
Location Map:		Surve	ved Length:		
This map is based upon the Ordnance Surv behalf of The Controller of Her Majesty's S	free material with the permission of Ordnance Survey tationary Office, © Crown copyright 2013. In copyright and may lead to prosecution or civil		664 728 686 S 60 362 6m 362 6m 4 359 4 362	Ner	
Habitat	Ditch		Neighboring Land U	se	Livestock grazing;
Bank Profile	Flat <10 degrees		Bank Management		Unfenced
Depth of Water	<0.5m		Suitability for Otters	5	Negligible
Channel Width	1 - 2m		Otter Signs		
Flow Speed	Still		Suitability for Water	voles	Negligible
Shore Banks	Earth		Watervole Signs		
Vegetat	ion Description		Co	ommen	ts:
Hedge ditch					



Photo 2



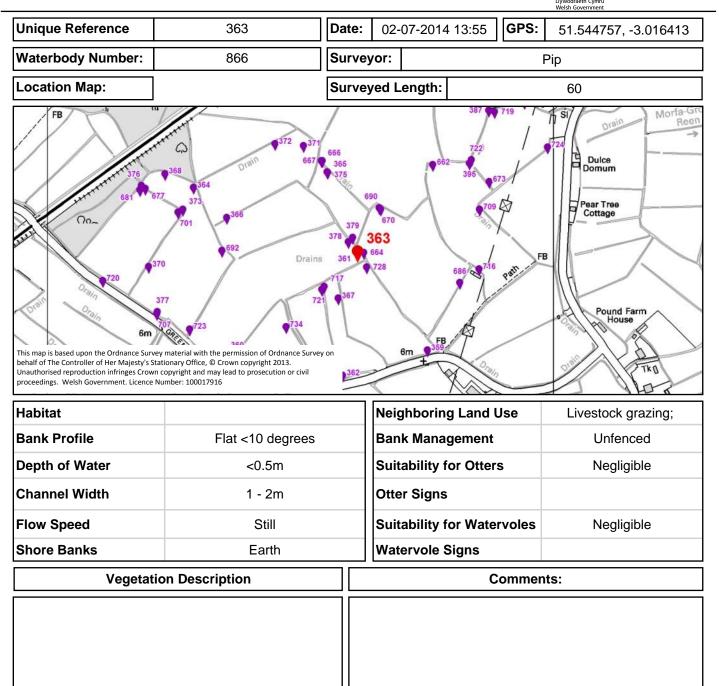


Photo 1

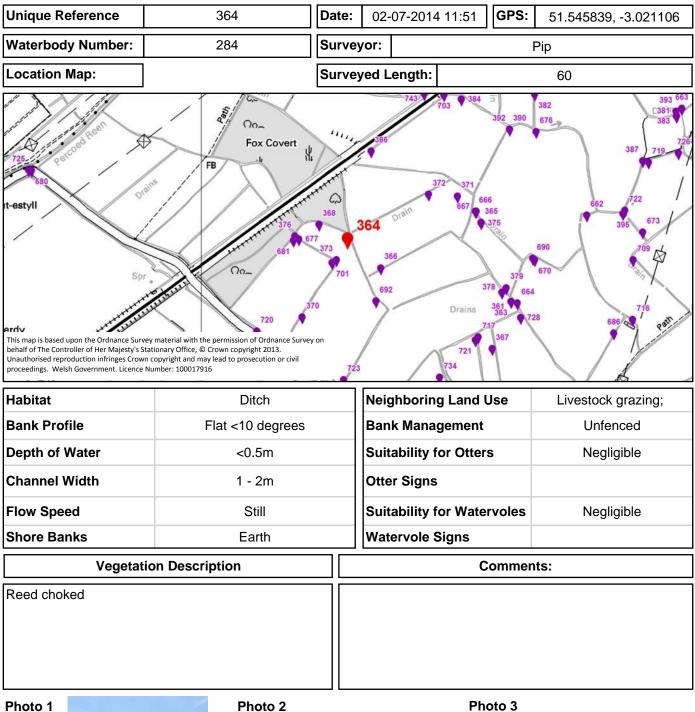
Photo 2

Photo 3

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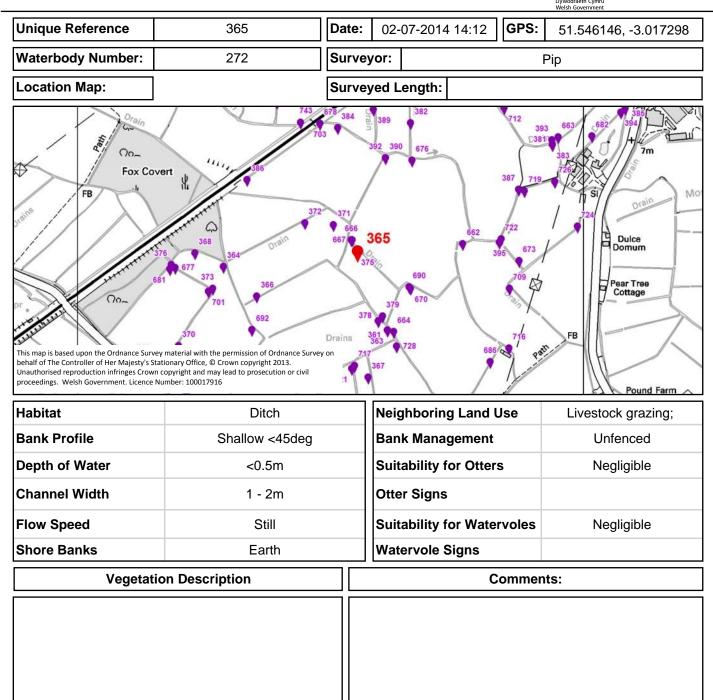


Photo 1

Photo 2

Photo 3



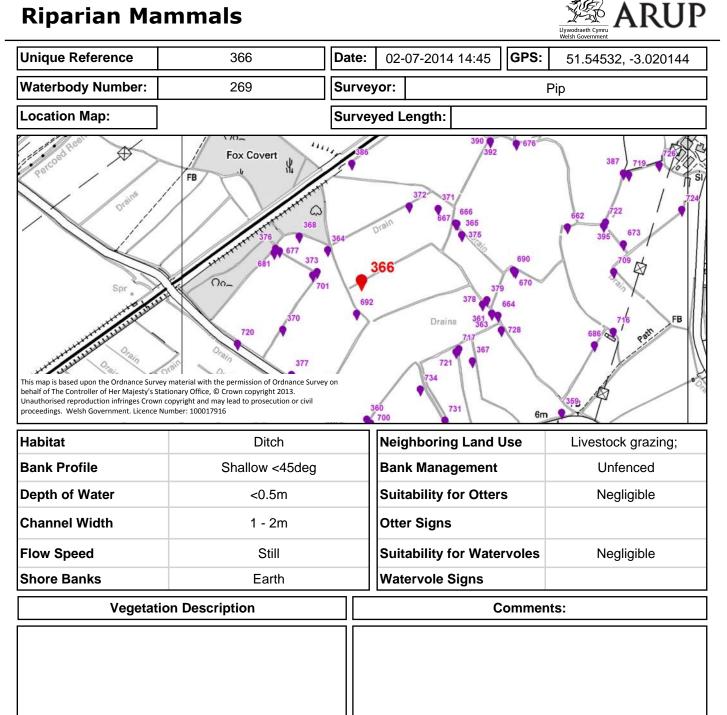
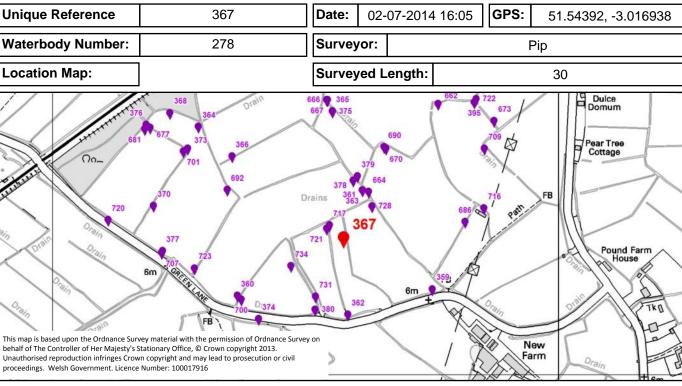




Photo 2





Ditch	Neighboring Land Use	Livestock grazing;
Flat <10 degrees	Bank Management	Unfenced
<0.5m	Suitability for Otters	Negligible
1 - 2m	Otter Signs	
Still	Suitability for Watervoles	Negligible
Earth	Watervole Signs	
	Flat <10 degrees <0.5m 1 - 2m Still	Flat <10 degreesBank Management<0.5m

Vegetation Description	Comments:	
Hedge		







Photo 3



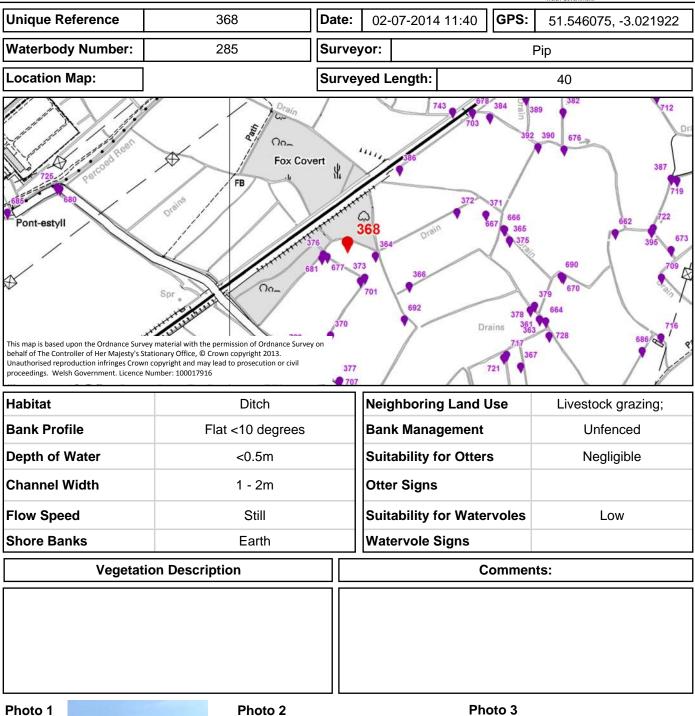
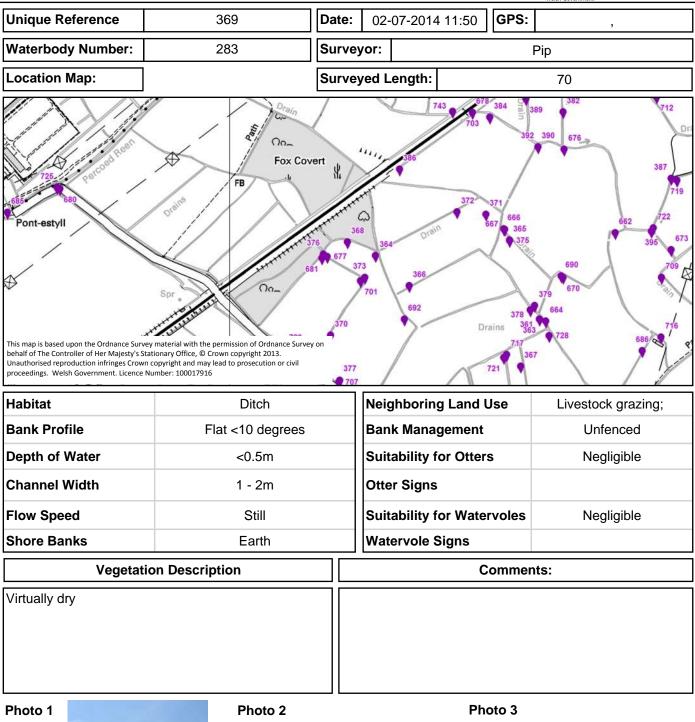




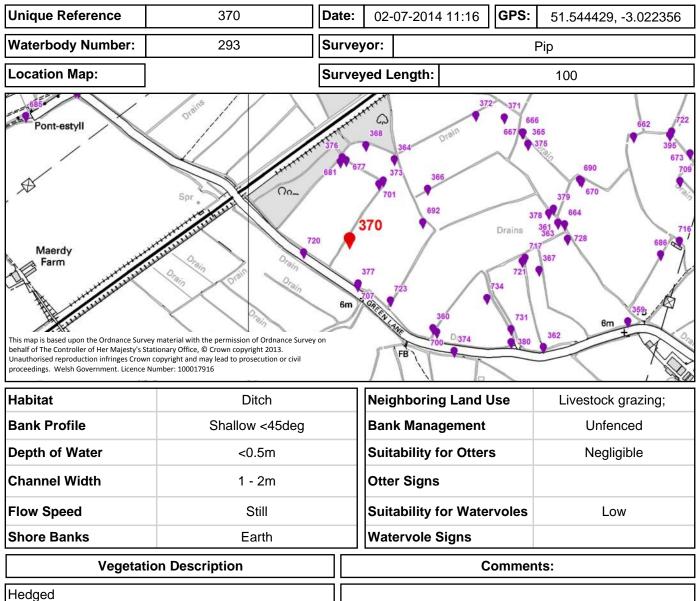
Photo 2

















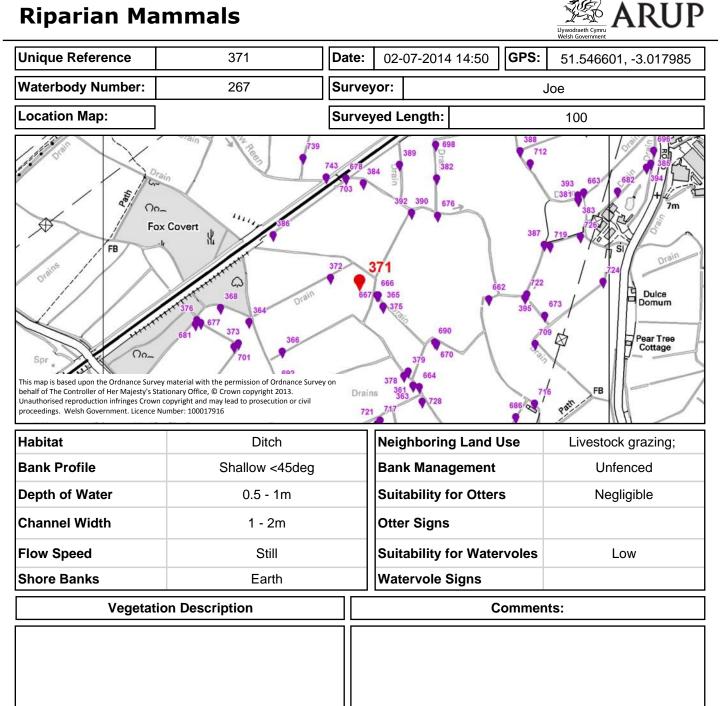


Photo 1

Photo 2





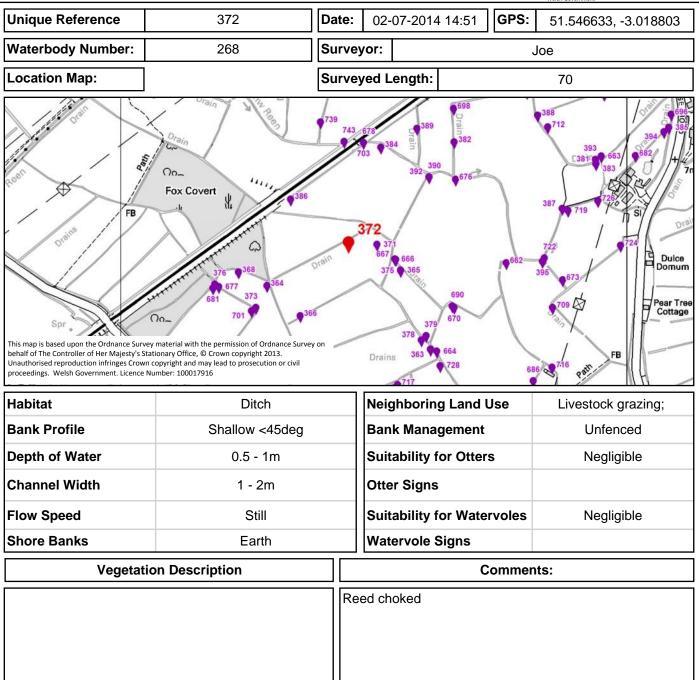


Photo 1







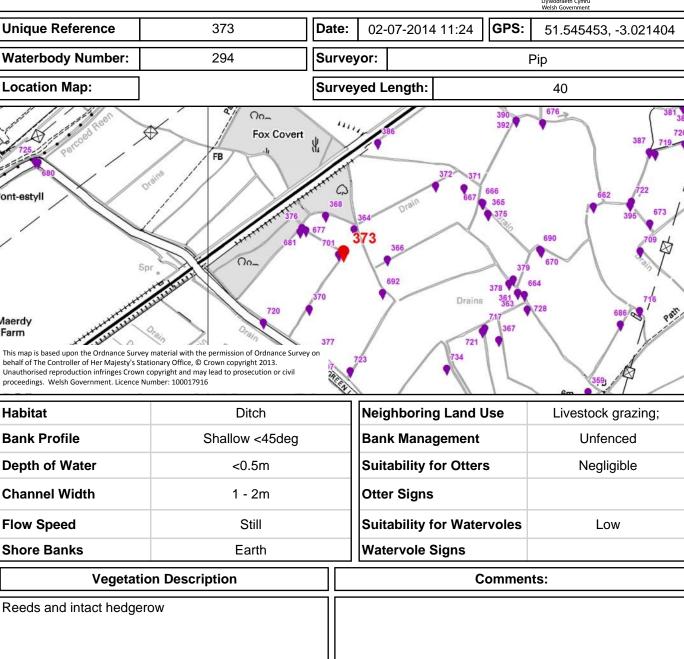




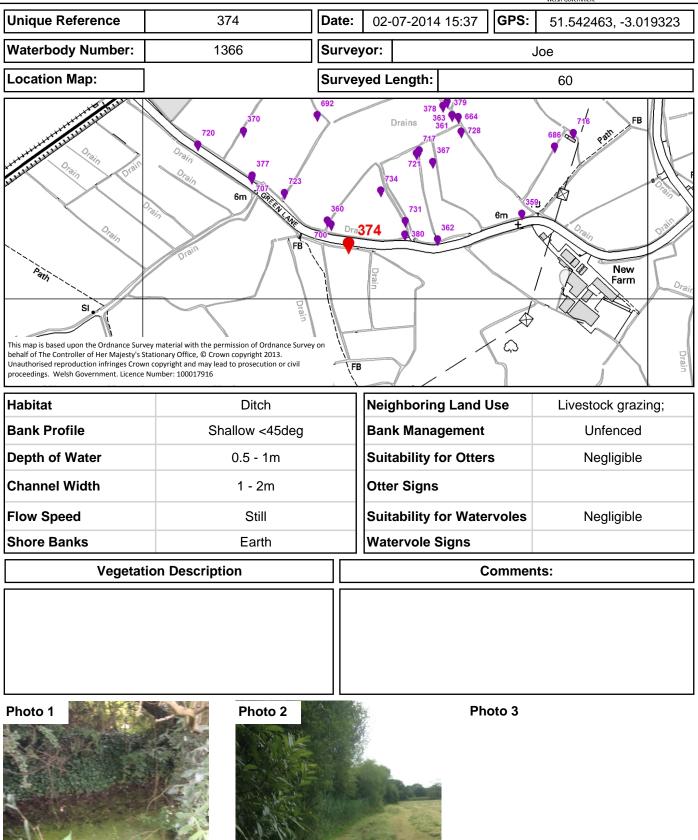
Photo 2

Photo 3

🖗 ARUP











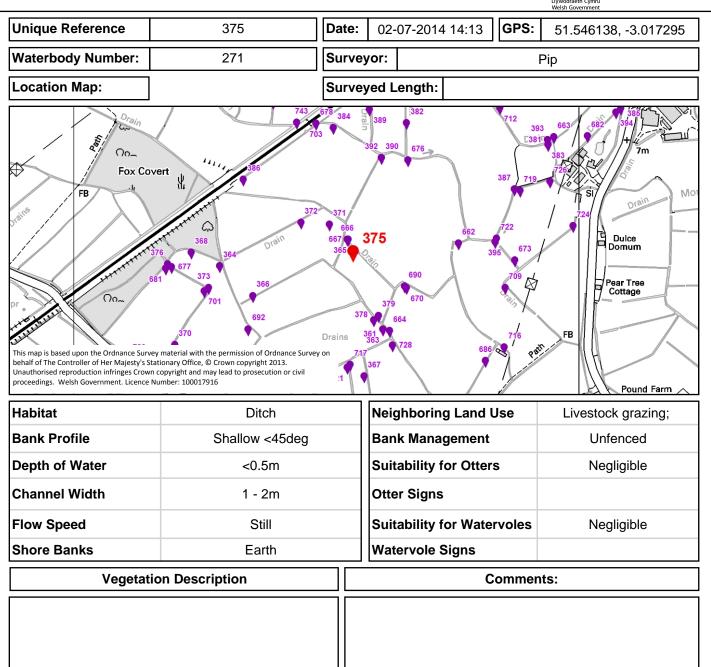




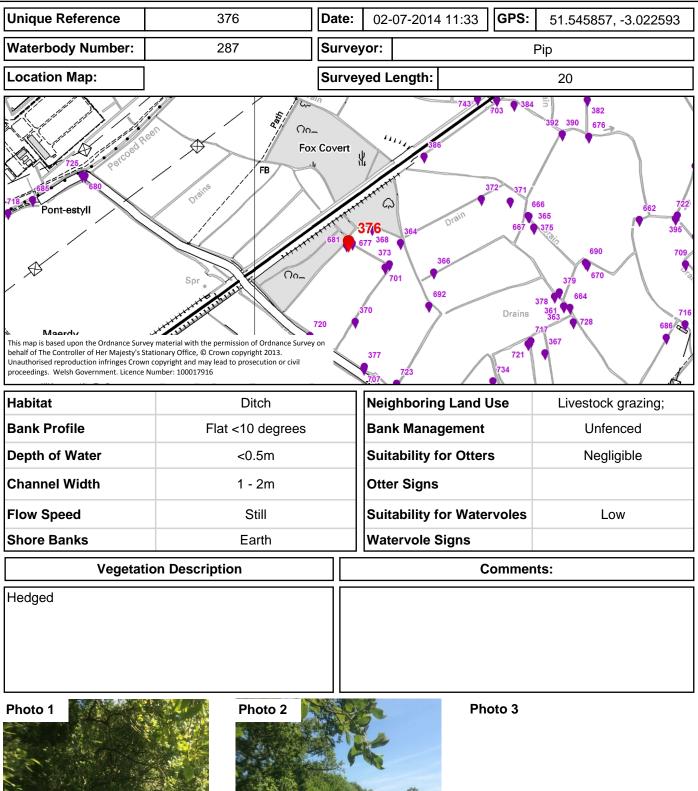
Photo 2

Photo 3

ARUP







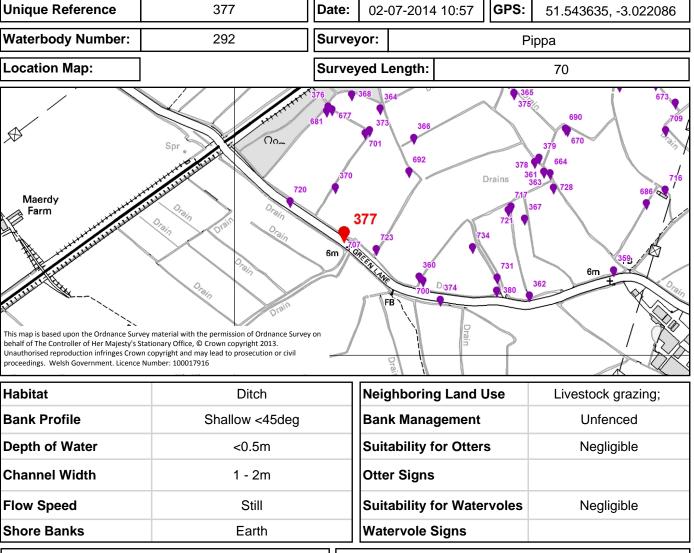






Photo 2

Photo 3

🖗 ARUP

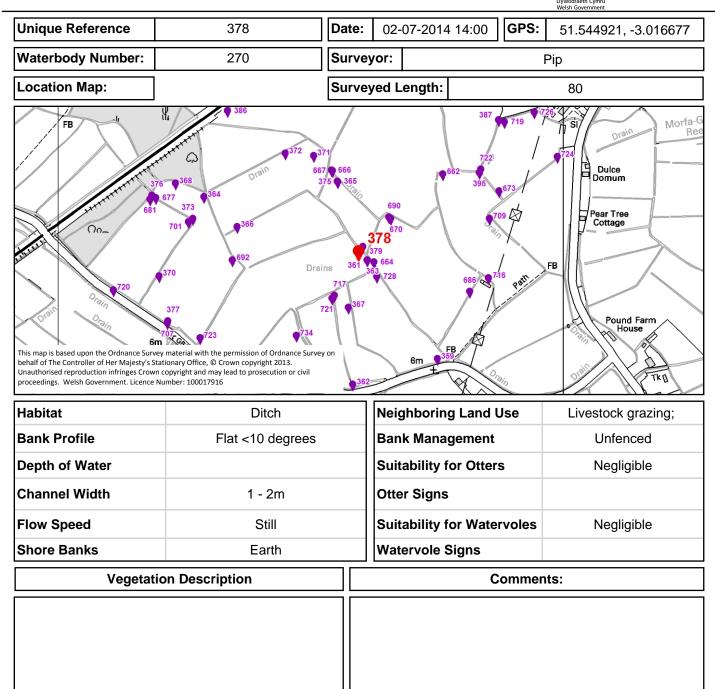


Photo 1

Photo 2

Photo 3

🖗 ARUP



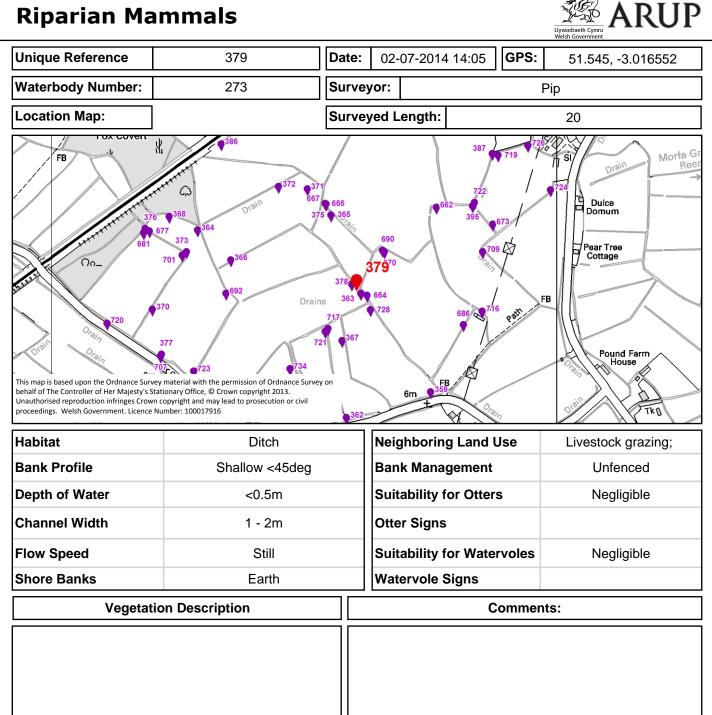




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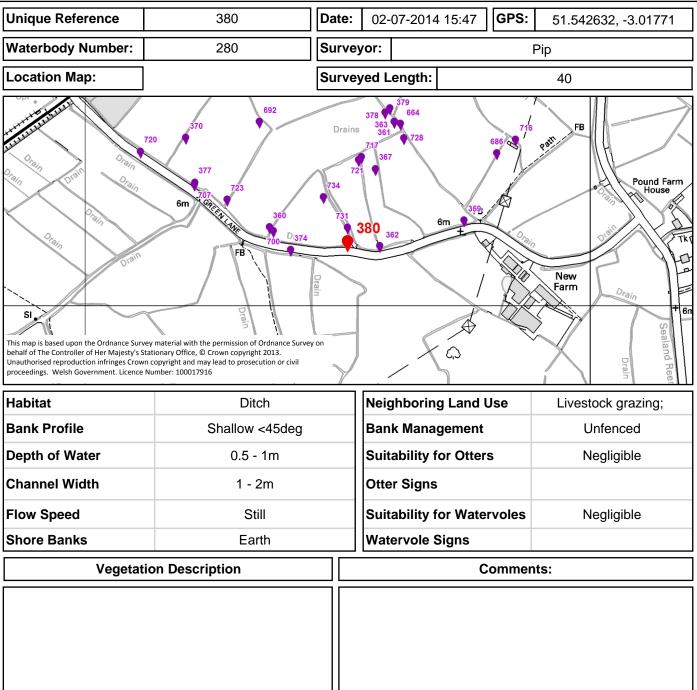


Photo 1

Photo 2



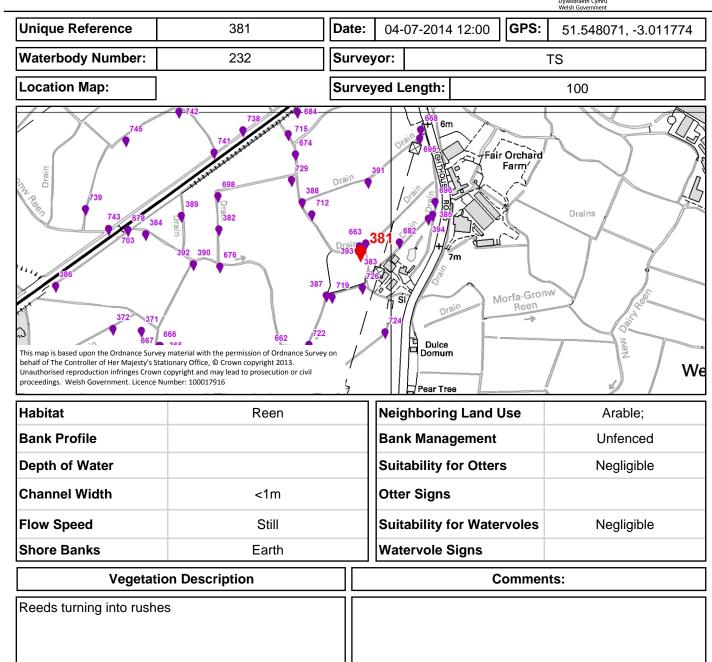




Photo 2

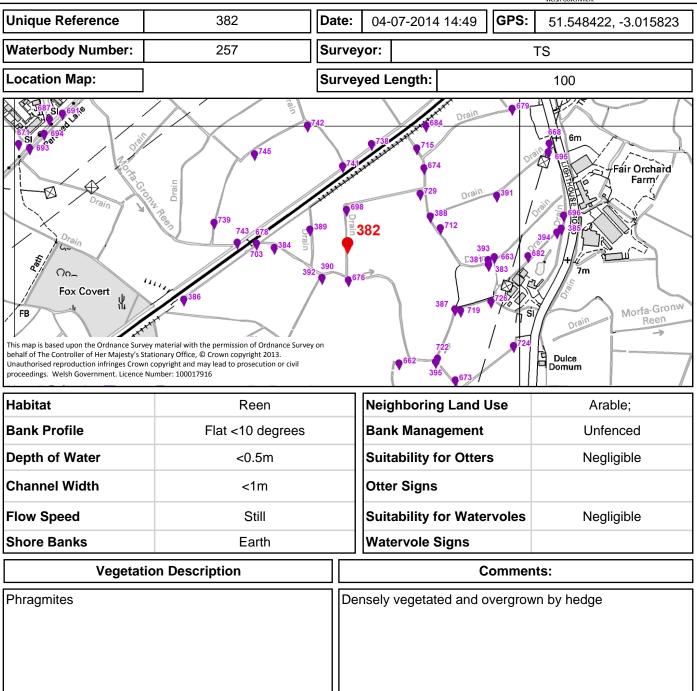
Photo 3

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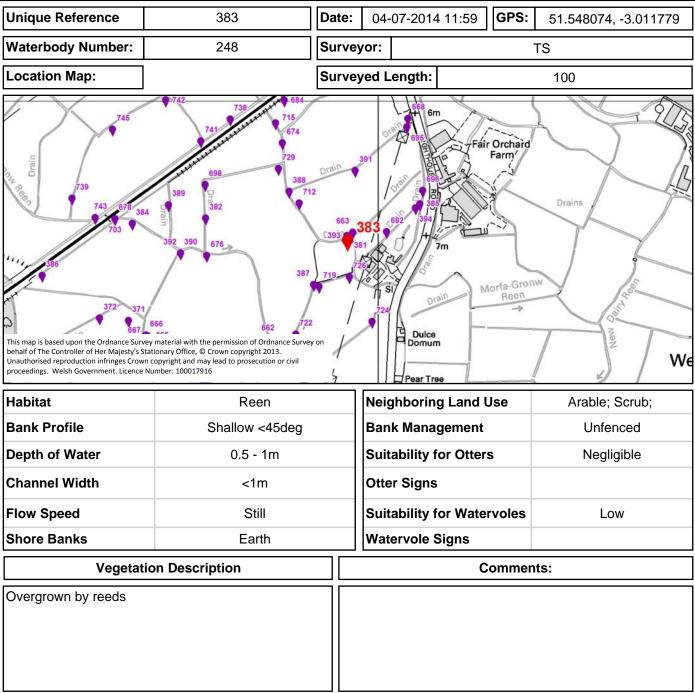
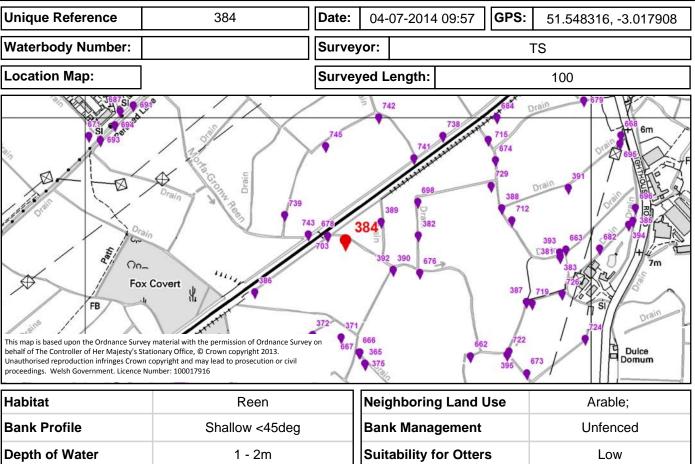


Photo 1

Photo 2





Channel Width	2 - 5m	Otter Signs		
Flow Speed	Still	Suitability for Watervoles	Medium	
Shore Banks	Earth	Watervole Signs		
Vegetation Description		Comments:		
Phragmites, sedges, Frogbit		Potential WV trails through duck	weed	

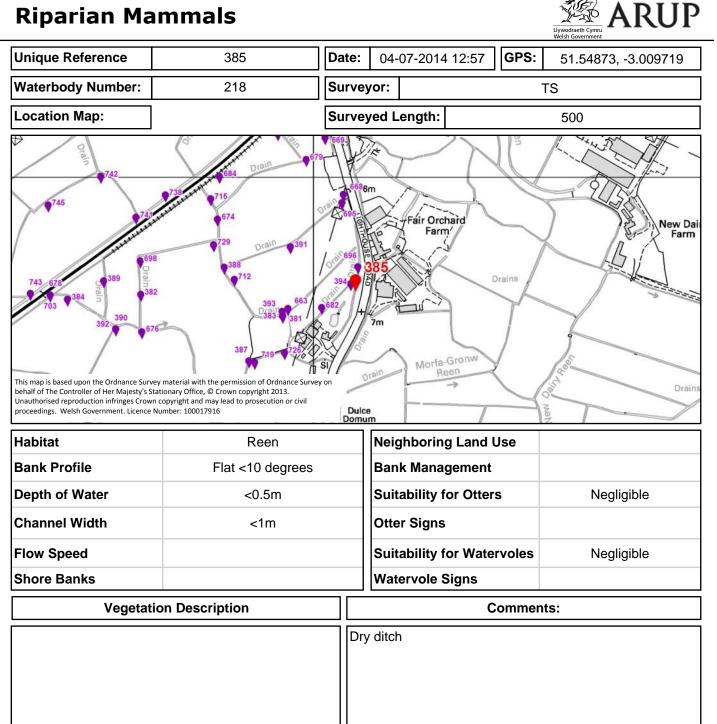








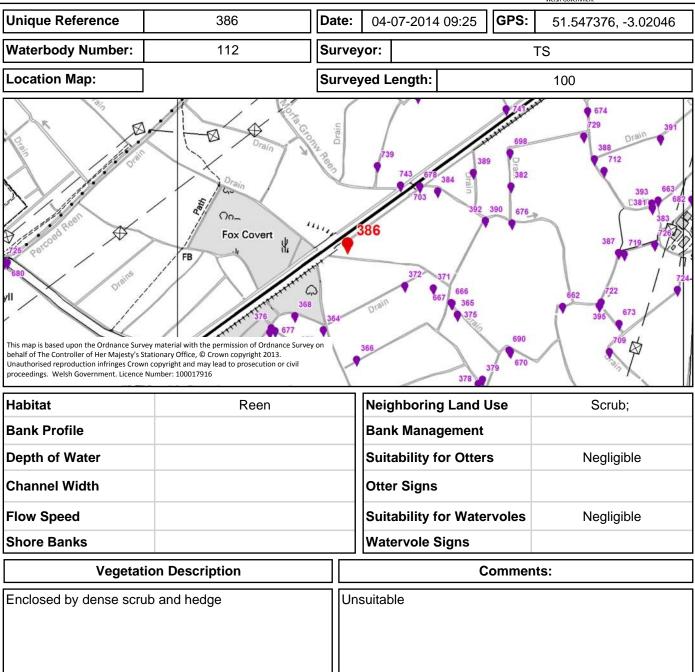




















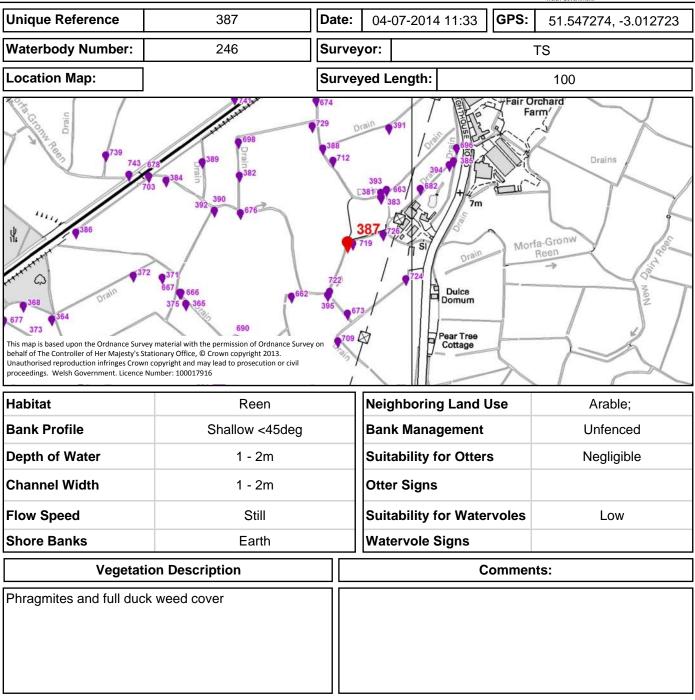
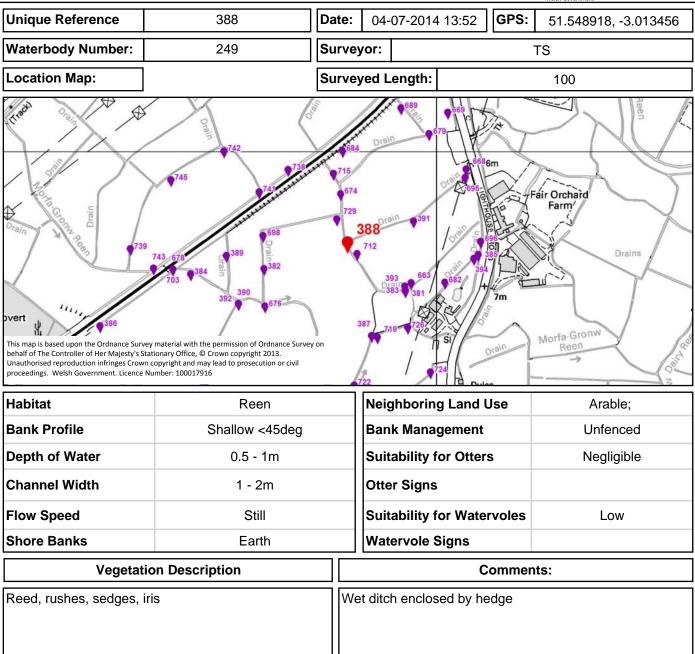




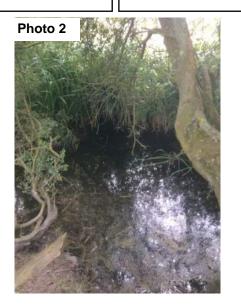
Photo 2





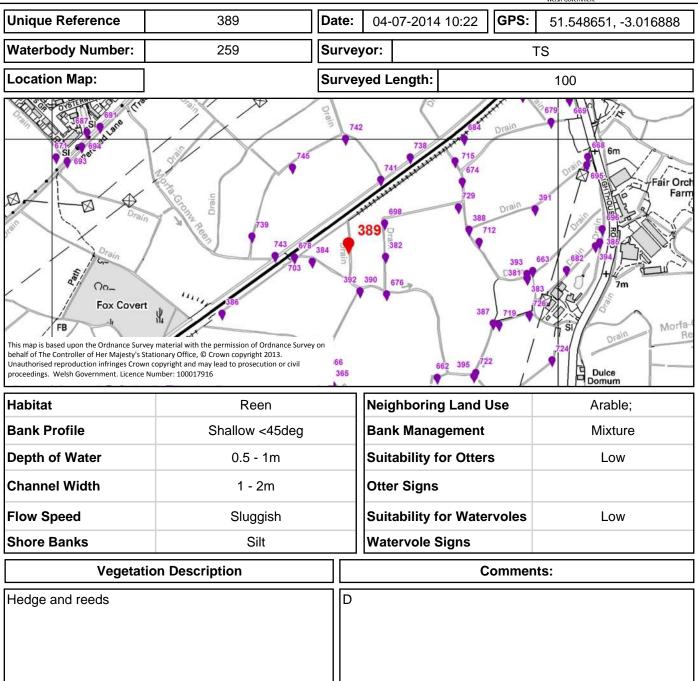










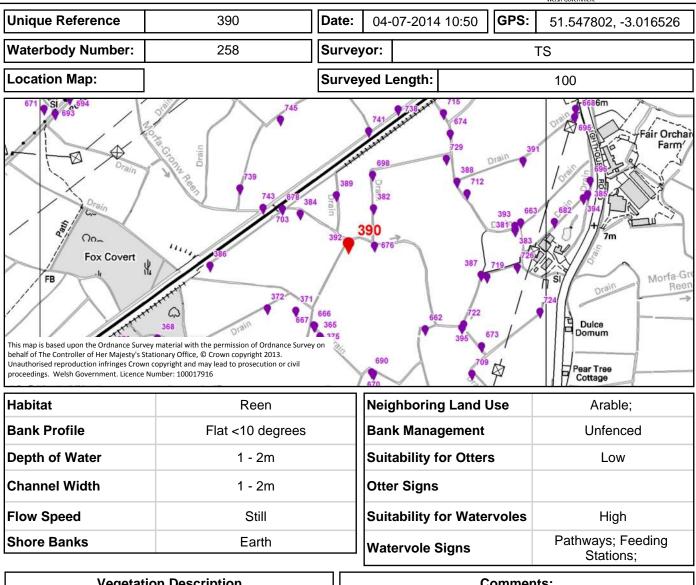












Vegetation Description	Comments:
Sedges, iris, reeds	We'll connected

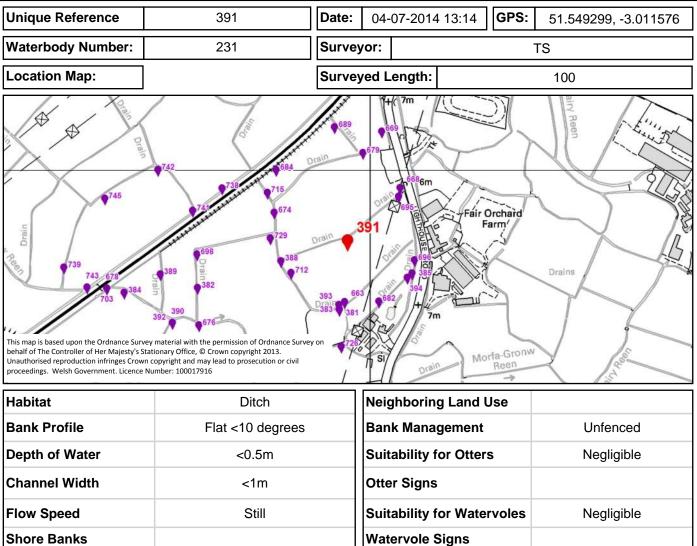












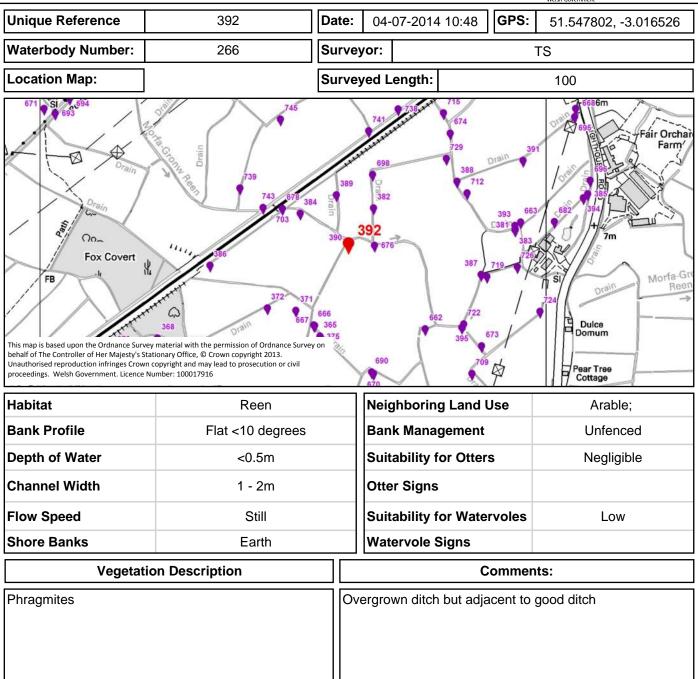
Vegetation Description	Comments:			
	Dry ditch			



Photo 2





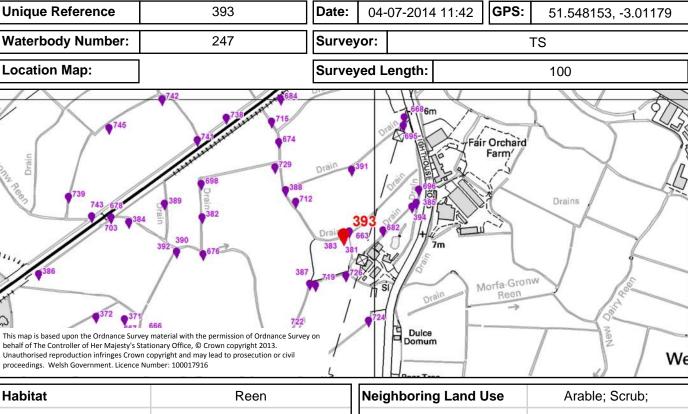












Habitat	Reen	Neighboring Land Use	Arable; Scrub;	
Bank Profile	Flat <10 degrees	Bank Management	Mixture	
Depth of Water	0.5 - 1m	Suitability for Otters	Negligible	
Channel Width	1 - 2m	Otter Signs		
Flow Speed	Still	Suitability for Watervoles	Low	
Shore Banks	Earth	Watervole Signs		

Vegetation Description	Comments:		
Phragmites			

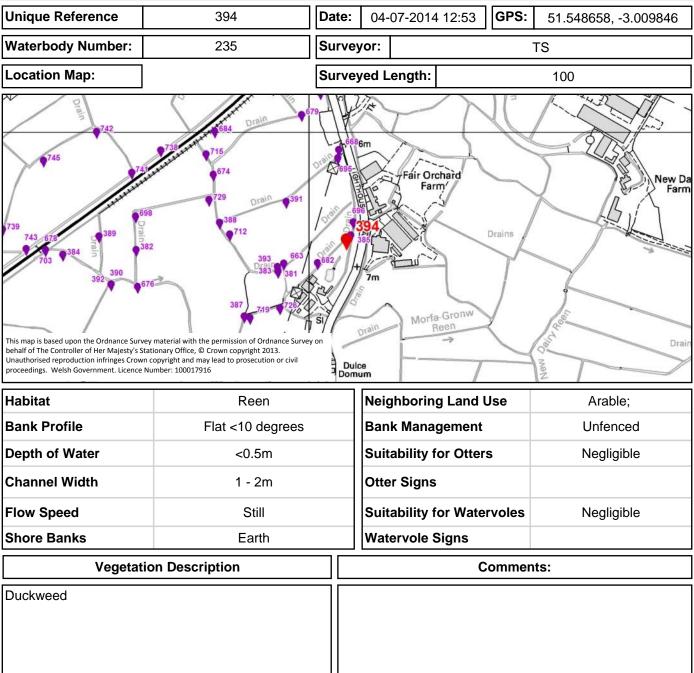


















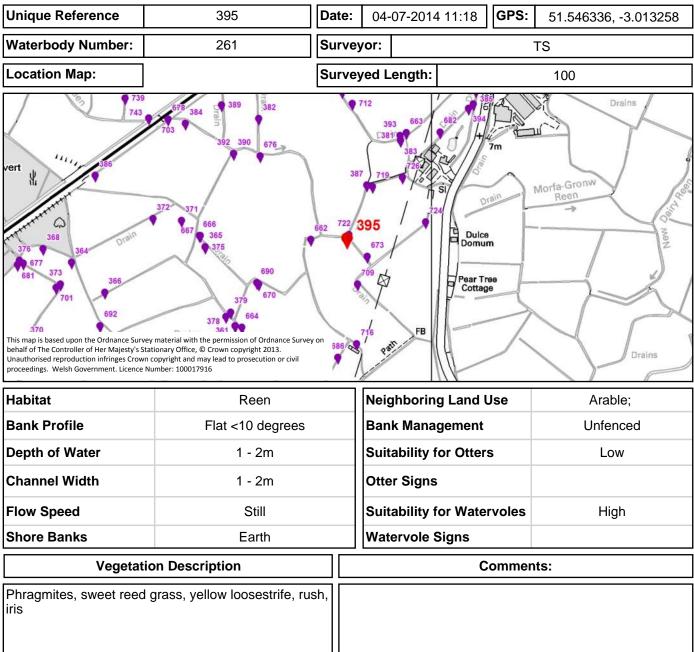
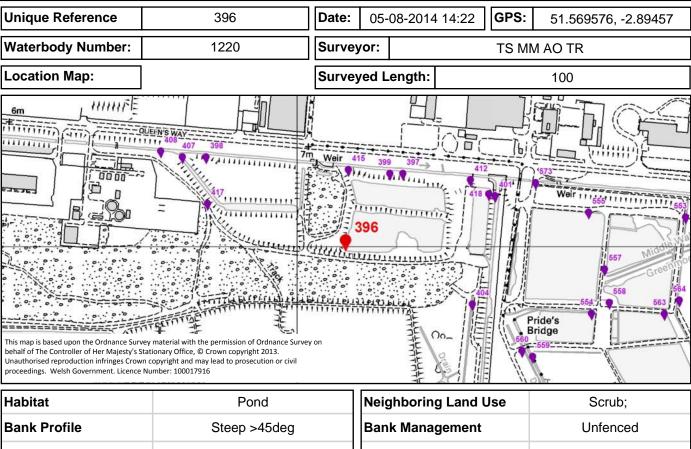






Photo 3



Shore Banks	Stones	Watervole Signs	
Flow Speed		Suitability for Watervoles	Negligible
Channel Width	>20m	Otter Signs	
Depth of Water	<0.5m	Suitability for Otters	Negligible
Bark Frome	Olecp >45deg	Bark management	Officilied

Vegetation Description	Comments:
Budlea and willow herb growing in dry pond	Dry pond

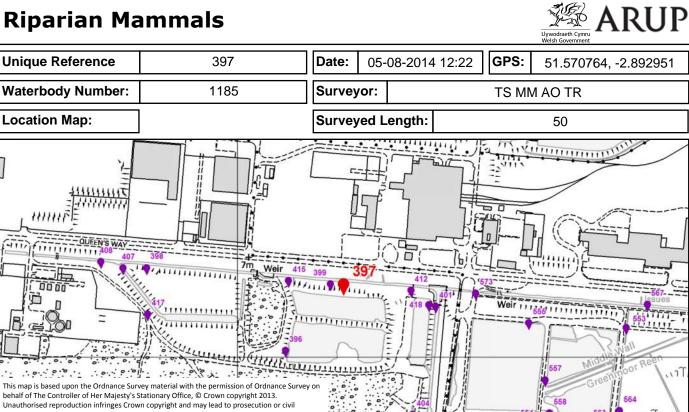






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proceedings. Welsh Government. Licence Number: 100017916



Habitat	Reen	Neighboring Land Use	Scrub;
Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Sluggish	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	Feeding Stations;

Vegetation Description Comments: Phragmites dominated





Photo 3

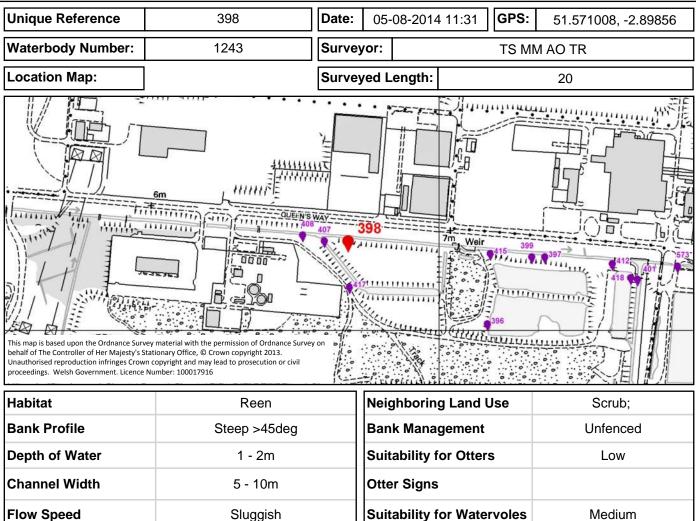
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Latrines; Pathways;

منالم



		0	Feeding Stations;
Vegetation Description		Co	mments:
Phragmites dominated			

Earth

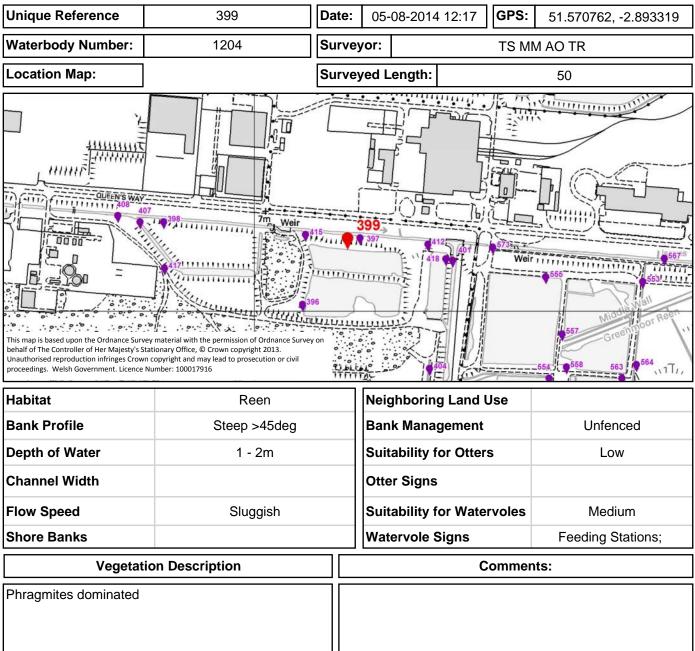


Shore Banks



Watervole Signs

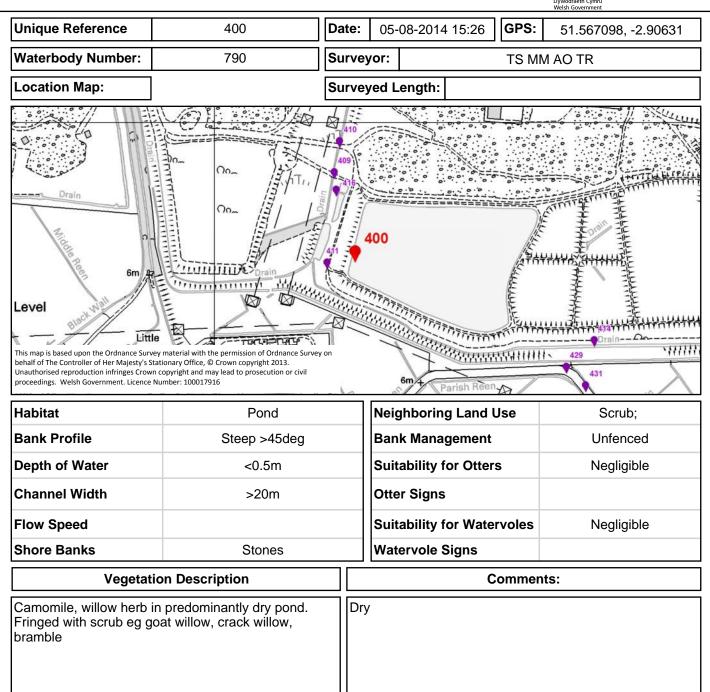




















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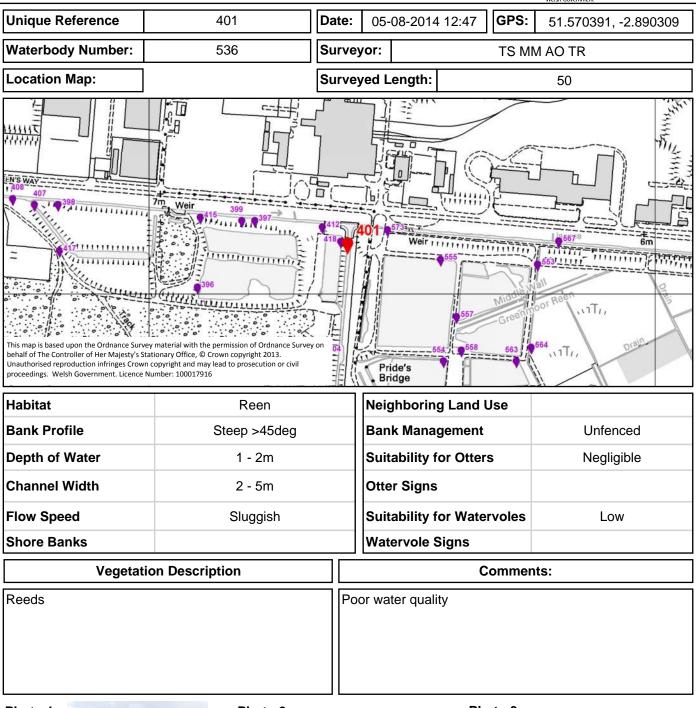
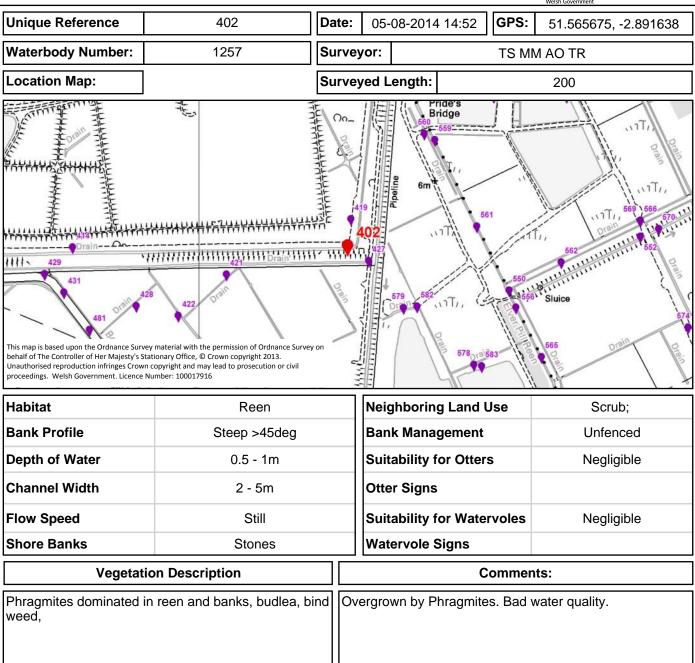




Photo 2





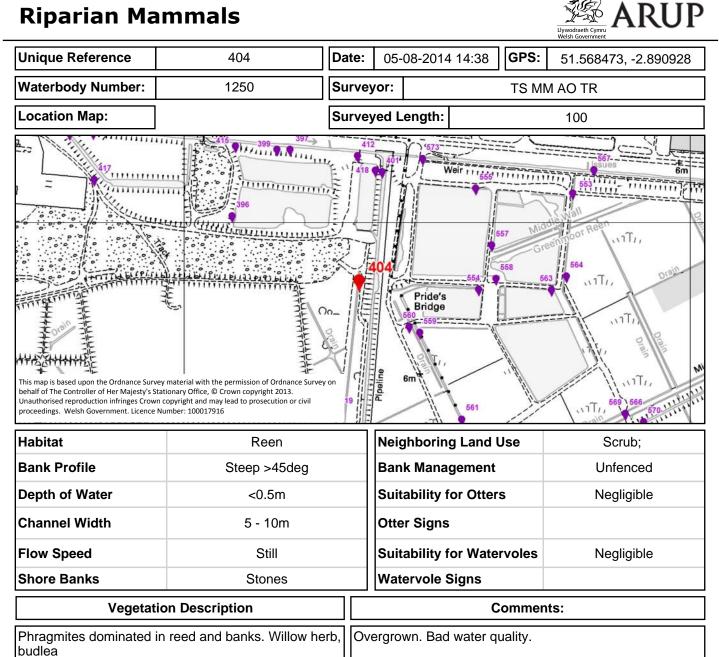








Unique Reference	403	Date:	Date: 05-08-2014 14:57 GPS: ,			
Waterbody Number:	1241	Surveyor: TS MM AO TR		M AO TR		
Location Map:		Surveyed Length:				
431 481 This map is based upon the Ordnance Sur behalf of The Controller of Her Majesty's S	vey material with the permission of Ordnance Survey of Stationary Office, © Crown copyright 2013. In copyright and may lead to prosecution or civil Number: 100017916		Bi 500 Builedia 227 570 582	108's 108's 109 109 100's	565 Drain	Drain Calific Drain
Habitat			Neighborin	g Land Use		
Bank Profile			Bank Mana	gement		
Depth of Water			Suitability f	or Otters		
Channel Width			Otter Signs			
Flow Speed		:	Suitability f	or Watervoles		
Shore Banks			Watervole \$	Signs		
Vegetat	tion Description			Comme	nts:	
Photo 1	Photo 2	No a	ICCESS	Photo 3		





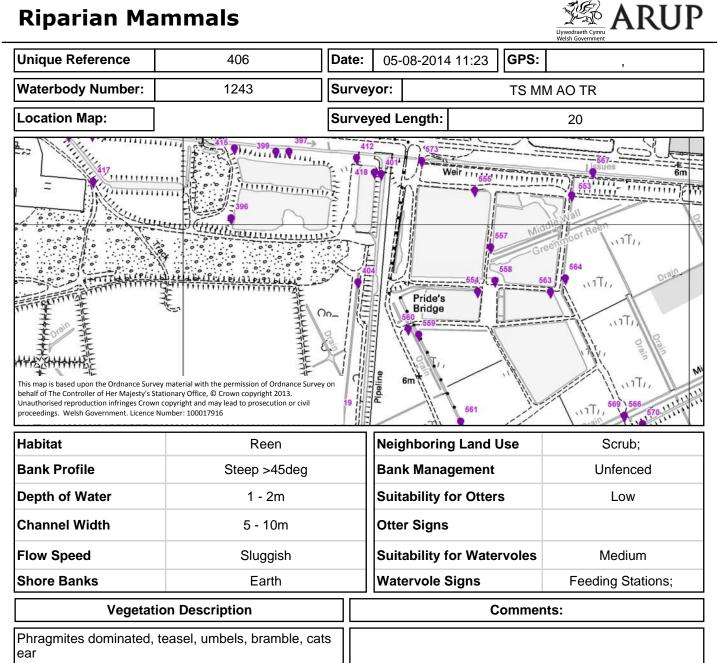




Riparian Ma	ammals					Lywodraeth Cymru Weish Government
Unique Reference	405	Date:	05-	08-2014 16:49	GPS:	3
Waterbody Number:	1258	Survey	or:		TS M	A AO TR
Location Map:		Survey	ved L	ength:		
behalf of The Controller of Her Majesty's S	vey material with the permission of Ordnance Survey stationary Office, © Crown copyright 2013. m copyright and may lead to prosecution or civil		Pipeline		57 Mill 57 Mill 568 66	667 1 553 1111 553 1111 1111 1111 564 1001 Regn 0131 0131 564 1117 0131 0131 0131 564 1117 0131 0131 0131 100 Regn 0131 0131 0131 1117 1117 0131 0131 0131 1117 1117 0131 0131 0131 1117 1117 0131 0131 0131 1117 1117 0131 0131 0131 1117 1117 0131 0131 0131 1117 1117 1117 0131 0131 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117 1117
Habitat			Neig	ghboring Land L	Jse	
Bank Profile			Ban	k Management		
Depth of Water			Suit	ability for Otters	S	
Channel Width			Otte	r Signs		
Flow Speed			Suit	ability for Wate	rvoles	
Shore Banks			Wat	ervole Signs		
Vegetation Description			Comments:			
		Ina	ccess	sible		

Photo 1

Photo 2

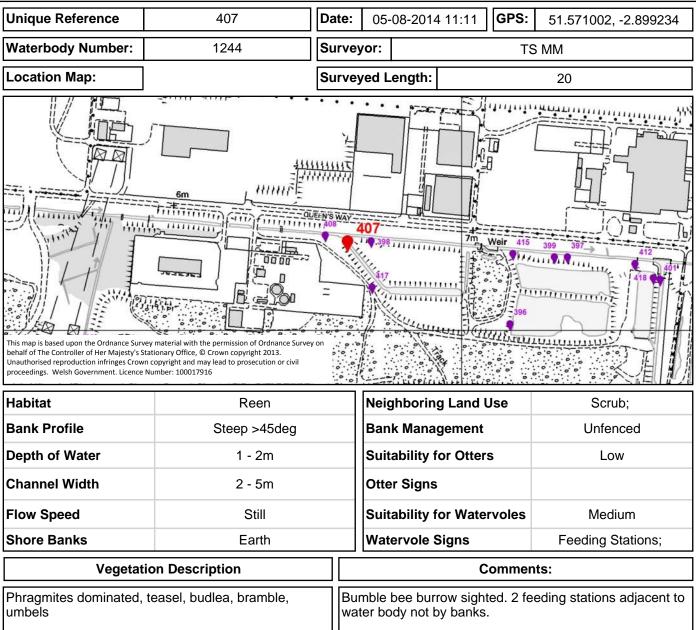










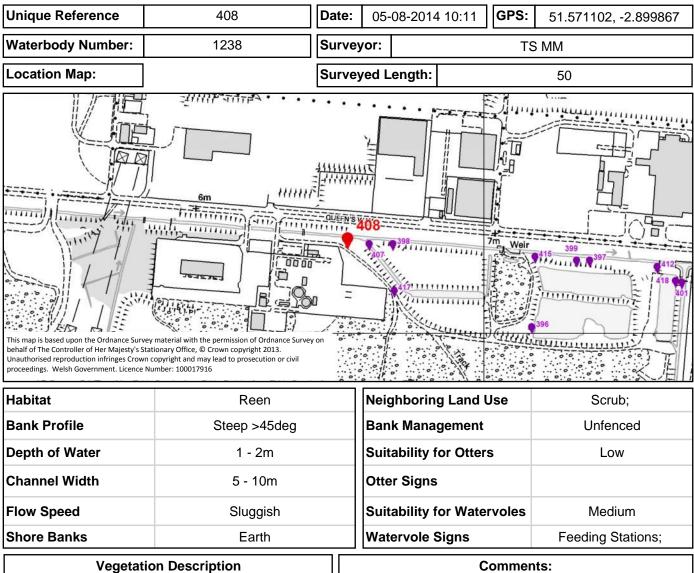












Phragmites, redshank, willow herb, teasel, sedge sp., umbels



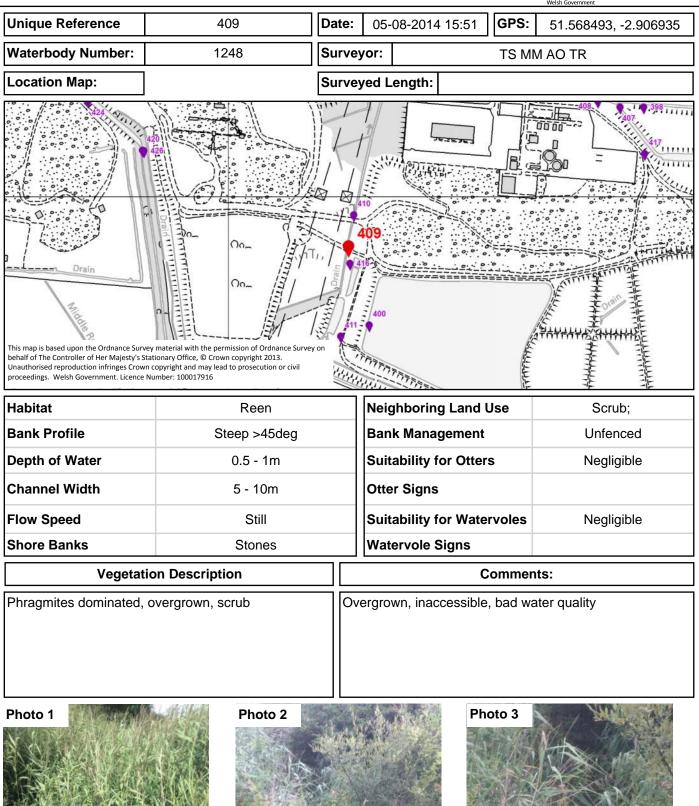










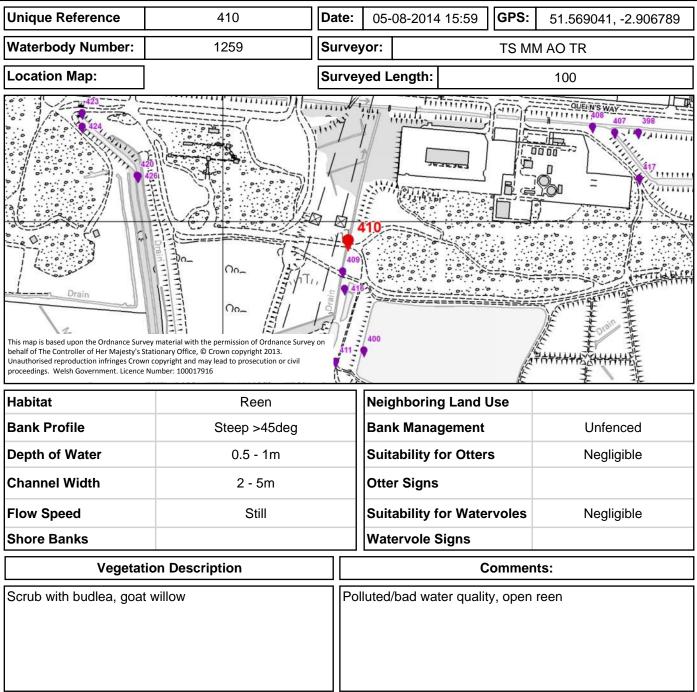


















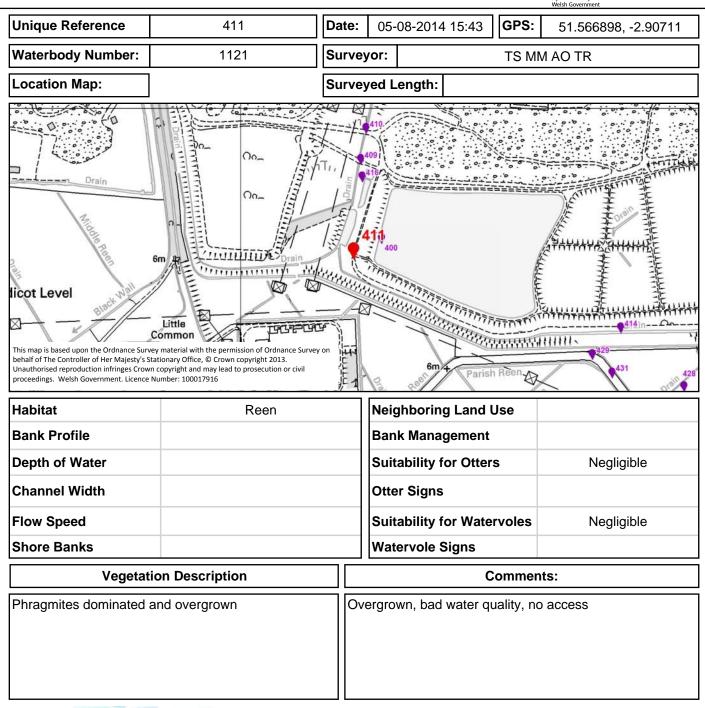




Photo 2

Photo 3

🖗 ARUP

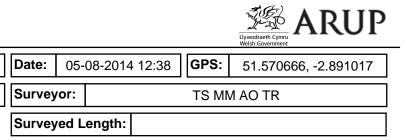


412

1194

Unique Reference

Waterbody Number:



materisedy manifest	1101	Garroyon	10 10		
Location Map:	Surveyed Length:				
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Habitat	Reen	Nei	ghboring Land Use	Scrub;	
Bank Profile	Steep >45deg	Ban	k Management	Unfenced	
Depth of Water	1 - 2m	Suit	tability for Otters	Low	
Channel Width	2 - 5m	Otte	er Signs		
Flow Speed	Sluggish	Suit	ability for Watervoles	Medium	
Shore Banks	Earth	Wat	ervole Signs	Feeding Stations;	
Vegetation Description			Comments:		
Fragamites					

Date:







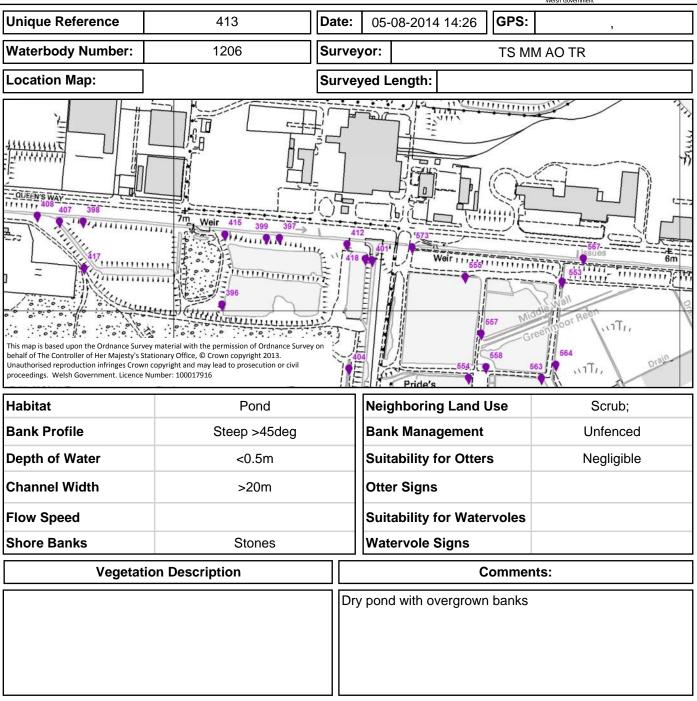
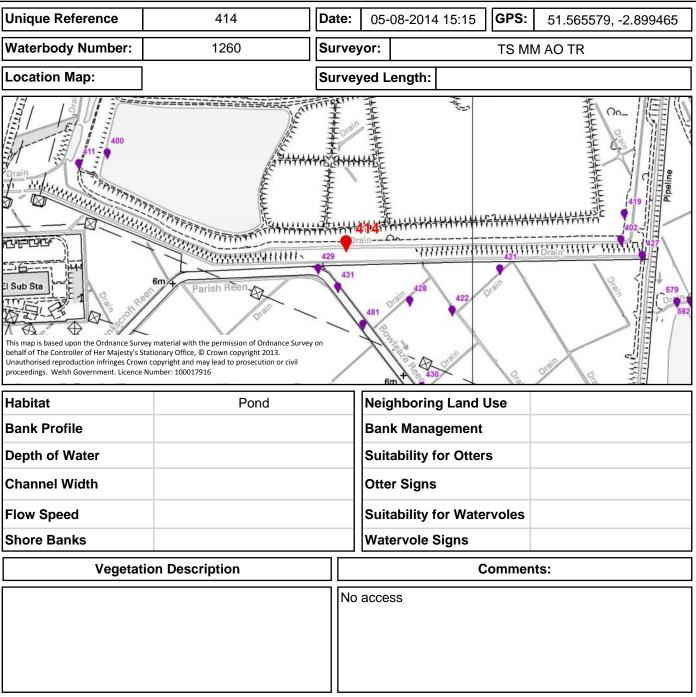




Photo 2

Photo 3

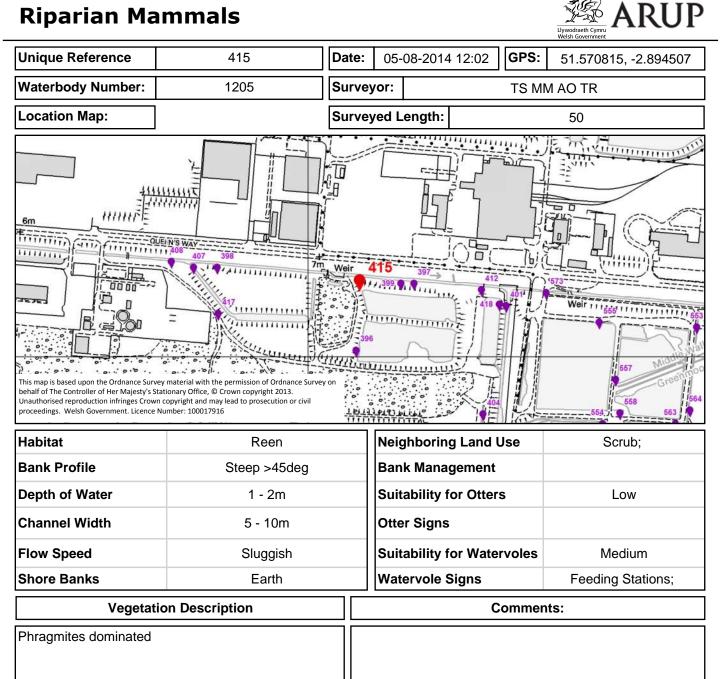








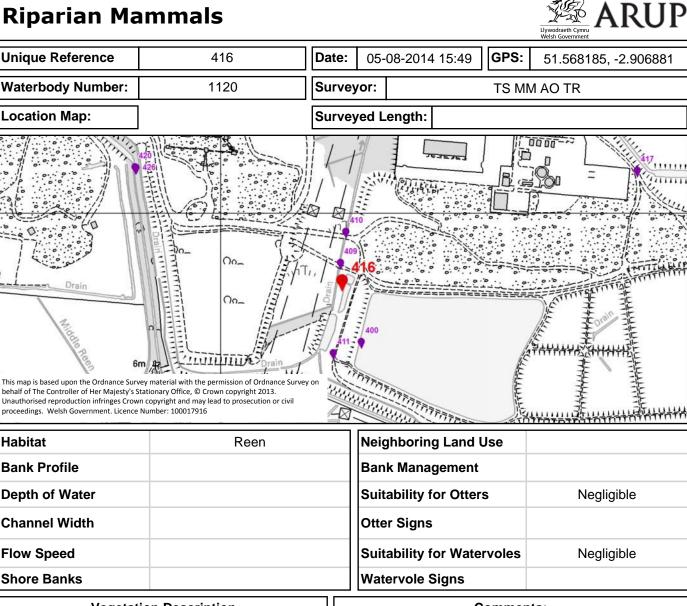












Vegetation Description Comments: Inaccessible, overgrown

Photo 1

Habitat

Photo 2



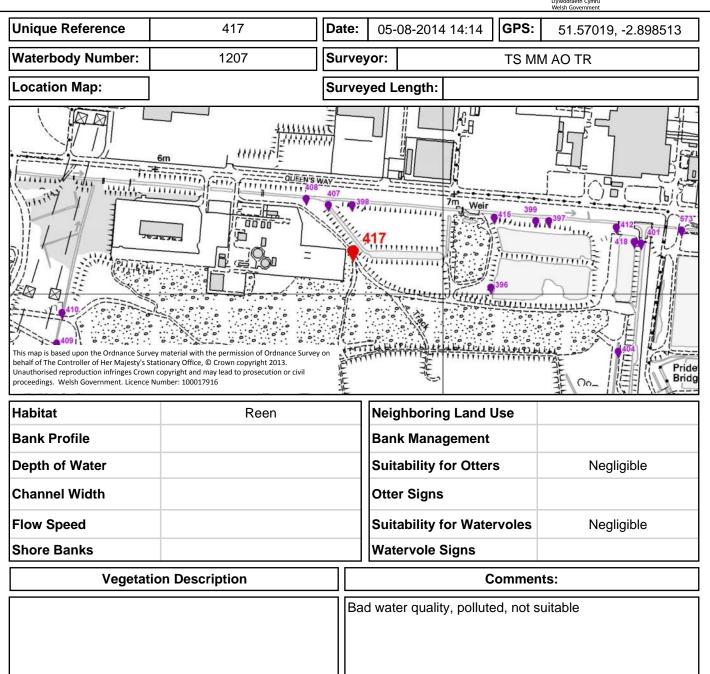




Photo 2

Photo 3

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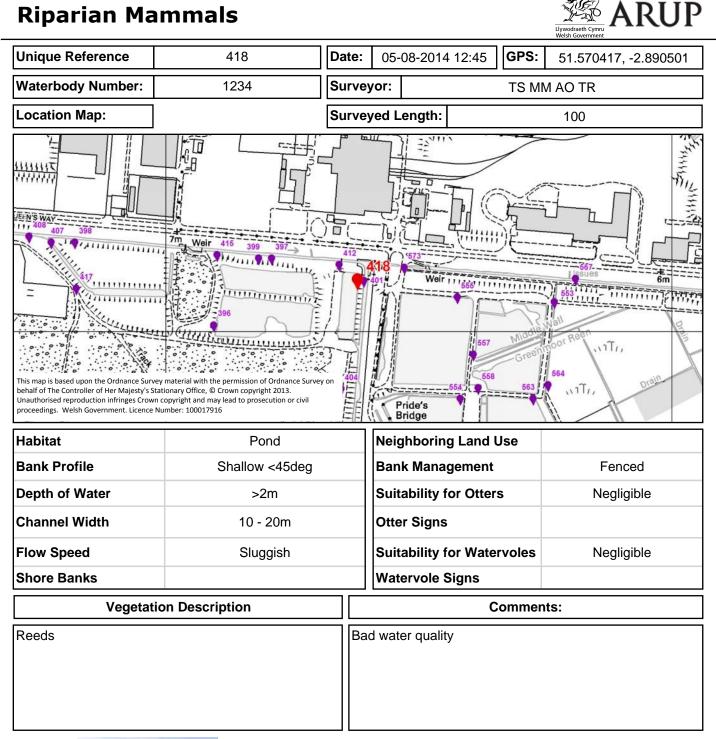
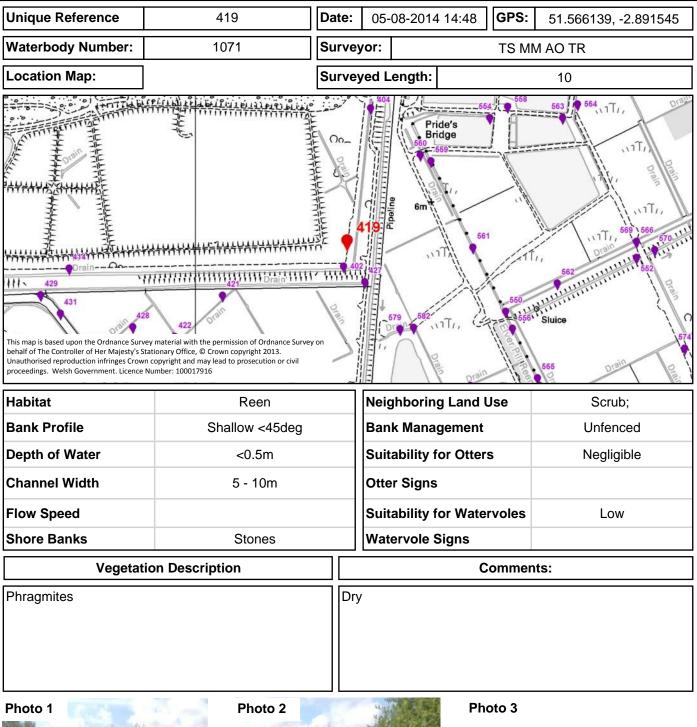




Photo 2











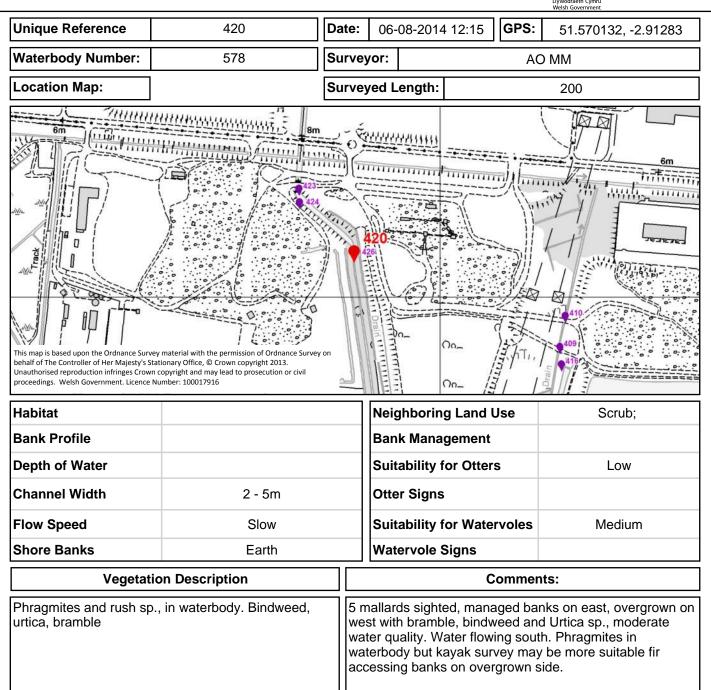
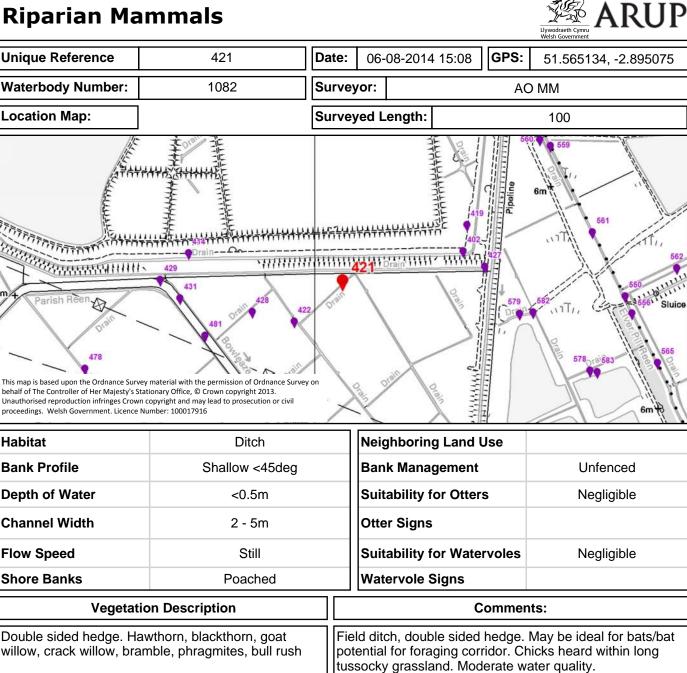




Photo 2

Photo 3

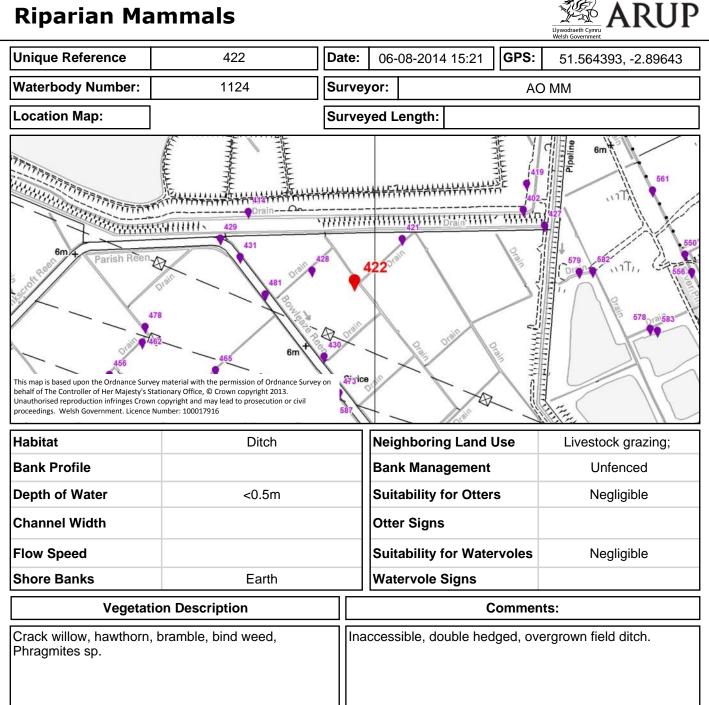
ARUP





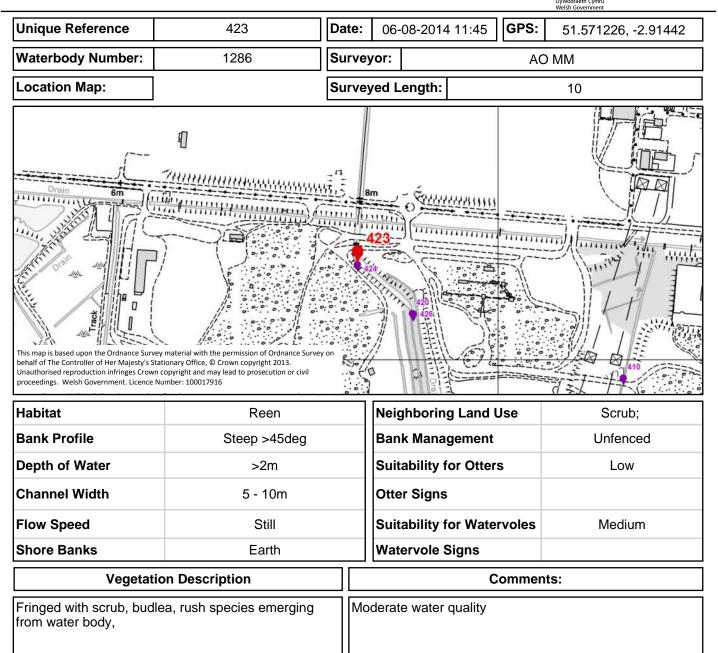


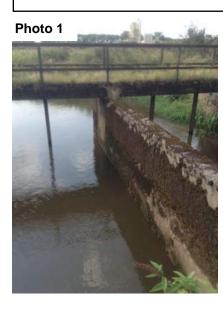




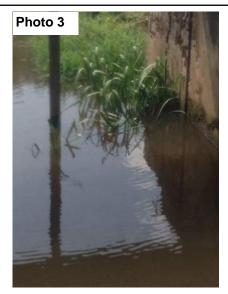




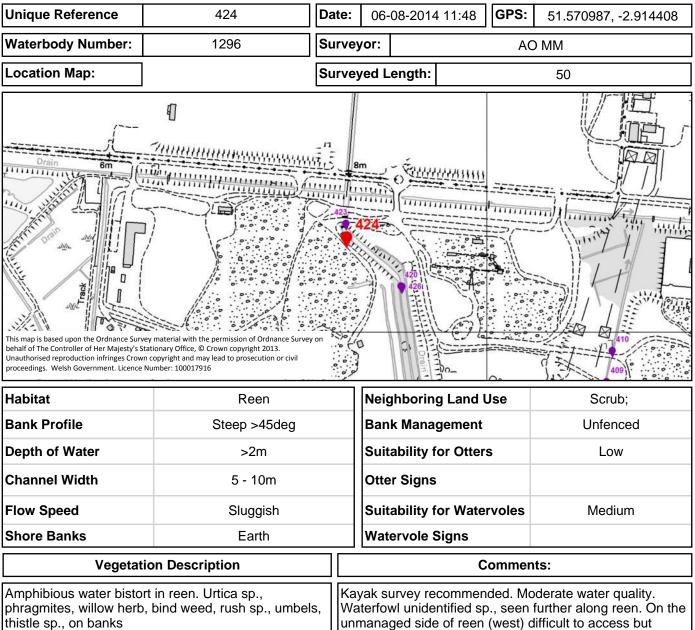








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Kayak survey recommended. Moderate water quality. Waterfowl unidentified sp., seen further along reen. On th unmanaged side of reen (west) difficult to access but surveyed 50m. Surveying along managed/cut side (east) no evidence due to management but cannot discount presence.



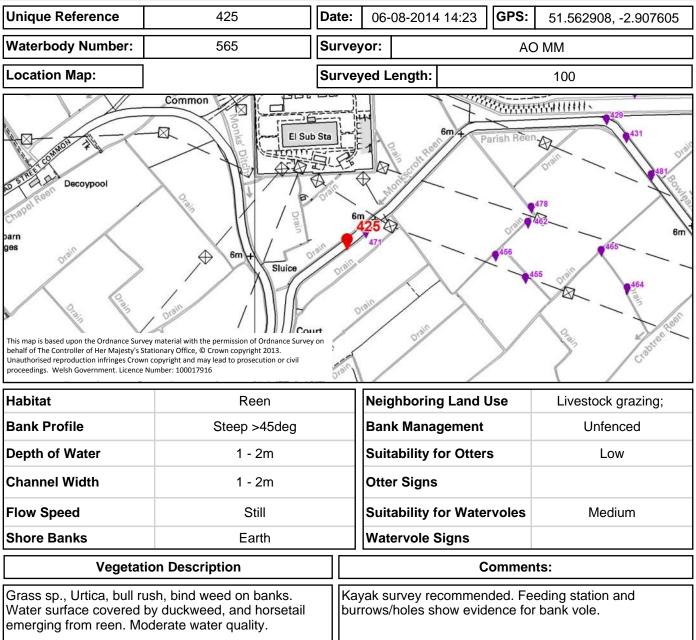






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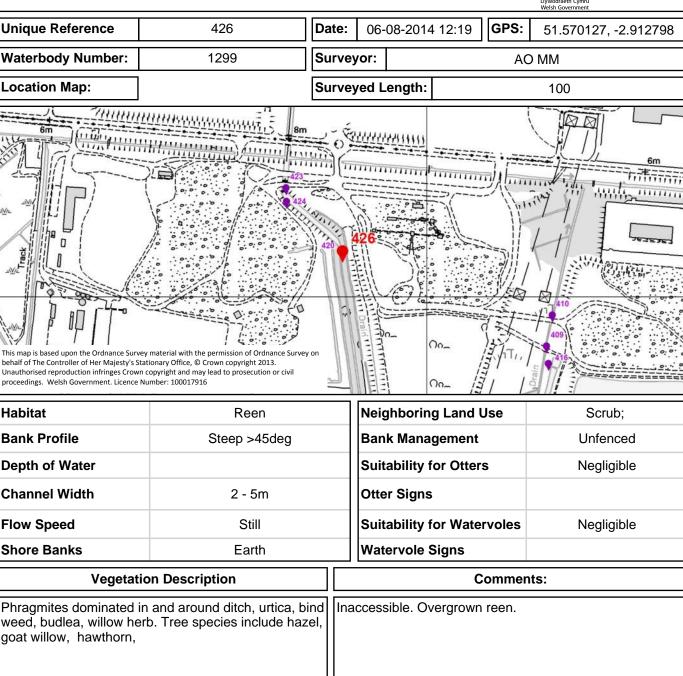














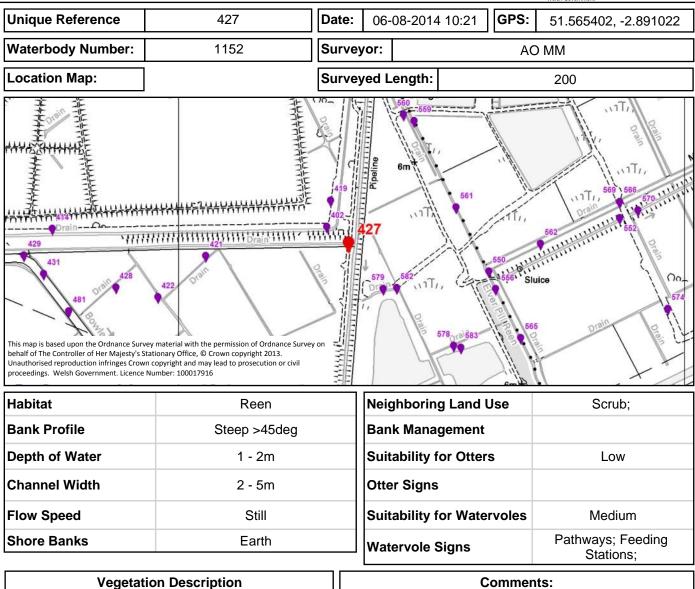






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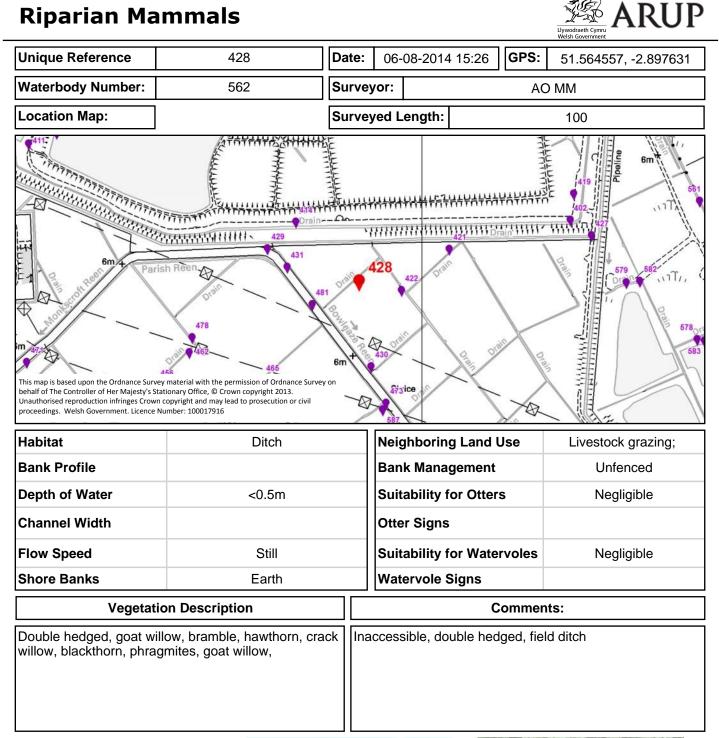


Vegetation Description	Comments:
	Moderate water quality. Aquatic surface vegetation eg duckweed b







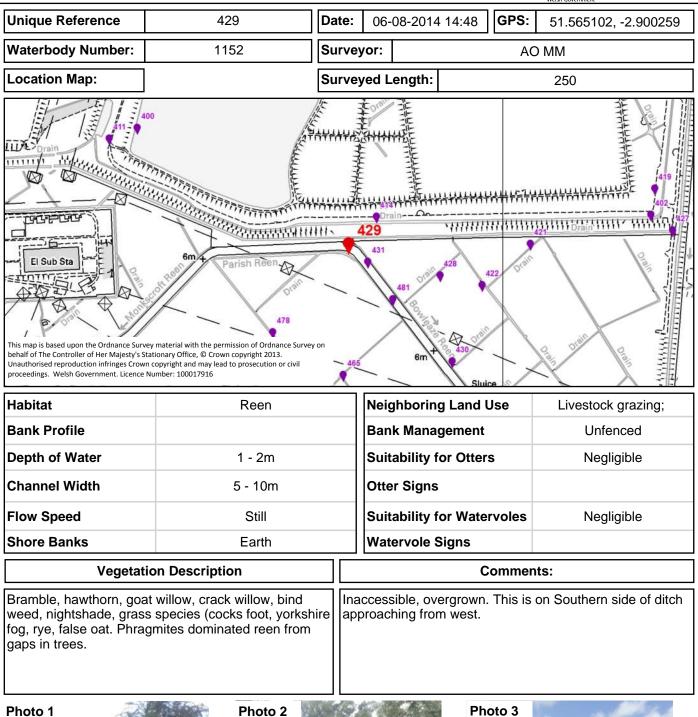










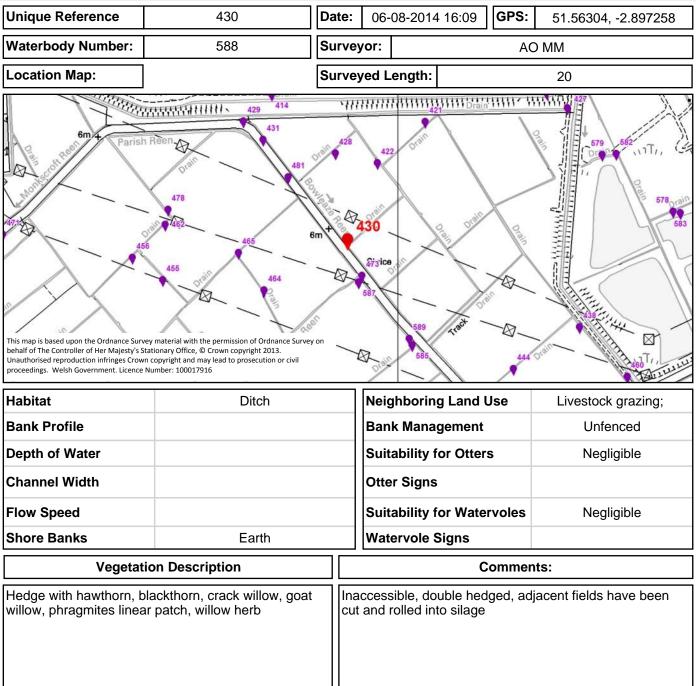








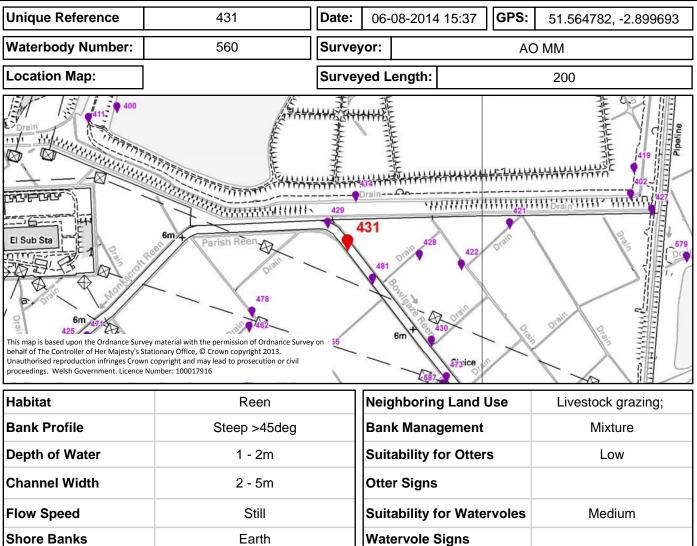












Vegetation Description	Comments:
Duckweed dominated, lilly sp., water plantain, bull rush, hard rush, sedge sp. Bankside veg: phragmites, umbels, birds foot trefoil, redshank/amphibious bistort, willow herb, Mentha aquatica, meadow sweet, common fleabane, grasses. Tree species: crack willow young and covered in ivy, hawthorn, oak	



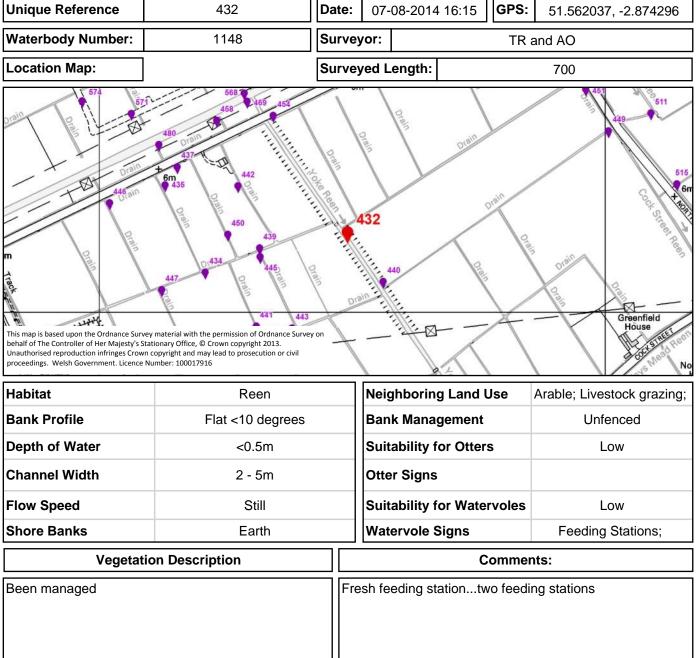










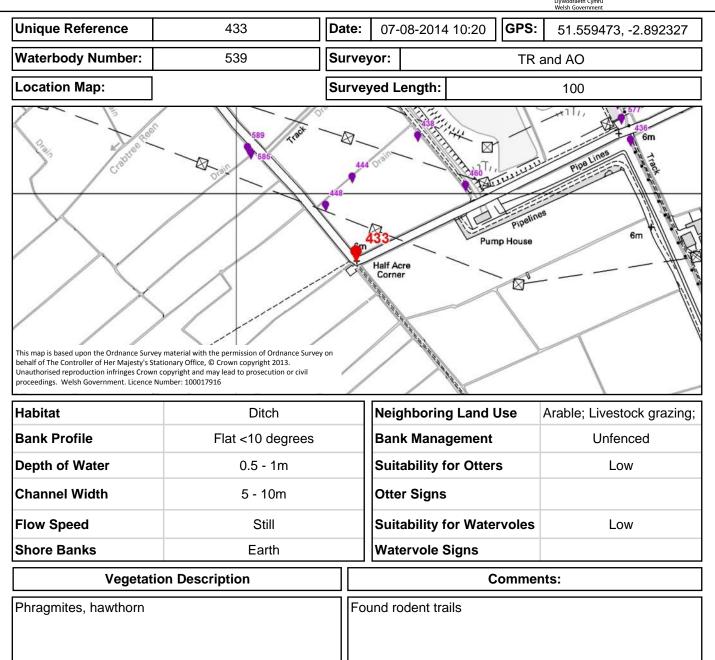














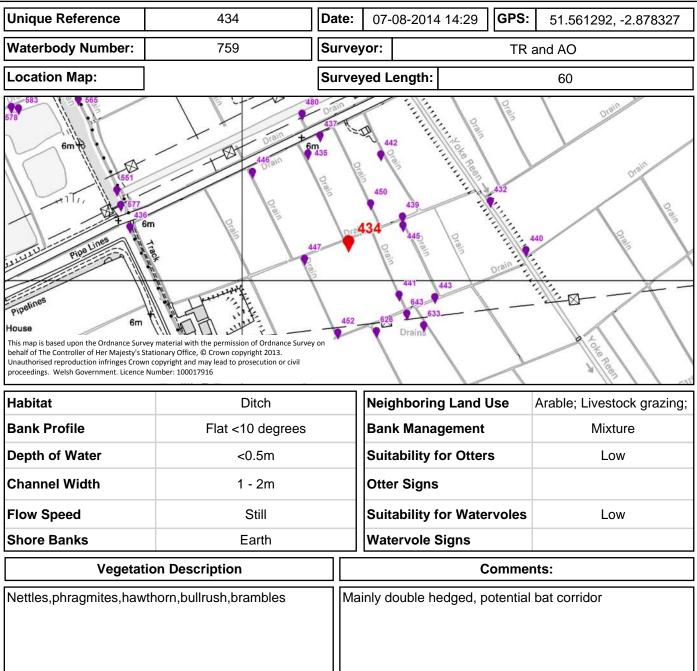






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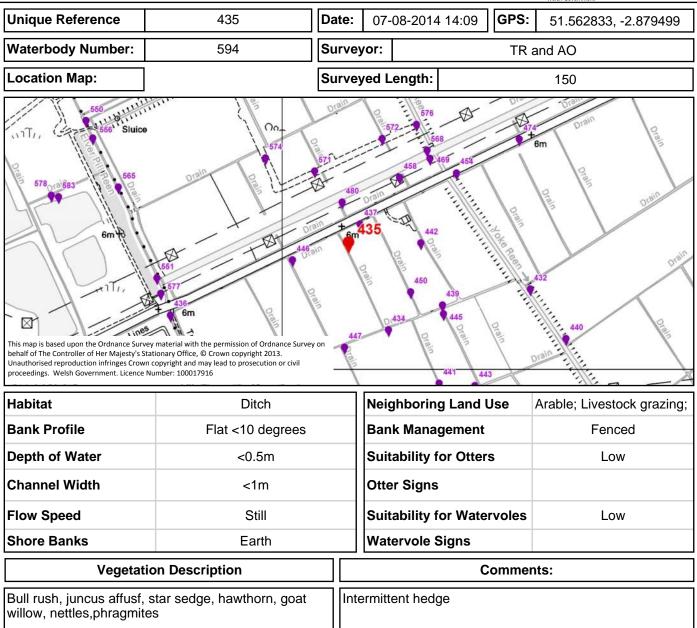




















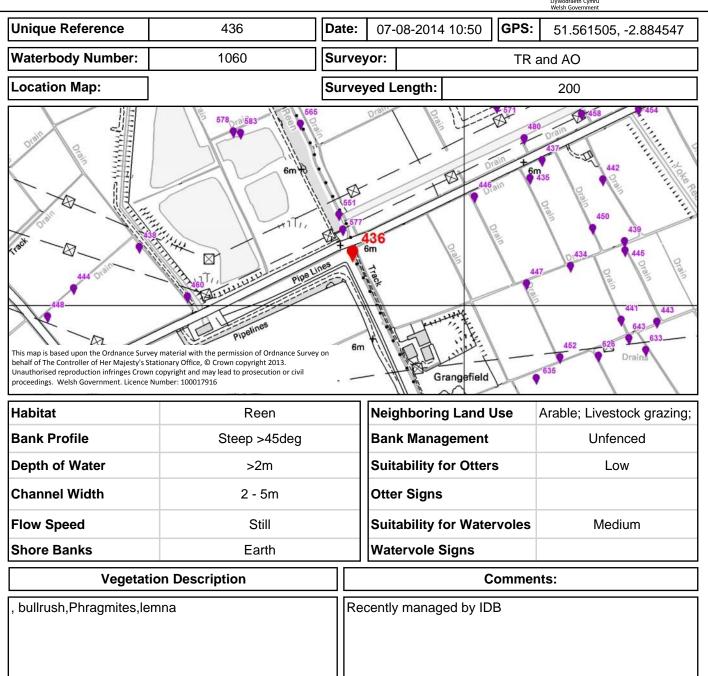




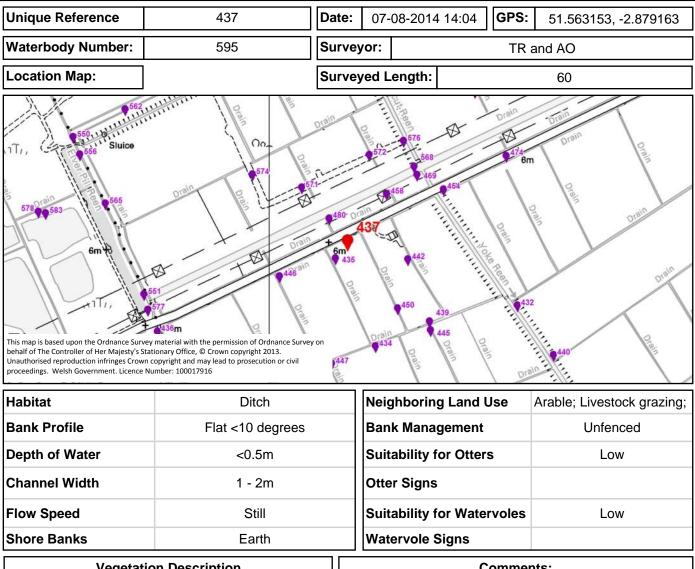




Photo 3

🖗 ARUP





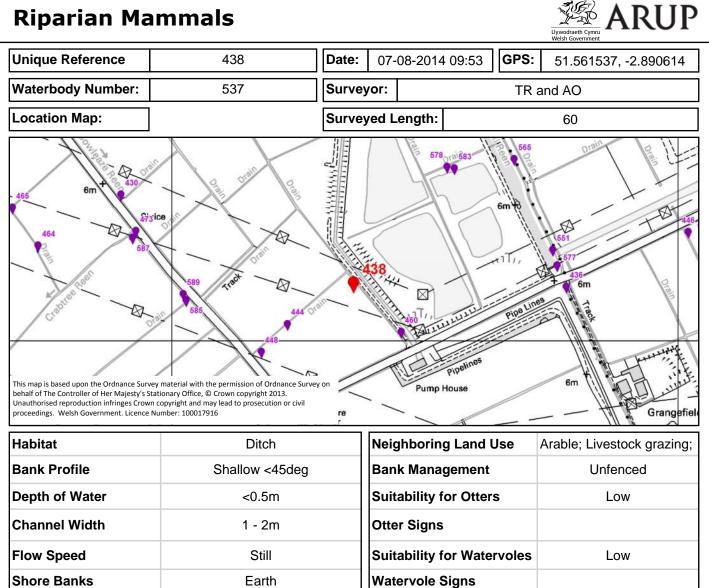
 Vegetation Description
 Comments:

 Phragmites, ash, goat willow, bramble, crack willow, bramble
 Unaccessible because of brambles and veg. Overgrown, dry ditch,overgrown, duck weed, juncus,







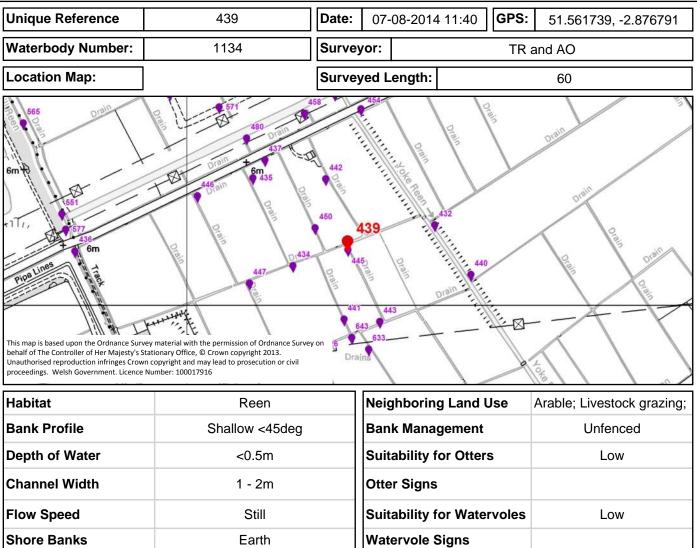


Vegetation Description	Comments:
Crack willow, blackthorn,hawthorn,bramble,rosebay willow herb,phragmites	Dry ditch









Vegetation Description	Comments:
Phragmites,nettle,marsh thistle, hawthorn,rosebay willow herb	Rodent trails, parts dry and parts wet, lamena

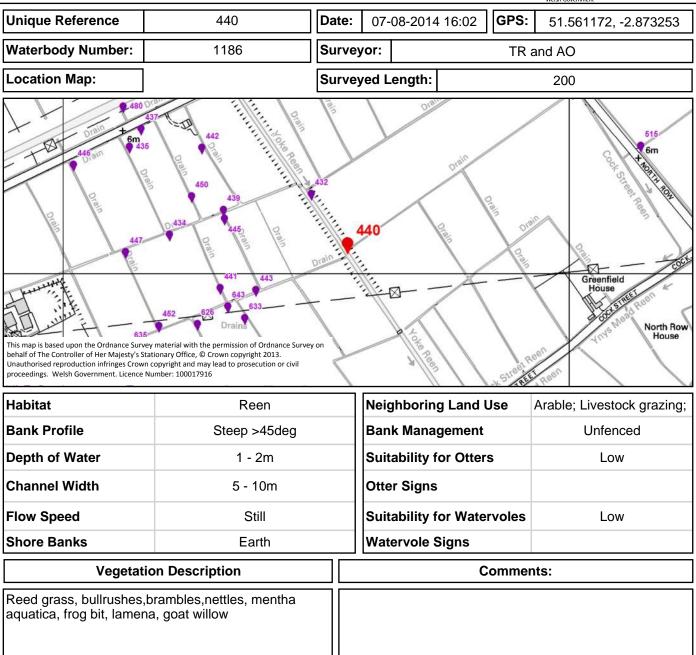










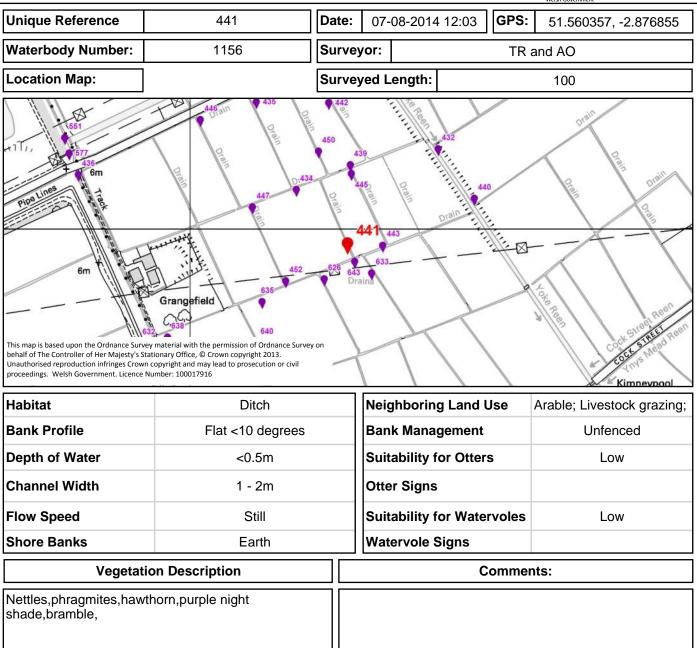






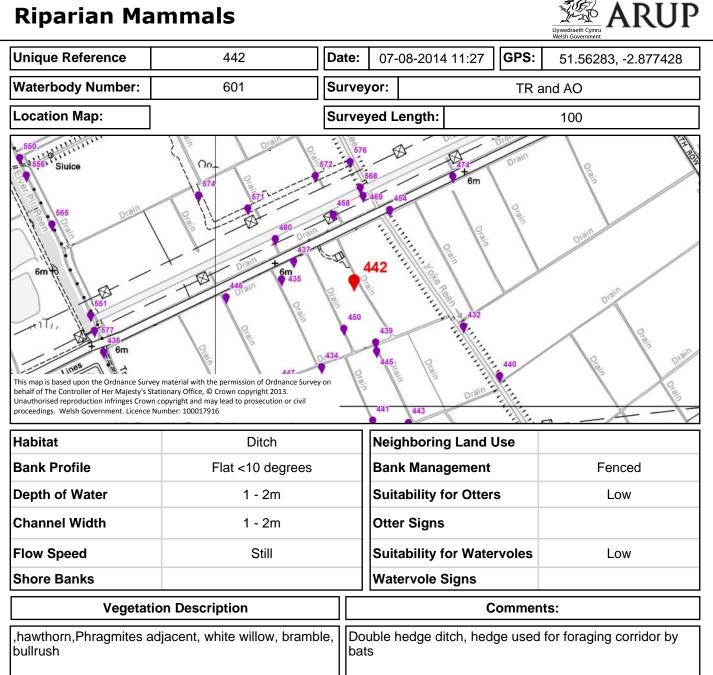


















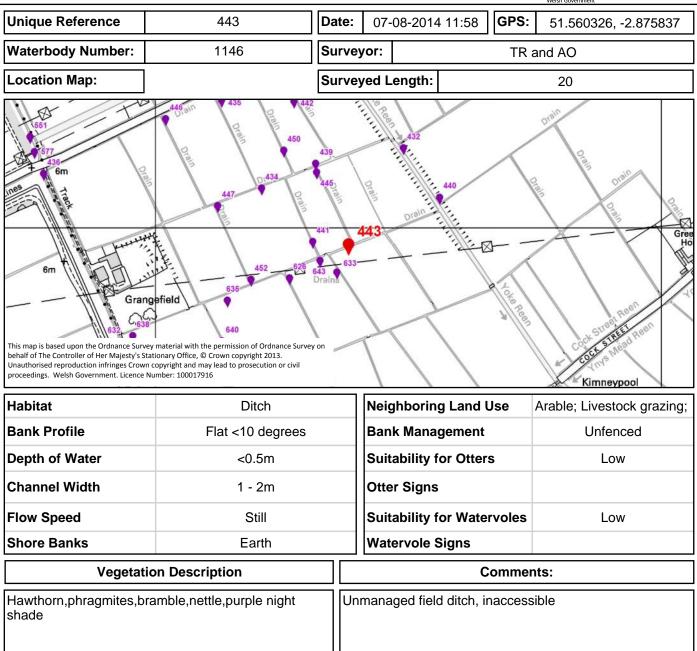
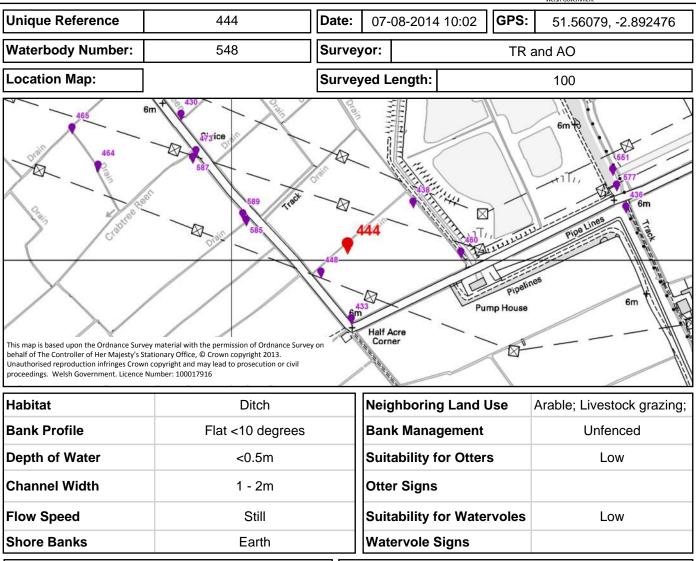


Photo 1









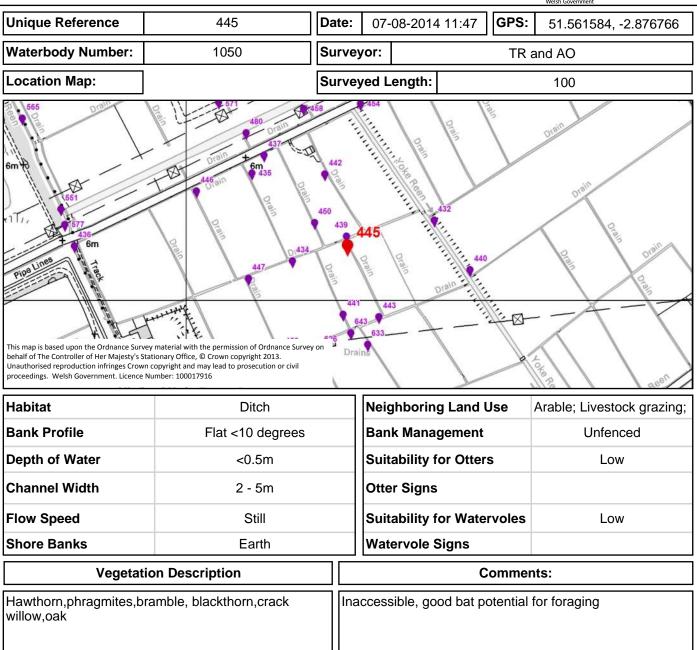








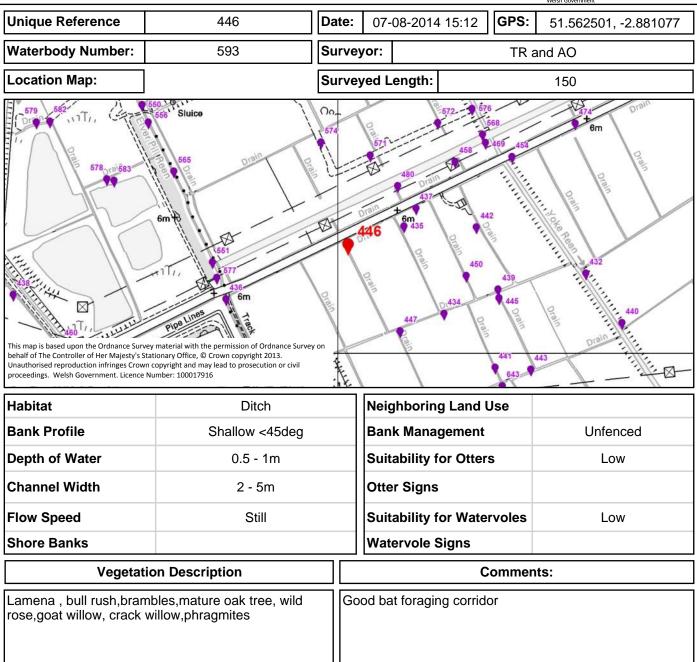




















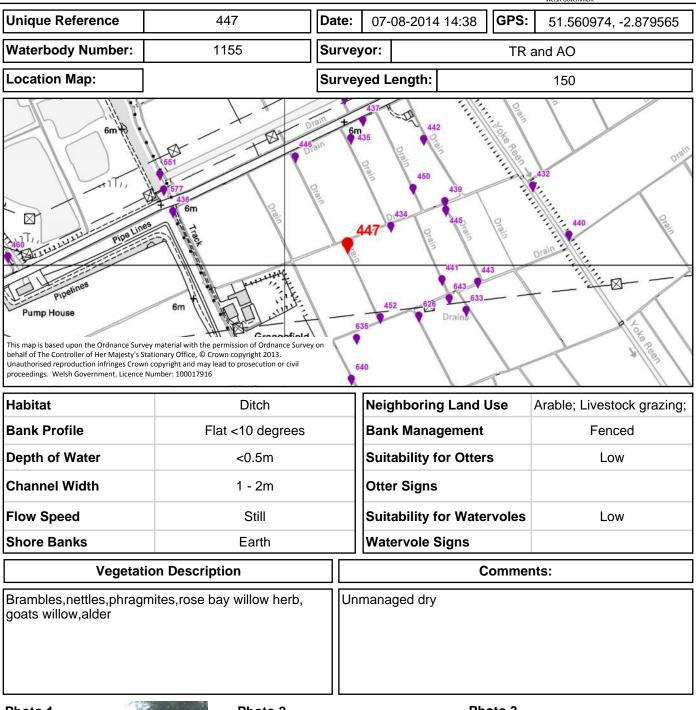




Photo 2



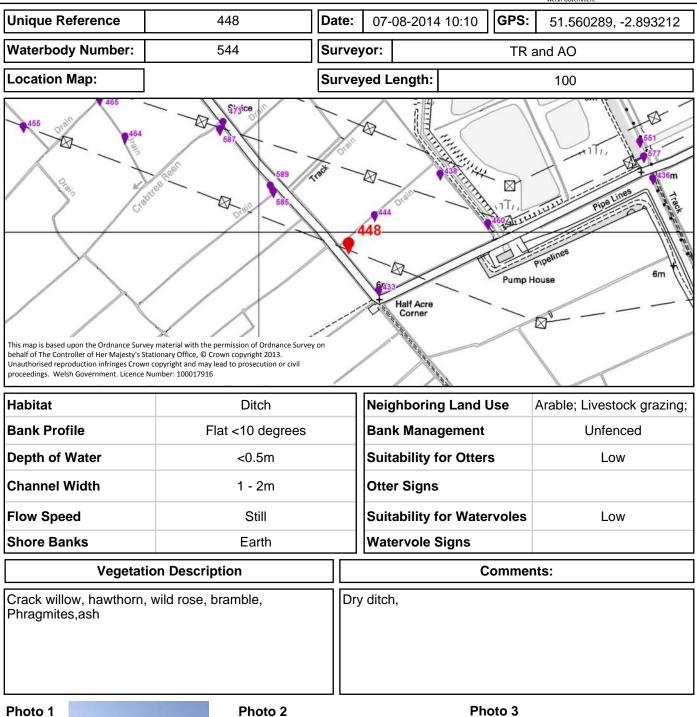
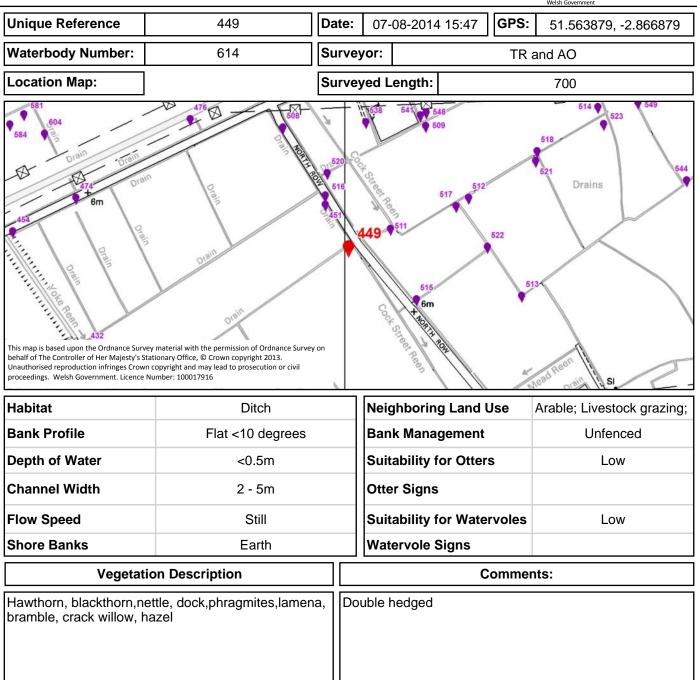




Photo 2





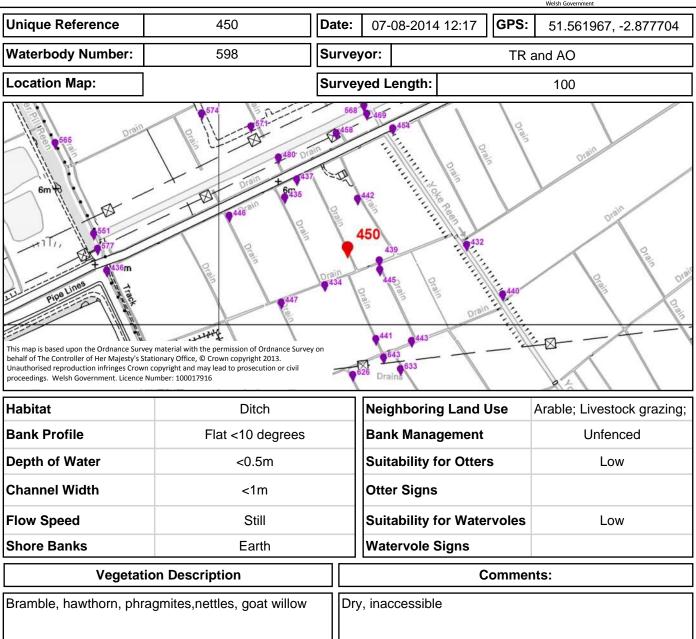






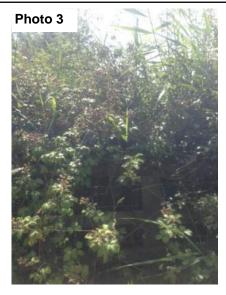














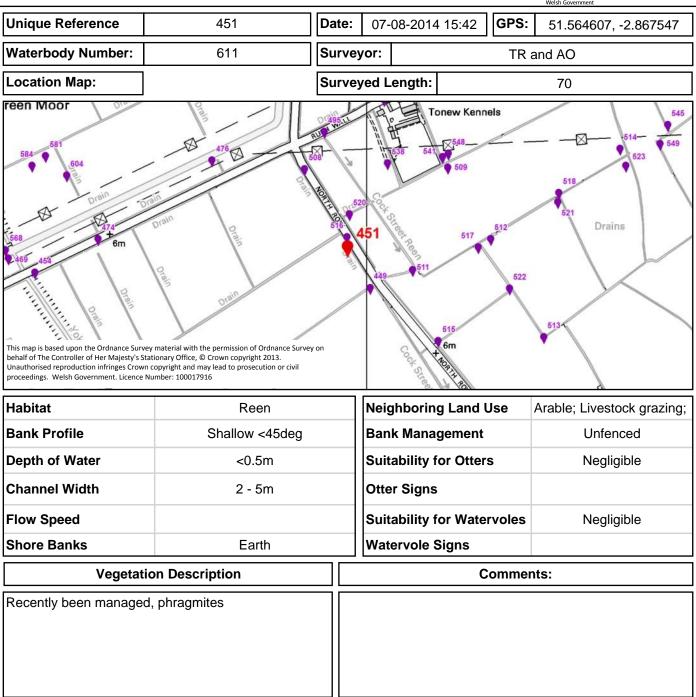
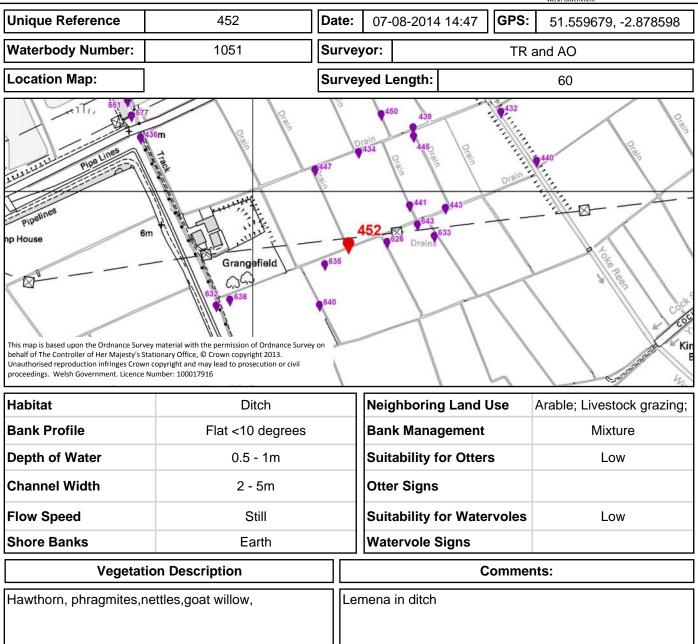


Photo 1















Unique Reference	453	Date:	06-	08-2014 15:28 GPS:	,
Waterbody Number:	1246	Surveyor: TS			TS
Location Map:		Surveyed Length:			
This map is based upon the Ordnance Surv behalf of The Controller of Her Majesty's S	A36m A36m A36m A36m A36m A36m A36m A36m	635 640	2 45	445 445 0 441 441 443 0 0 0 0 0 0 0 0 0 0 0 0 0	
Habitat			Neig	hboring Land Use	
Bank Profile			Ban	k Management	
Depth of Water			Suit	ability for Otters	
Channel Width			Otte	r Signs	
Flow Speed		Suitability for Watervoles			
Shore Banks		Watervole Signs			
Vegetation Description			Comments:		
Photo 1	Photo 2	Ina	ccess	ible reed bed Photo 3	



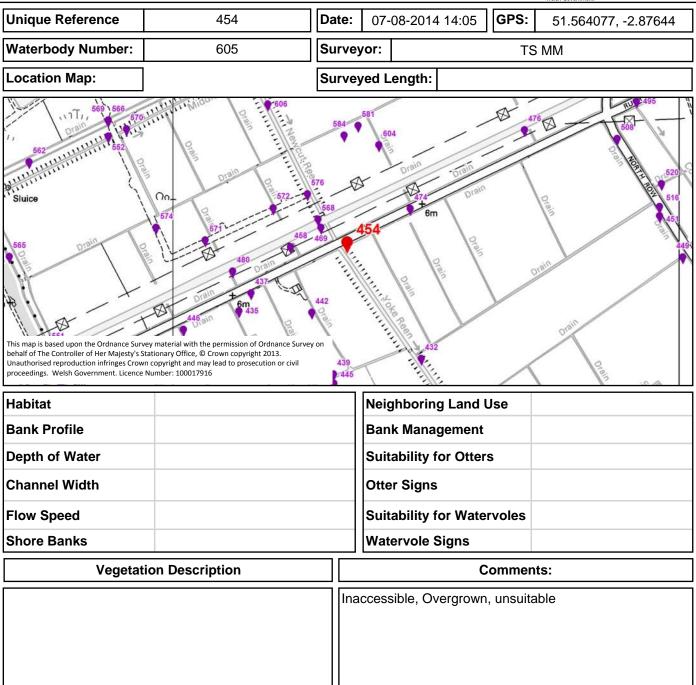
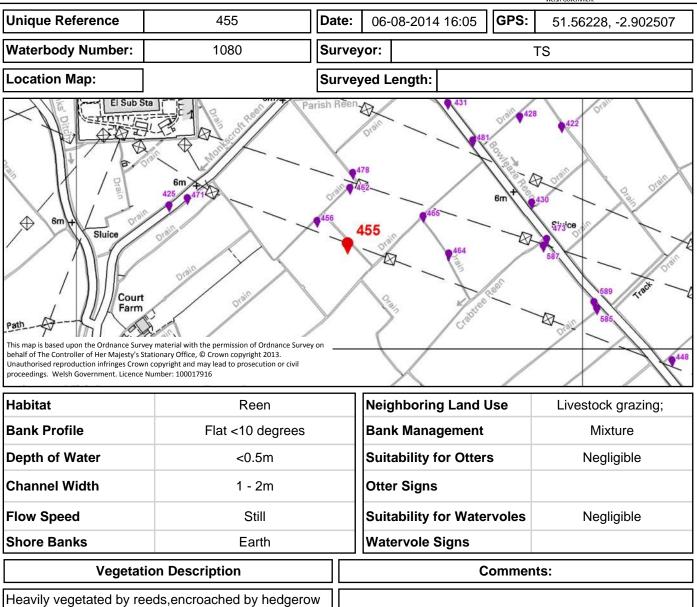






Photo 3

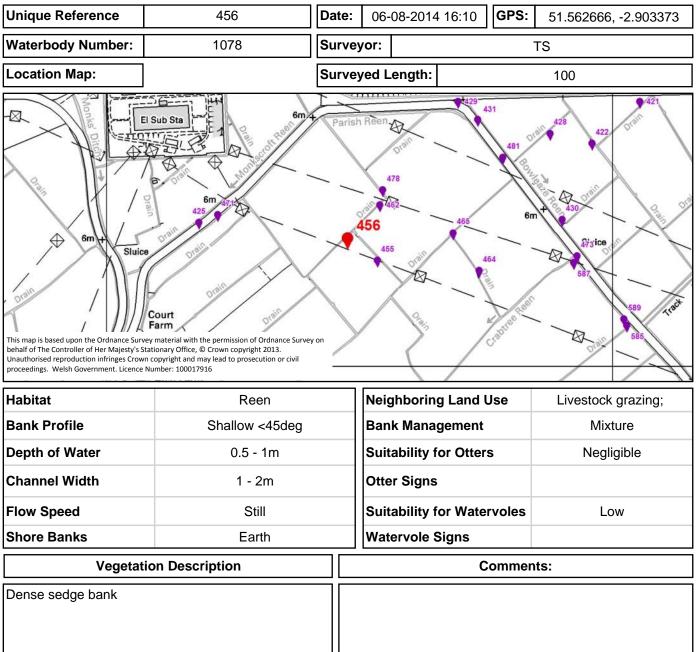














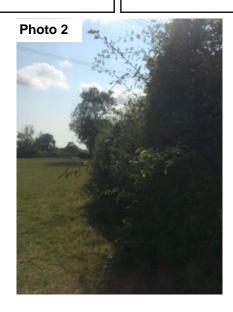
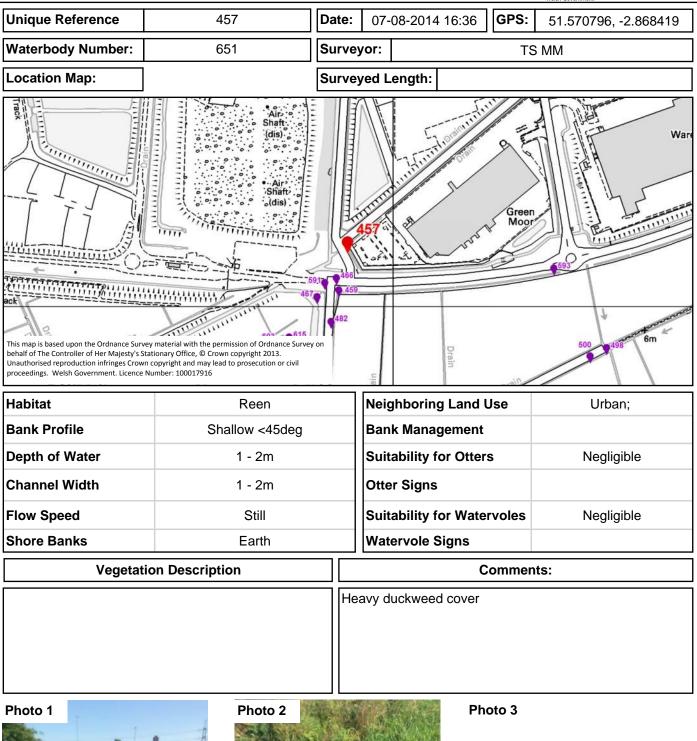


Photo 3

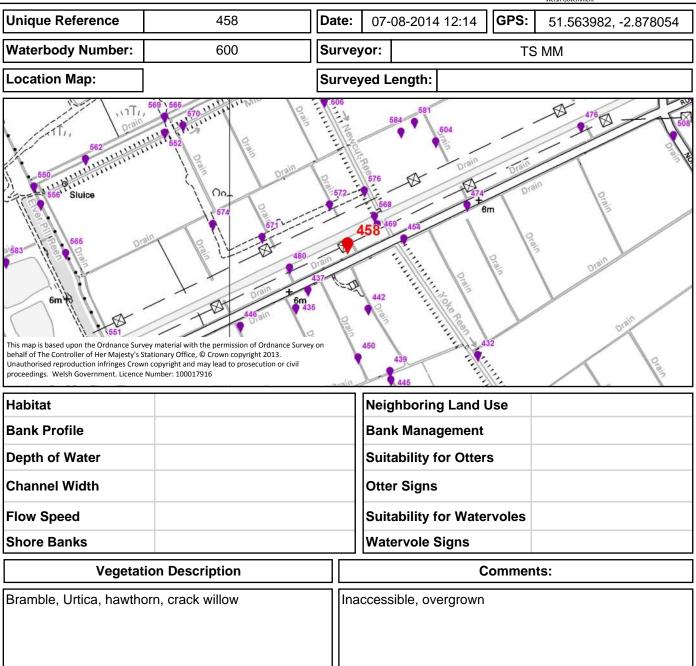








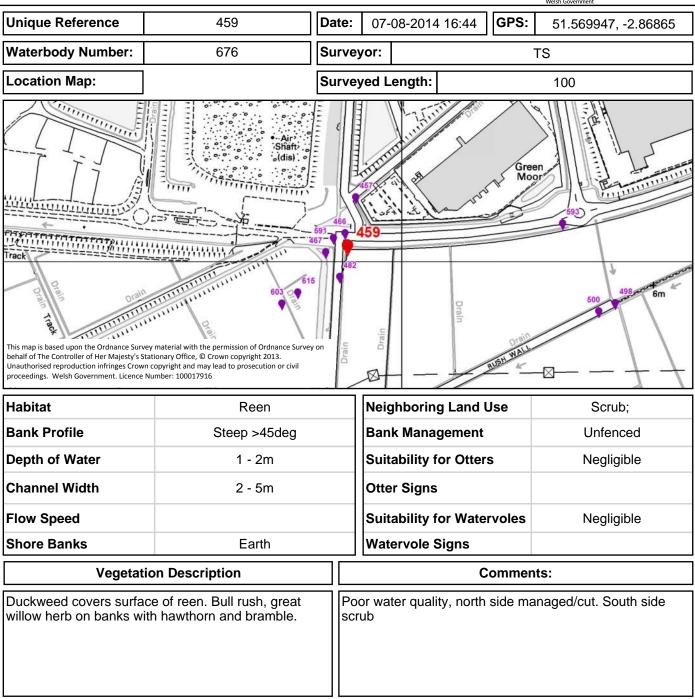












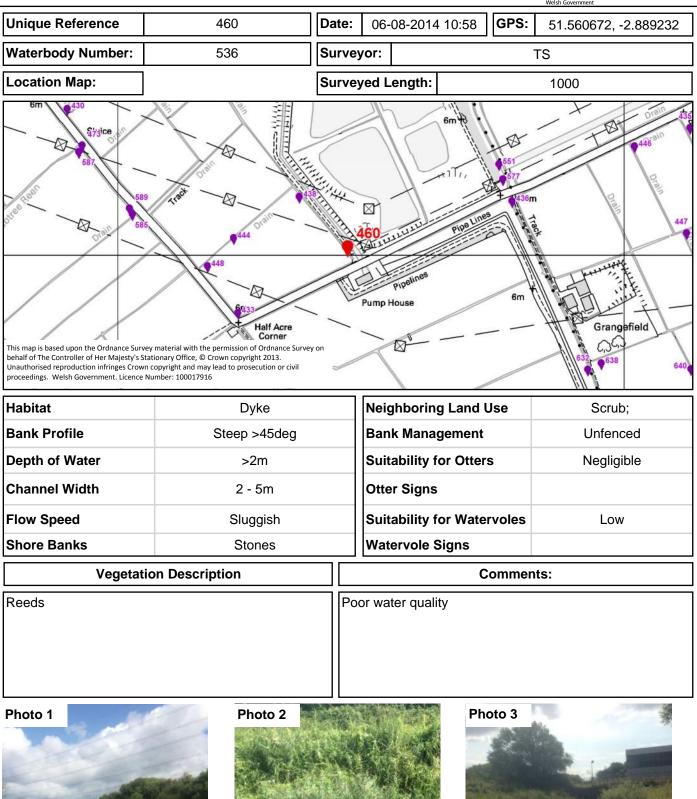






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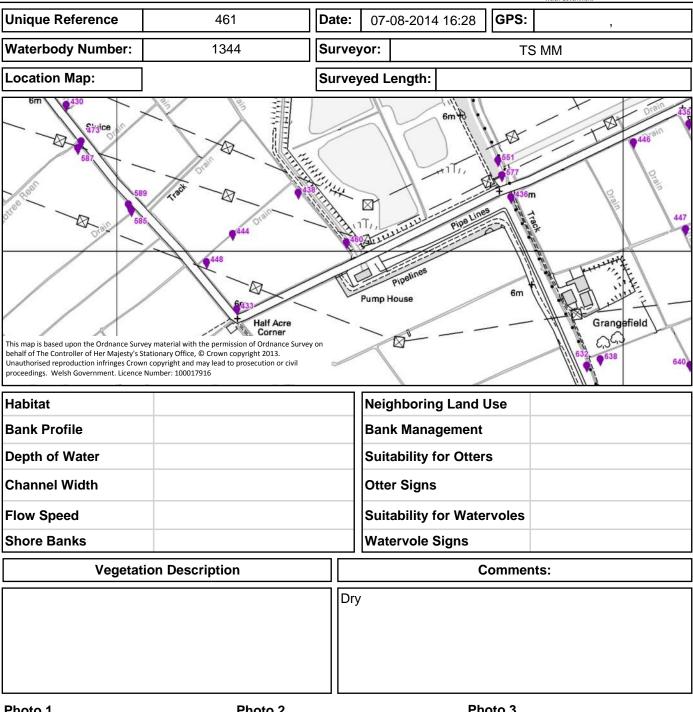
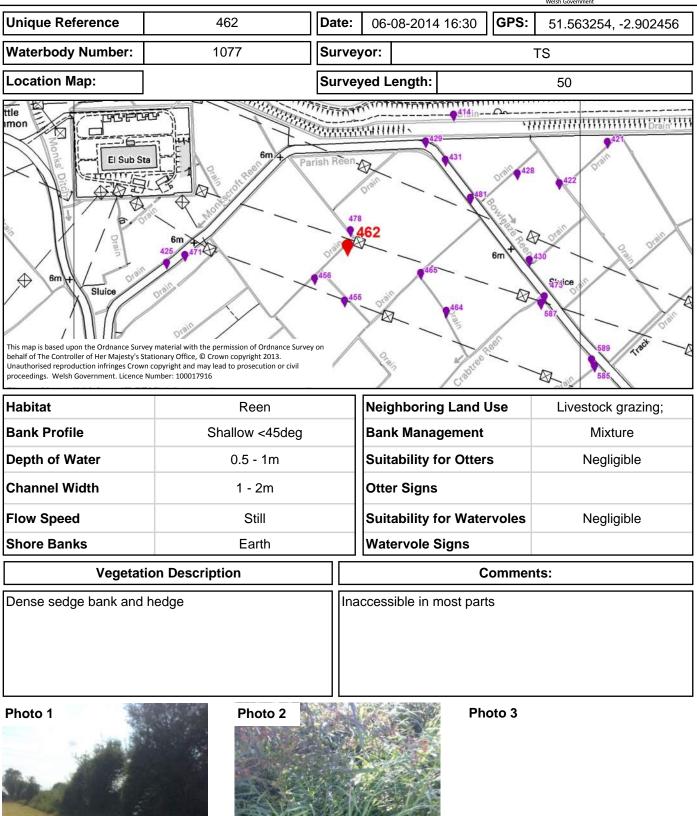


Photo 1

Photo 2

Photo 3

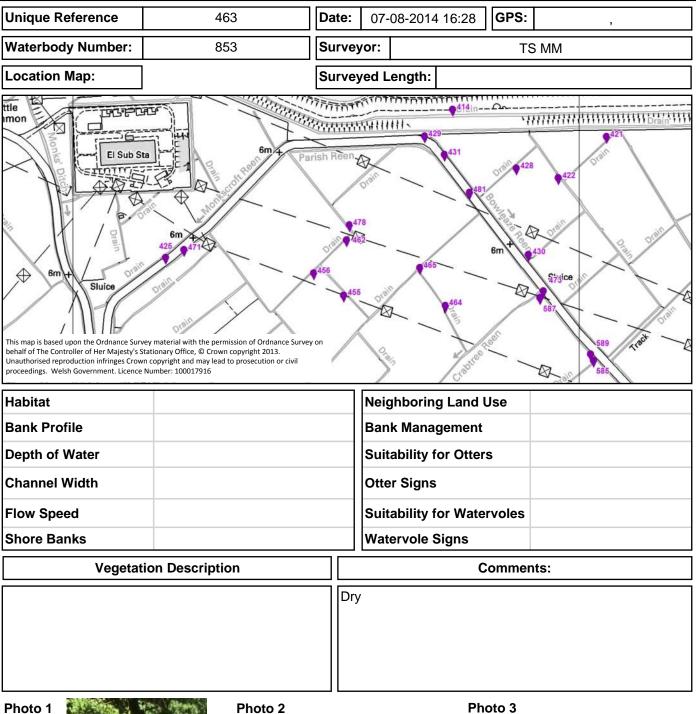






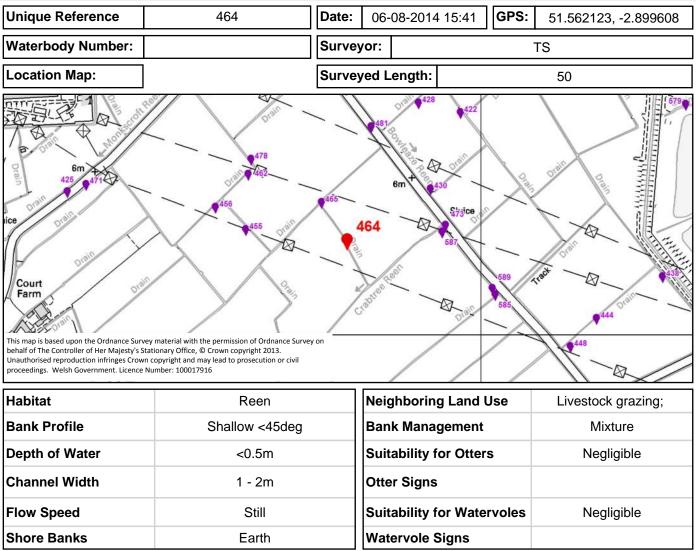












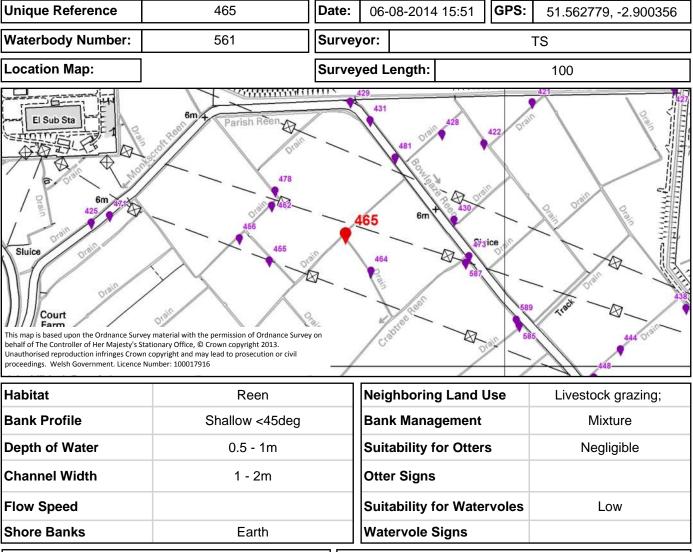












 Vegetation Description
 Comments:

 Heavily vegetated by duck weed, encroached by scrub and sedges. Some purple loosestrife and sweet reed grass present
 Grass present

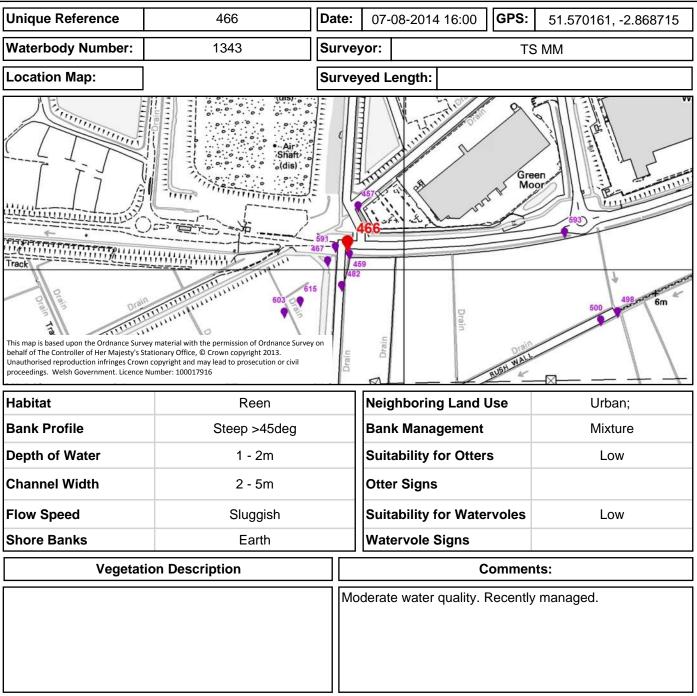




Photo 3

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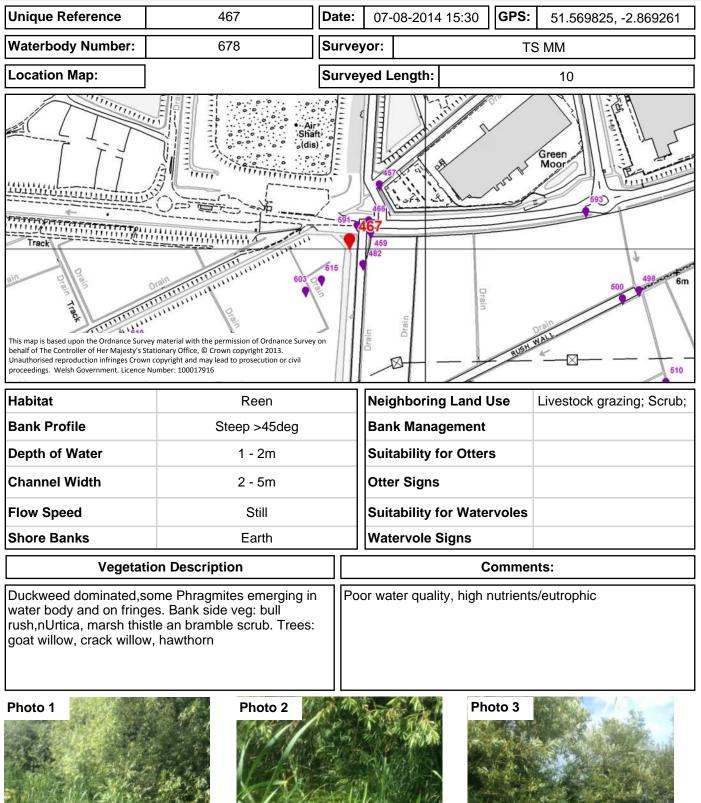










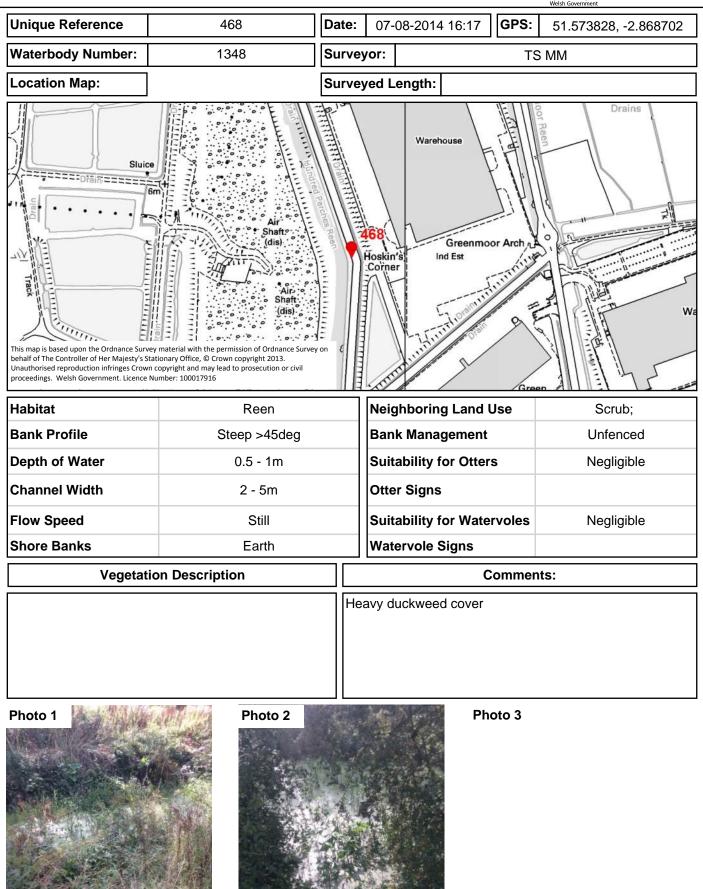




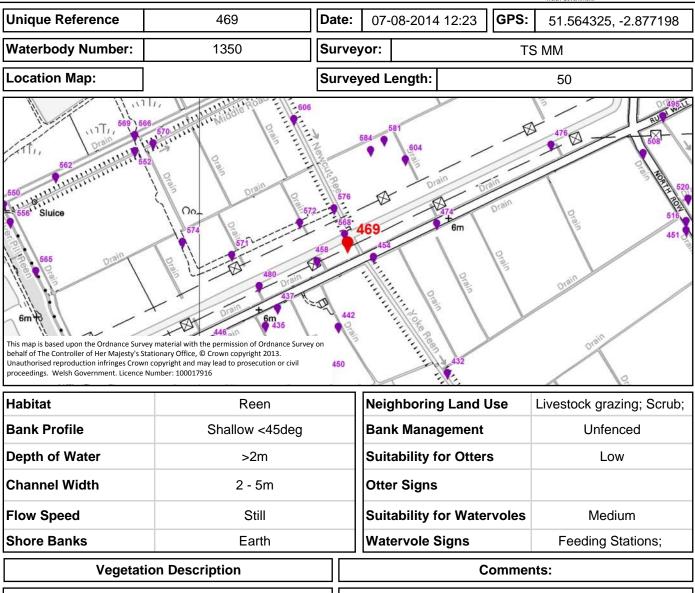












Duck weed, Frogbit, bull rush in reen. Bank veg: bull rush, soft rush, umbels









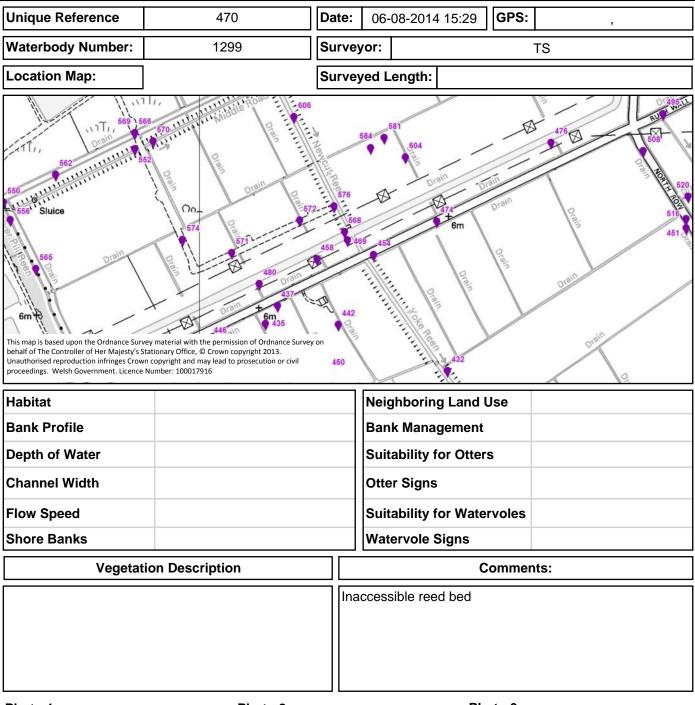
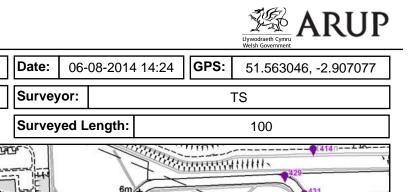


Photo 1

Photo 2

471

Unique Reference



Waterbody Number:	566	Surveyor:			TS
Location Map:		Surveyed	Length:		100
This map is based upon the Ordnance Survey behalf of The Controller of Her Majesty's Sta	r material with the permission of Ordnance Survey tionary Office, © Crown copyright 2013. copyright and may lead to prosecution or civil		Gent	Parish Reen of Array Arr	All
Habitat	Reen	No	iabborina	I and Use	Livestock grazing

Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	Feeding Stations;

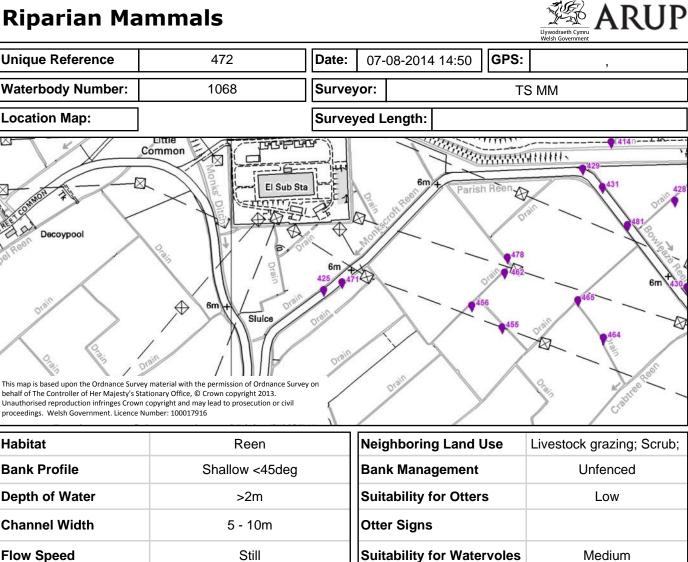
Vegetation Description	Comments:		
Heavy duck weed cover.sedges on the edges	Feeding station		

Photo 1









Shore Banks	Earth	Earth Watervole		Latrines;
Vegetation Description		Comments:		
		Wide habitat. Latrine on rotting wood branch		











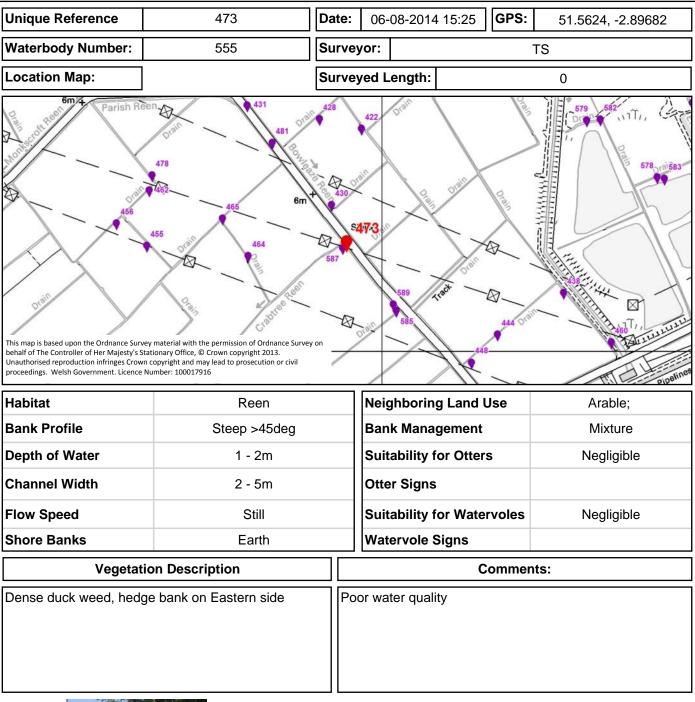
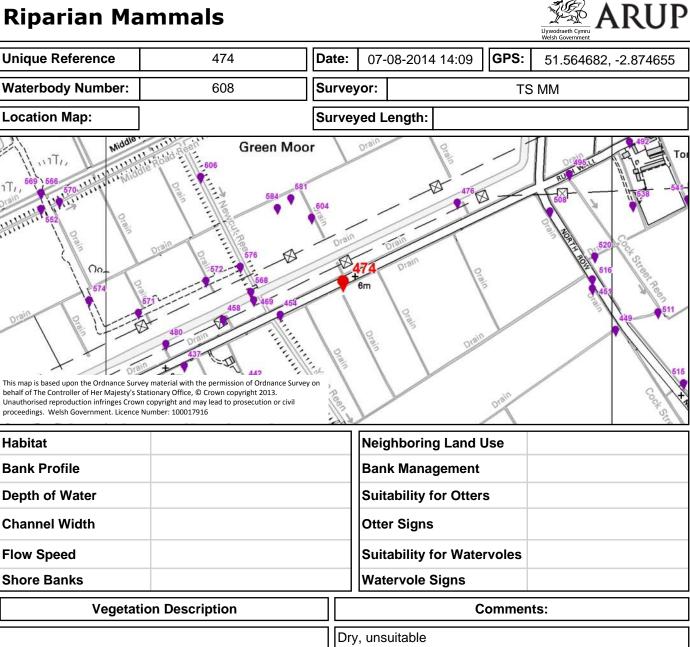
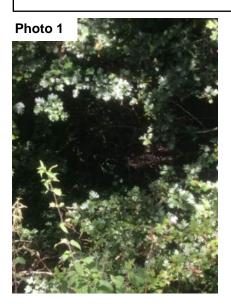
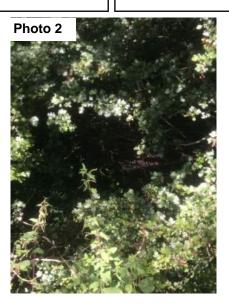




Photo 2







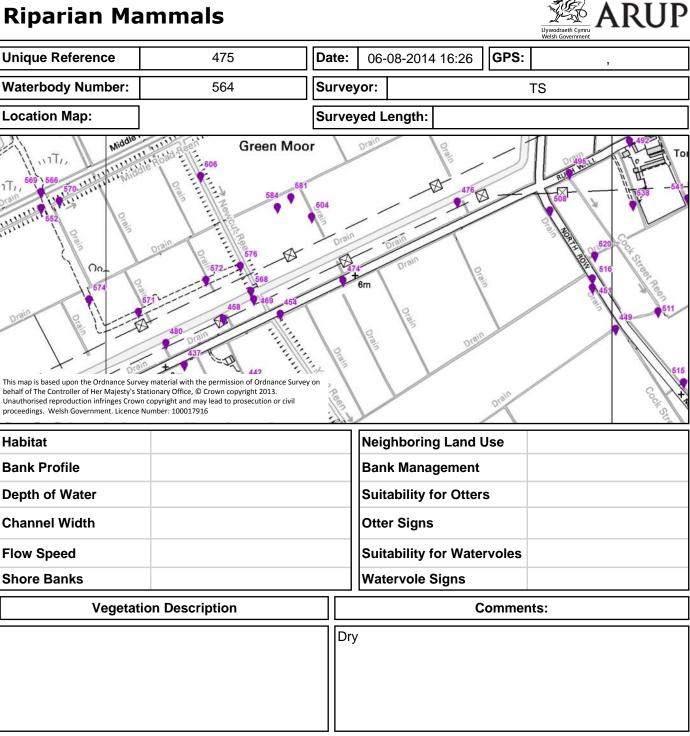
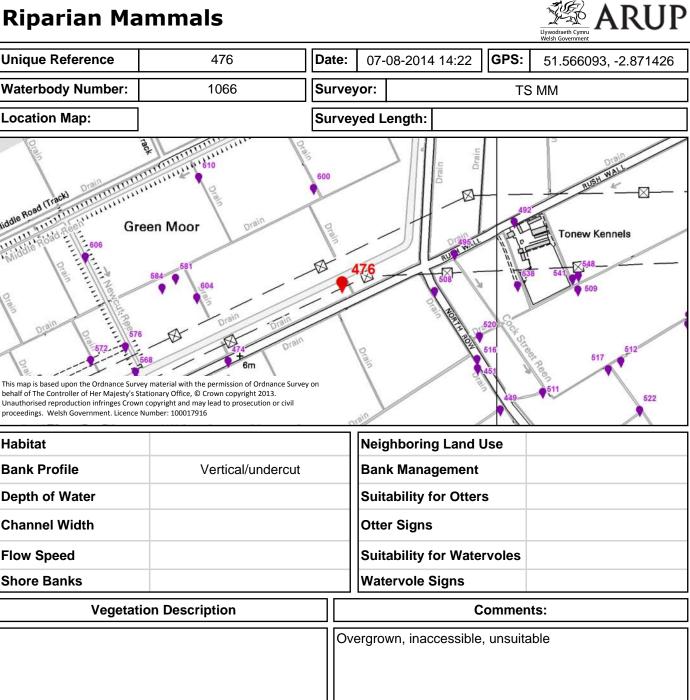


Photo 1

Photo 2











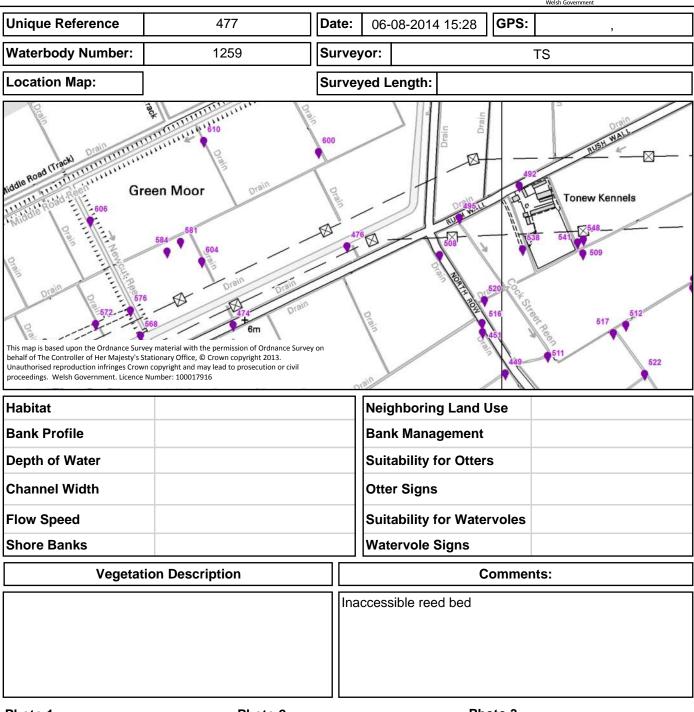
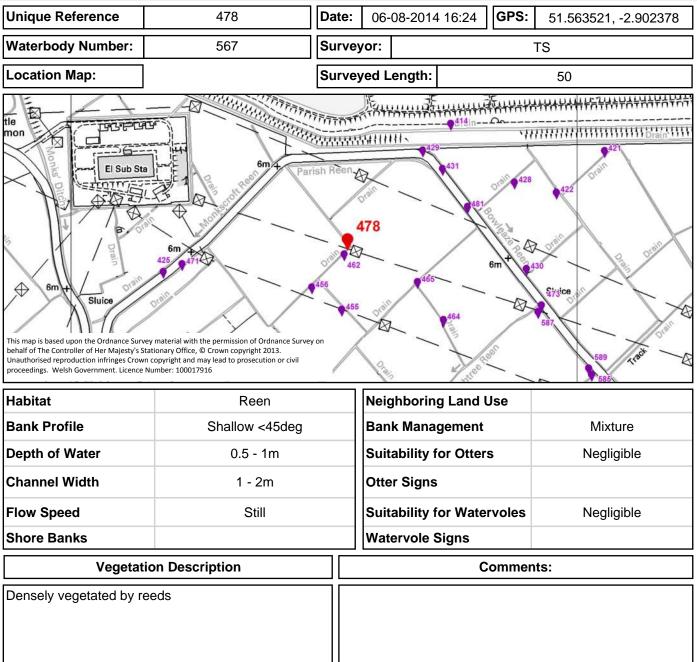


Photo 1

Photo 2

Photo 3



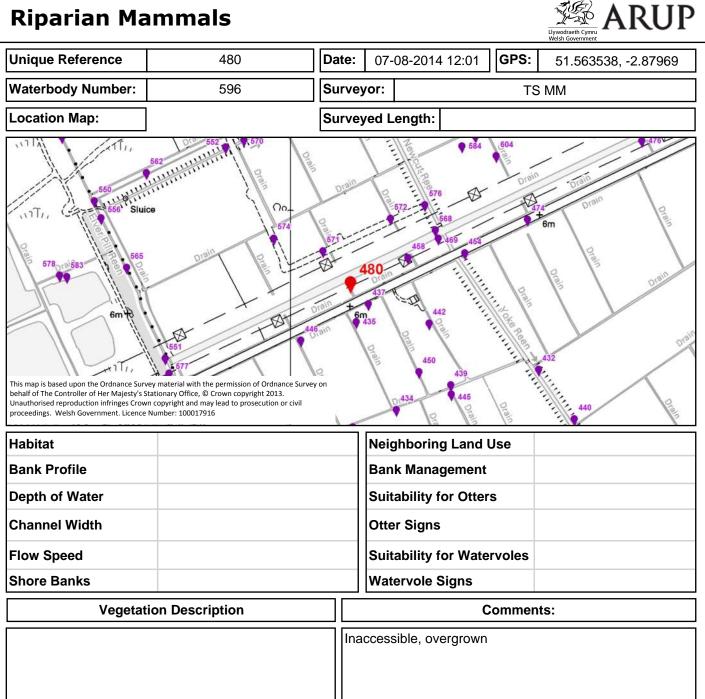








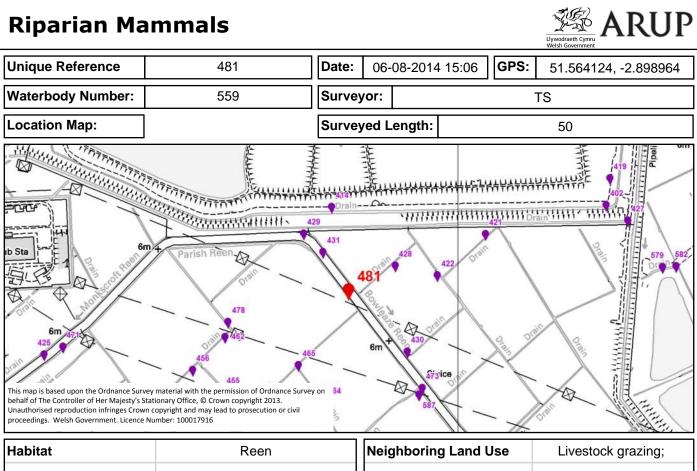
Unique Reference	479	Date:	06-0	08-2014 15:27 GP	S: ,
Waterbody Number:	1188	Survey	or:		TS
Location Map:		Survey	ed L	ength:	
behalf of The Controller of Her Majesty's S	eye material with the permission of Ordnance Survey tationary Office, © Crown copyright 2013. n copyright and may lead to prosecution or civil	77777777777777777777777777777777777777		465 6m	111111111111111111111111111111111111
Habitat			Neig	hboring Land Use	
Bank Profile			Ban	k Management	
Depth of Water			Suita	ability for Otters	
Channel Width			Otte	r Signs	
Flow Speed			Suita	ability for Watervole	S
Shore Banks			Wate	ervole Signs	
Vegetation Description Co		Comn	nents:		
Photo 1	Photo 2	Inad	ccess	ible reed bed Photo 3	











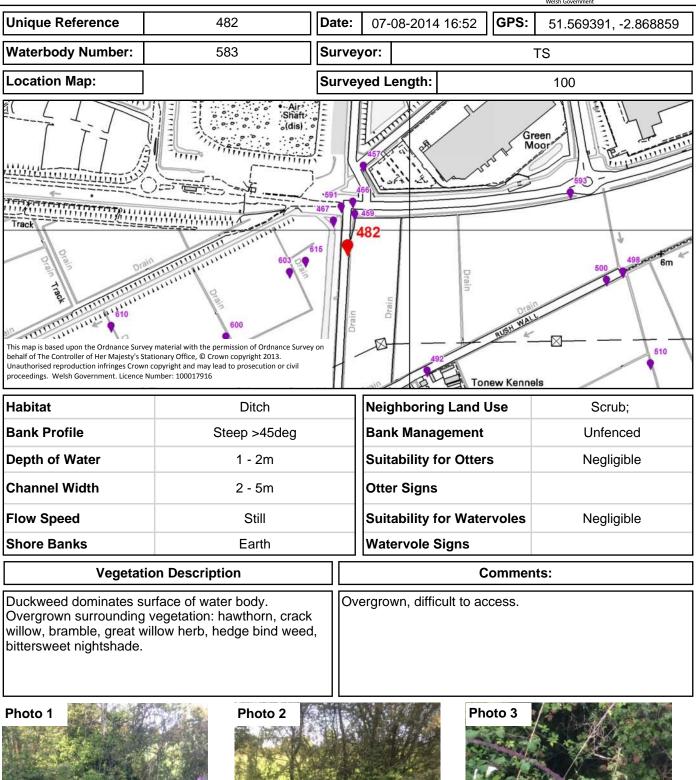
Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	0.5 - 1m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	Feeding Stations;

Vegetation Description	Comments:
Sedges, Frogbit, willow herb, trees	Reeds







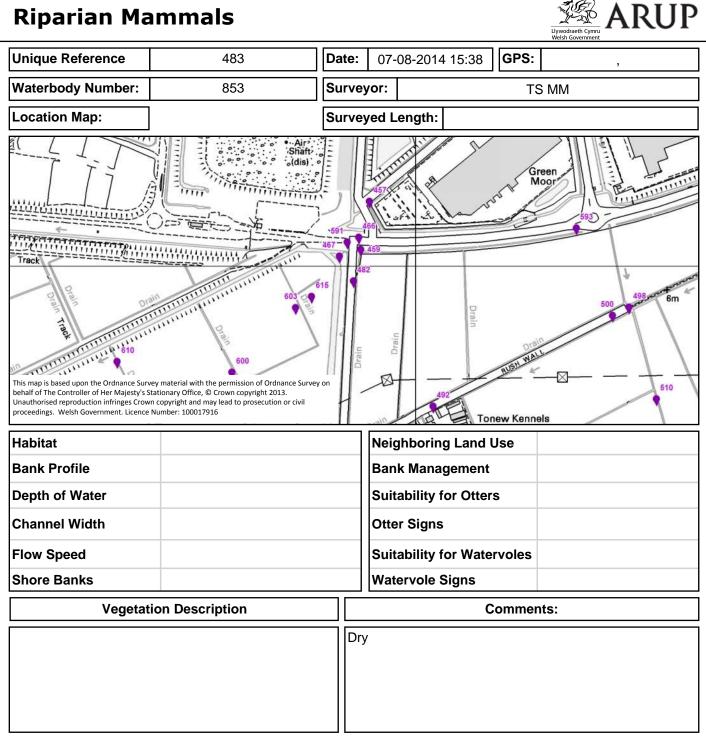








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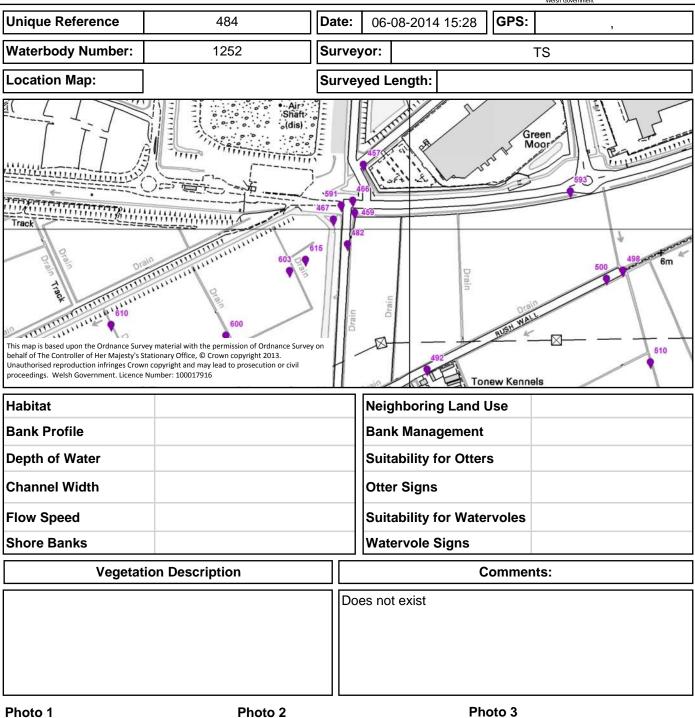


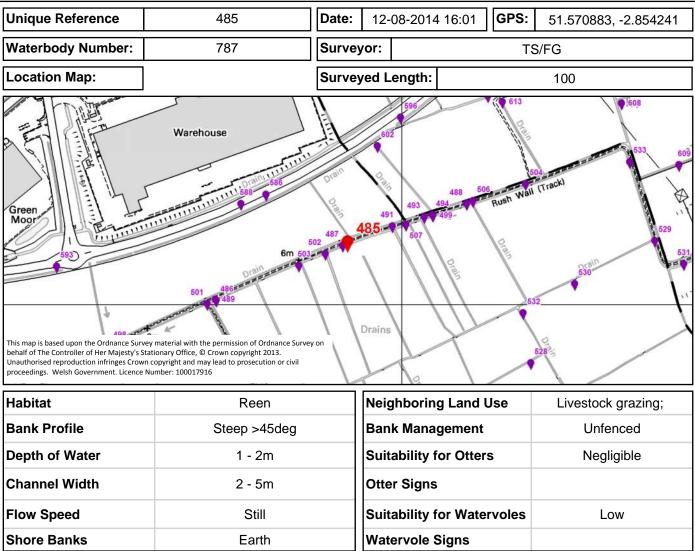
Photo 2

Photo 3

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Vegetation Description	Comments:
Ruderal on north side. Managed on South side.	Possible feeding station on south side but difficult to tell due to managed bank. Grass chomped at 45 degrees.





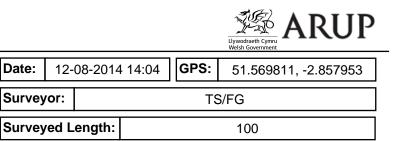


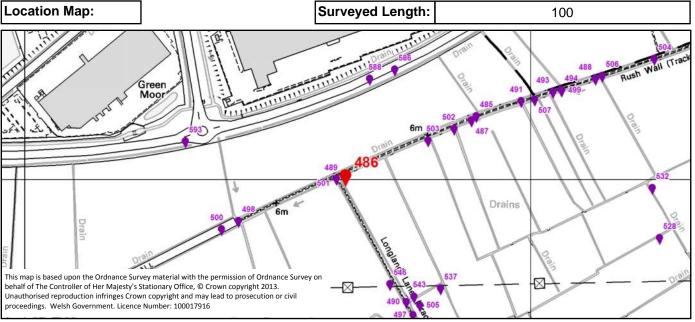
486

631

Unique Reference

Waterbody Number:





Date:

Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	Lawns;

Vegetation Description	Comments:
Long grass and ruderal	Potential mink tar spots. Mink/rat presence. possible water vole burrow. animal heard. (likely brown rat as no feeding station found on bank). Bank could not be checked due to cattle in field.









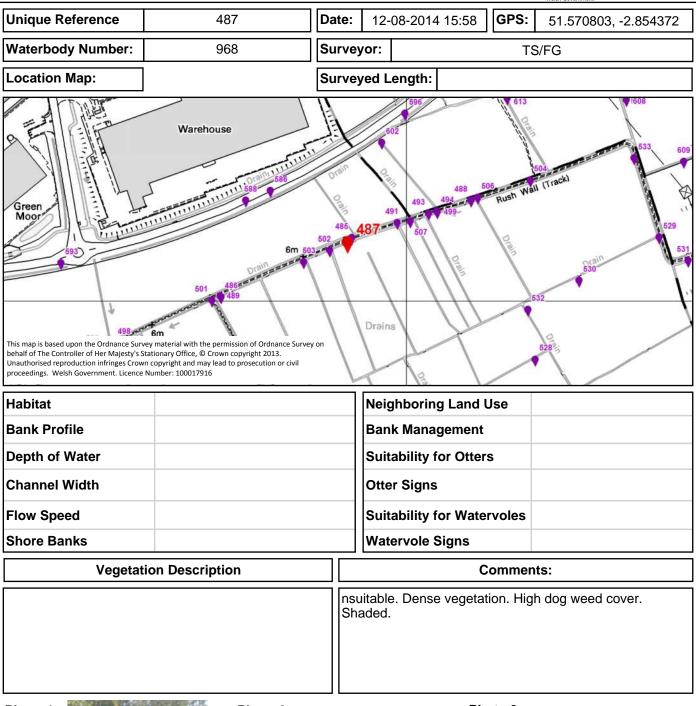




Photo 2



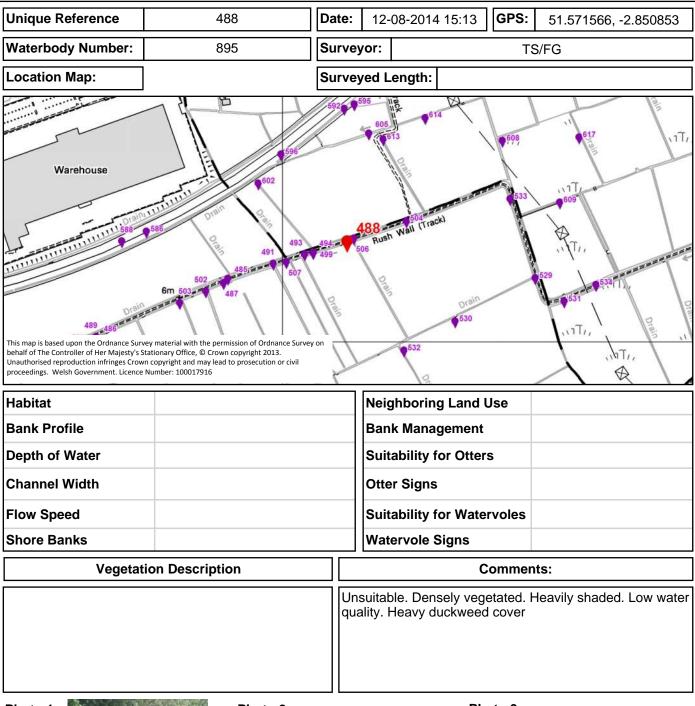




Photo 2



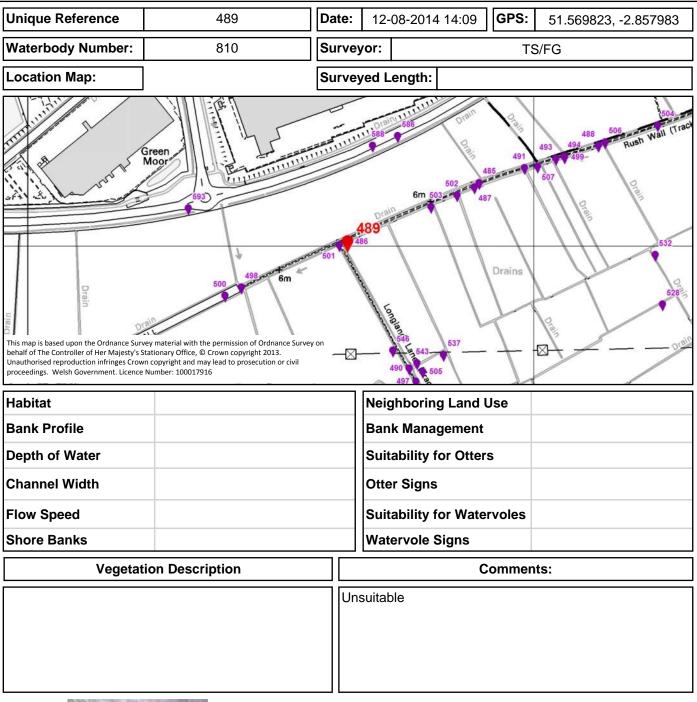
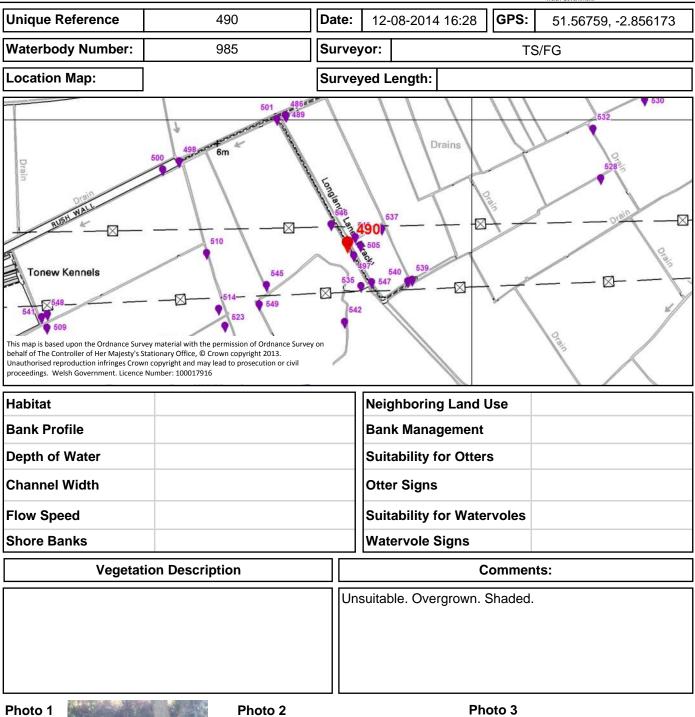




Photo 2









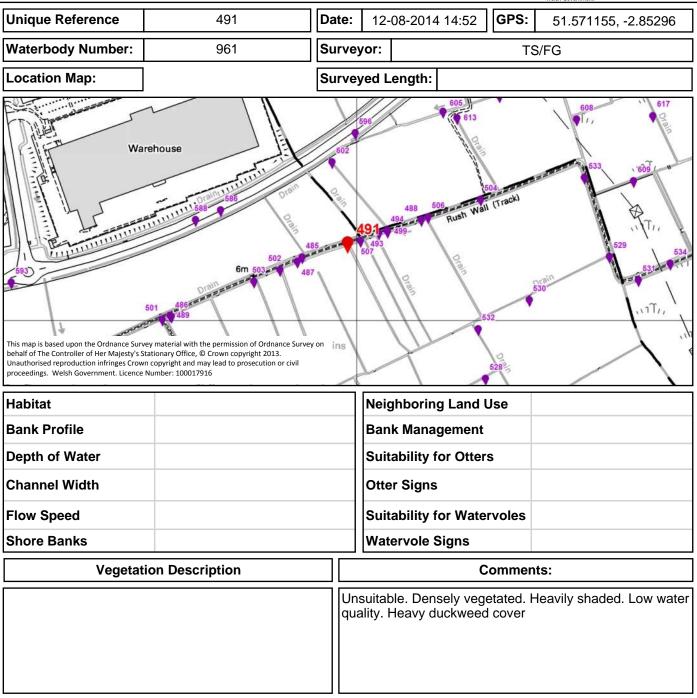
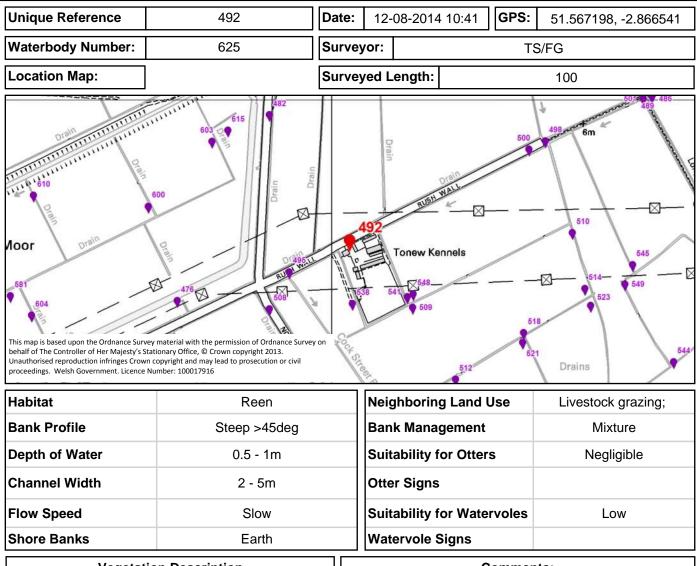




Photo 2





 Vegetation Description
 Comments:

 Willow herb, nettle, sedges, rush, dense duckweed cver.
 Recently cut bank









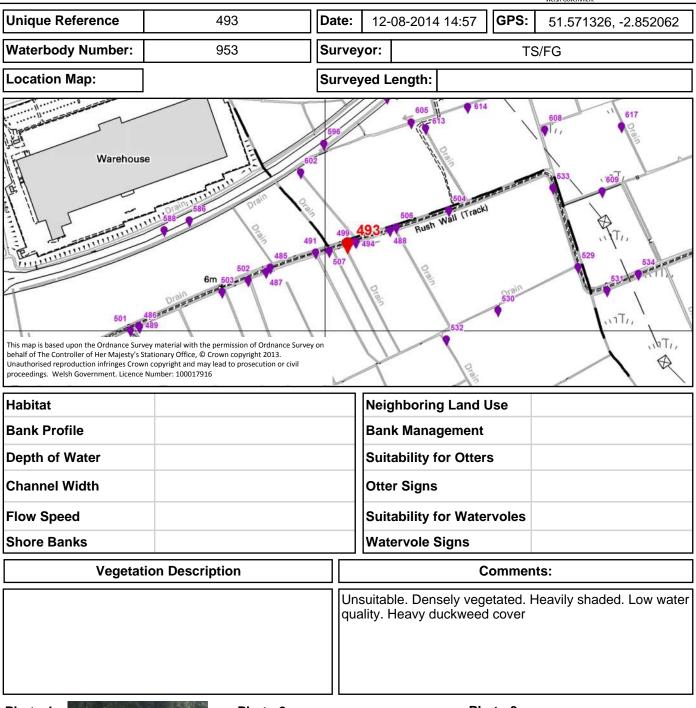




Photo 2

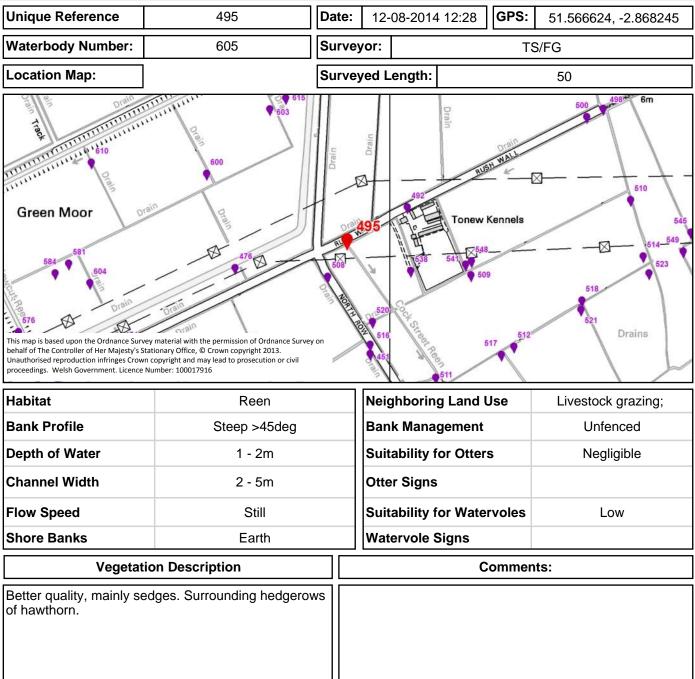


Unique Reference Waterbody Number: Location Map:		Date:	12-	08-2014 15:37	GPS:	54 574000 0 054000
			12	00 2014 10.07	GF3.	51.571366, -2.851829
Location Man	873	873 Surveyor: TS/FG		S/FG		
		Survey	ed L	ength:		
Warehouse Warehouse	6m 503 487 material with the permission of Ordnance Survey on ionary Office, © Crown copyright 2013. opyright and may lead to prosecution or civil	96	94 9	605 11 504 504 504 70 10 10 10 10 10 10 10 10 10 10 10 10 10	Brain	608
Habitat		Sec.	Neig	Jhboring Land L	Jse	
Bank Profile			Ban	k Management		
Depth of Water			Suit	ability for Otters	S	
Channel Width			Otte	r Signs		
Flow Speed			Suit	ability for Wate	rvoles	
Shore Banks			Wat	ervole Signs		
Vegetatio	n Description			C	ommen	its:
Photo 1	Photo 2		aded.		ation. Hi	igh dig weed cover.



Photo 2

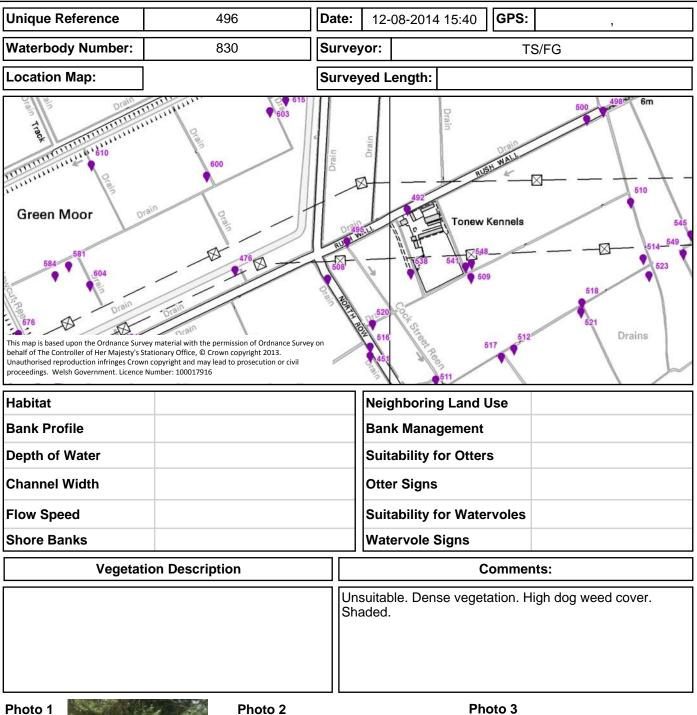






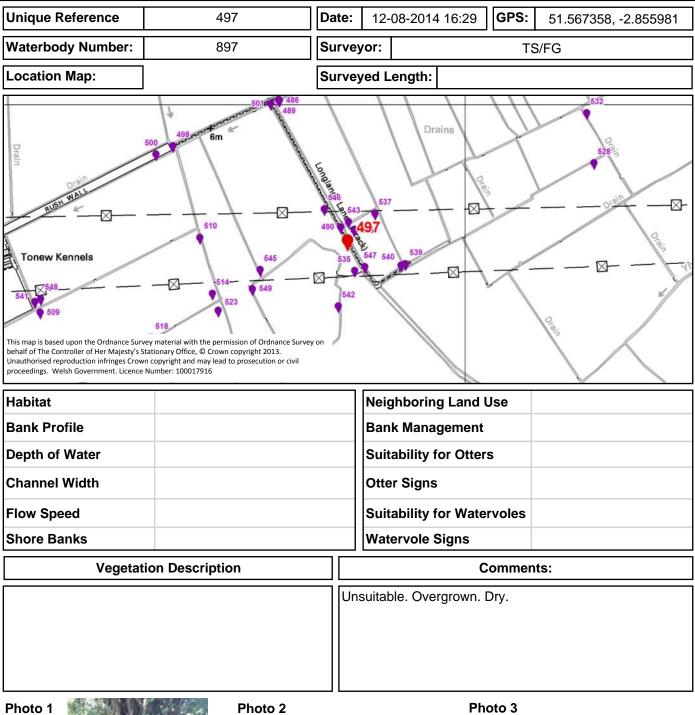






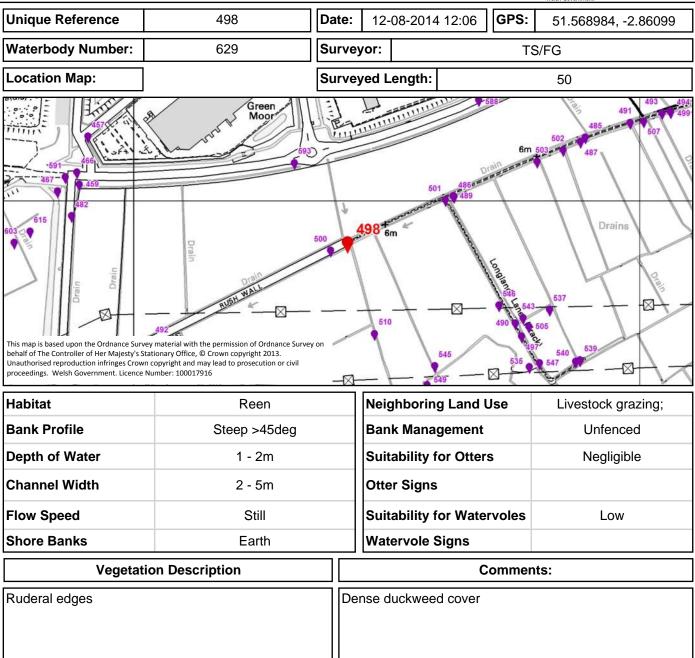












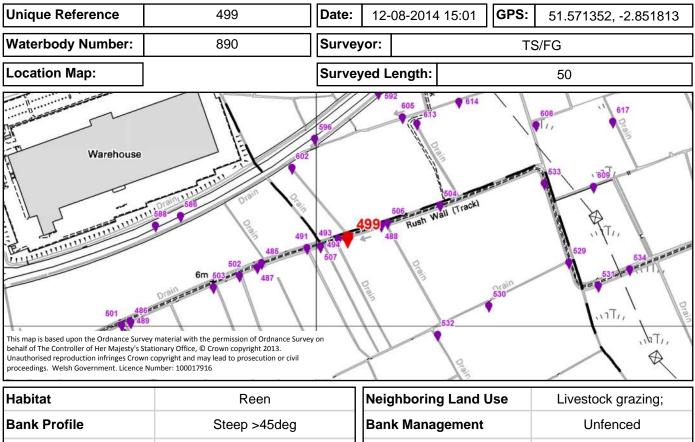












Shore Banks	Earth	Watervole Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Channel Width	2 - 5m	Otter Signs	
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Ballk Flollie	Sleep >45deg	Bank Management	Unienceu

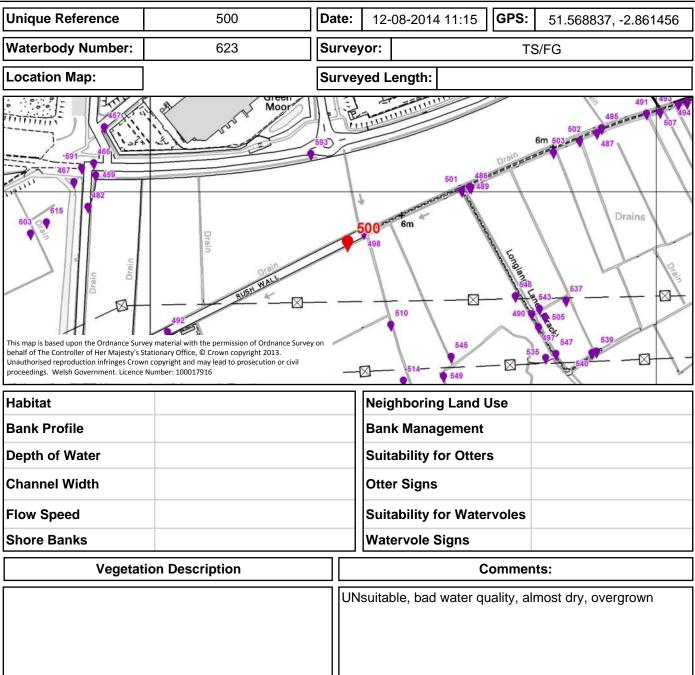








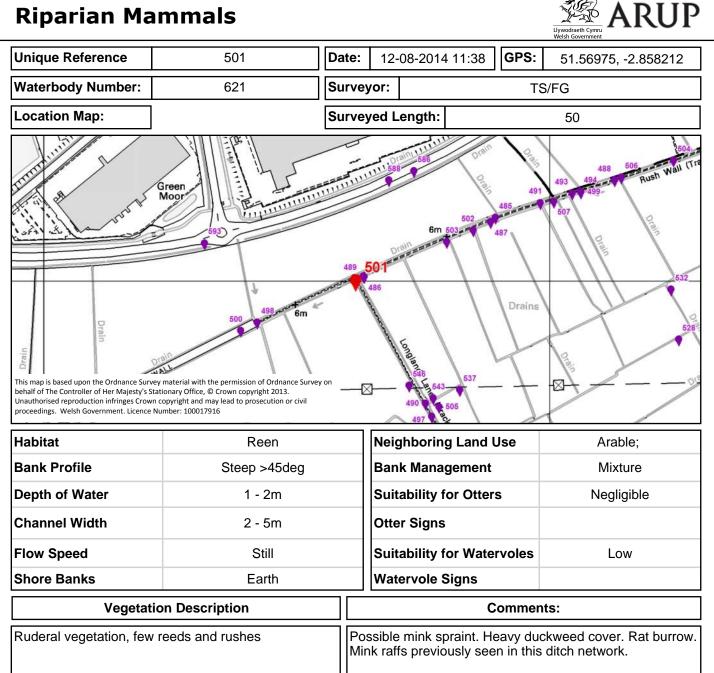




















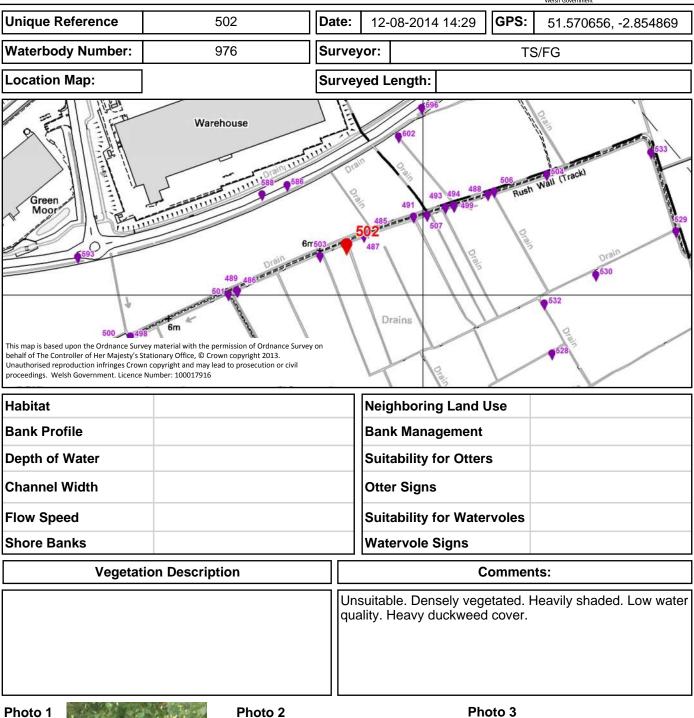




Photo 2



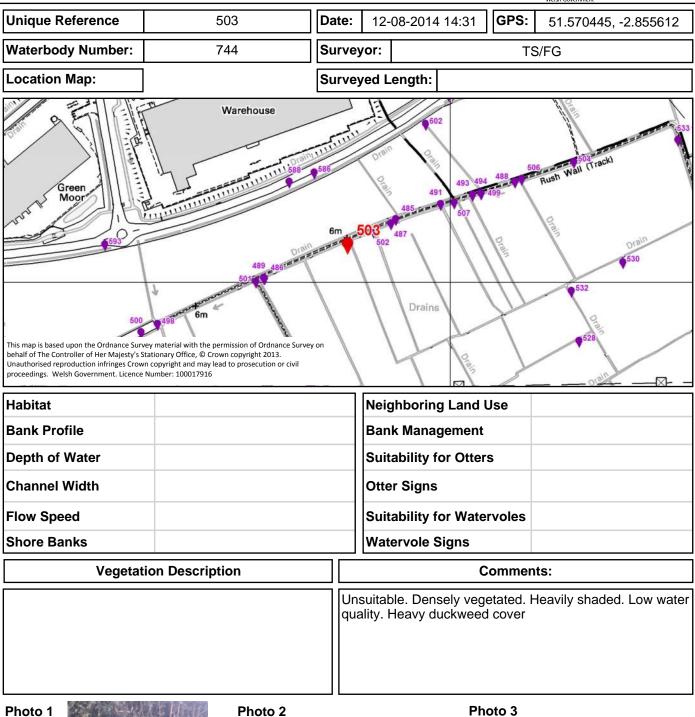
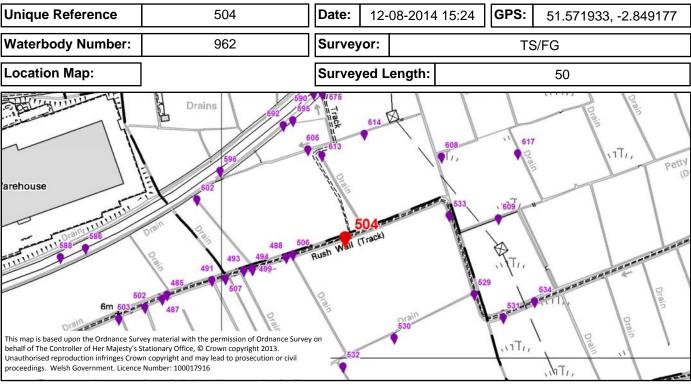




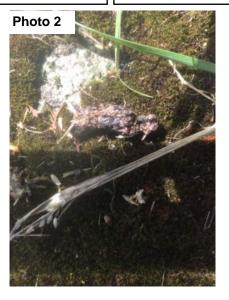
Photo 2



Habitat	Reen	Neighboring Land Use	
Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks		Watervole Signs	

Vegetation Description	Comments:
Managed on soured side. Ruderal on Northern side.	Quite recent mink spraint. No small mammal bones found in spraint.











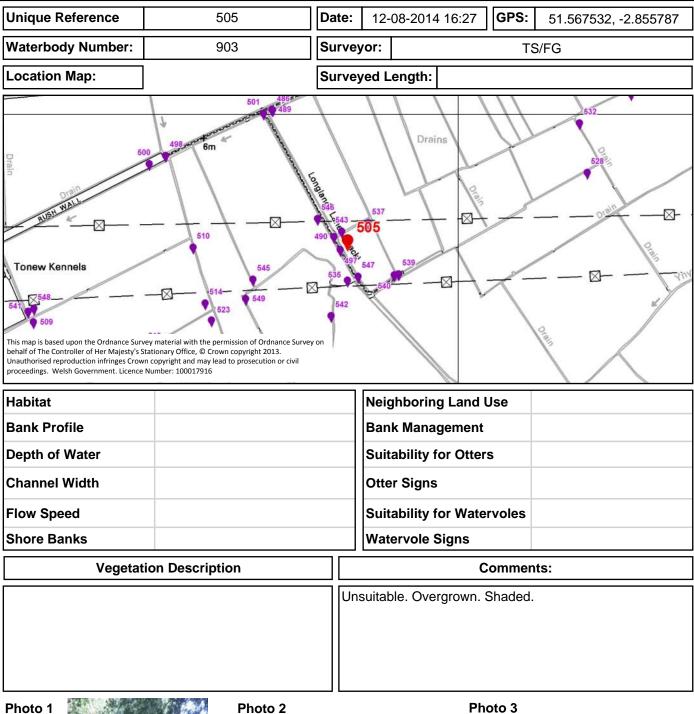
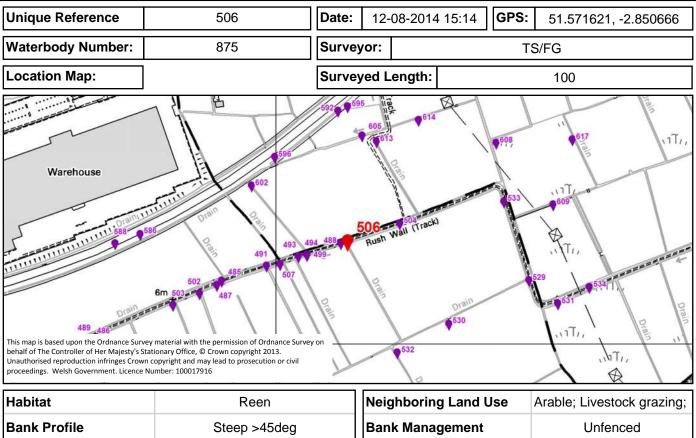




Photo 2





Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

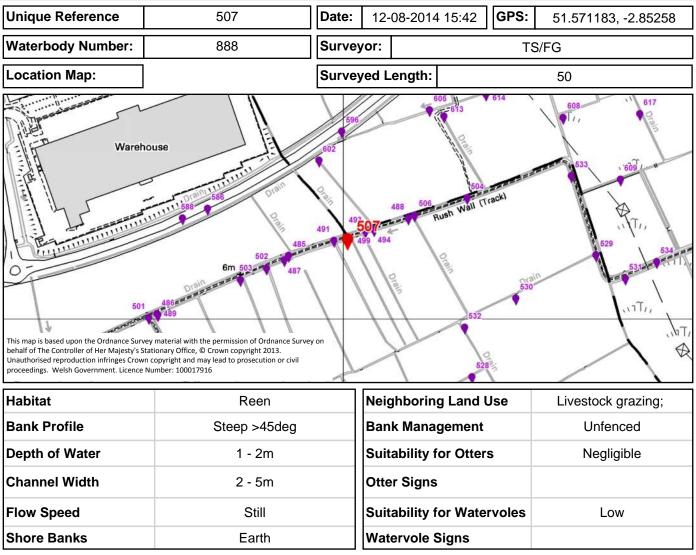
Vegetation Description	Comments:
Recently managed on Northern side. Ruderal on the southern side.	











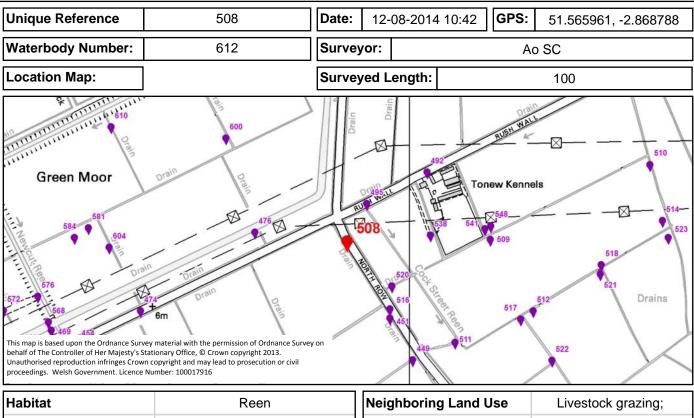
Vegetation Description	Comments:		
Managed on the southern side. Ruderal on the northern side.	Feeding stations found in 2 separate locations. Bank vole droppings found.		











Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Negligible
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	Pathways; Feeding Stations:

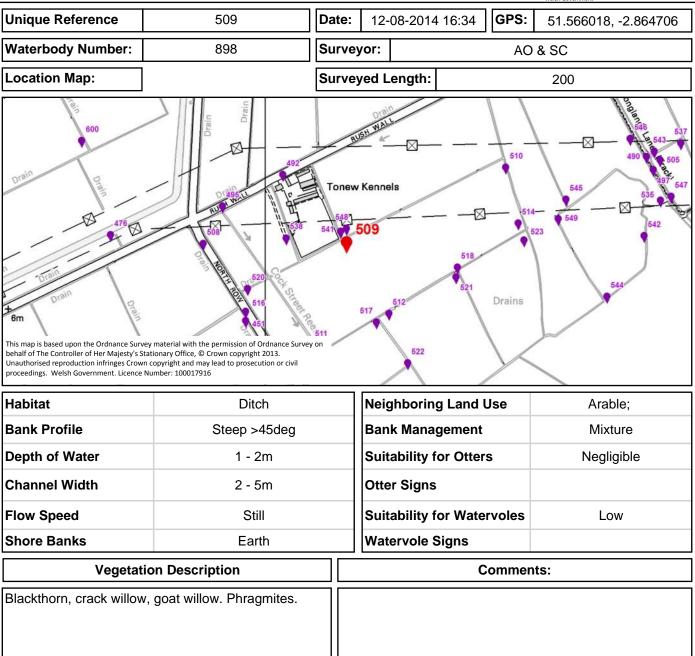
	Citationio,		
Vegetation Description	Comments:		
Bramble hedge, bullrush in ditch, nettles and Umbellifores in ditch. Roadside verge recently cut.	Feeding station on bank of field ditch adjacent to road.		

















					Weish Government
Unique Reference	510	Date:	12-08-2014 16:14	GPS:	51.567374, -2.860181
Waterbody Number:	981	Surveyor: AO & SC			
Location Map:		Surveyed Length: 300			
behalf of The Controller of Her Majesty's Stat	copyright and may lead to prosecution or civil			543 505 397 55 542	Drains
Habitat	Ditch	•	leighboring Land U	lse	Arable;
Bank Profile	Shallow <45deg	E	Bank Management		Mixture
Depth of Water	1 - 2m	8	Suitability for Otters	5	Negligible
Channel Width	5 - 10m	c	Otter Signs		

Flow Speed	low Speed Still		Suitability for Watervoles	Low
Shore Banks Earth		Watervole Signs		Pathways; Feeding Stations;
Vegetation Description		Comments:		
Double sided hedge with horthorn, crack willow, wild rose, grasses, nettles.a section of the water surface covered in duckweed in the ditch		Bat foraging potential with hedgerow & mature crack willow.		

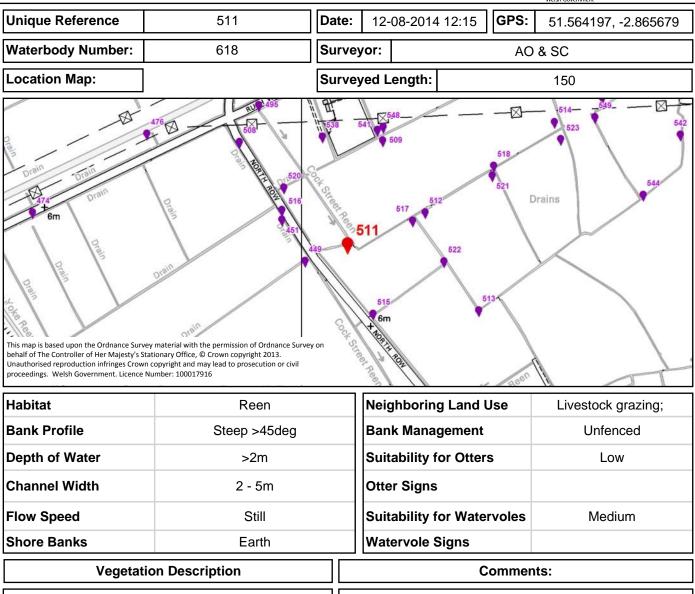












Short section to the south - Bullrush,duck weed, section of hedge with crack willow & horthorn. Main section - duckweed, hogweed, bullrush. Bank vole feeding remains

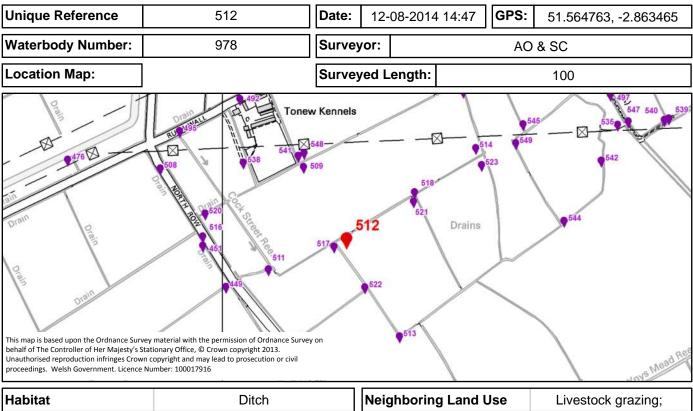












Habitat	Ditch	Neighboring Land Use	Livestock grazing;
Bank Profile	Steep >45deg	Bank Management	Mixture
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	Burrows; Feeding Stations;

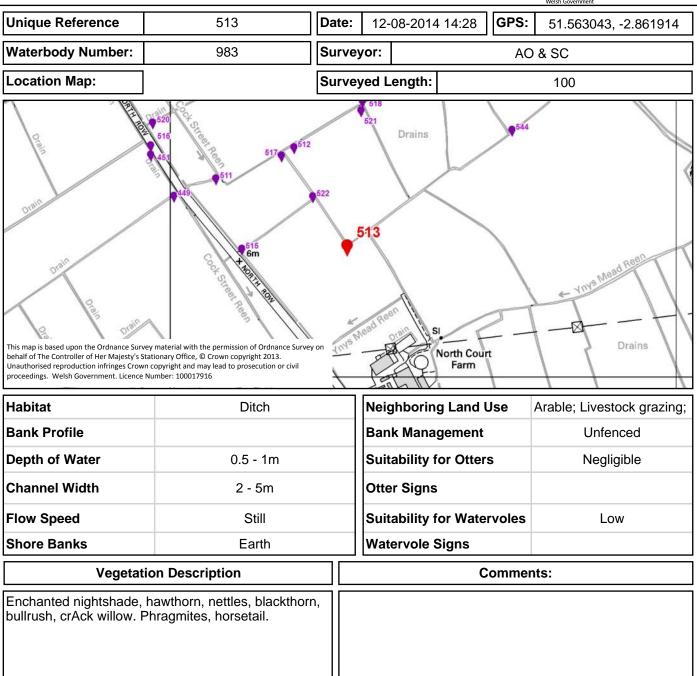
Vegetation Description	Comments:		
Southern edge - Crack willow, blackthorn, bramble, lemna, nettles, hawthorn. Northern edge - Phragmites,duckweed	Water vole feeding remains, bank vole feeding remains.		



















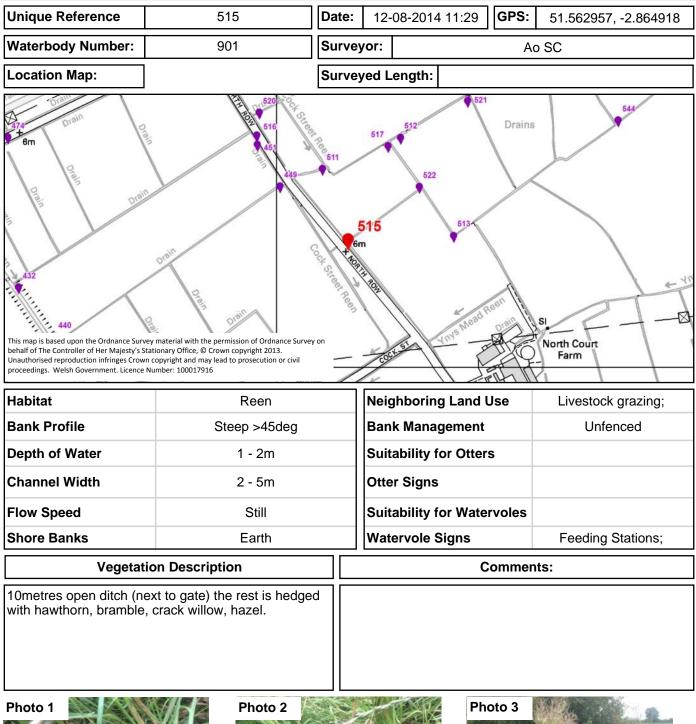


Unique Reference	514	Date:	12-08-2014 16	6:05 GPS :	51.566387, -2.85981
Waterbody Number:	628	Survey	vor:	AC) & SC
Location Map:		Survey	ved Length:		50
behalf of The Controller of Her Majesty's St	copyright and may lead to prosecution or civil	Drains	545 523 544	4901 543 5537 4901 5505 497 ² 540 555 547 542	
Habitat	Ditch		Neighboring L	and Use	Arable; Livestock grazing;
Bank Profile	Steep >45deg		Bank Managei	nent	
Depth of Water	1 - 2m		Suitability for	Otters	Negligible
Channel Width	5 - 10m		Otter Signs		
Flow Speed	Still		Suitability for	Watervoles	Low
Shore Banks	Earth		Watervole Sig	ns	
Vegetation Description Comments:					
Double sided hawthorn bramble, goat wilow, ph	hedge; blackthorn and ragmites. Photo 2			Photo 3	







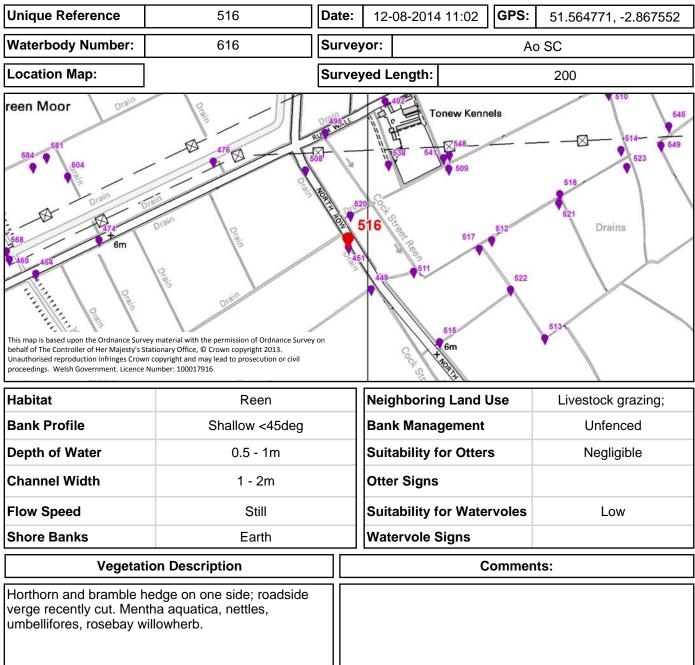








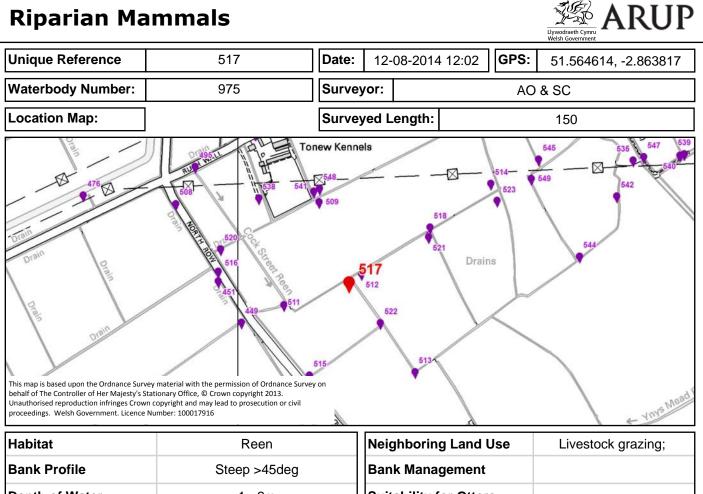












Vegetatio	on Description	Comments:			
Shore Banks	Earth	Watervole Signs			
Flow Speed	Still	Suitability for Watervoles			
Channel Width	2 - 5m	Otter Signs			
Depth of Water	1 - 2m	Suitability for Otters			

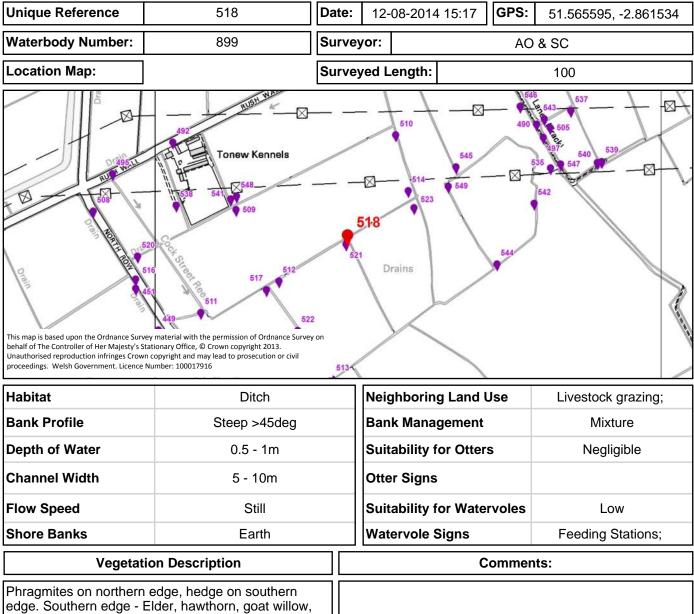
Southern side of ditch is hedged with bramble, hawthorn, Phragmites. Enchanted nightshade. HaZel. Crack willow











wild rose. Bat potential - old ivy stand, goat willow.







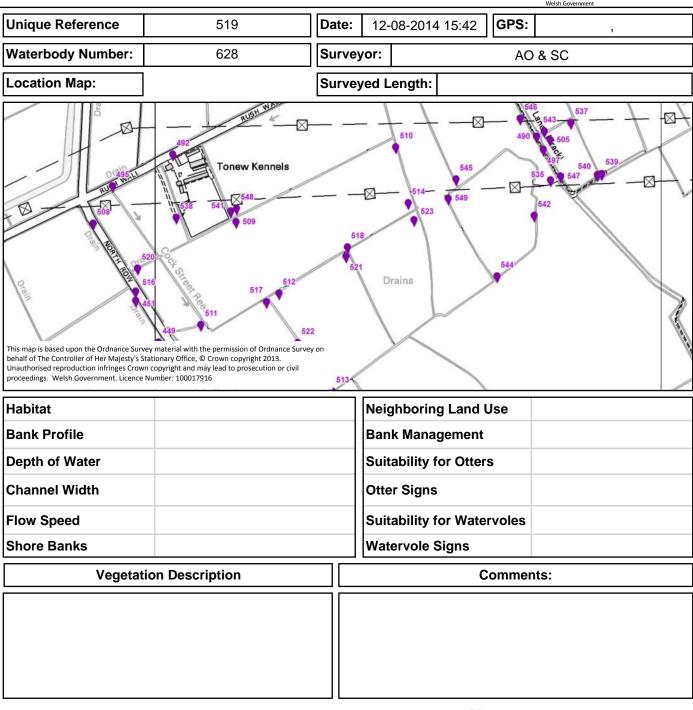
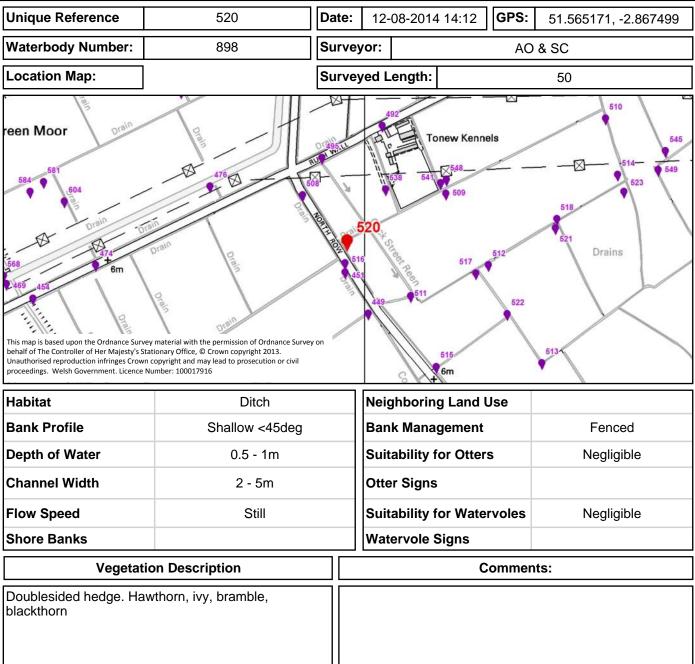


Photo 1

Photo 2

Photo 3

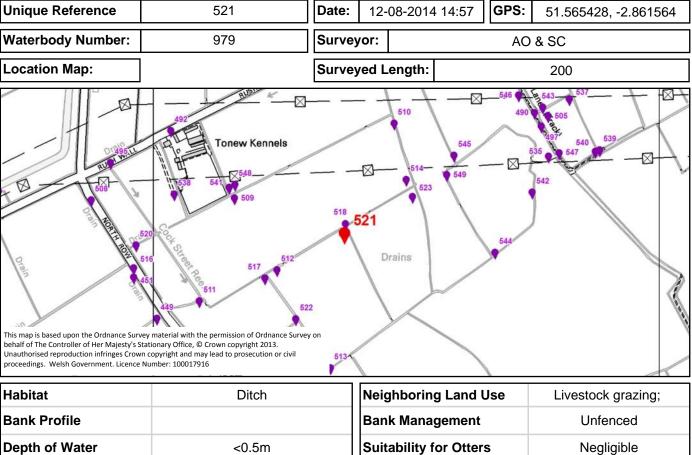












		J	
Depth of Water	<0.5m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Negligible
Shore Banks	Earth	Watervole Signs	

 Vegetation Description
 Comments:

 Blackthorn, bramble, phragmites. Hedge on western side, phragmites / bramble/ hawthorn eastern side.
 Comments:













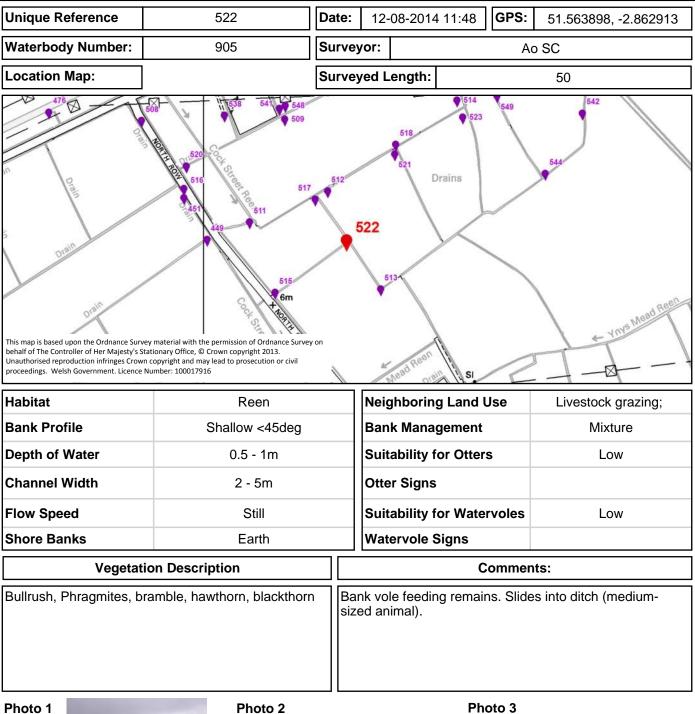


Photo 2



Í.						Welsh Government	
Unique Reference	523	Date:	12-08-2014	15:44	GPS:	51.566088, -2.859635	
Waterbody Number:	825	Survey	or:	AO & SC			
Location Map:		Survey	ed Length:			150	
This map is based upon the Ordnance Survey behalf of The Controller of Her Majesty's Sta	113						
Habitat	Ditch		Neighboring	g Land L	lse	Livestock grazing;	
Bank Profile	Steep >45deg		Bank Manag	gement		Unfenced	
Depth of Water	0.5 - 1m		Suitability f	or Otters	5	Negligible	
Channel Width	2 - 5m		Otter Signs				
Flow Speed	Still		Suitability f	or Water	voles	Negligible	
Shore Banks	Earth	Watervole Signs					
Vegetatio		Comments:					

Horthorn blackthorn, bramble hedge - double sided. Eastern edge is arable cornfield.

Photo 1

Photo 2







Waterbody Number:		Survey	or:			
Location Map:			01.		,	loe
		Survey	/ed Le	ength:		
This map is based upon the Ordnance Survey mate behalf of The Controller of Her Majesty's Stationar Unauthorised reproduction infringes Crown copyr	rry Office, © Crown copyright 2013. right and may lead to prosecution or civil	525 5	524			
proceedings. Welsh Government. Licence Numbe						Draadlaaf waadlaad
Habitat Bank Profile	Pond Steep >45deg		Neig	hboring Land U	Jse	Broadleaf woodland; Conifer plantation; Bog; Salt marsh;
Depth of Water	0.5 - 1m		Bank	(Management		Unfenced
Channel Width	5 - 10m		Suita	ability for Otters	s	Low
Flow Speed	Fast		Otter	r Signs		
Shore Banks	Silt		Suita	ability for Wate	rvoles	
			Wate	ervole Signs		
Vegetation	Description			C	ommen	ts:
Photo 1	Photo 2			Pho	oto 3	



Unique Reference	525	Date:	13-	08-2014 15:34 GP	S:	51.450254, -2.58814	
Waterbody Number:		Surveyor: Joe					
Location Map:		Surveyed Length:					
behalf of The Controller of Her Majesty's S	vey material with the permission of Ordnance Survey Stationary Office, © Crown copyright 2013. In copyright and may lead to prosecution or civil Number: 100172016	•	5 25 524				
Habitat	Pond		Noic	hboring Land Use		Broadleaf woodland;	
Bank Profile					_	Conifer plantation; Bog;	
Depth of Water				k Management ability for Otters	_		
Channel Width	5 - 10m			r Signs			
Flow Speed	Sluggish			ability for Watervole	s		
Shore Banks				ervole Signs	-		
Vegetat	ion Description			Comm	ent	s:	
Photo 1	Photo 2			Photo 3			

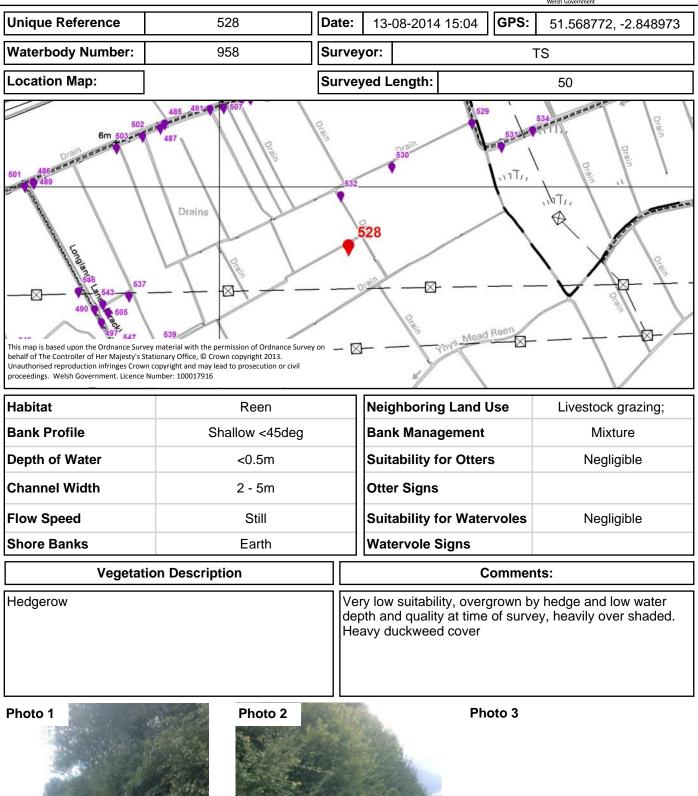


Waterbody Number:						,	
		Survey	/or:			Joe	
Location Map:		Surveyed Length:					
This map is based upon the Ordnance Survey materia behalf of The Controller of Her Majesty's Stationary Unauthorised reproduction infringes Crown copyrigh proceedings. Welsh Government. Licence Number :	Office, © Crown copyright 2013. ht and may lead to prosecution or civil	525	524				
Habitat	Pond		Neig	hboring Land L	Jse		
Bank Profile	Steep >45deg			k Management			
Depth of Water			Suit	ability for Otters	S		
Channel Width	2 - 5m		Otte	r Signs			
Flow Speed			Suit	ability for Wate	rvoles		
Shore Banks			Wat	ervole Signs			
Vegetation D	escription			C	ommer	nts:	
Photo 1	Photo 2			Dha	oto 3		



Unique Reference	527	Date:	13-	08-2014	11:47	GPS:	3		
Waterbody Number:	952	Surve	eyor:				ГS		
Location Map:		Surve	eyed L	ength:			50		
This map is based upon the Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office, @ Crown copyright 2013. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Webls Government. Licence Number: 100017916									
Habitat	Reen		Neig	hboring	g Land L	Jse	Livestock grazing;		
Bank Profile	Steep >45deg		Ban	k Manag	gement		Mixture		
Depth of Water	0.5 - 1m		Suita	ability fo	or Otters	5	Negligible		
Channel Width	1 - 2m		Otte	r Signs					
Flow Speed	Still		Suita	ability fo	or Water	rvoles	Medium		
Shore Banks	Earth		Wate	ervole S	igns				
Vegetati	on Description				C	ommen	ts:		
Fence reeds and rushes hedgerow and scrub. Lo	Fence reeds and rushes surrounded by encroaching hedgerow and scrub. Lots of sweet reed grass present Adjacent to ditch with feeding station. Better quality towards Northern end but still heavily vegetated.								
Photo 1 Photo 2 Photo 2 Photo 2 Photo 3 Photo									









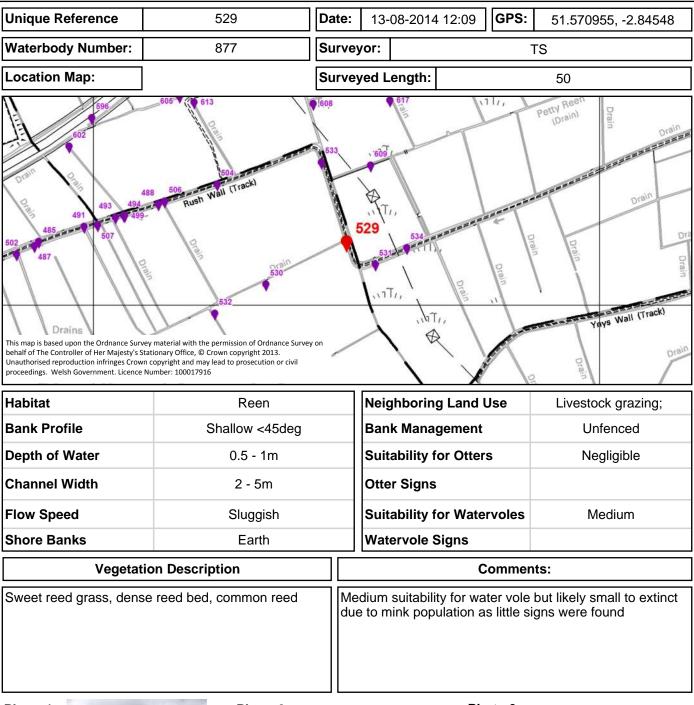
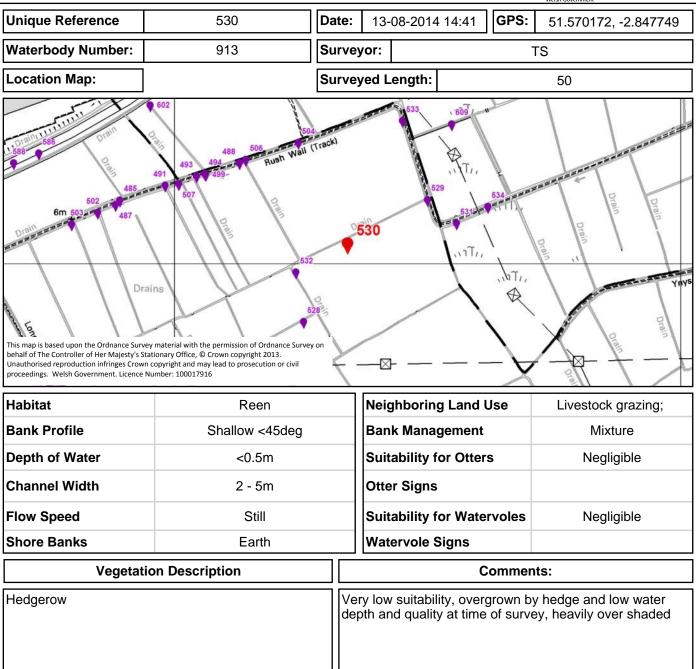




Photo 2



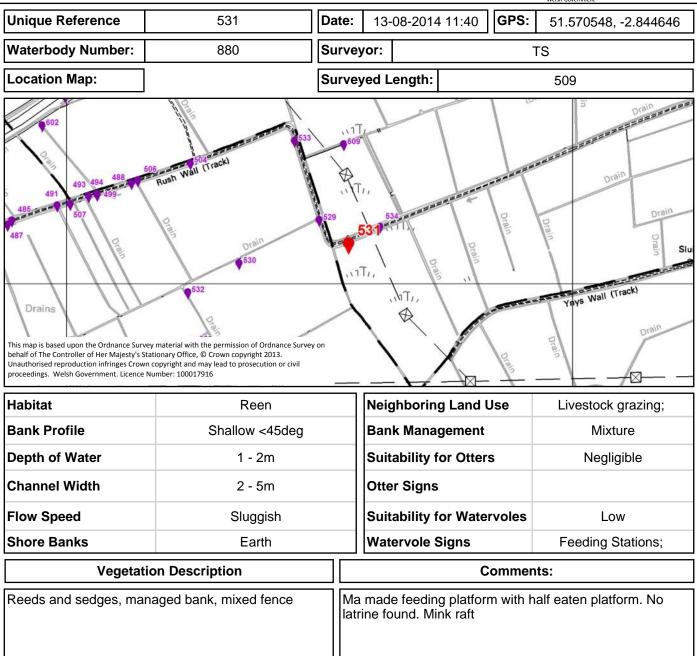




















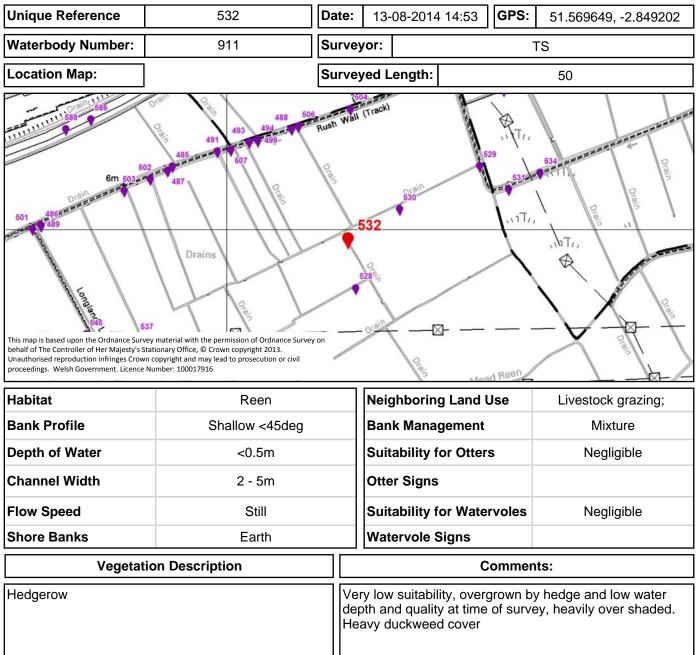
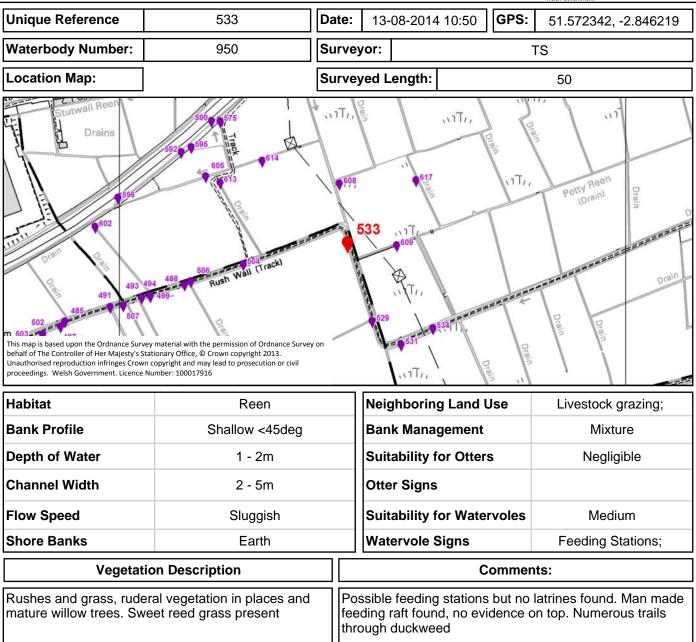




Photo 2





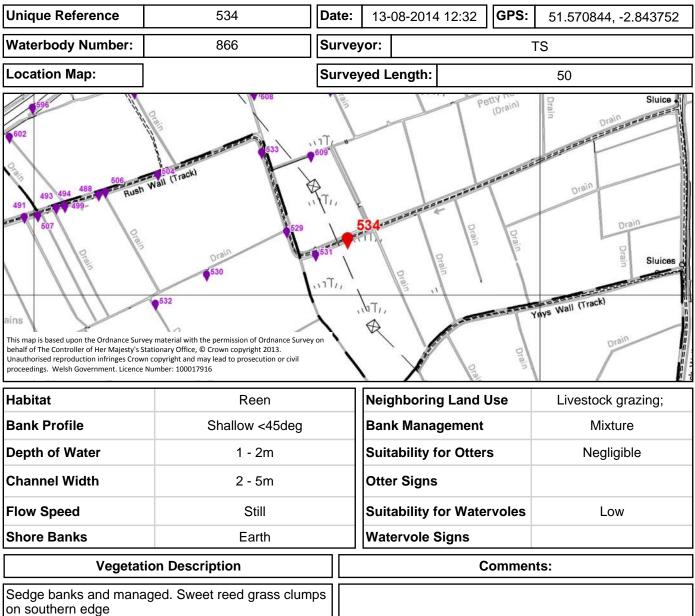




















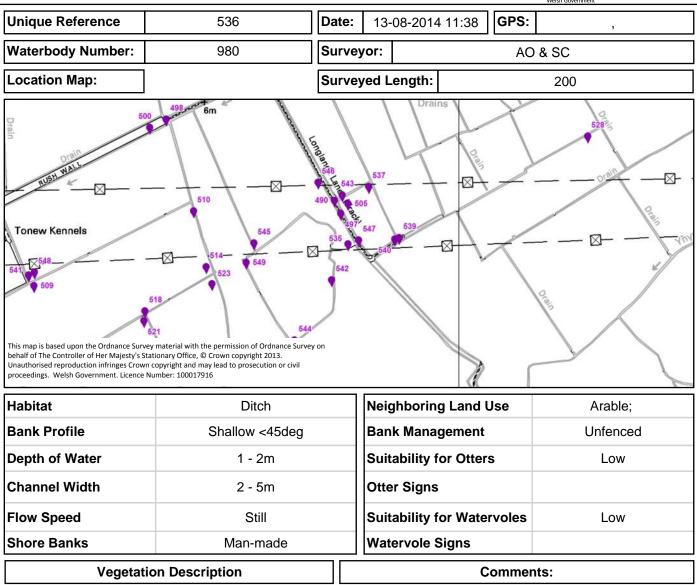


					Welsh Government
Unique Reference	535	Date:	13-	08-2014 11:42 GPS:	51.566823, -2.855763
Waterbody Number:	980	Surve	yor:	AC) & SC
Location Map:		Surve	yed L	ength:	
behalf of The Controller of Her Majesty's Sta	510 545 545 545 545 545 549 544 544	490 497 497 542	537 535 547 547	539	
Habitat	Ditch		Neig	hboring Land Use	Arable;
Bank Profile	Steep >45deg		Ban	k Management	Fenced
Depth of Water	<0.5m		Suit	ability for Otters	Low
Channel Width	2 - 5m		Otte	r Signs	
Flow Speed	Still		Suit	ability for Watervoles	Low
Shore Banks	Man-made		Wate	ervole Signs	
Vegetatio	on Description	Comments:			
Ash copse, blackthorn,cr bramble,hawthorn	ack willow,goat willow,			edged with cox wooded and foraging	dland, bat potential for
Photo 1	Photo 2			Photo 3	







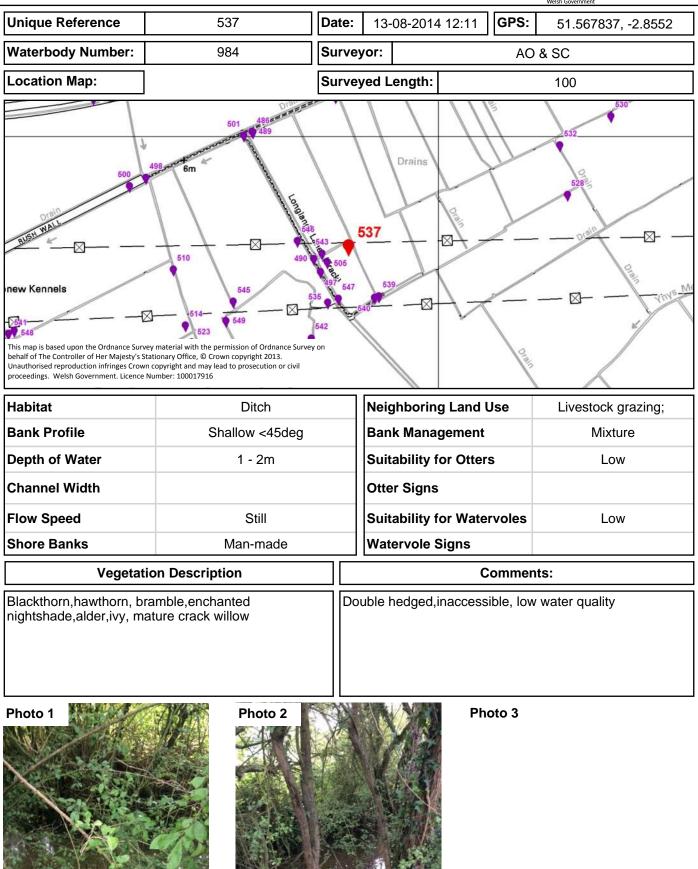












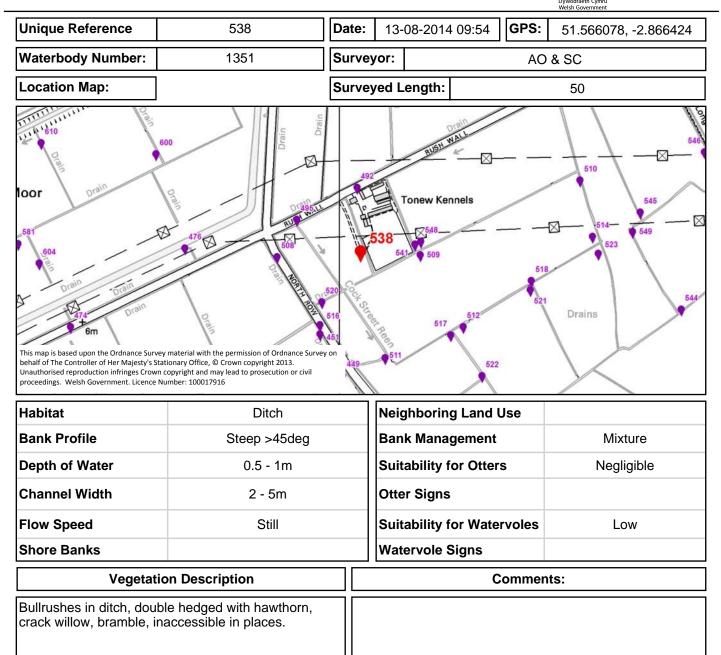






Photo 3

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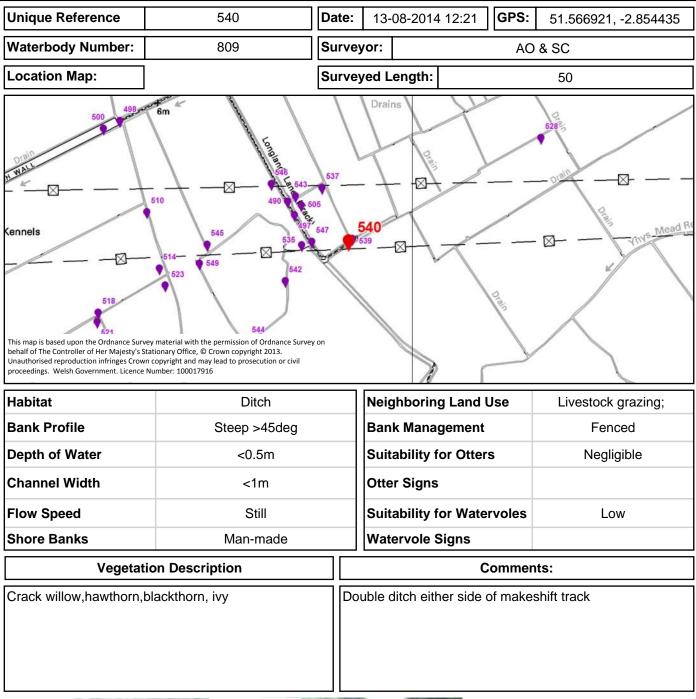
Unique Reference	539	Date:	13-08-2014	14:34	GPS:	Welsh Government 51.566946, -2.854312
Waterbody Number:	743	Surve	I			& TR
Location Map:			yed Length:			50
	A CONTRACT OF A		- 1			50
behalf of The Controller of Her Majesty's S	ey material with the permission of Ordnance Survey tationary Office, © Crown copyright 2013. n copyright and may lead to prosecution or civil	547	Drains			S28 ² DOULL NO Mead Rev Vivus Mead Rev
Habitat	Ditch		Neighboring	g Land U	se	Arable;
Bank Profile	Flat <10 degrees		Bank Management			Fenced
Depth of Water	<0.5m		Suitability for Otters		;	Negligible
Channel Width	1 - 2m		Otter Signs			
Flow Speed	Still		Suitability for	or Water	voles	Low
Shore Banks	Man-made		Watervole S	Signs		
Vegetat	ion Description			Co	ommen	ts:
Blackthorn,hawthorn,cra ash tree	ack willow,ivy,bramble, matu		ccessible,dry ed ditches in	ditch,mo	re like a	a copse than ditch.got two







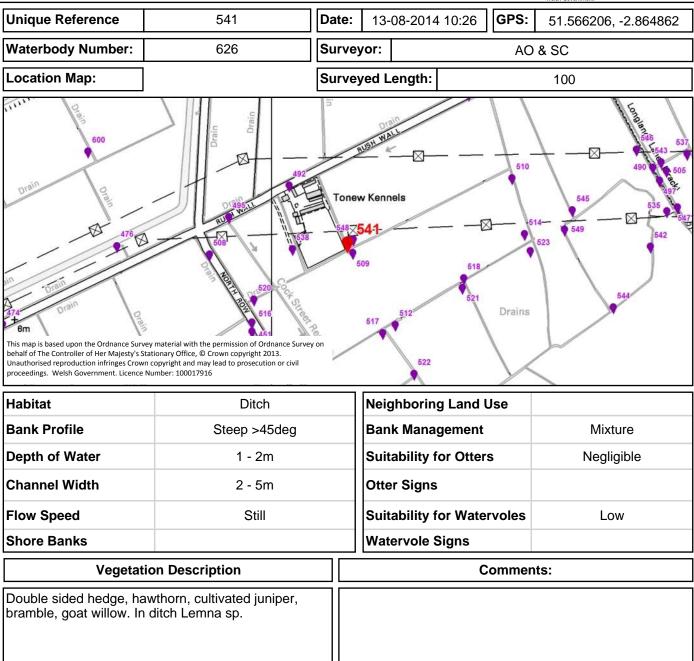


















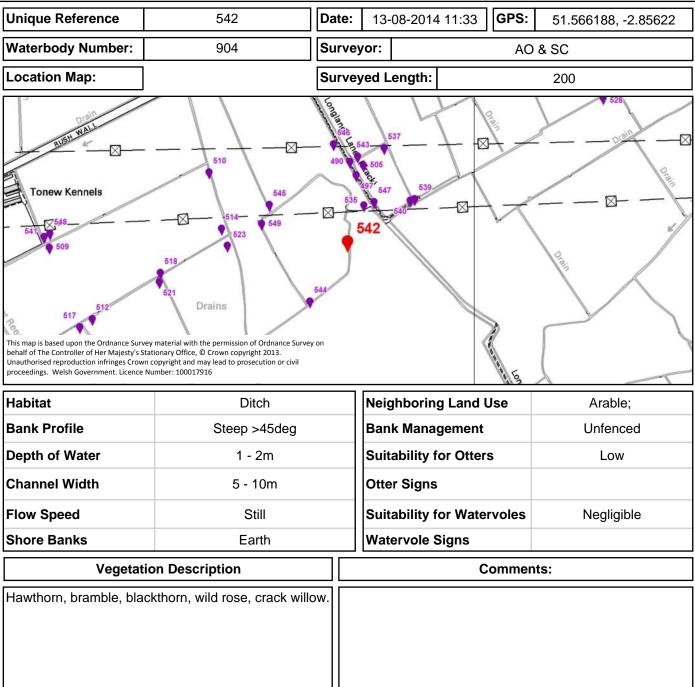


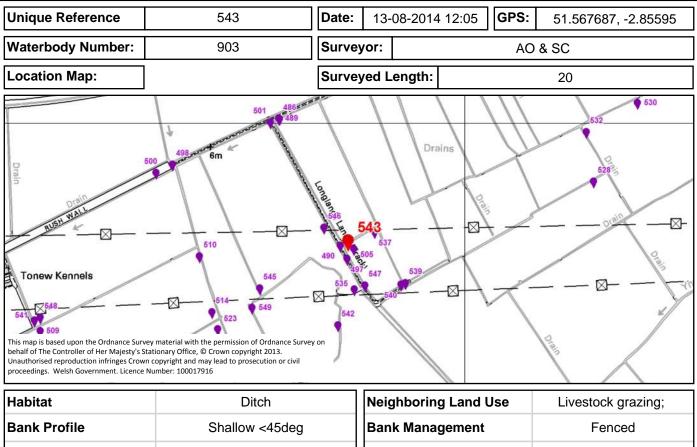


Photo 1









Bank Profile	Shallow <45deg	Bank Management	Fenced
Depth of Water	>2m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Man-made	Watervole Signs	

Vegetation Description

Bull rush and duck weed in ditch, poached edge on northern side,hawthorn,bramble,goat willow,blackthorn,phragmites,ivy

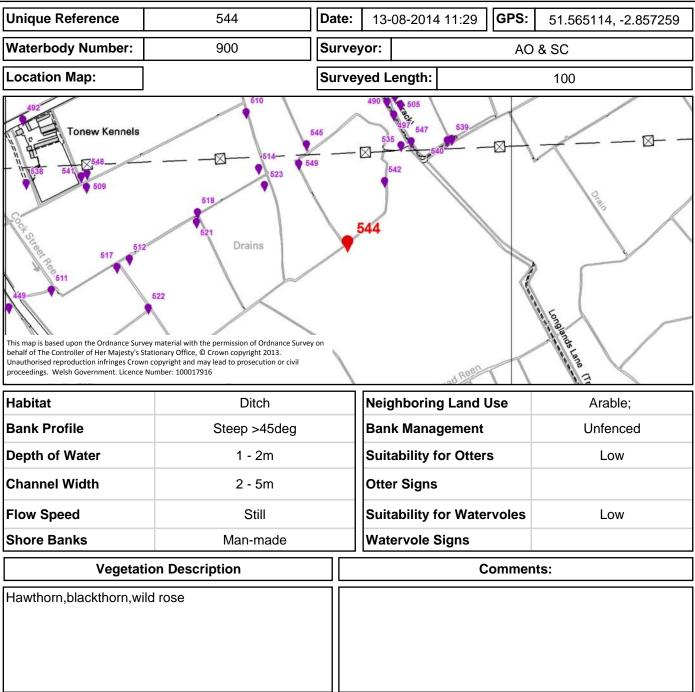




Photo 3

Comments:



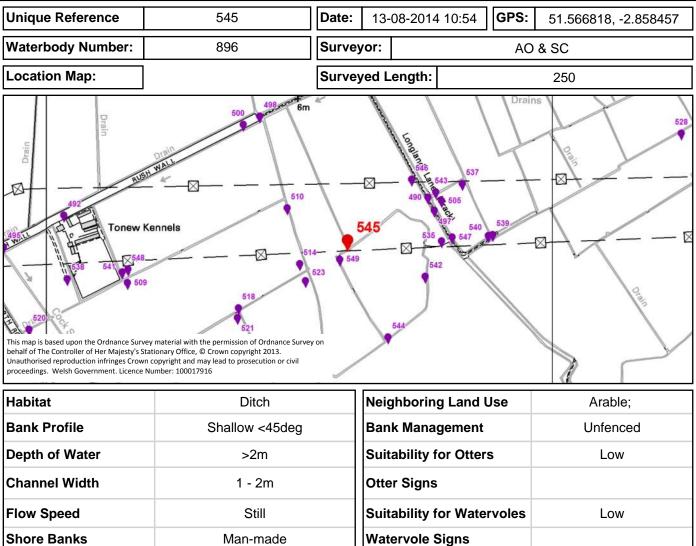












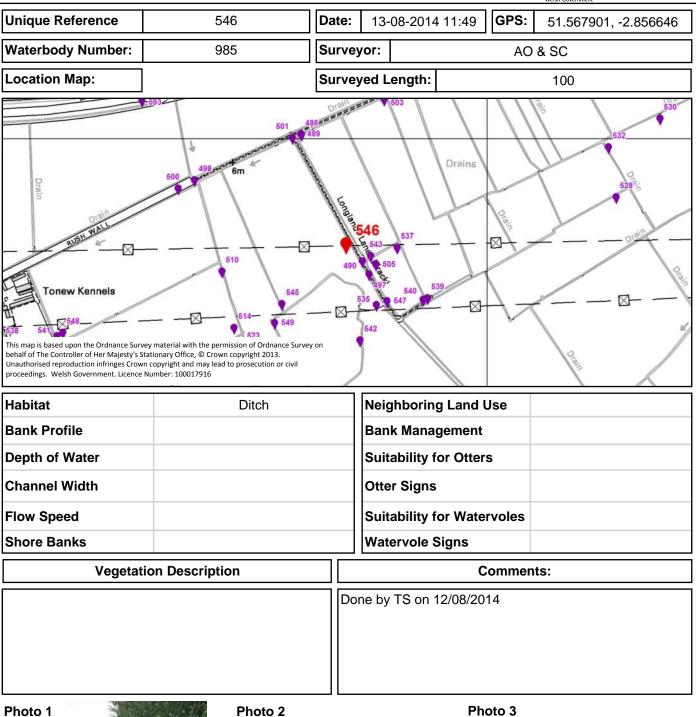
Vegetation Description	Comments:
Hawthorn, crack willow, bramble. Overgrown inaccessible.	















						Welsh Government	
Unique Reference	547	Date:	13-	08-2014 11:58	GPS:	51.56689, -2.855467	
Waterbody Number:	897	Surve	yor:		AC) & SC	
Location Map:		Surve	yed L	ength:		100	
behalf of The Controller of Her Majesty's S	n copyright and may lead to prosecution or civil	545 543 900 505 497 535 542	537-547 -540	Drains			
Habitat	Ditch		Neig	hboring Land	Use	Arable; Livestock grazing;	
Bank Profile	Flat <10 degrees		Ban	k Management		Fenced	
Depth of Water	<0.5m		Suita	ability for Otte	rs	Negligible	
Channel Width	<1m		Otte	r Signs			
Flow Speed	Still		Suita	ability for Wat	ervoles	Negligible	
Shore Banks	Man-made		Wate	ervole Signs			
Vegetat	Vegetation Description			Comments:			
Hedge, mature ash tree hogweed,bramble	s, crack willow,	Dry	/ ditch				









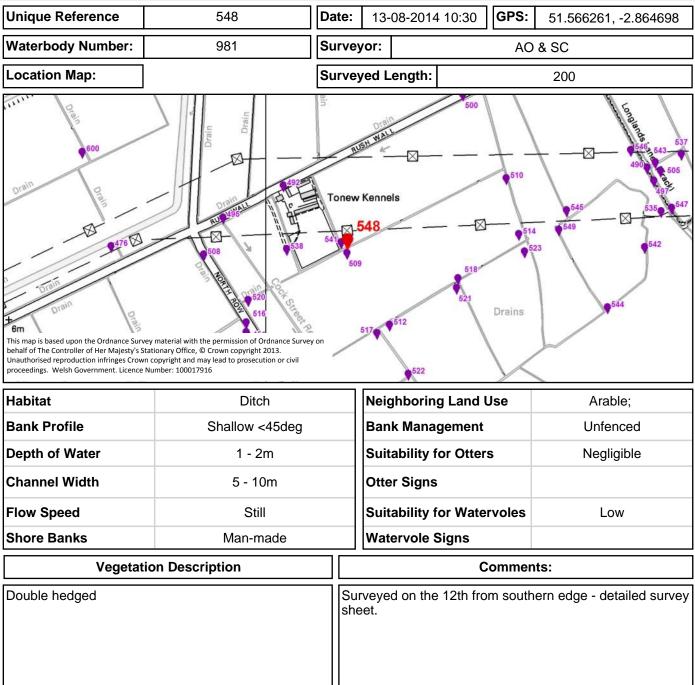


Photo 1







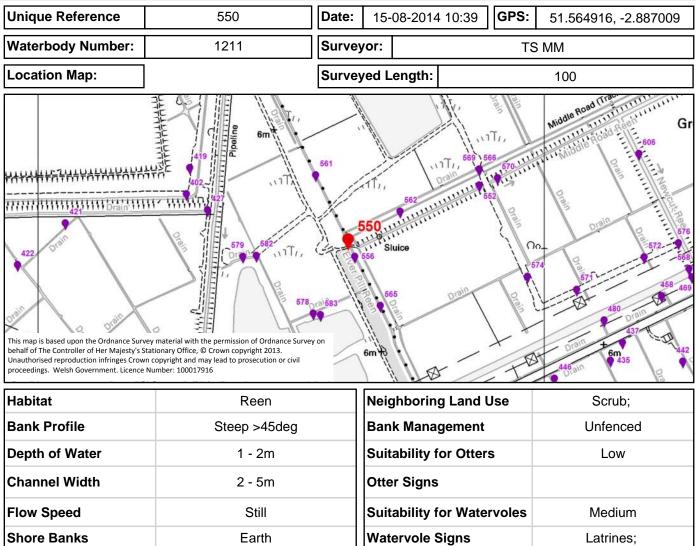




Unique Reference 549 Date: 13-08-2014 11:17 GPS: 51.566477, -2.858 Waterbody Number: 982 Surveyor: AO & SC Location Map: Surveyed Length: 150 Image: Surveyed Length: Surveyed Length: Image: Surveyed Length: Surveyed Length: Surveyed Length: Image: Surveyed Length: Surveyed Length: Surveyed Length: Image: Surveyed Length: Surveyed Length: Surveyed Length: Surveyed Length: Image: Surveyed Length: Surveye						Welsh Government	
Location Map: Surveyed Length: 150 Image: Surveyed Length: 150 Imade: Surveyed Length: 150	Unique Reference	549	Date:	13-08-2014	11:17 GP	S: 51.566477, -2.858666	
Image: State of the control of the contre control of the control of the contrect of the control	Waterbody Number:	982	Surveyor: AO & SC		AO & SC		
Image: State of the state	Location Map:		Survey	ed Length:		150	
Bank ProfileShallow <45deg	Subarticle 510 510 510 510 100 100 500 510 500 100 100 500 514 100 100 500 518 100 510 510 100 510 510 100 510 510 100 500 510 100 500 510 100 500 510 510 510 540 520 517 510 510 518 523 520 517 510 510 510 544 520 517 510 510 518 523 520 517 510 510 518 523 521 518 544 521 518 544 521 518 544 545 544 544 545 544 544 545 544 544 545 544 544 545 544 544 545 544 544 545 544 544 546						
Depth of Water >2m Suitability for Otters Low Channel Width 1 - 2m Otter Signs Depth of Watervoles Low Flow Speed Still Suitability for Watervoles Low Shore Banks Man-made Watervole Signs Vegetation Description Comments:	Habitat			Neighboring	Land Use	Arable;	
Channel Width 1 - 2m Otter Signs Flow Speed Still Suitability for Watervoles Low Shore Banks Man-made Watervole Signs Vegetation Description Comments:	Bank Profile	Shallow <45deg		Bank Manag	ement	Unfenced	
Flow Speed Still Suitability for Watervoles Low Shore Banks Man-made Watervole Signs Vegetation Description Comments:	Depth of Water	>2m		Suitability fo	or Otters	Low	
Shore Banks Man-made Watervole Signs Vegetation Description Comments:	Channel Width	1 - 2m		Otter Signs			
Vegetation Description Comments:	Flow Speed	Still		Suitability fo	or Watervole	es Low	
	Shore Banks	Man-made		Watervole S	igns		
Hawthorn,bramble,rose,goat willow,	Vegetation Description			Comments:			
Photo 1 Photo 2 Photo 3							







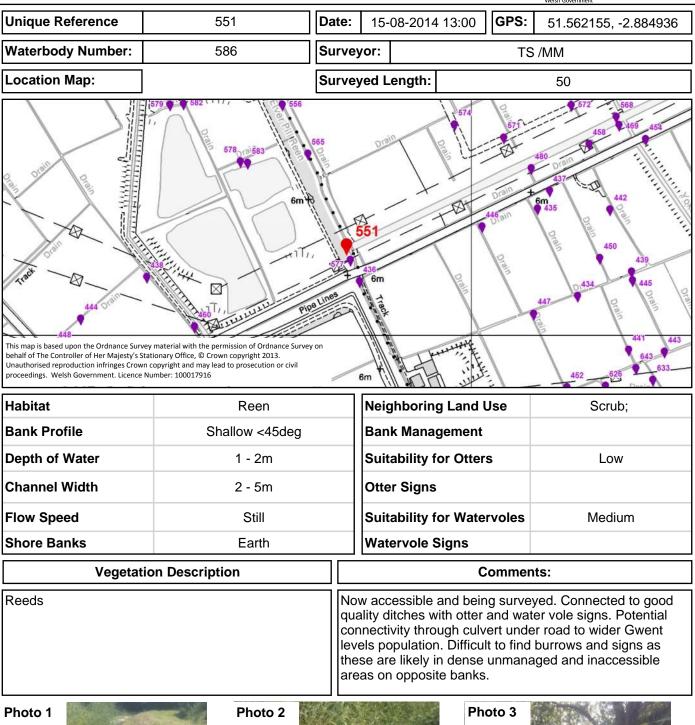
Vegetation Description	Comments:		
Phragmites dominated, duckweed, ivy leaved Frogbit, hemp agrimony, meadow sweet,	Recently managed eastern bank, good water quality,		











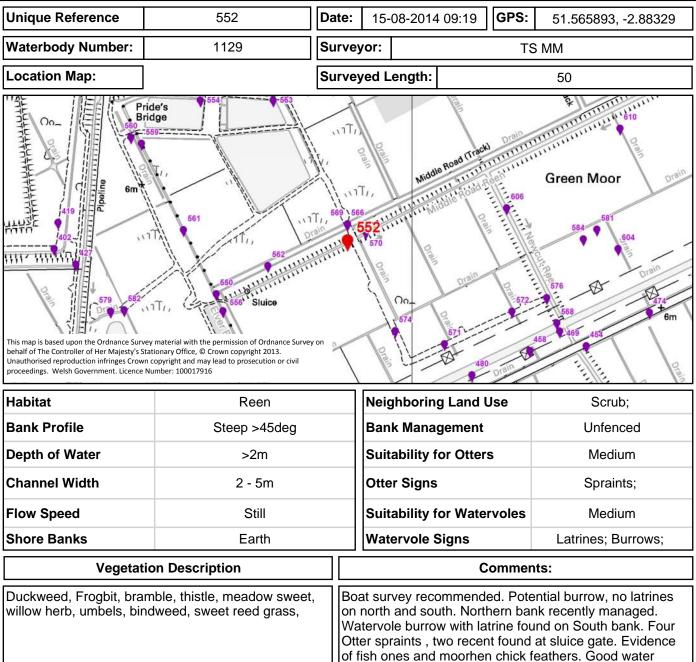






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quality with fish fry

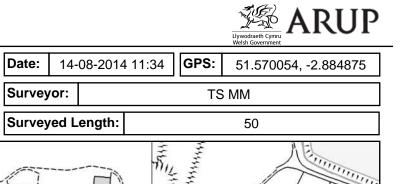


553

1200

Unique Reference

Waterbody Number:



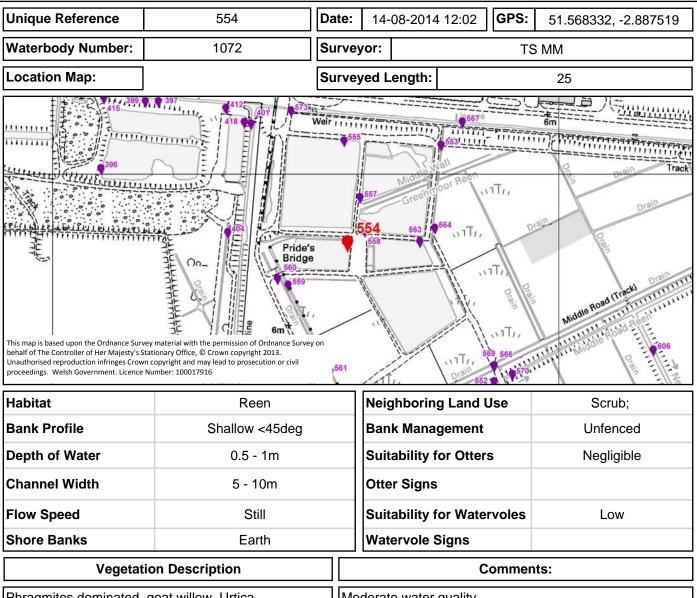
Location Map:	Surve	eyed Length:	50
This map is based upon the Ordnance Survey behalf of The Controller of Her Majesty's Stat Unauthorised reproduction infringes Crown or proceedings. Welsh Government. Licence Nu	material with the permission of Ordnance Survey on ionary Office, © Crown copyright 2013. opyright and may lead to prosecution or civil		
Habitat	Reen	Neighboring Land Use	Scrub;
Bank Profile		Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Negligible
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Negligible
Shore Banks	Stones	Watervole Signs	

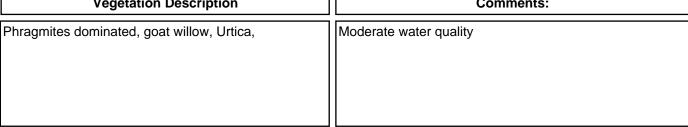
Vegetation Description	Comments:
Phragmites dominated	Bad water quality-polluted.



















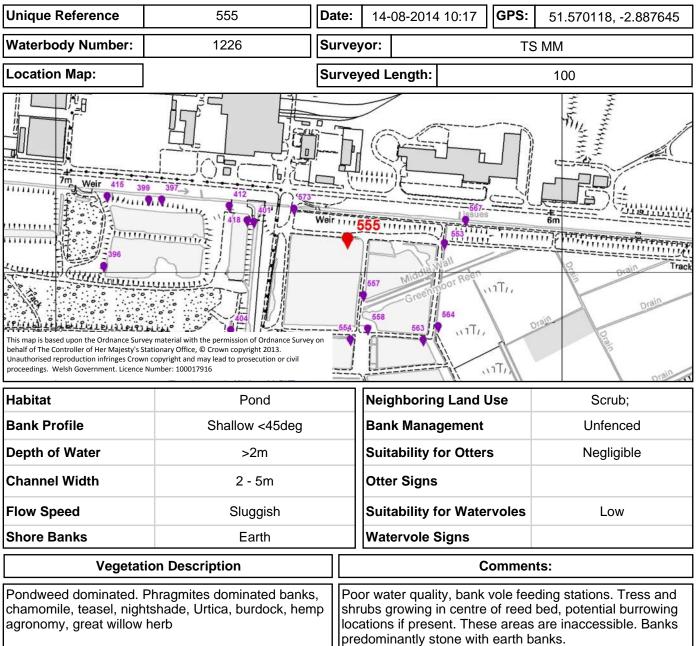


Photo 1

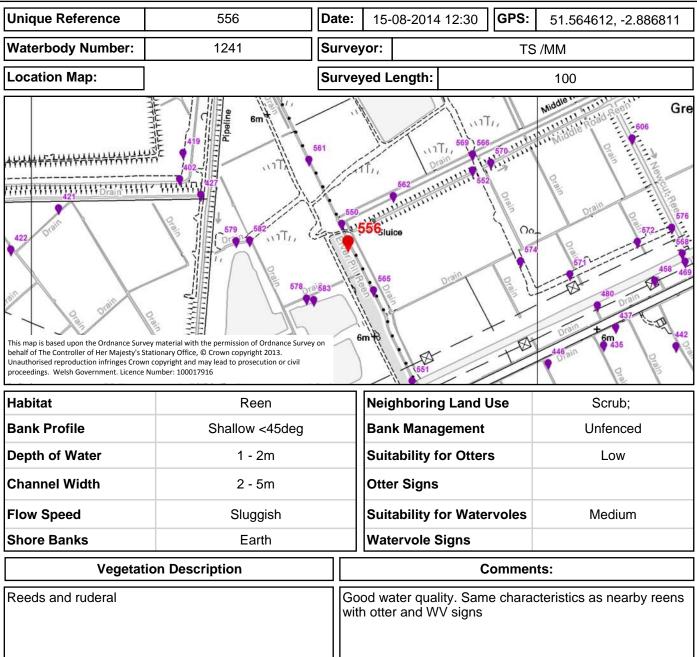


Photo 2







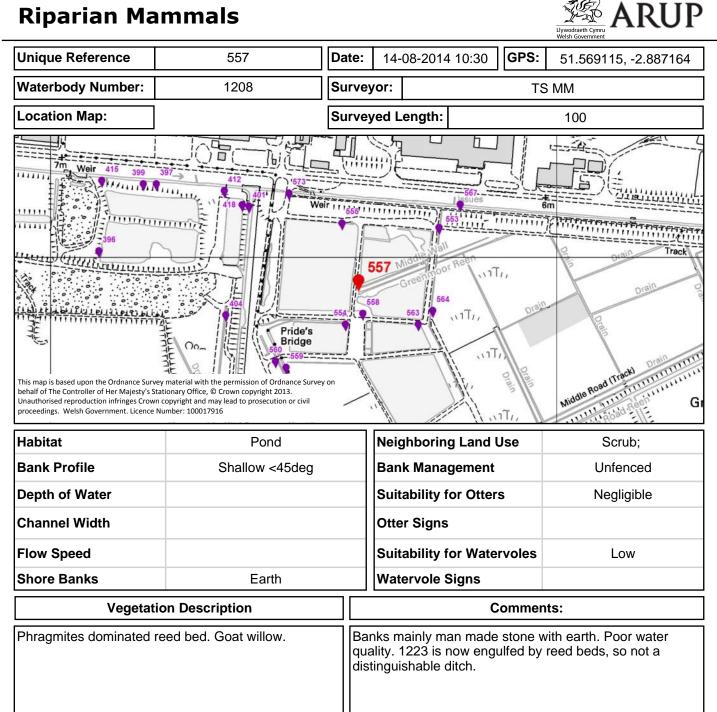












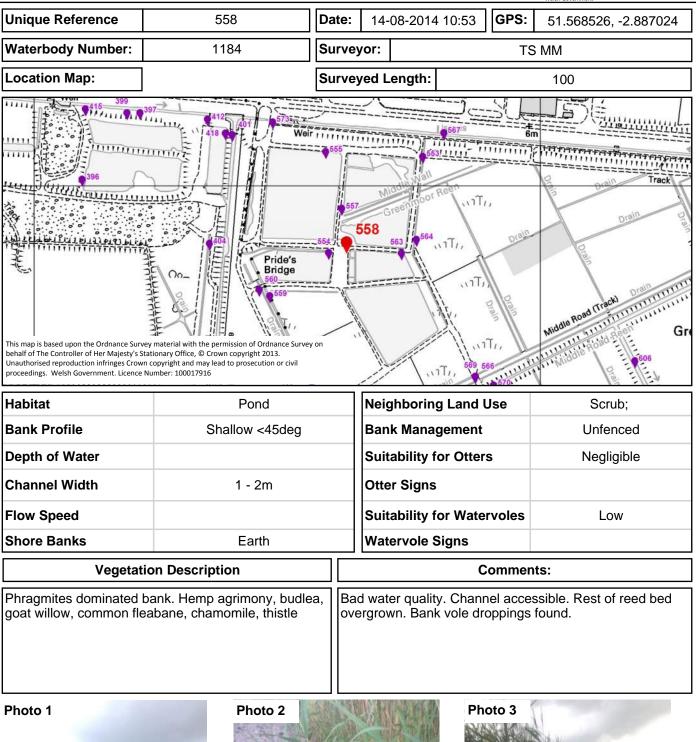












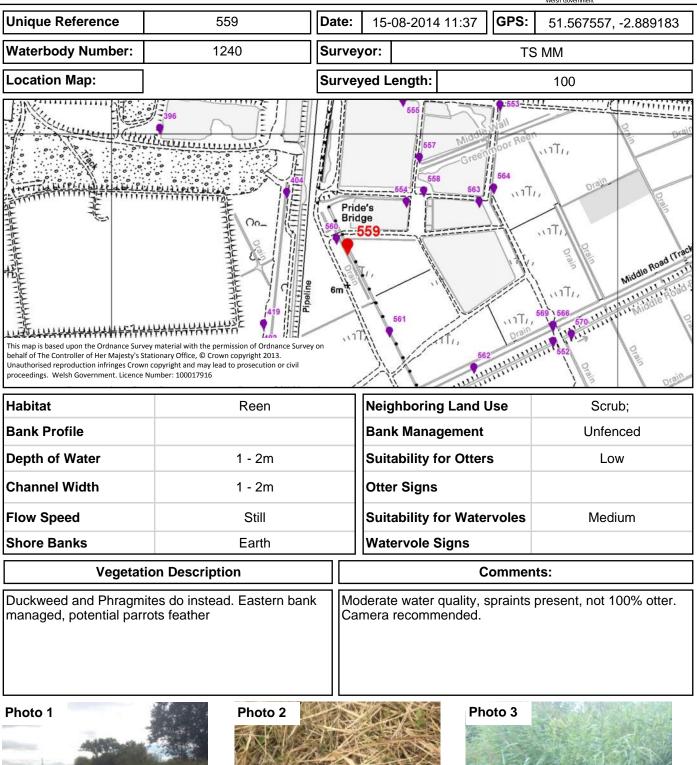






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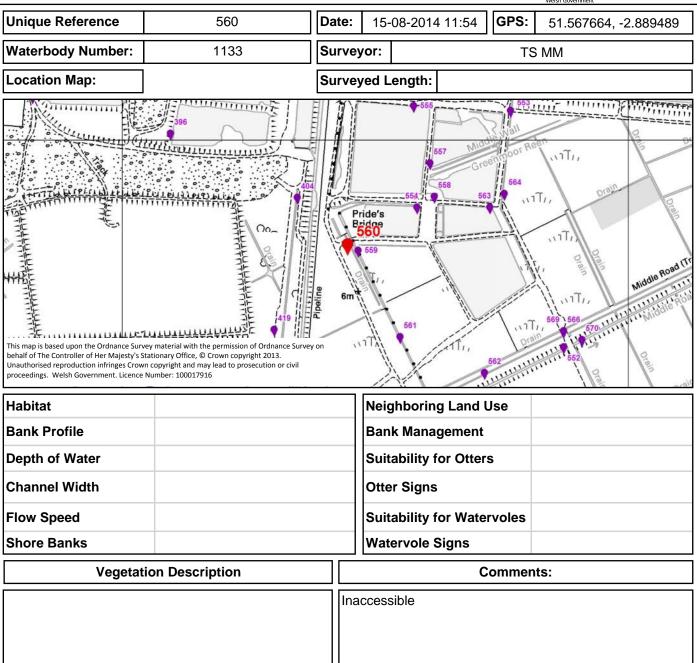










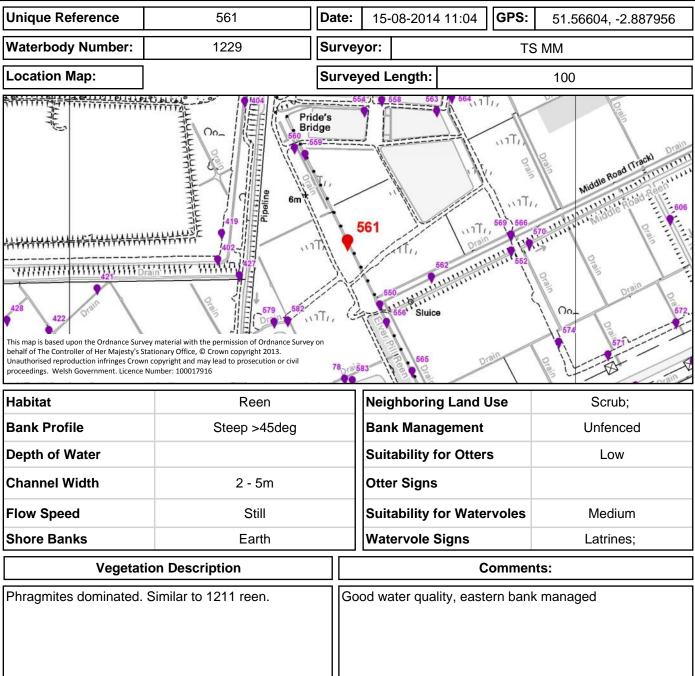










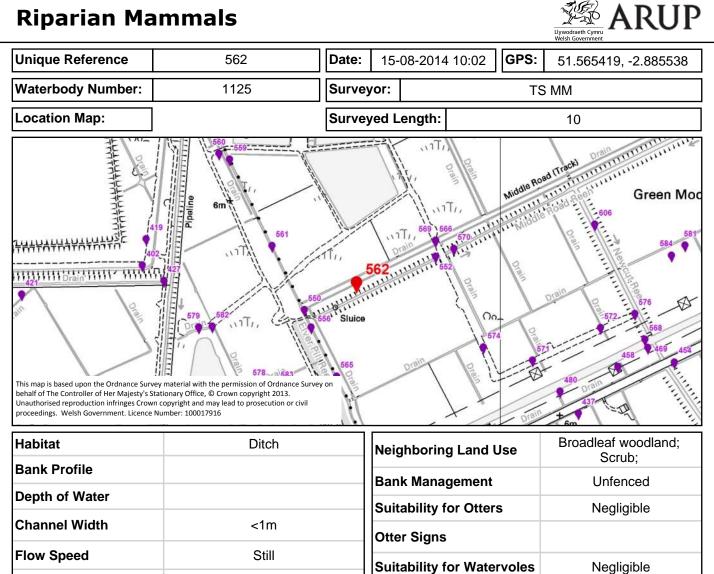












Shore Daliks	Latti	Watervole Signs	
Vegetation Description		Comme	ents:
Duckweed covering entire fern, garlic mustard, Urtica crack willow, sycamore	e surface, hart's tongue fern, a, hawthorn, blackthorn,	suitable, poor water quality. ential/suitable otter holt.	Surrounding woodland with

Earth

Photo 1

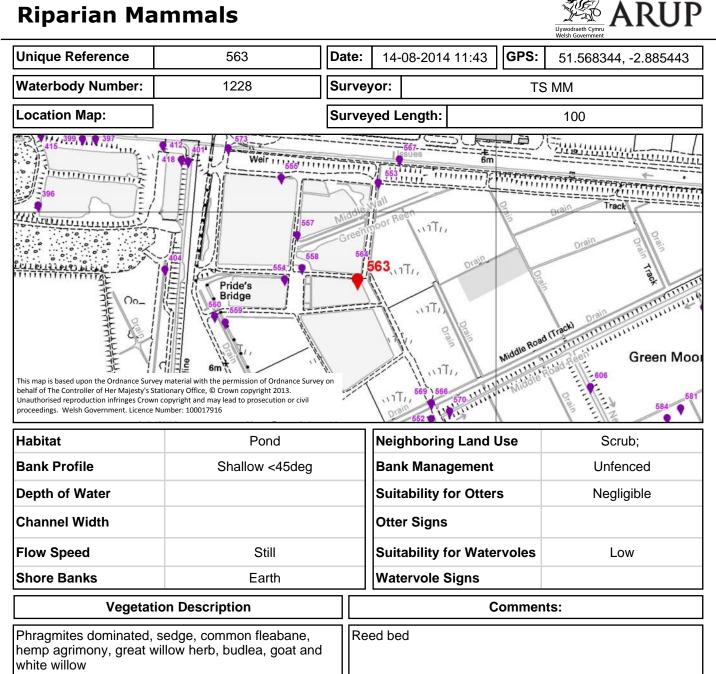
Shore Banks









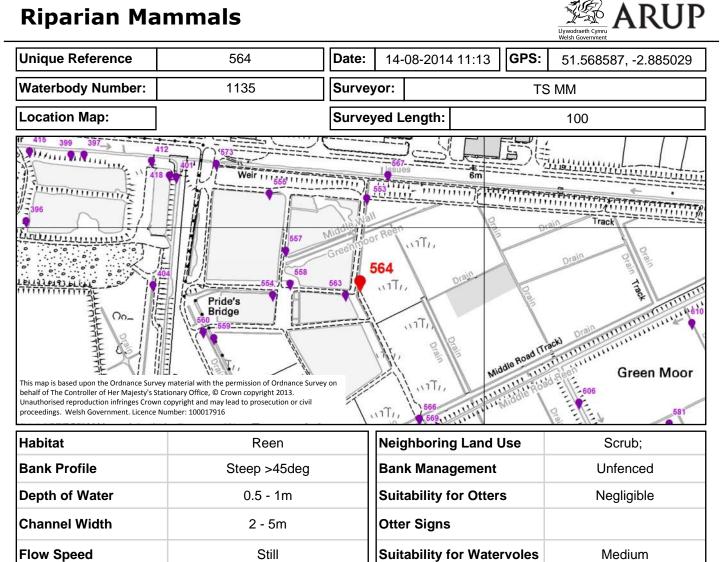












Shore Banks Stones		Watervole Signs	Latrines; Feeding Stations;
Vegetatio	n Description	Comm	ents:
			eard. One side of bank earth ater quality at Northern end

Stones



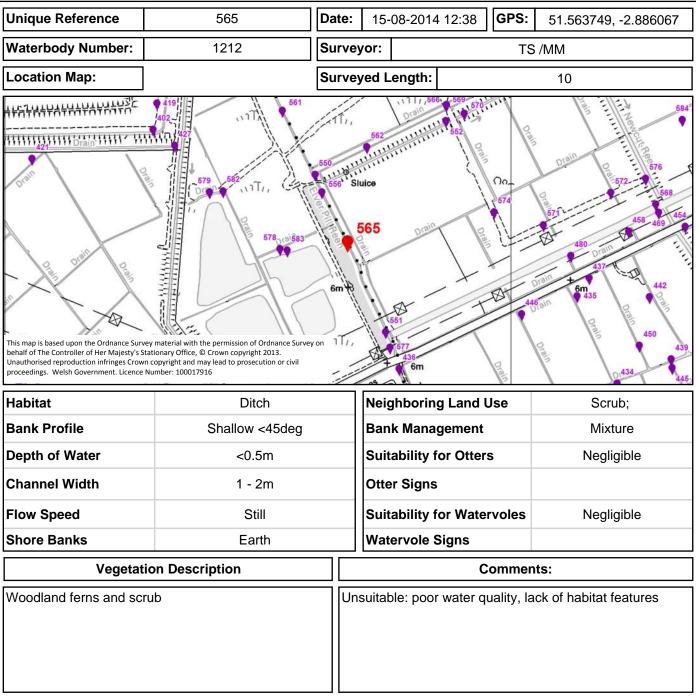
Shore Banks





Latrines; Feeding

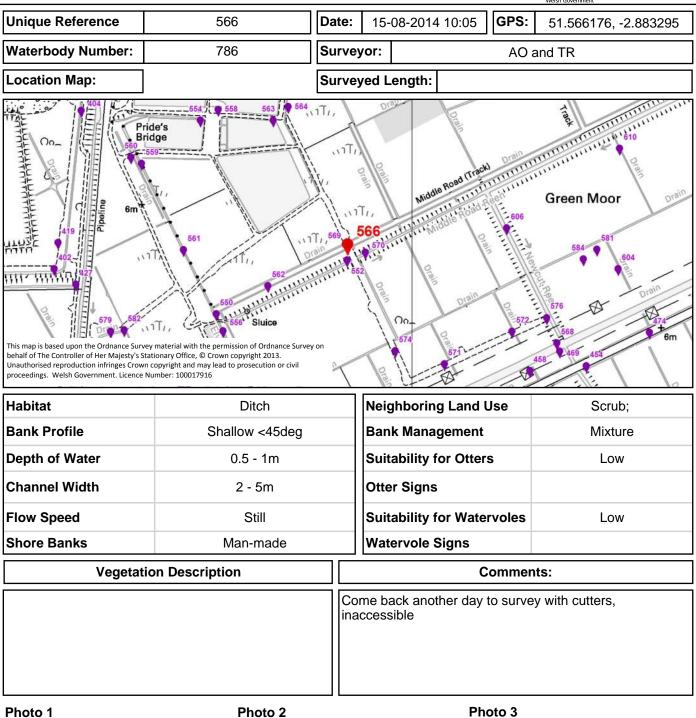


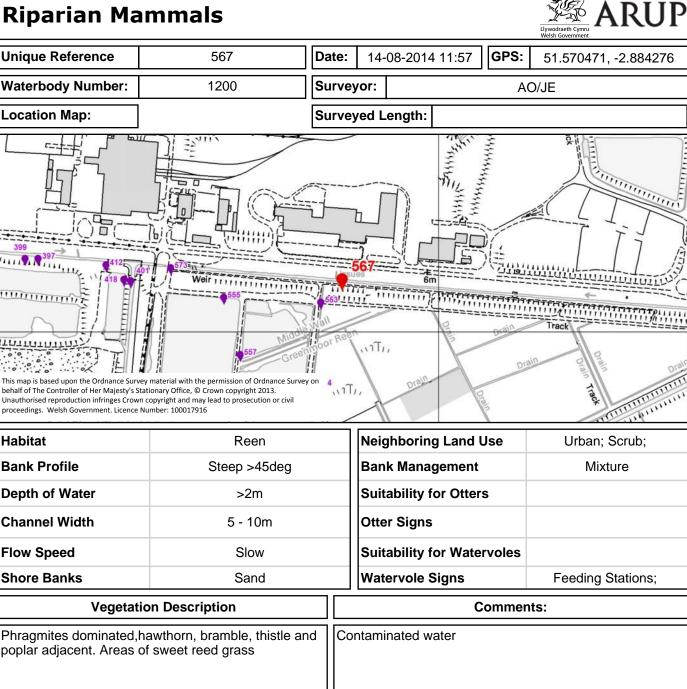








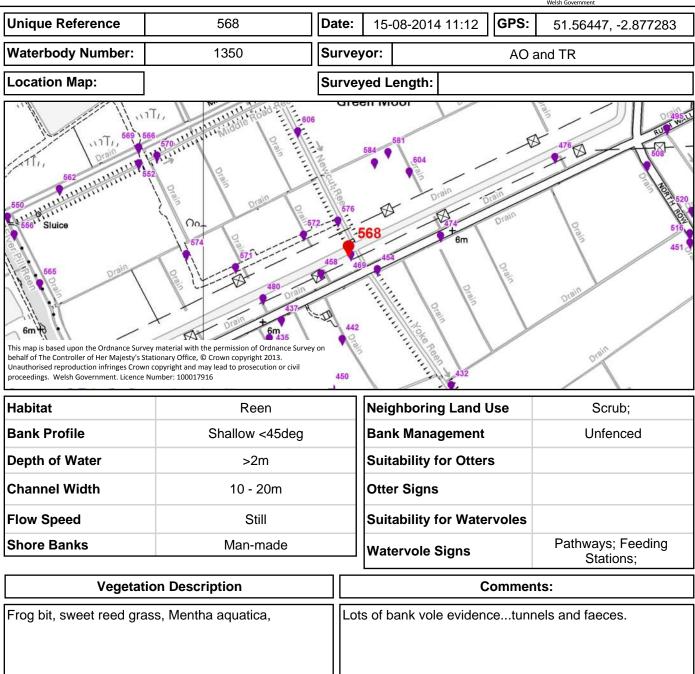










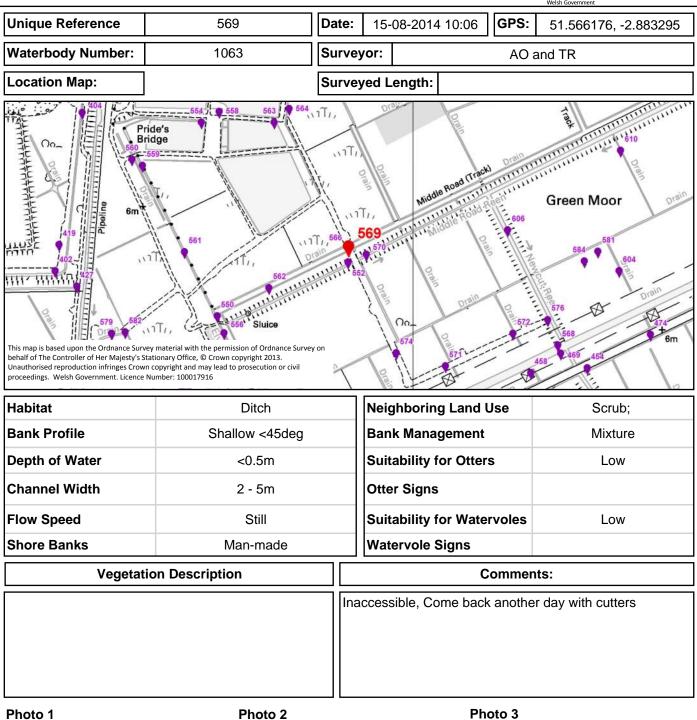


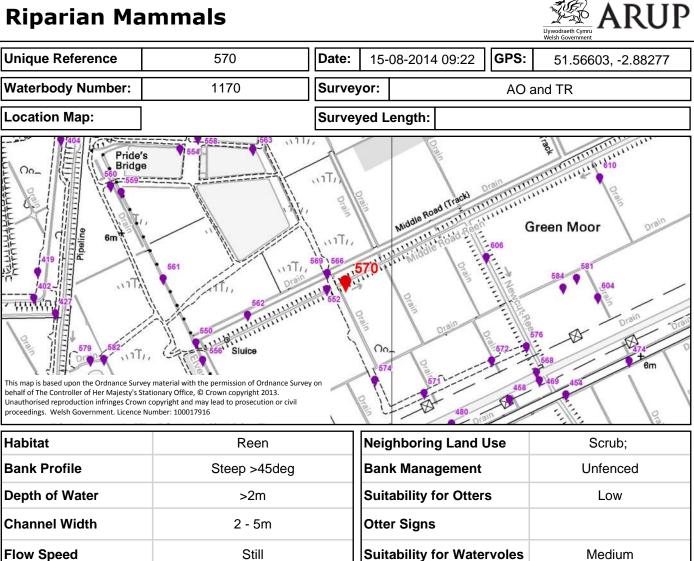












Shore Banks Watervole Signs Man-made **Vegetation Description Comments:** Frog bit, sweet reed grass





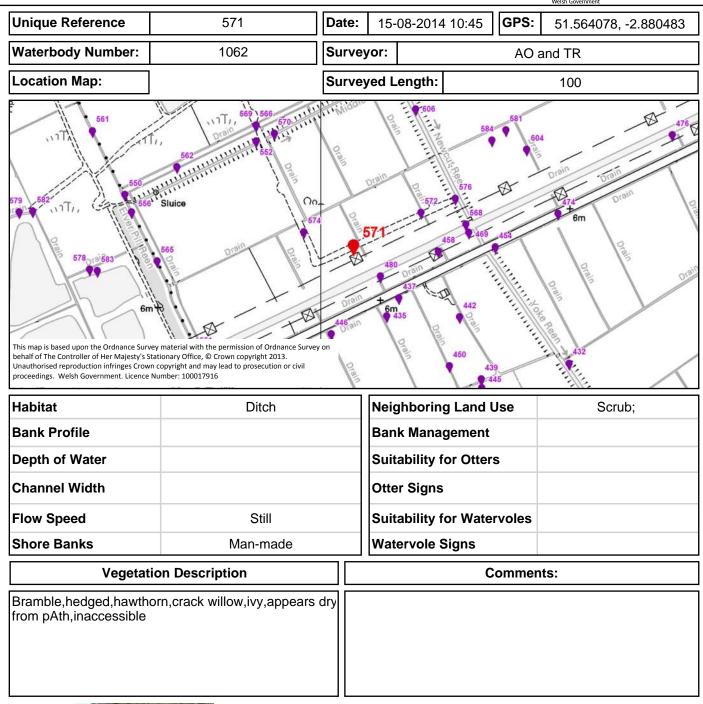




Photo 2

Photo 3

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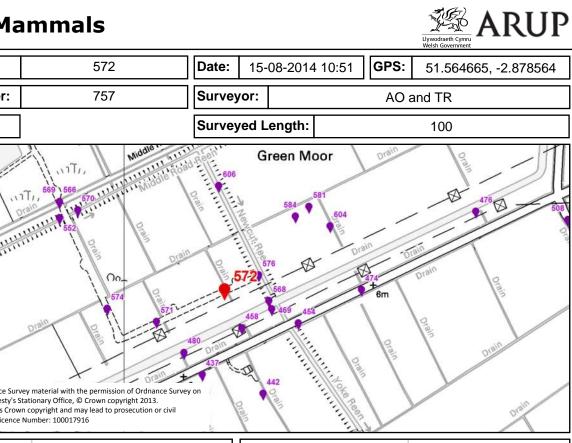
Unique Reference

Location Map:

578 0.583

Waterbody Number:

556' Sluice



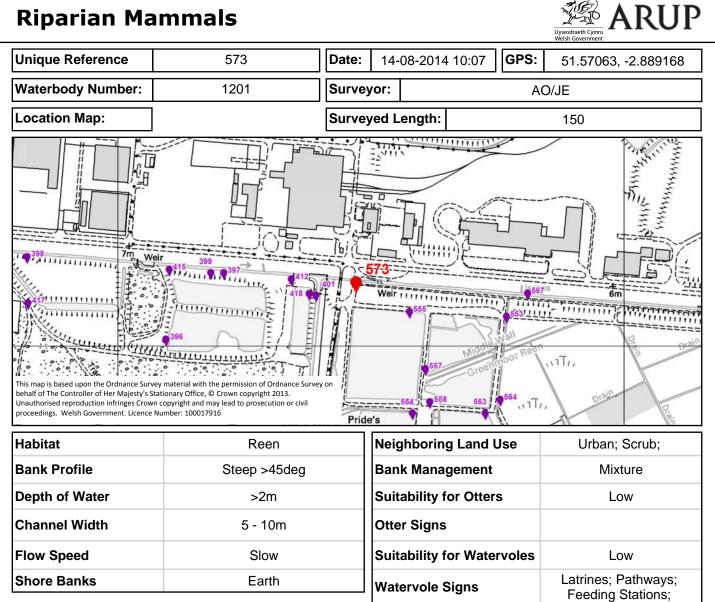
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Habitat	Ditch	Neighboring Land Use	Scrub;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Negligible
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Negligible
Shore Banks	Man-made	Watervole Signs	

Vegetation Description	Comments:
Bramble,hawthorn, white willow, wild rose,	Inaccessible. Overgrown with dense bramble, nettles, hawthorn, ivy, white willow







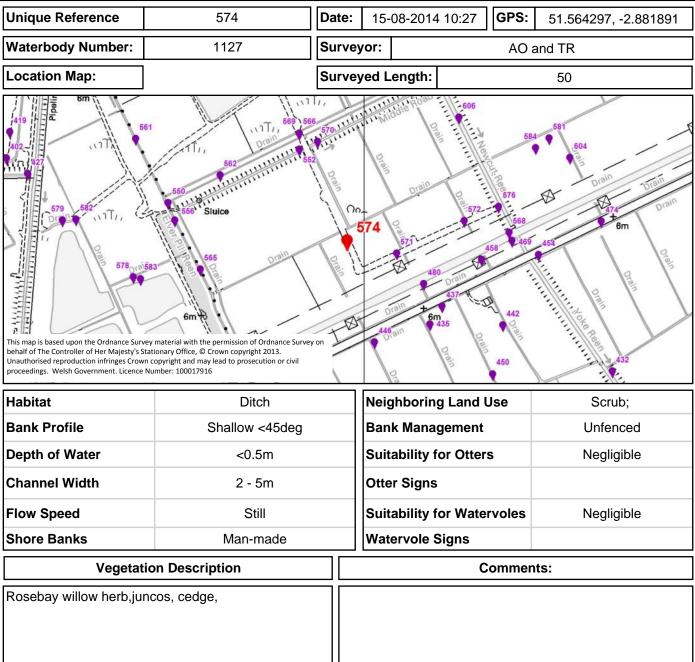
Vegetation Description	Comments:
Phragmites, hawthorn, bramble, thistle and poplar adjacent. Areas of sweet reed grass	Possible water vole latrine photos taken. Didn't survey entire length because of health and safety concern









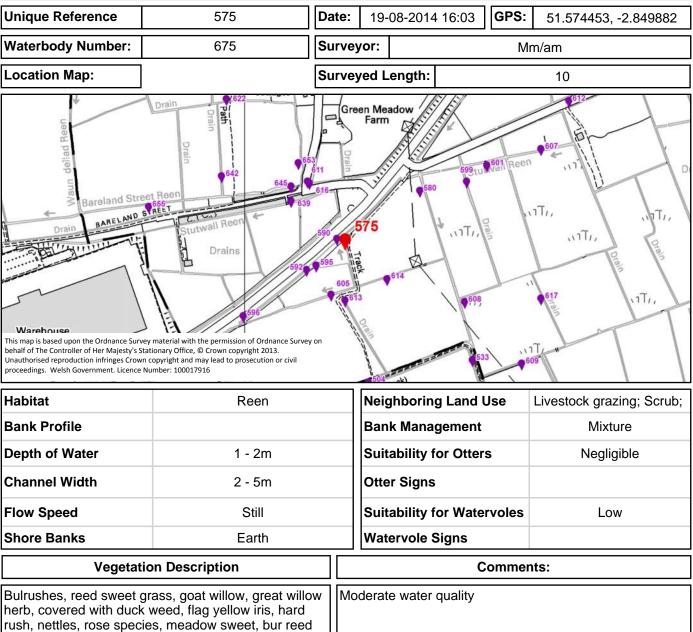










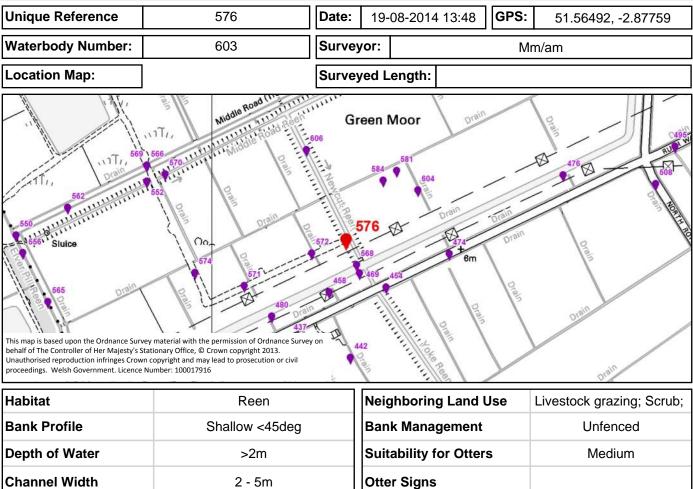












Shore Banks	Earth		nks Earth Watervole Signs		
Vegetation Description		Comments:			
	ace, great willow herb, goat ead.	bar ma	od water quality. Boat survey nk difficult to access. Eastern naged. Fish, snails. Eastern row and feeding stations fou	bank appears recently bank poached. Bank vole	

Suitability for Watervoles

Photo 1

Flow Speed





Still

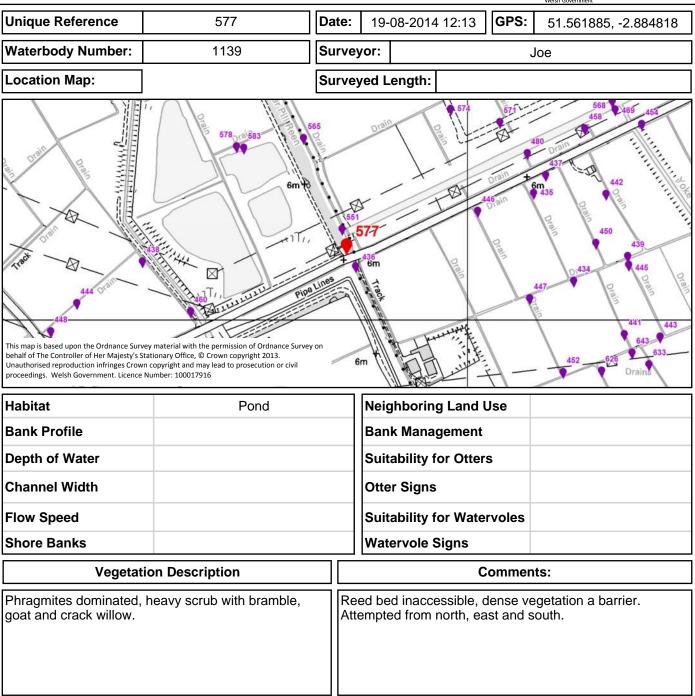






Medium



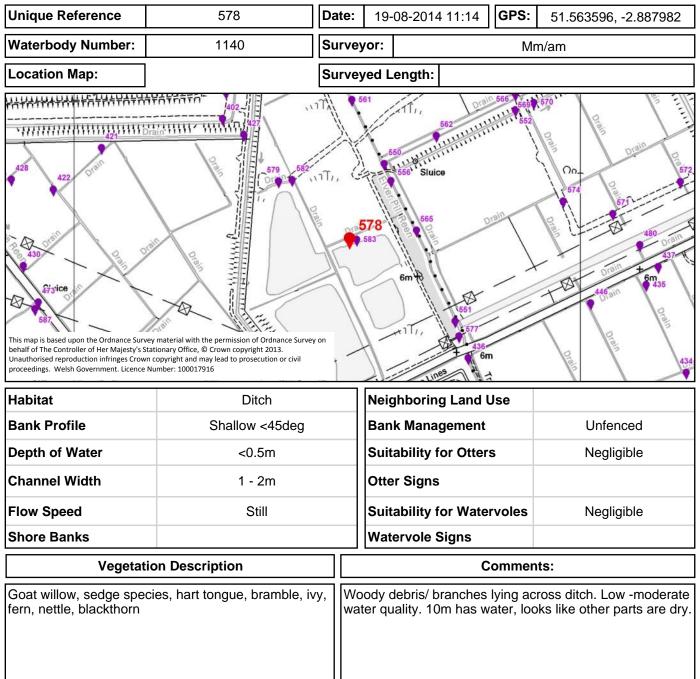








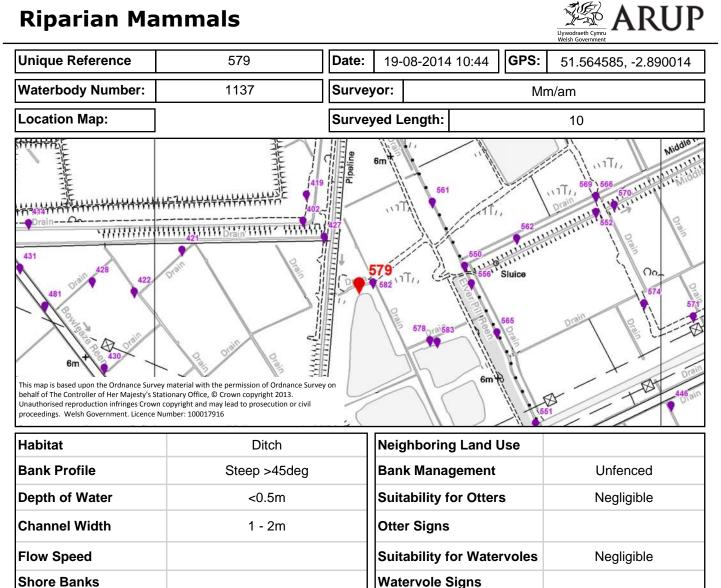










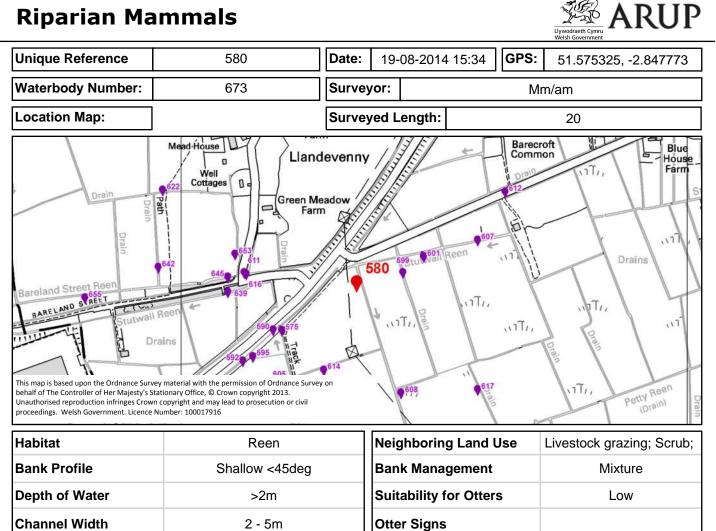


Vegetation Description	Comments:
Hawthorn, goat willow, bramble, umbels, nettle, hemp agrimony	Dry ditch, unsuitable









Shore Banks	Earth		Watervole Signs	Latrines;
Vegetation Description		Comments:		
willow herb, bramble, nettles, crack willow		bra	nce present on West Bank, di ambles, boat survey recomme m surveyed due to fence/brar	ended, potential latrine.

Still

Suitability for Watervoles



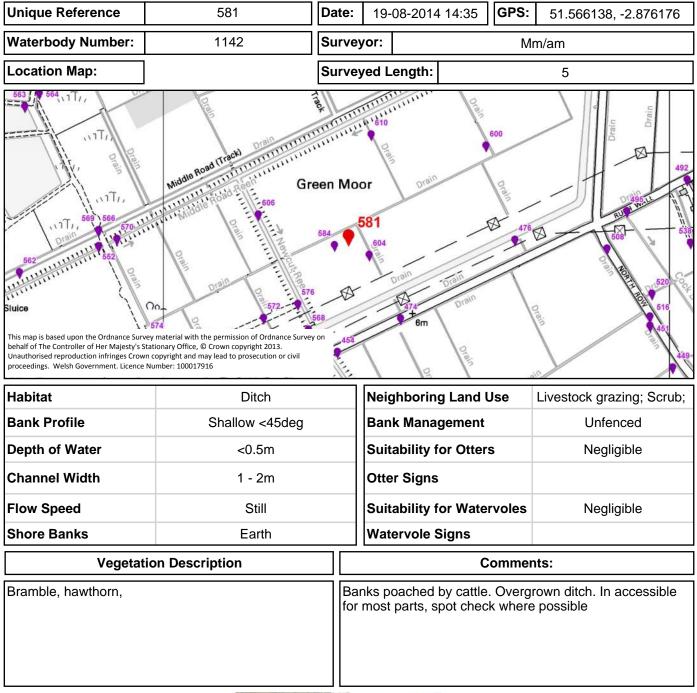
Flow Speed





Medium

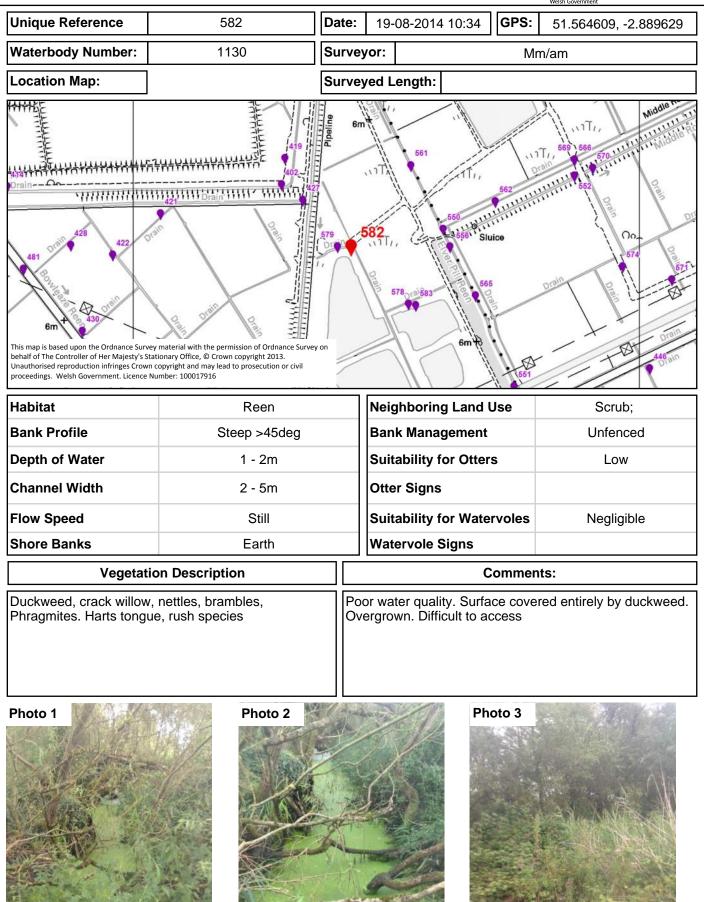


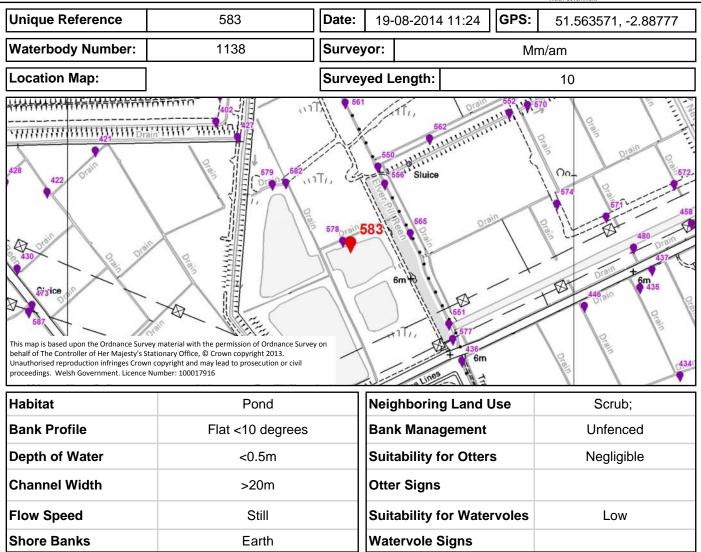












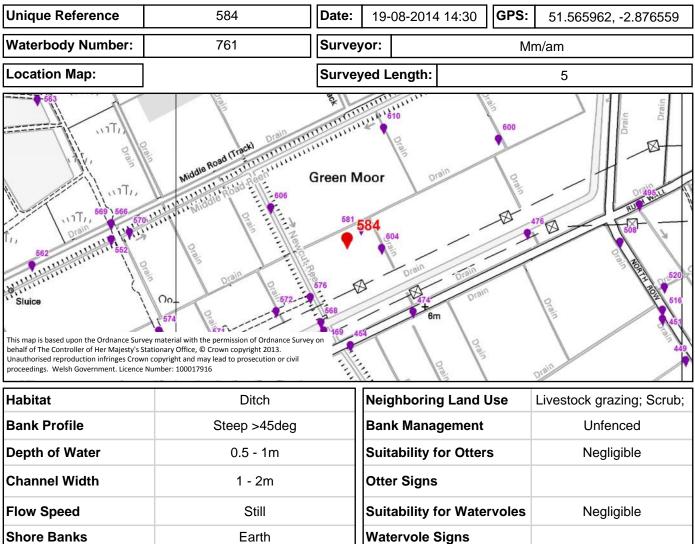
Vegetation Description	Comments:
Phragmites dominated reed bed, great willow herb, nettle, bramble	Reed bed only 10m surveyed due to dense vegetation, difficulty in accessing whole pond











Vegetation Description	Comments:
Overgrown with brambles. Nettle, goat willow, creeping thistle, hawthorn	Inaccessible in most places. Spot checks made where possible.

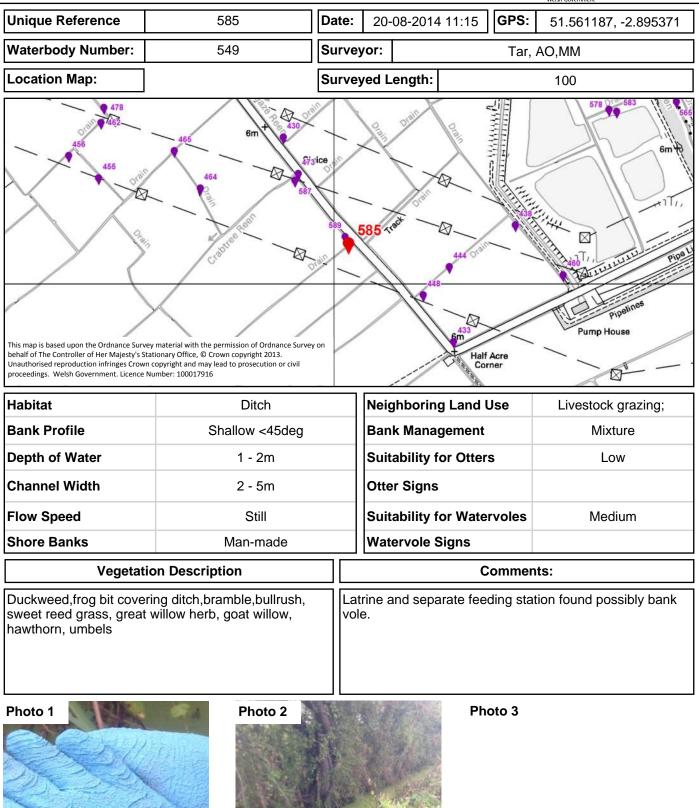




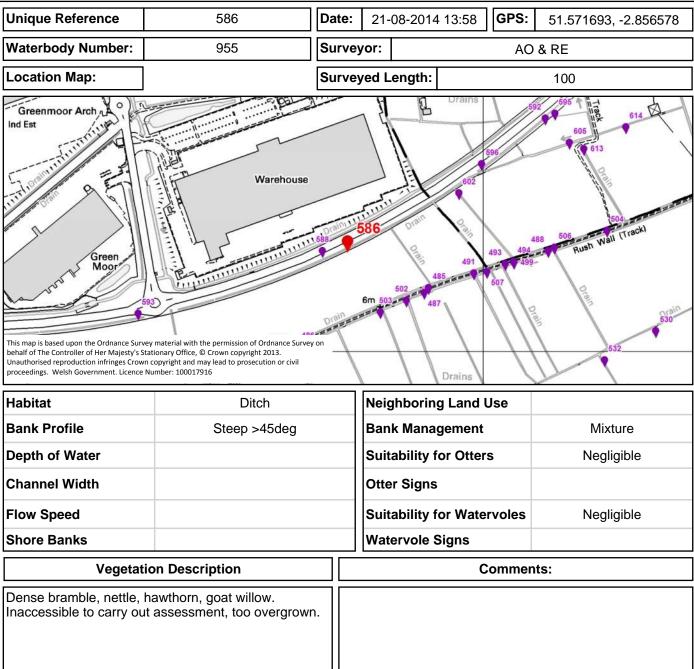












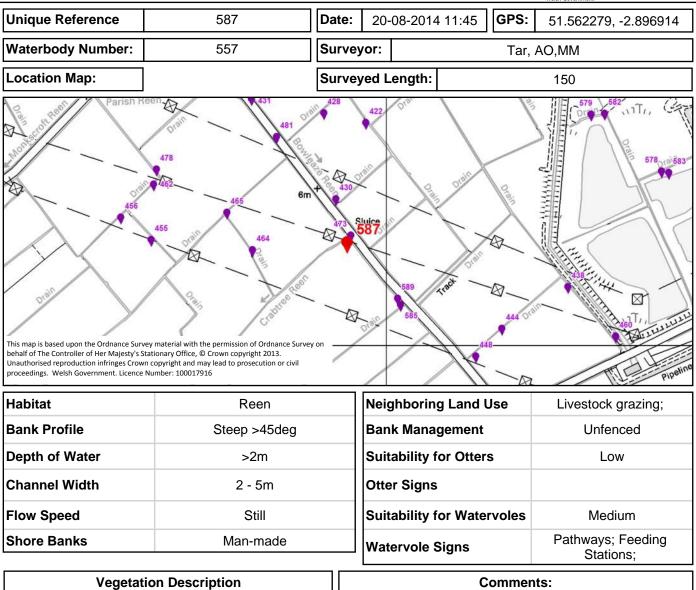










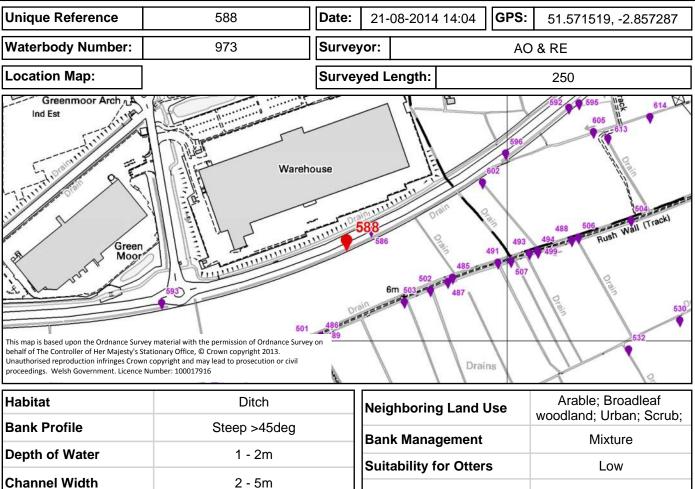


Phragmites, hogweed, sweet field grass and meadow grasses.









	2 311	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Man-made	Watervole Signs	LOW
Vegetation Description		Comme	nts:
Bullrush within ditch, bu	t ditch inaccessible to survey.		

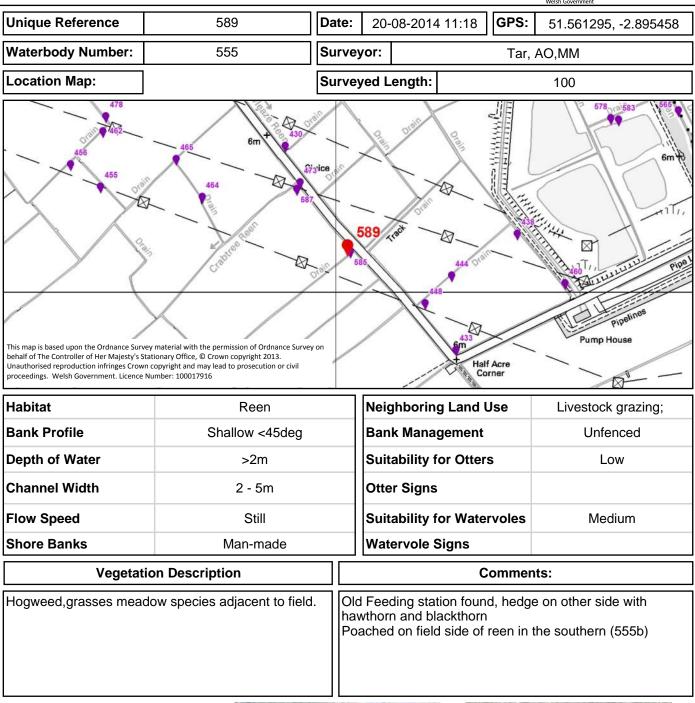
Dense vegetation on bank, bramble, hawthorn, rosebay willow herb, hemp agrimony, burr. Feeding remains on verge, but only 6cm long. Hart's tongue fern on bank in section that is woodland.







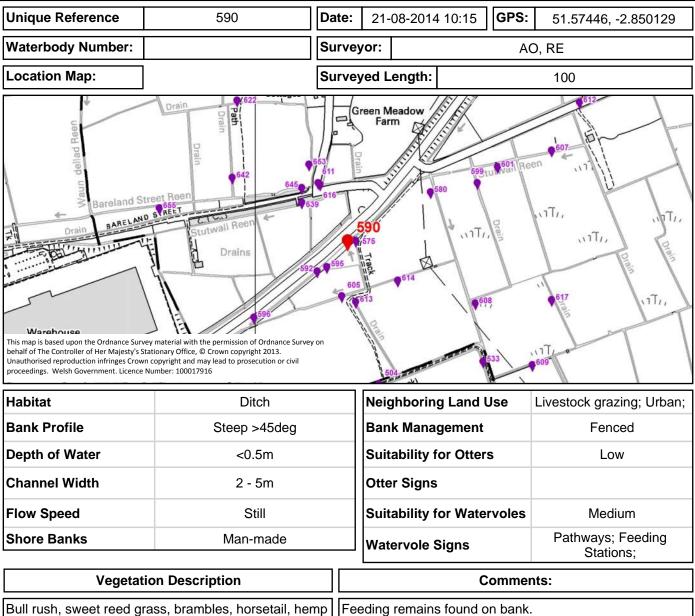












Bull rush, sweet reed grass, brambles, horsetail, hemp agrimony, rosebay willow herb. Dense Scrub vegetation both sides of bank. Accessibility difficult.

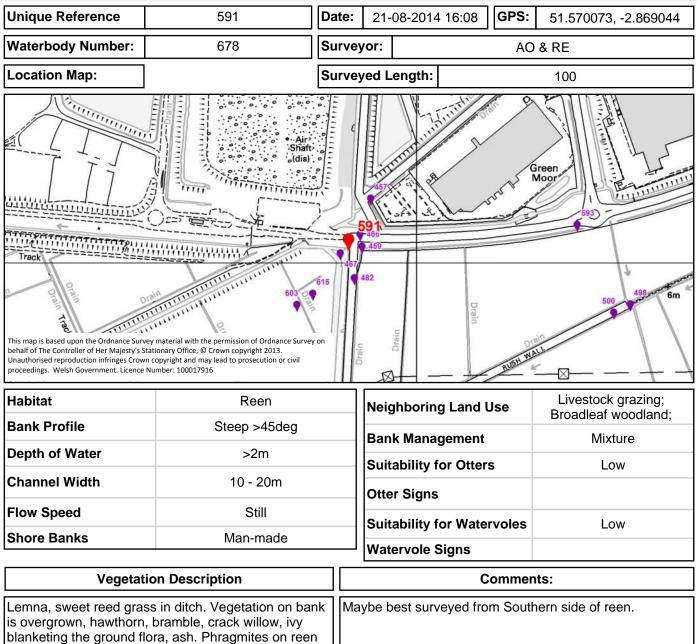




Photo 3

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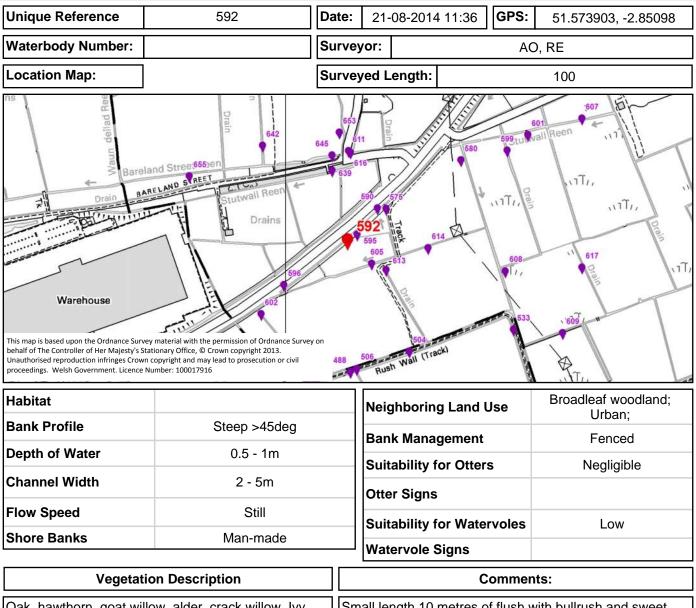




edge. Buddleja.







Oak, hawthorn, goat willow, alder, crack willow. Ivy smothering the bank, nettles, bramble. Hart's tongue fern.

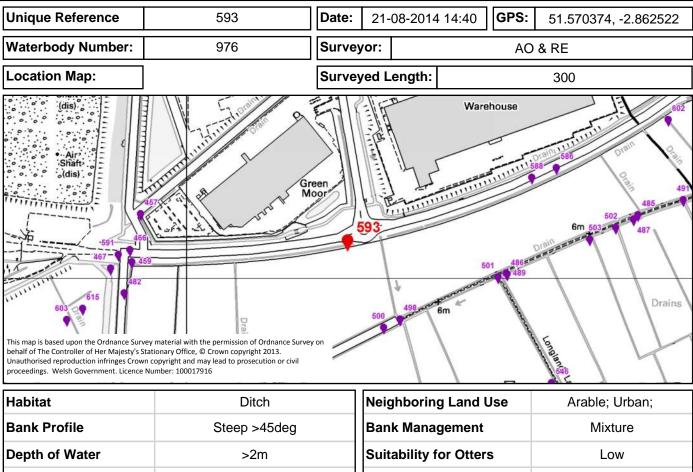
Small length 10 metres of flush with bullrush and sweet reed grass. Otherwise ditch has little vegetation, low water (below 0.5metres) and overgrown with mature trees.

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Channel Width	2 - 5m	Otter Si
Flow Speed	Still	Suitabil
Shore Banks	Man-made	
		Waterve

Neighboring Land Use	Arable; Urban;		
Bank Management	Mixture		
Suitability for Otters	Low		
Otter Signs			
Suitability for Watervoles	Medium		
Watervole SignsLatrines; Burrows; Pathways; Feeding Stations; Lawns;			
Comments:			

Vegetation Description	Comments:
Section of ditch (approx 150 metres) has been recently cut. Lemna species smothering ditch, sweet reed grass.	

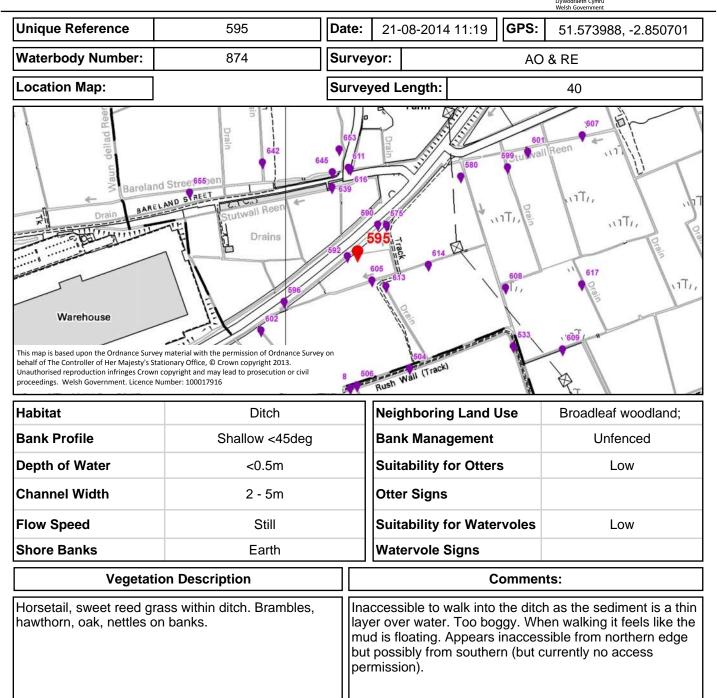








Unique Reference	594	Date:	20	08-2014 1	15:00	GPS:	51.465731, -3.159676
					10.00		ł
Waterbody Number:	672	Surve	-			Tar,	AO,MM
Location Map:		Surve	yed L	ength:			
594 This map is based upon the Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office, © Crown copyright 2013.							
proceedings. Welsh Government. Licence N	Reen		Nei	ghboring	Land Us	se	Arable; Livestock grazing;
Bank Profile	Shallow <45deg		Bar	k Manage	ement		Fenced
Depth of Water	<0.5m		Sui	ability for	r Otters		Low
Channel Width	2 - 5m		Otte	er Signs			
Flow Speed	Still		Sui	ability for	r Waterv	oles	Medium
Shore Banks	Man-made		Wat	ervole Sig	gns		
Vegetatio	on Description				Со	mmer	nts:
Difficult to access the reen from either side as dense vegetation (brambles, nettles, hawthorn). There are mature cracked willows adjacent to the area where we parked car. Ditch has bullrush, sweet reed grass, sedge, horsetail.				There are mature cracked re we parked car. Ditch			
Photo 1 Photo 2 Photo 2 Photo 2 Photo 3 Photo 3							

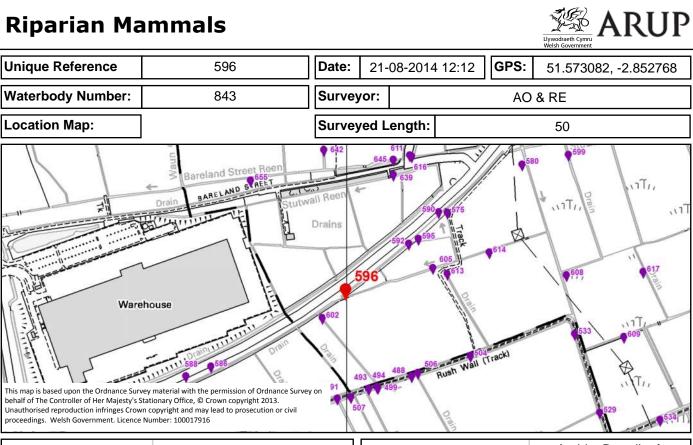








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Habitat	Ditch	Neighboring Land Use	Arable; Broadleaf woodland; Urban;
Bank Profile	Steep >45deg	Bank Management	Mixture
Depth of Water	>2m	Suitability for Otters	Low
Channel Width	5 - 10m	Otter Signs	Low
Flow Speed	Still		1
Shore Banks	Earth	Suitability for Watervoles	Low

Vegetation Description	Comments:
(duckweed) smothering the ditch in some areas. Nettles and bramble on bank. Some areas of the ditch	On the northern side of the ditch there is a barbed wire fence which makes the bank inaccessible (marked with a line on map). Other bank sides are densely overgrown which makes survey near impossible.



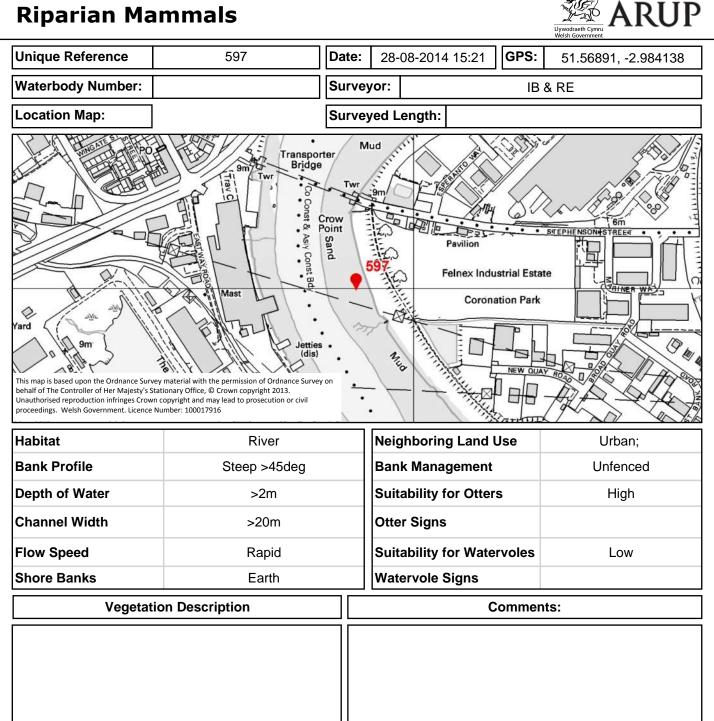
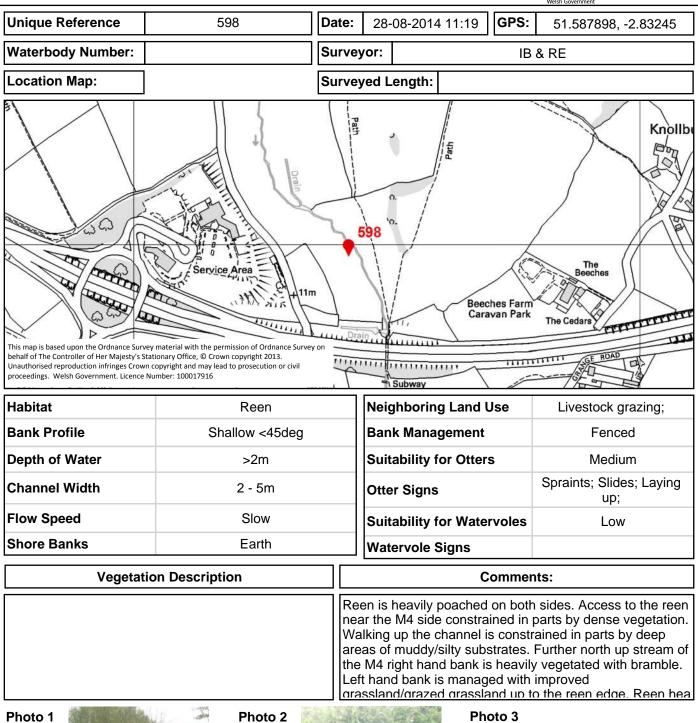




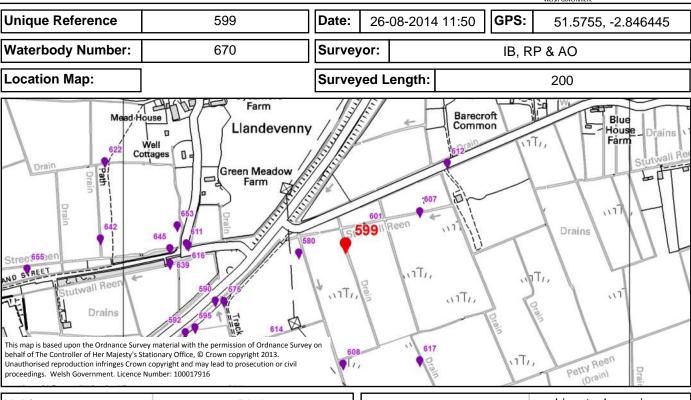
Photo 2











Habitat	Ditch	Neighboring Land Use	Livestock grazing; Broadleaf woodland;
Bank Profile	Shallow <45deg	Bank Management	Mixture
Depth of Water	1 - 2m	Suitability for Otters	
Channel Width	>20m	Otter Signs	Low
Flow Speed	Still		
Shore Banks	Earth	Suitability for Watervoles	Low
		Watervole Signs	

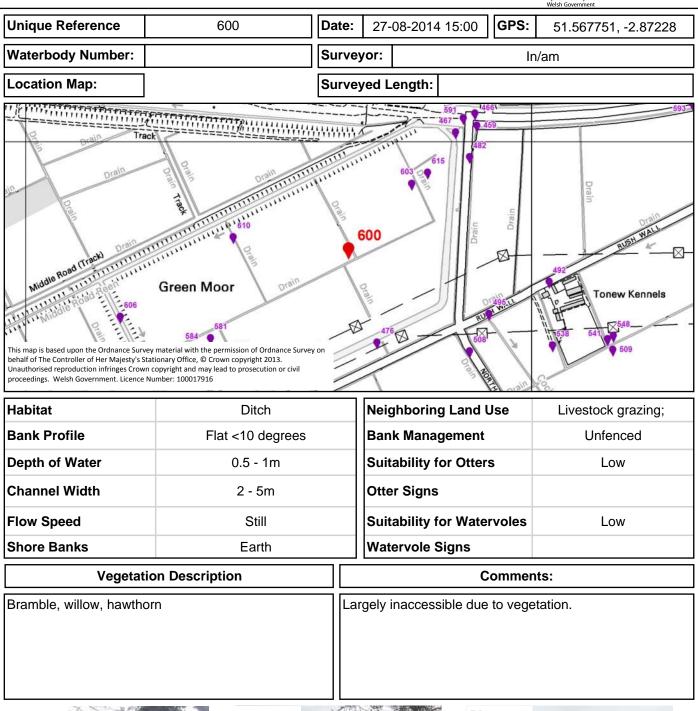
Vegetation Description	Comments:
Sweet reed grass, bullrush in the ditch. Vegetation on bank side mainly inaccessible due to brambles, crack willow, grey willow, oak tree, goat willow.	Sweet reed grass, bullrush in ditch.



Photo 2



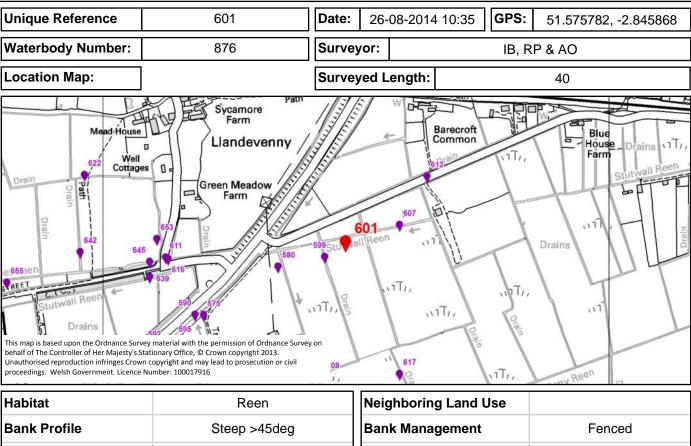












Depth of Water	>2m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks		Watervole Signs	Latrines; Pathways; Feeding Stations;
r			

Vegetation Description	Comments:
Bullrush, sweet reed grass, Mentha aquatica, bramble. Lemonade bramble.	

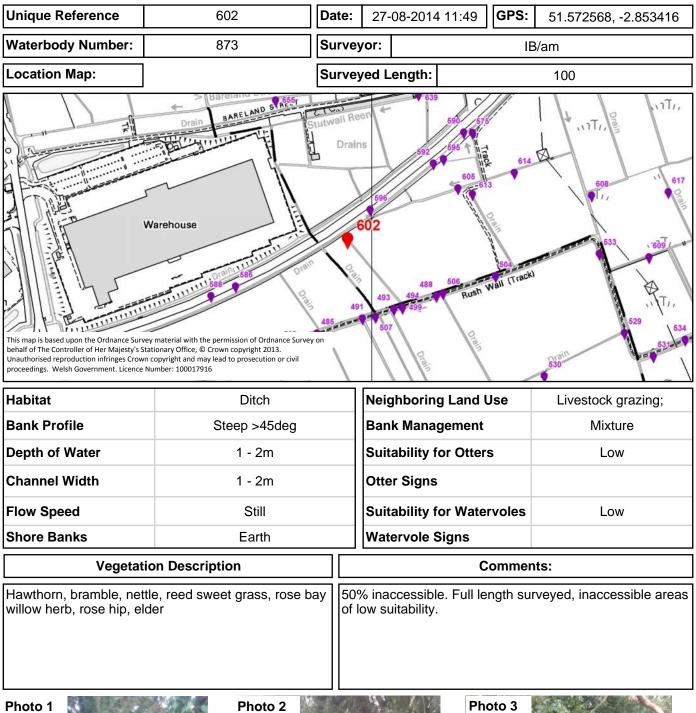
Photo 1







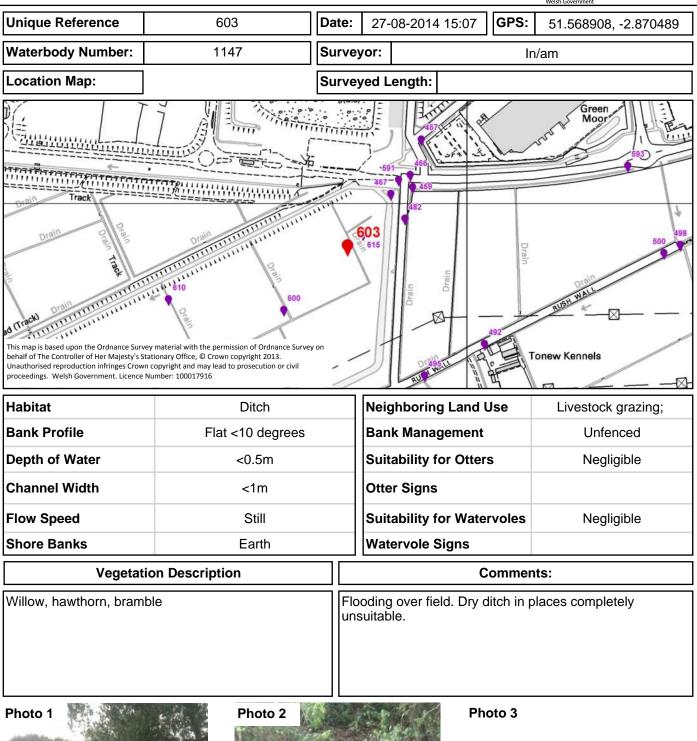












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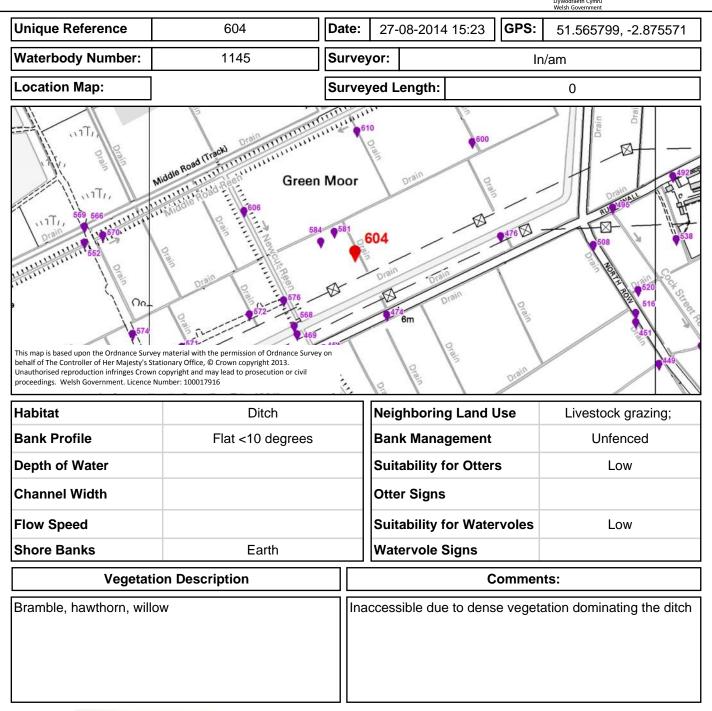


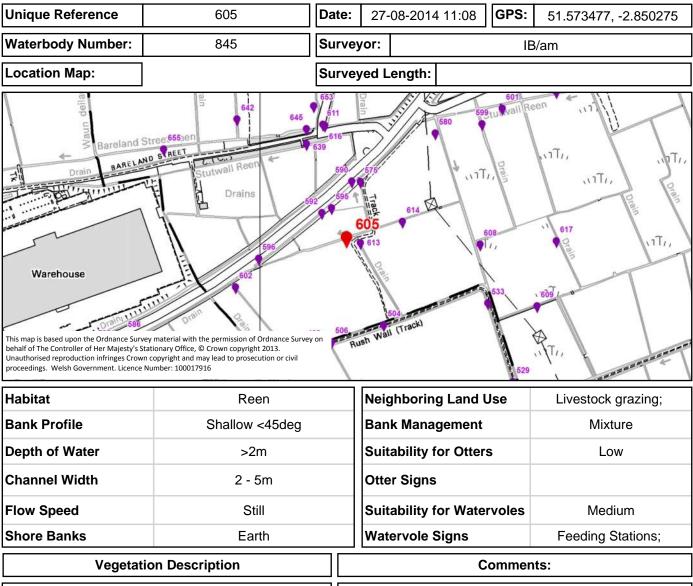
Photo 1

Photo 2

Photo 3

ARUP





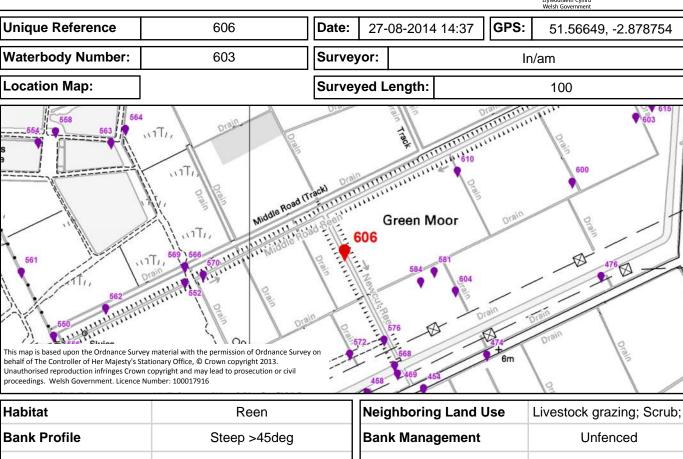
Reed sweet grass dominates majority of reen banks. Surface of reen covered with duckweed Potential Watervole feeding remains. Bank vole seen. Field cut very close to reen, including reeds. Western end fenced.







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Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	>2m	Suitability for Otters	Low
Channel Width	5 - 10m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	

 Vegetation Description
 Comments:

 Bullrush, reed canary grass
 Bank submerged due to recent flooding. Full length of reen walked and surveyed where possible. Further survey recommended when water level has dropped.

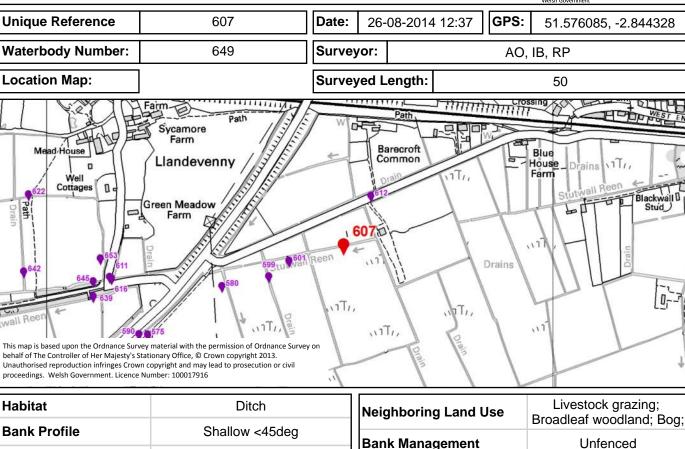






Photo 3

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Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	0.5 - 1m		
Channel Width	5 - 10m	Suitability for Otters	Low
		Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Sweet reed grass and bullrush in ditch. Bank veg- crack willow, bramble, nettles.	Inaccessible.











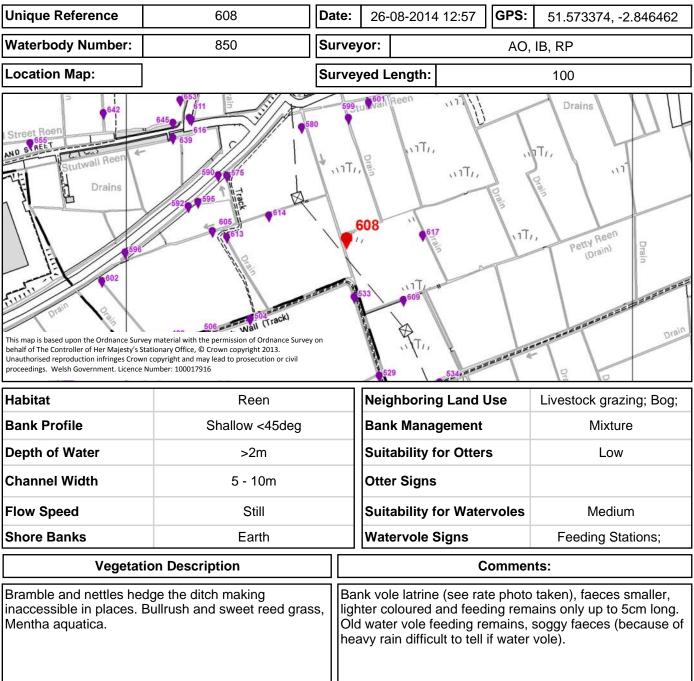


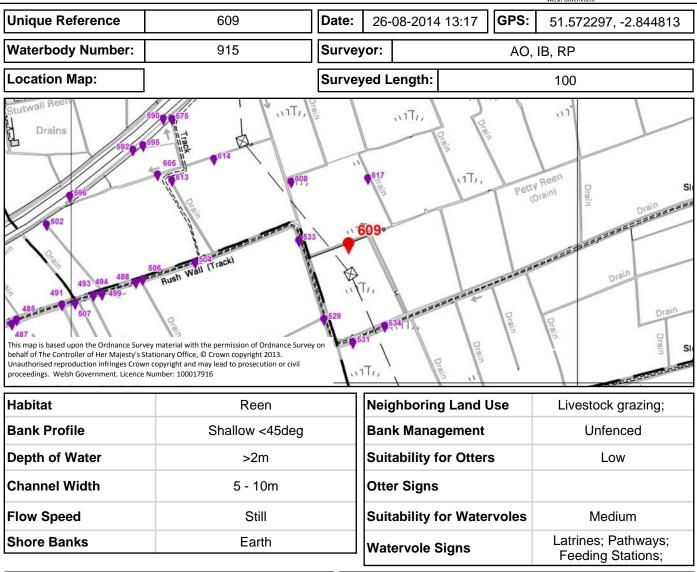
Photo 1











Vegetation Description

Lemons, sweet reed grass in the reen. Bank side vegetation grey willow, crack willow, goat willow, hawthorn, bramble. Marginal veg - good foraging habitat for bats. Inaccessible to survey some areas of ditch due to dense vegan.

Photo 2

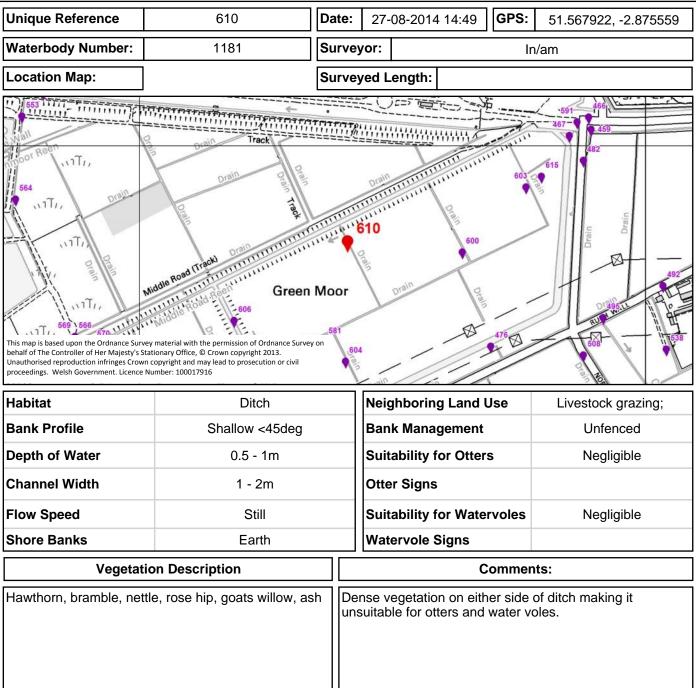




Photo 3

Comments:

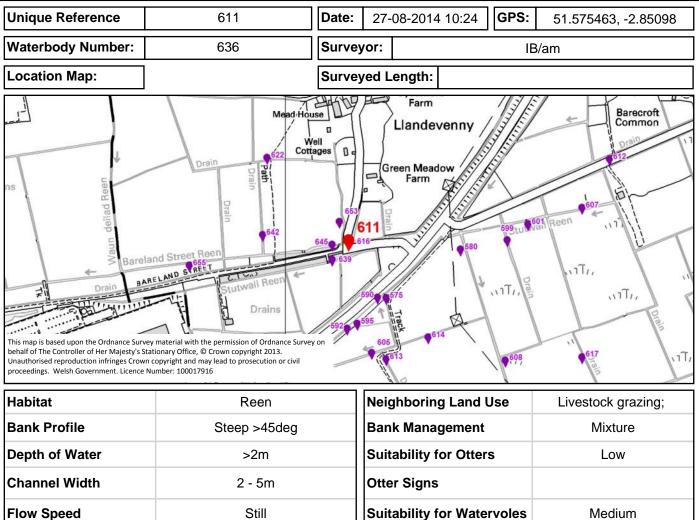












 Shore Banks
 Earth
 Watervole Signs

 Vegetation Description
 Comments:

 Bramble, nettle, hawthorn
 Western end of reen- vegetation recently cut on south bank. No access to north bank. Mink trap in reen. Reen on SDR and extending to north east to be surveyed by kayak as vegetation and bank slope too difficult to access.

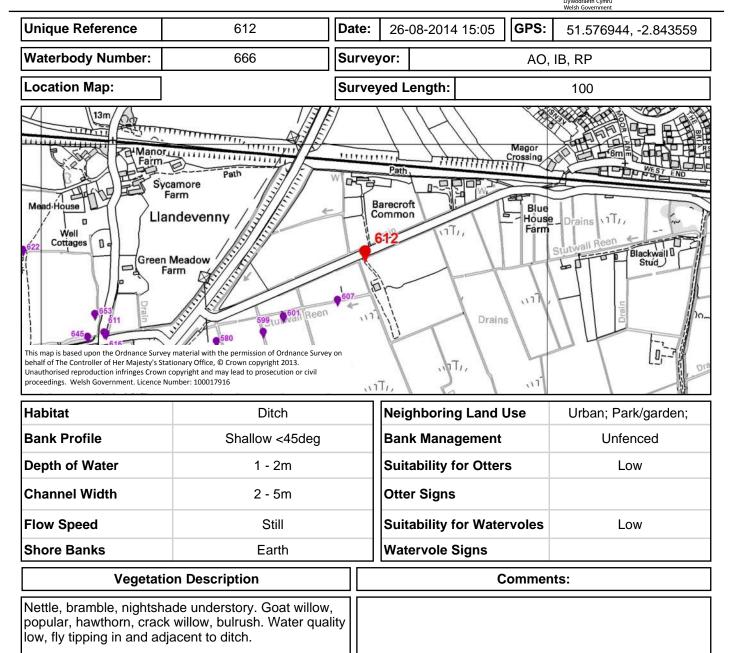














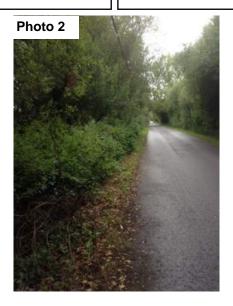
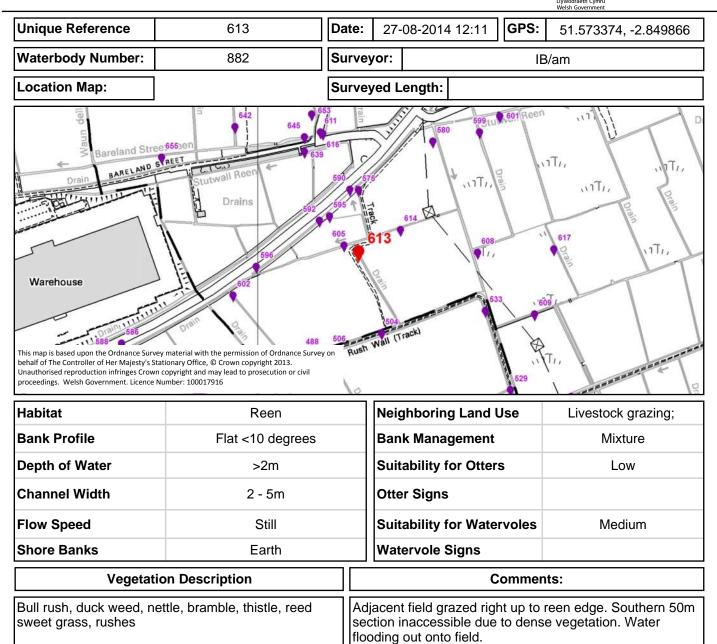


Photo 3

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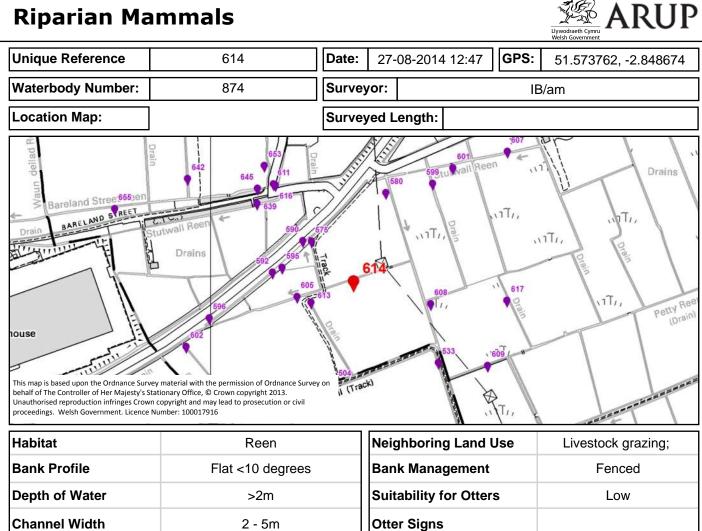








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•			,	
Shore Banks	Earth		Watervole Signs	
Vegetation Description			Comments:	
Bull rush, reed greass, ne	:ttle.	SI Ba	oot checks made along full ank vole signs seen.	ength. Marginally accessible.

Still



Flow Speed





Medium



Suitability for Watervoles

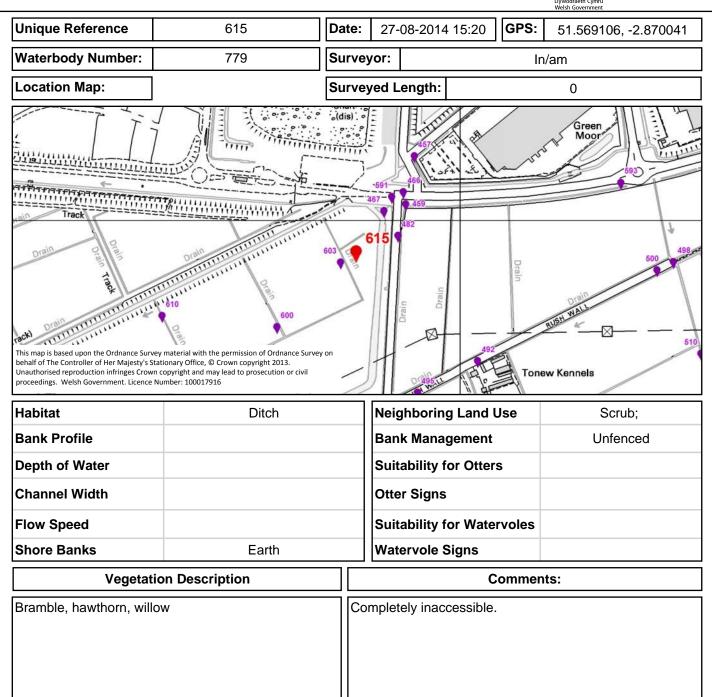




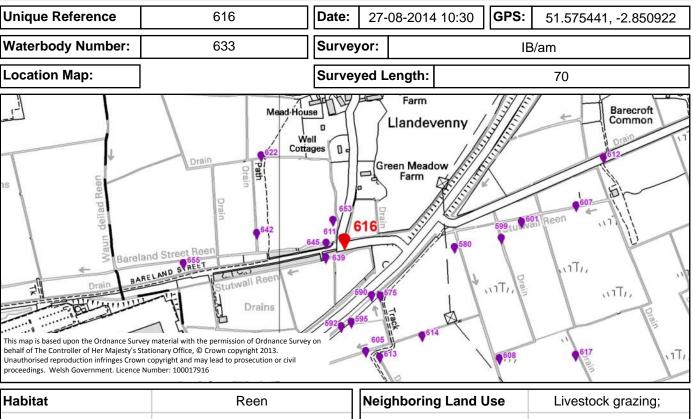






Photo 3

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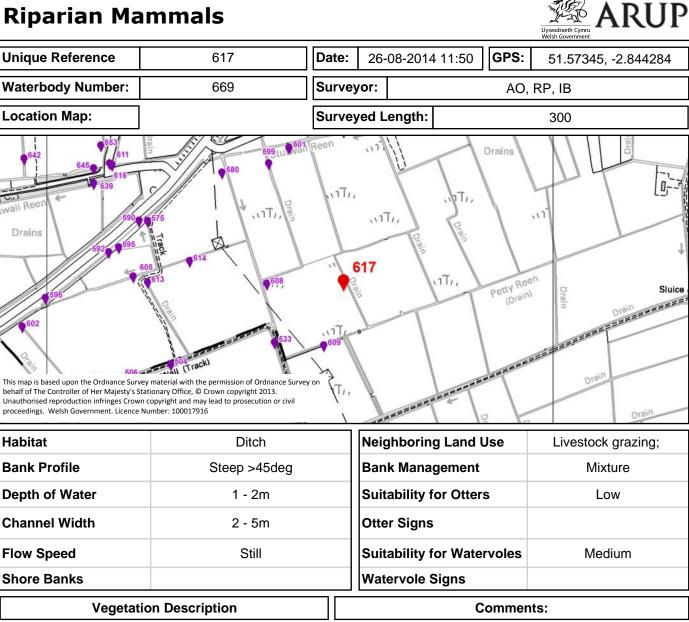
Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Steep >45deg	Bank Management	Mixture
Depth of Water	>2m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Nettle dominant, hog weed, enchanted nightshade	Largely inaccessible due to steep bank covered with vegetation. West side surveyed, east no access. Adjacent road on west side.









Vegetation Description	Comments:
	Lots of feeding material, assume to be bank vole as no sign of wv droppings



Photo 2



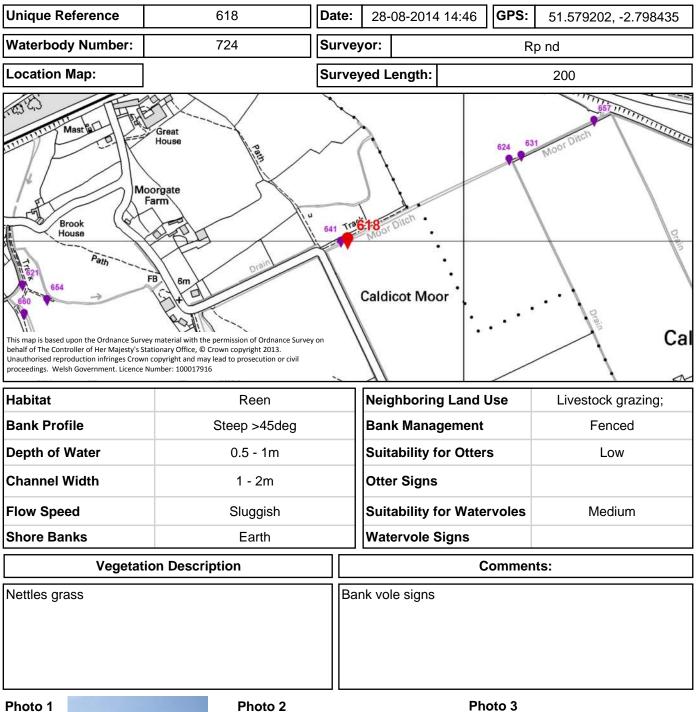




Photo 2

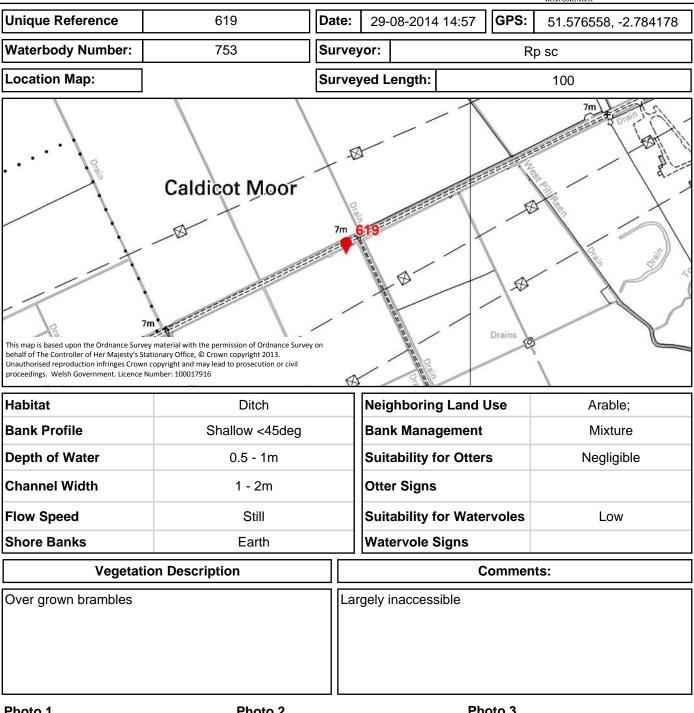
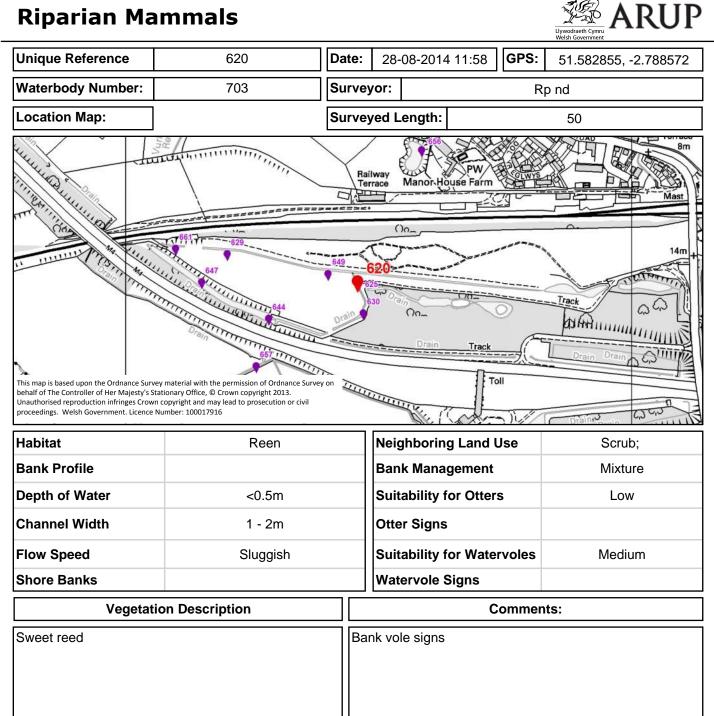


Photo 1

Photo 2

Photo 3

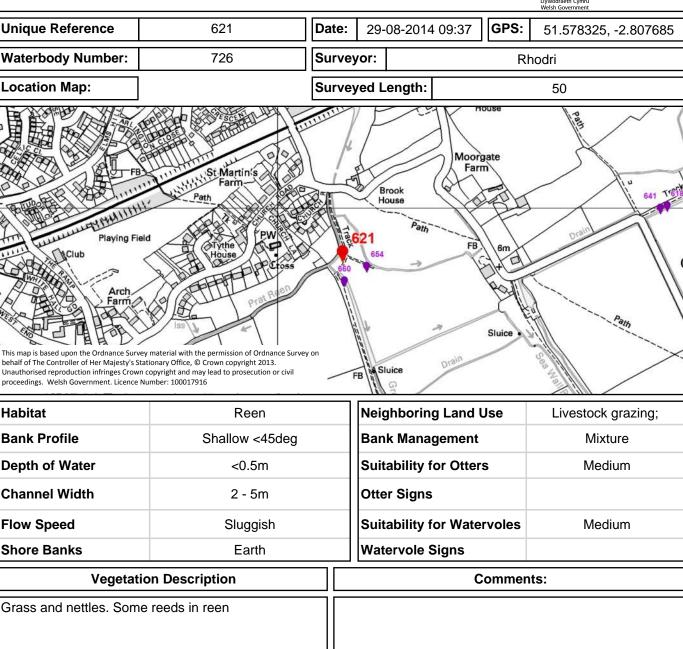
ARUP











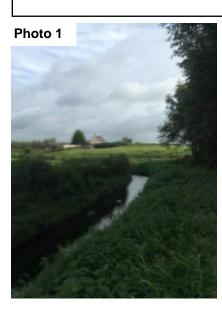
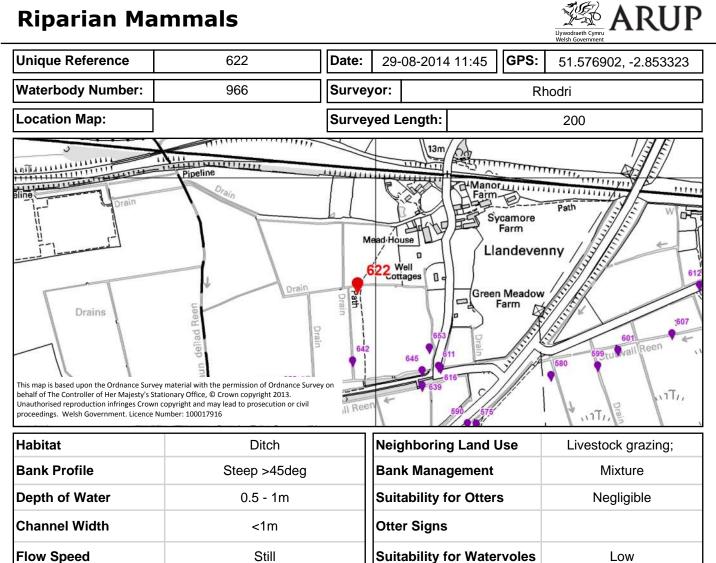




Photo 3

🖗 ARUP



Shore Banks	Earth	Watervole Signs	
Vegetation Description		Comments:	
Brambles and trees			







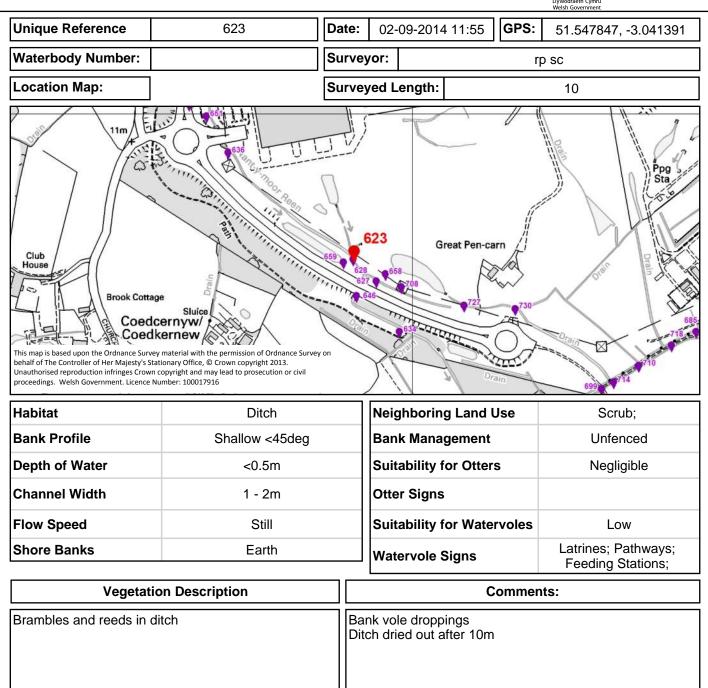




Photo 2

Photo 3

ARUP

30



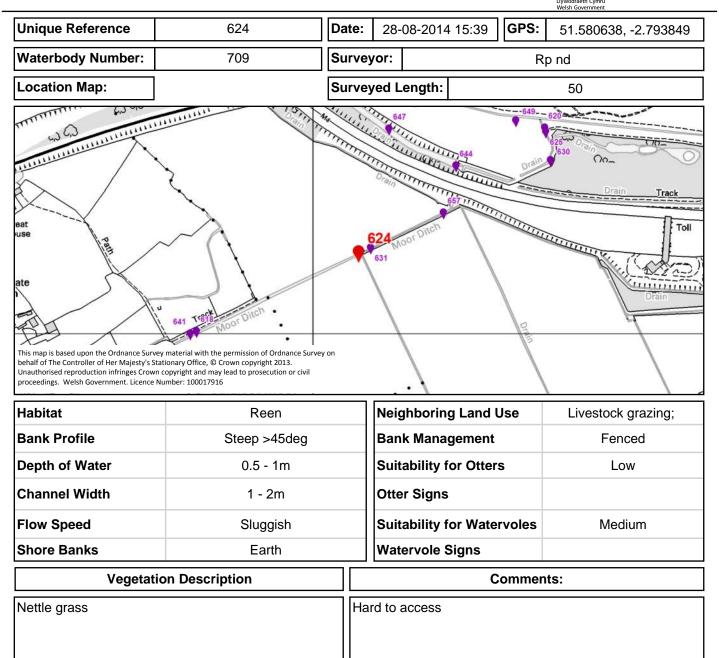


Photo 1

Photo 2

Photo 3

🖗 ARUP



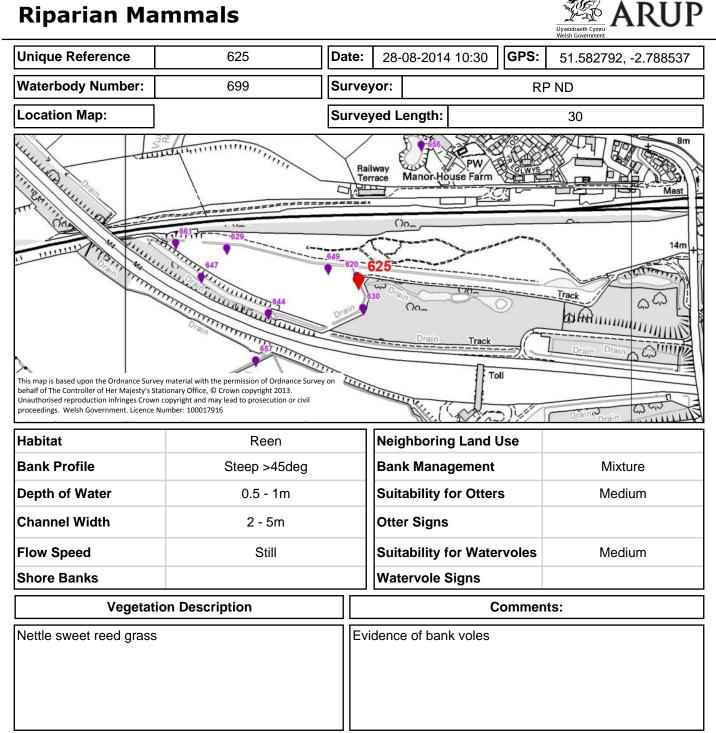
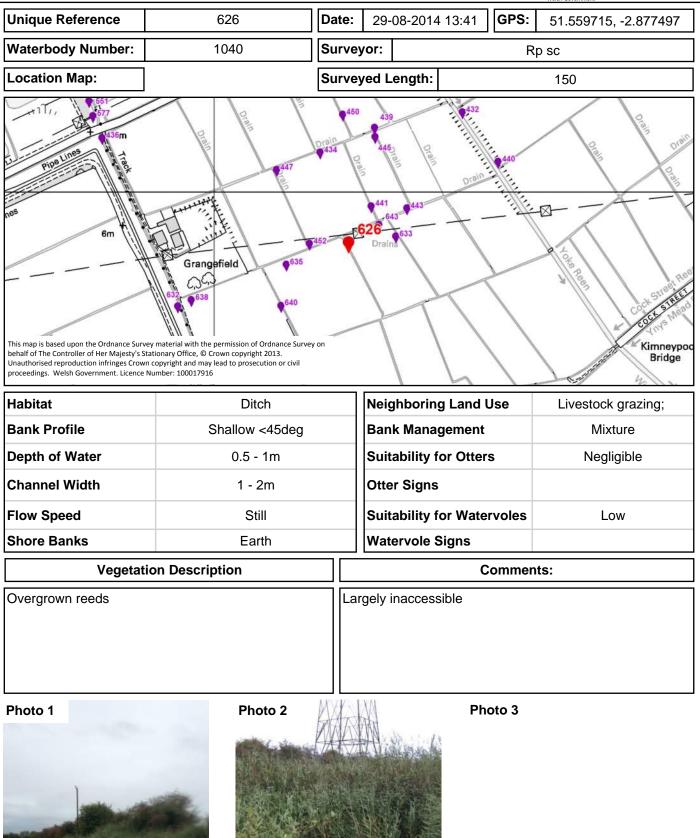




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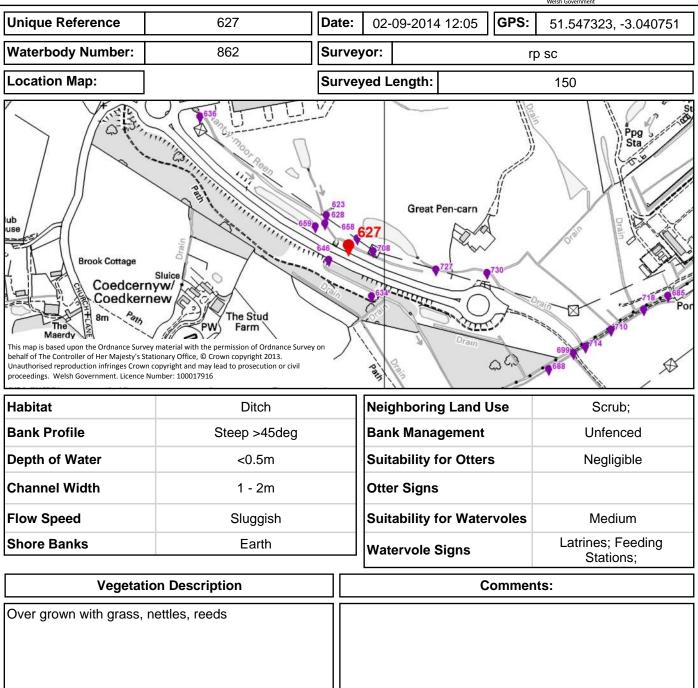














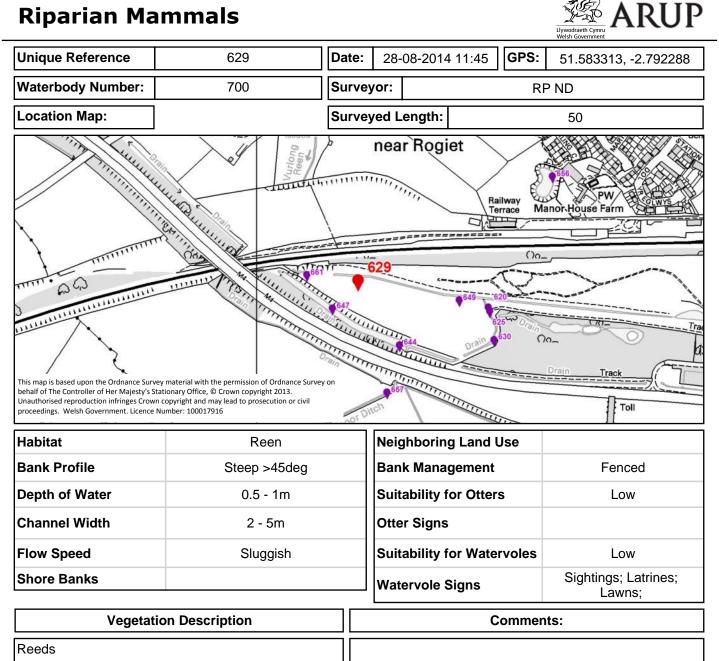




						Welsh Government
Unique Reference	628	Date	02	-09-2014 11:21	GPS:	51.547702, -3.041422
Waterbody Number:	861	Surv	eyor:		rı	o sc
Location Map:		Surv	eyed l	ength:		
Club House Brook Cotta Coed Coed This map is based upon the Ordnance Surv behalf of The Controller of Her Majesty's SI	Sluice Cernyw/ kernew av material with the permission of Ordnance Survey ationary Office, © Crown copyright 2013. copyright and may lead to prosecution or civil		·628	Great Pen-ca		Ppg 3 Sta 538 000 000 000 000 000 000 000 000 000 0
Habitat	Stream		Nei	ghboring Land	Jse	Scrub;
Bank Profile	Shallow <45deg		Bar	k Management		Unfenced
Depth of Water	0.5 - 1m		Sui	tability for Otter	s	Low
Channel Width	1 - 2m		Otte	er Signs		
Flow Speed	Slow		Sui	tability for Wate	rvoles	Medium
Shore Banks	Earth		Wa	ervole Signs		Latrines; Pathways; Feeding Stations;
Vegetation Description			Comments:			
Grass banks with brambles Part section has grass/reeds in stream			ank vo V drop	le signs pings		

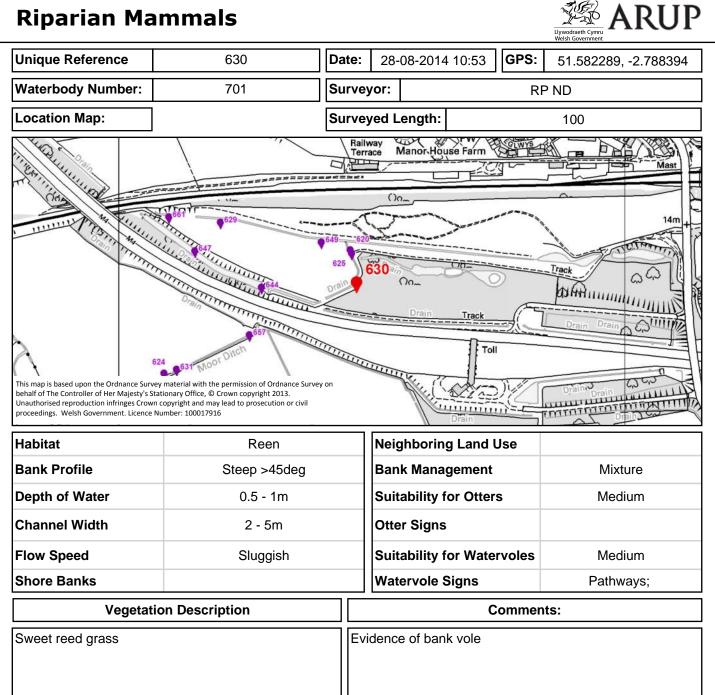








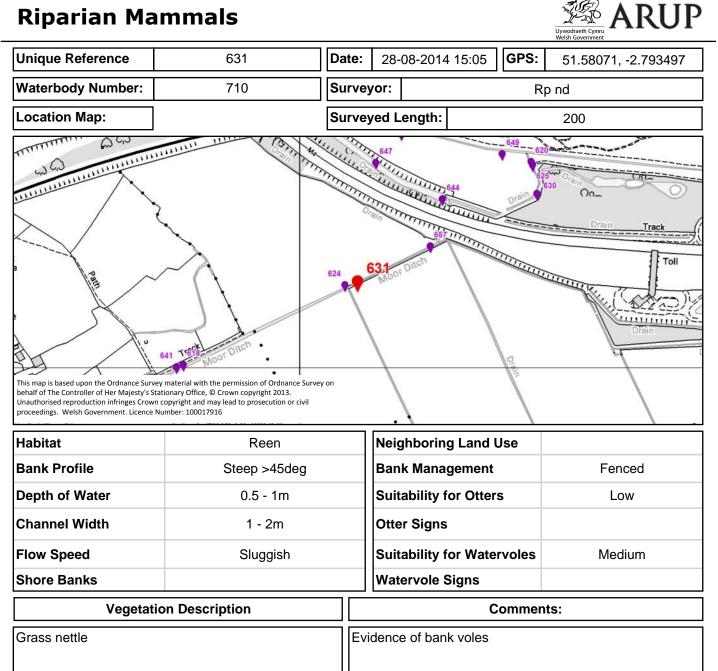












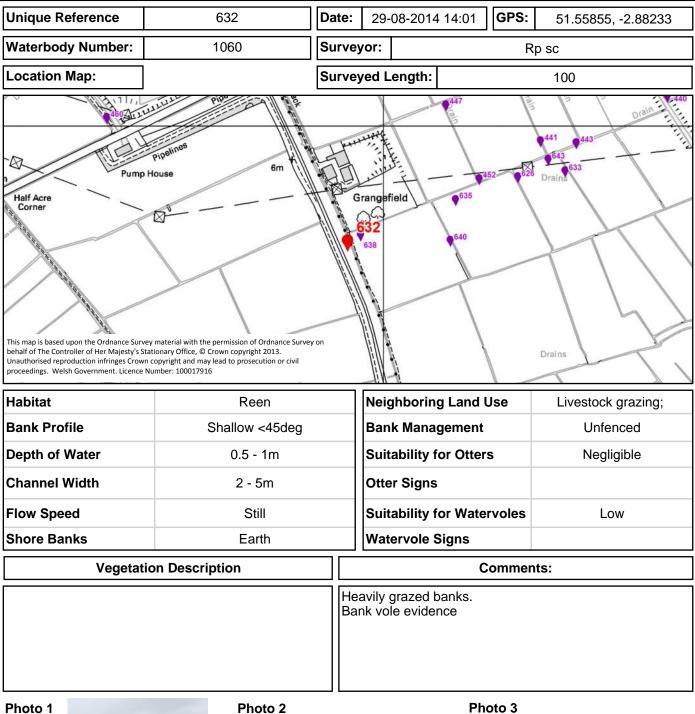














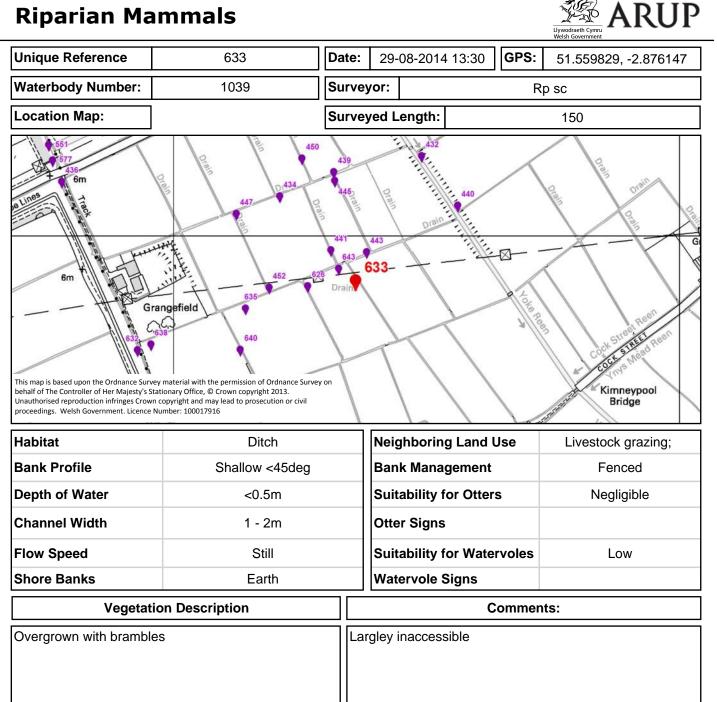




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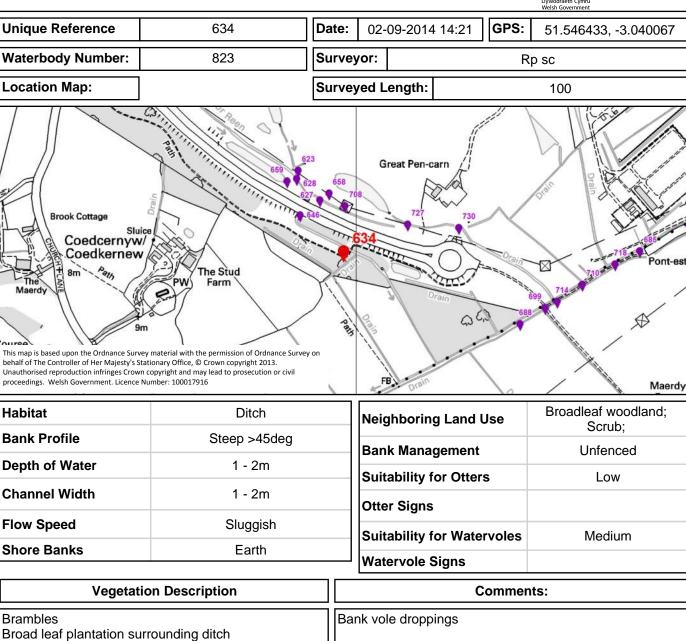


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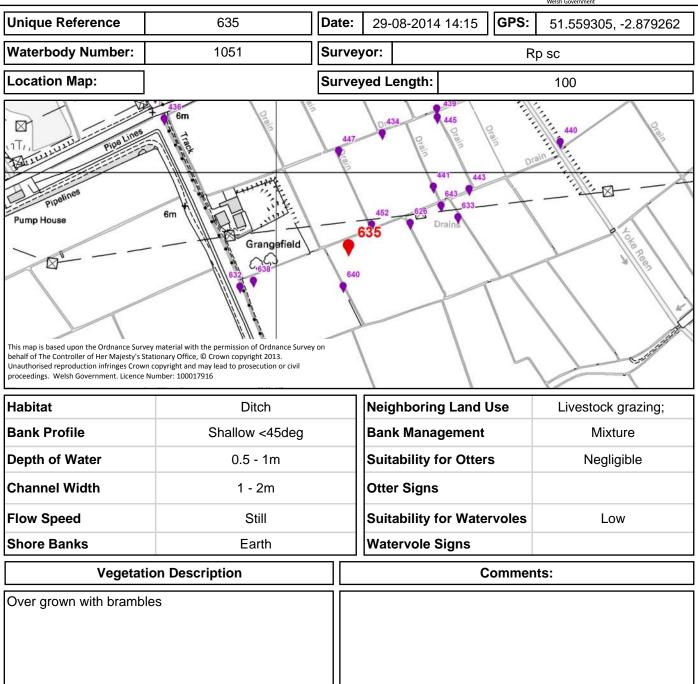
Photo 2

Photo 3

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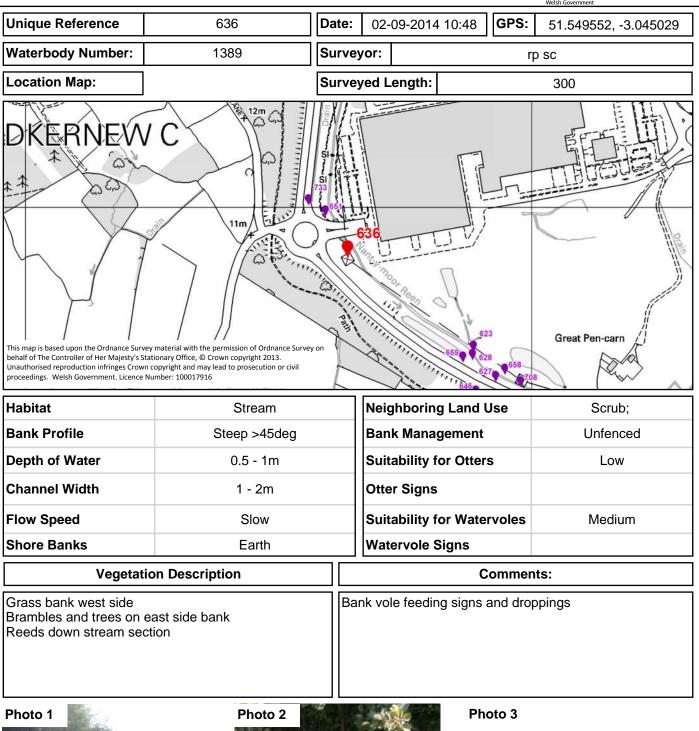
















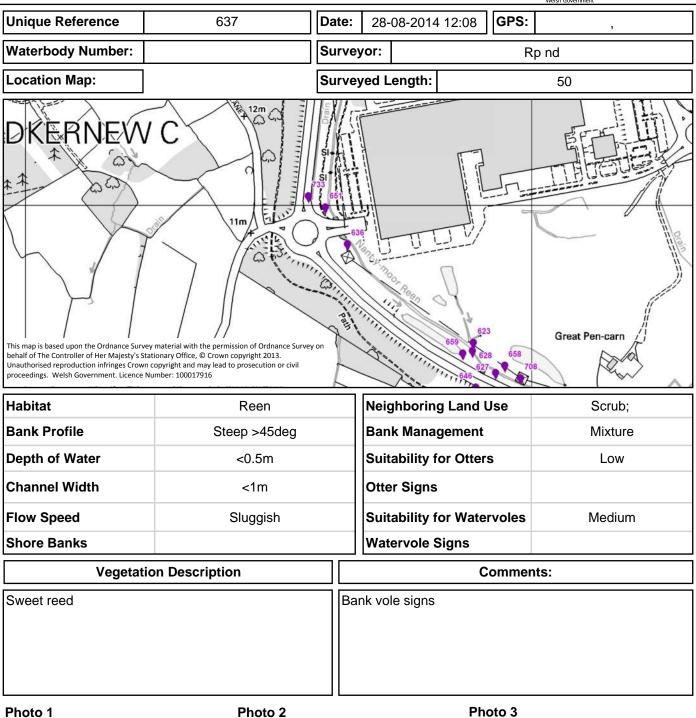


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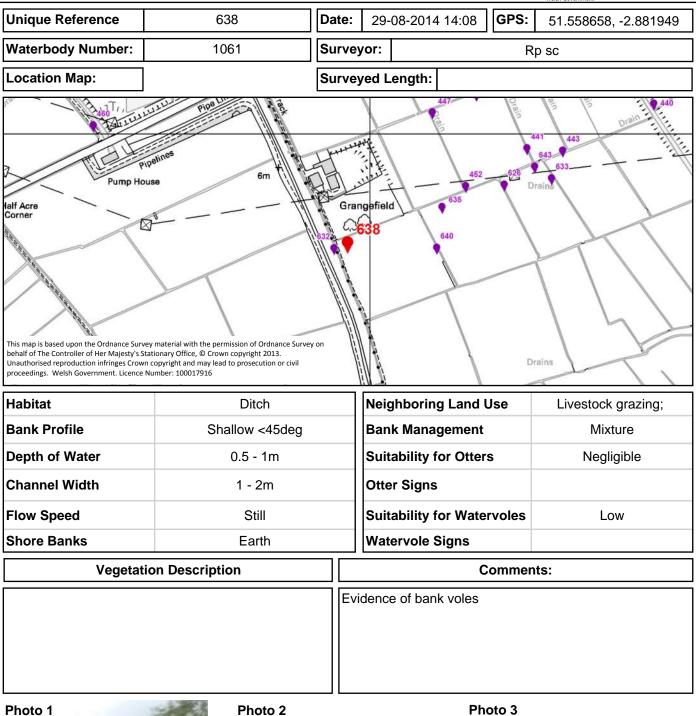




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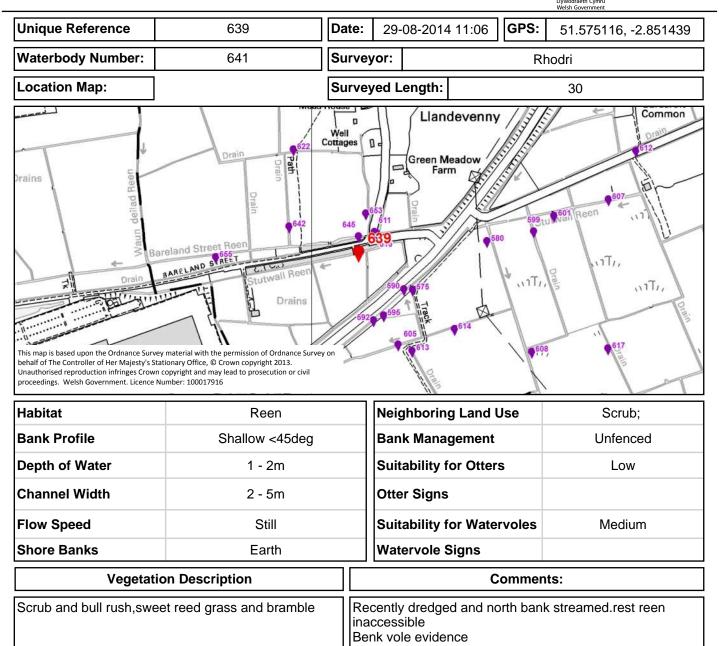


Photo 1

Photo 2

Photo 3

ARUP





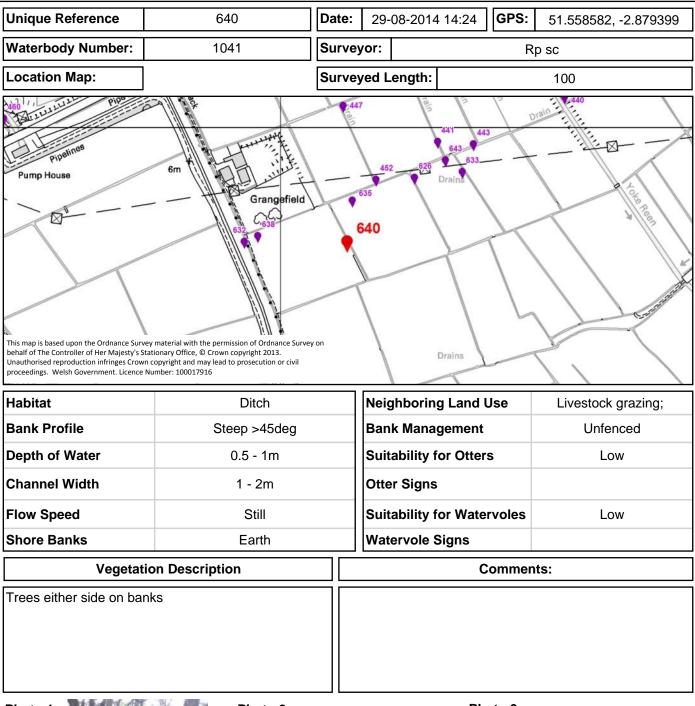
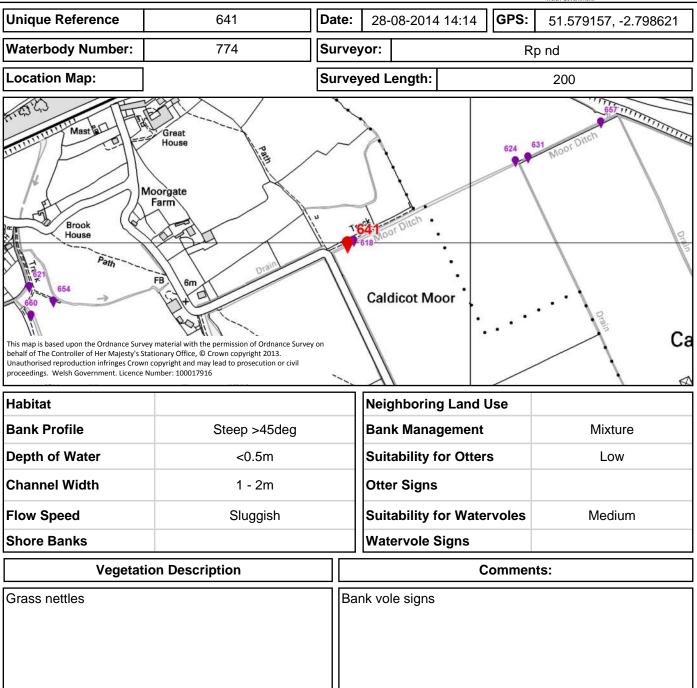




Photo 2





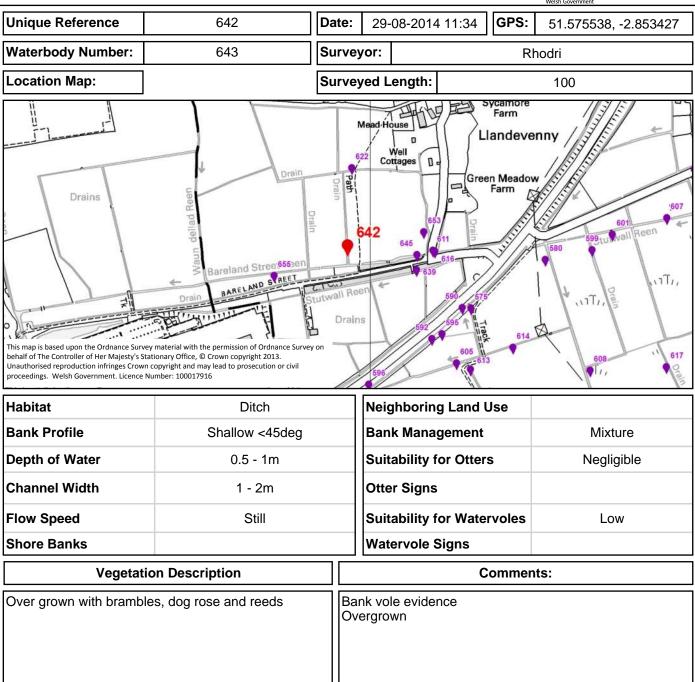






















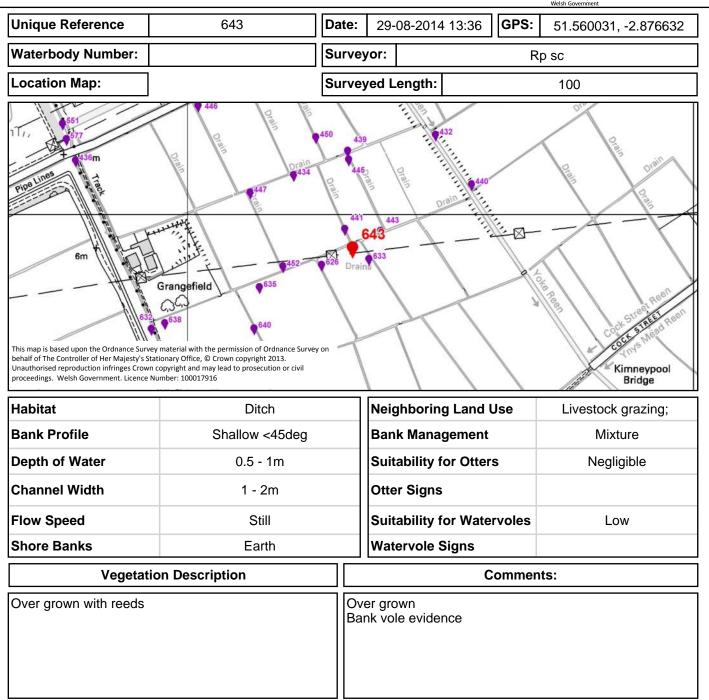
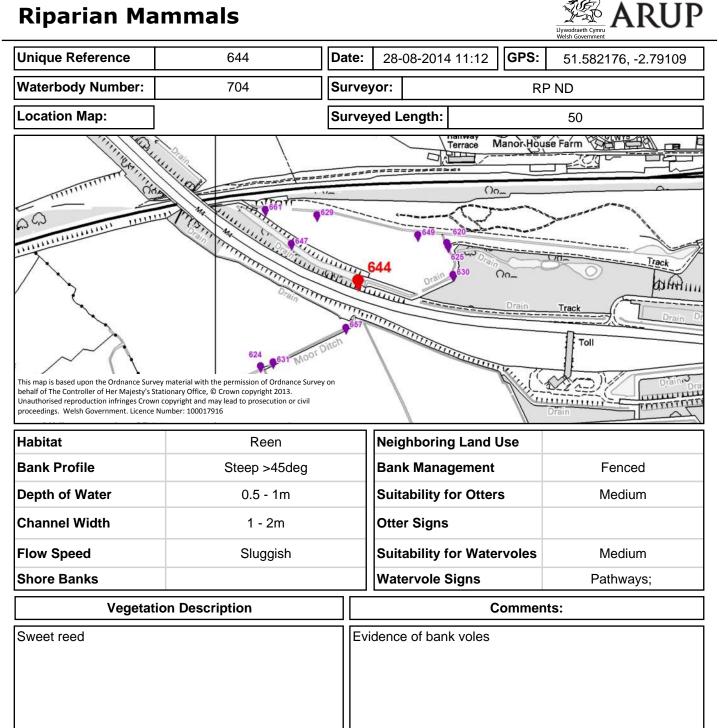






Photo 3

🖗 ARUP



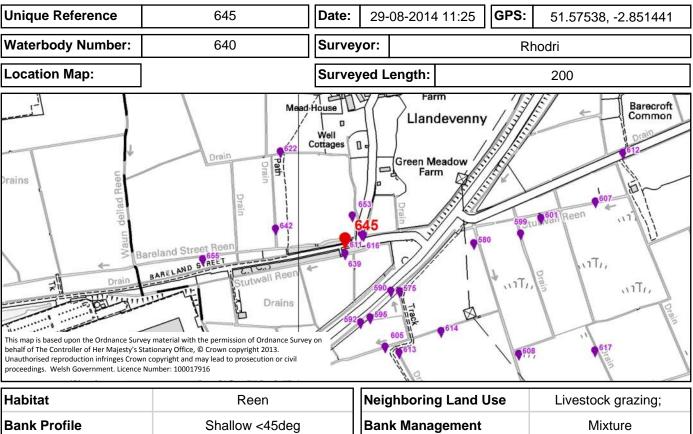












Bank Profile	Shallow <45deg	Bank Management	Mixture
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Nettles,grass, bull rush	Evidence of bank vole, bank cut on 1 side





Photo 3

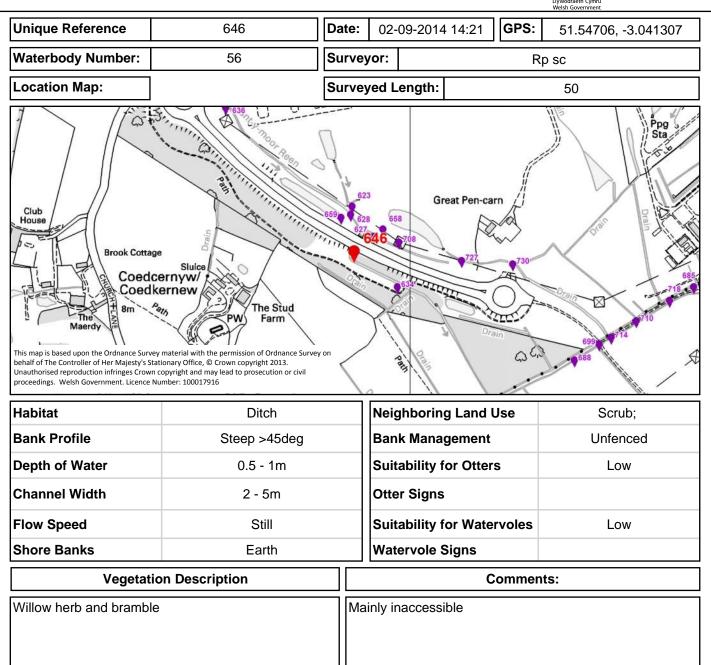


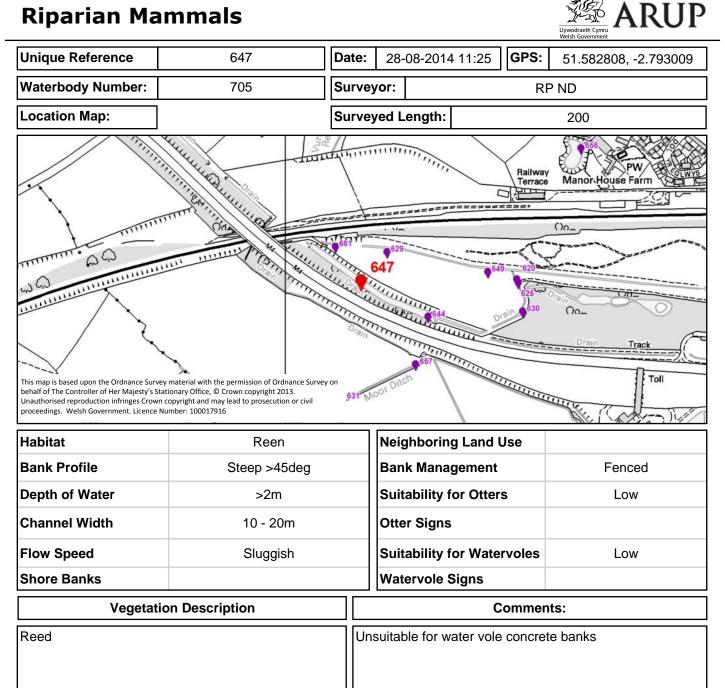






Photo 3

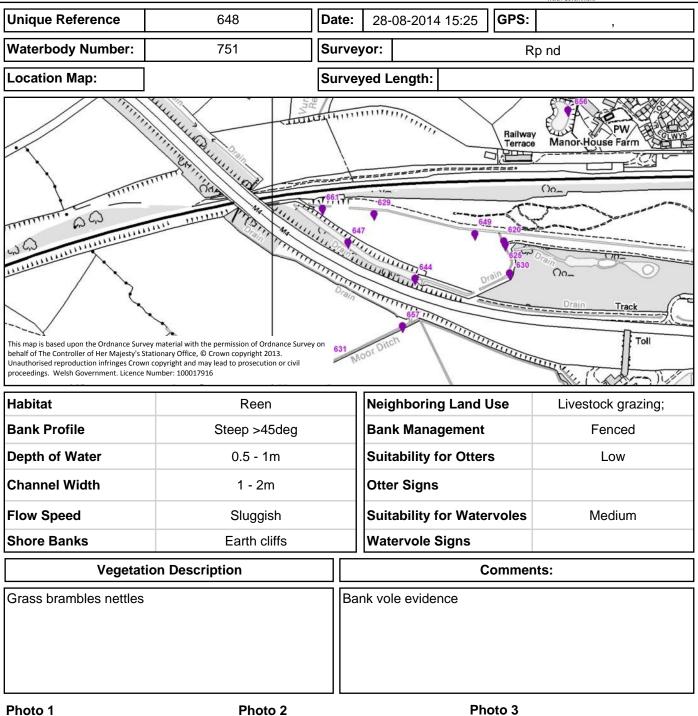
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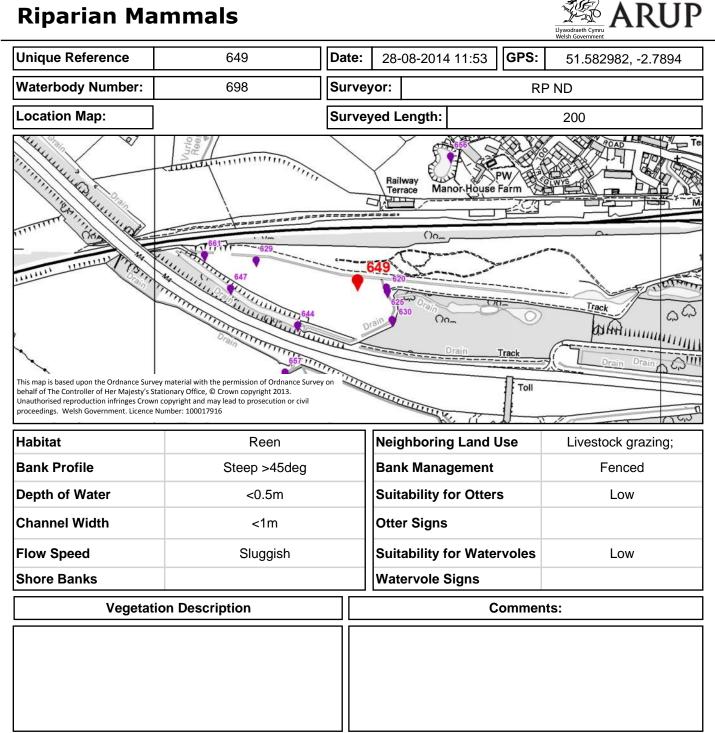
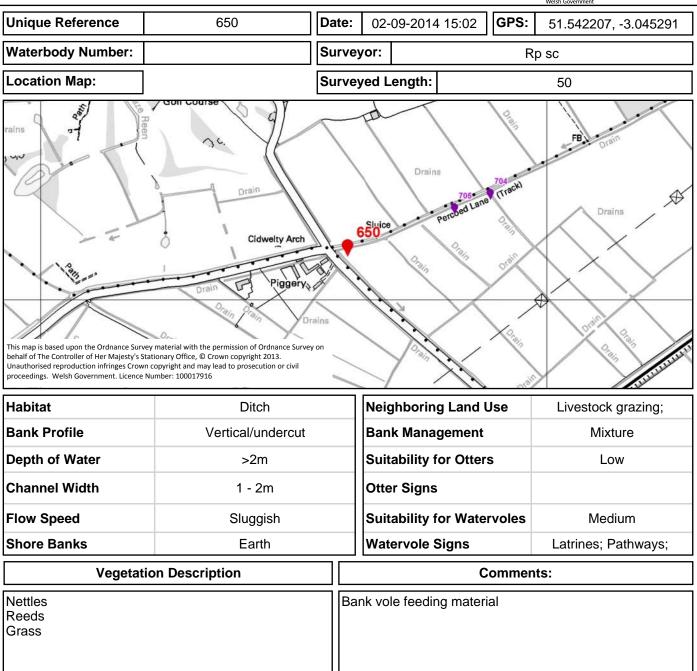




Photo 2



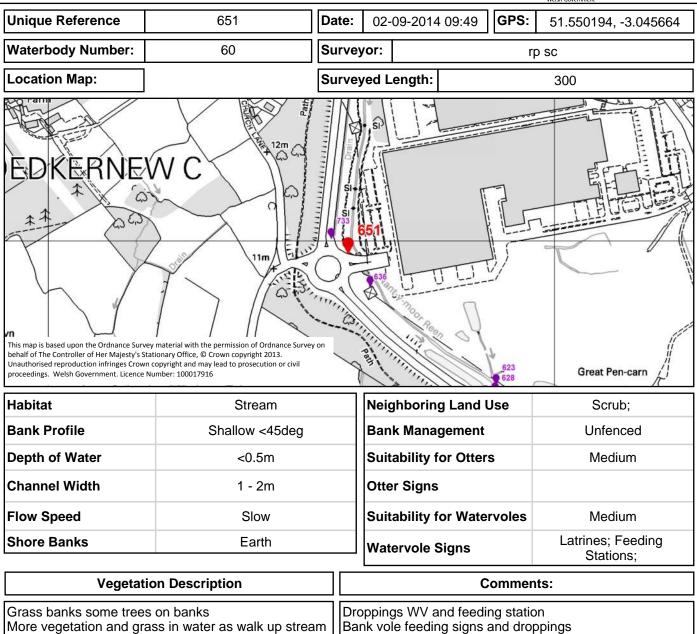
















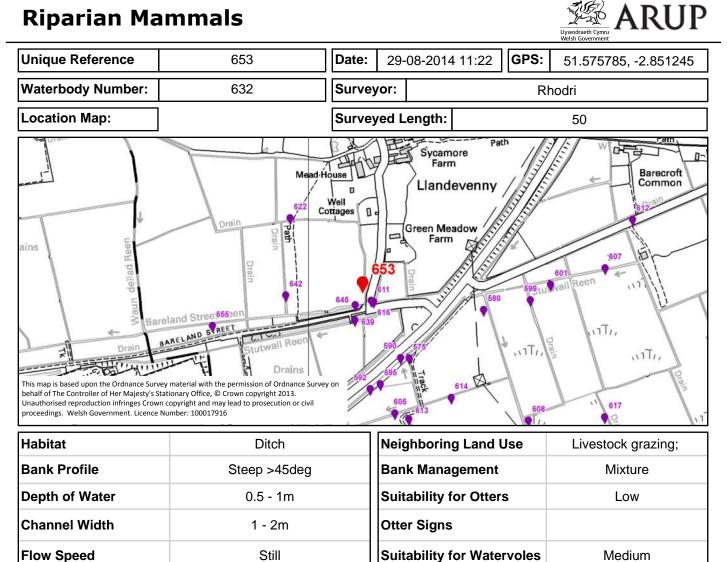




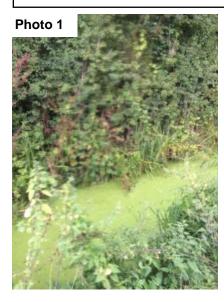
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Waterbody Number:		Survey	vor:	Joe
Location Map:		Survey	red Length:	
behalf of The Controller of Her Majesty's S	n copyright and may lead to prosecution or civil			Great Pen-carn
Habitat			Neighboring Land Use	
Bank Profile			Bank Management	
Depth of Water			Suitability for Otters	
Channel Width			Otter Signs	
Flow Speed			Suitability for Watervoles	
Shore Banks			Watervole Signs	
Vegetat	ion Description		Comme	nts:

Photo 1

Photo 2



Shore Banks	Earth		Watervole Signs		
Vegetation Description			Comments:		
Nettles and grass		F	ledge on east side cut for h	alf section of reen	





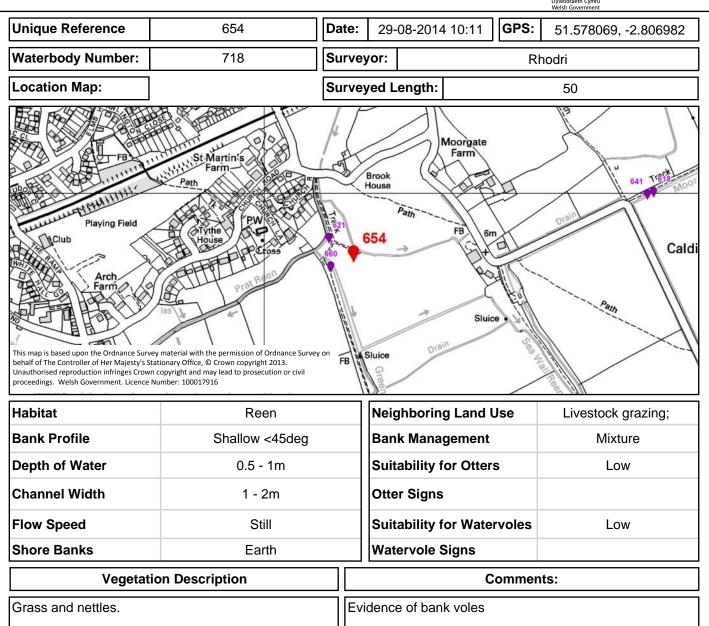






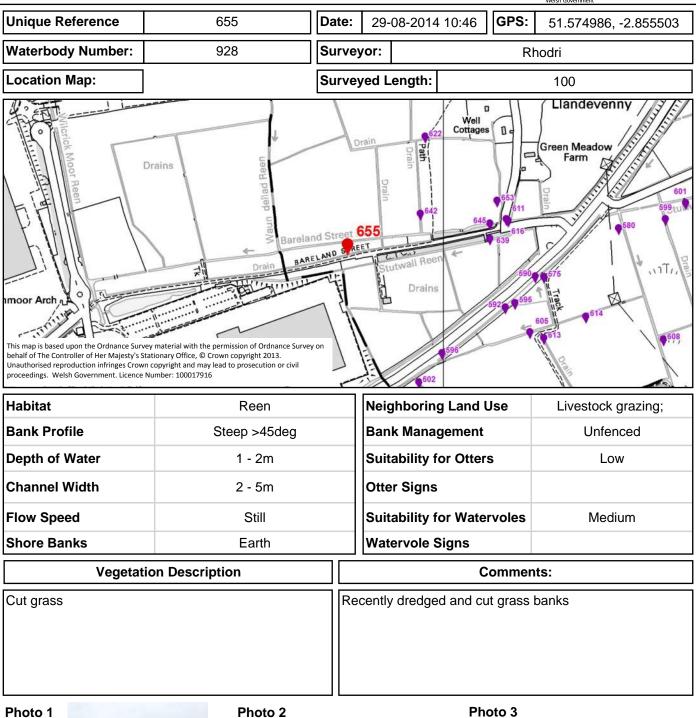




Photo 3

🖗 ARUP





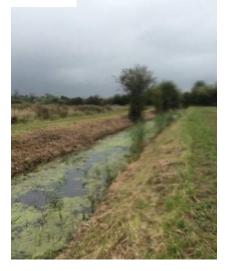
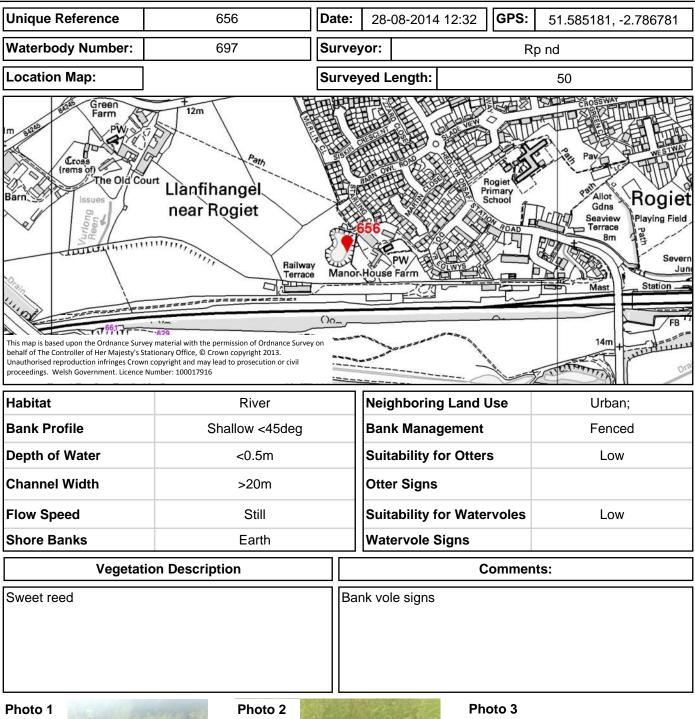


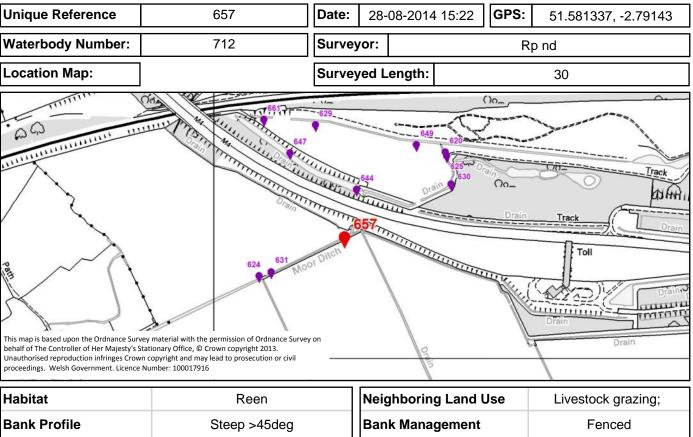
Photo 2



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Bank Prome	Steep >45deg	Dank Management	renceu
Depth of Water	0.5 - 1m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Sluggish	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	

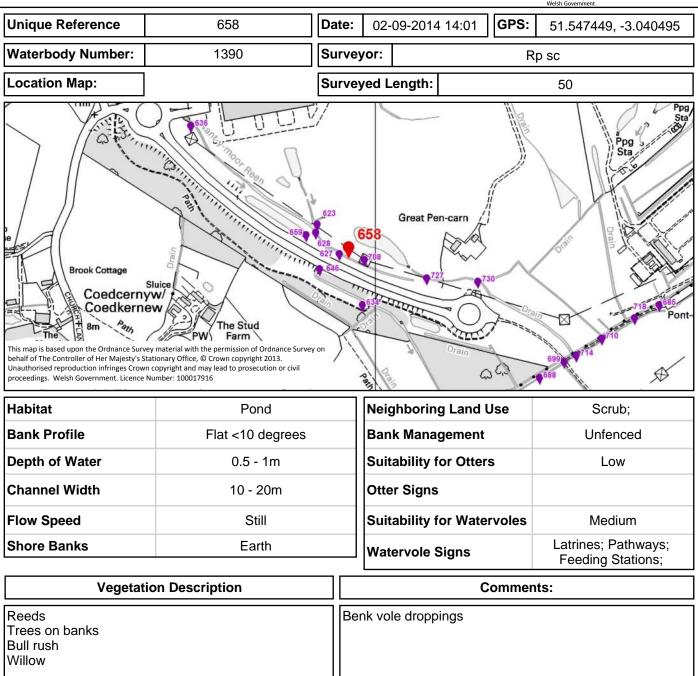
Vegetation Description	Comments:	
Grass nettle	Bank vole signsz	





Photo 3



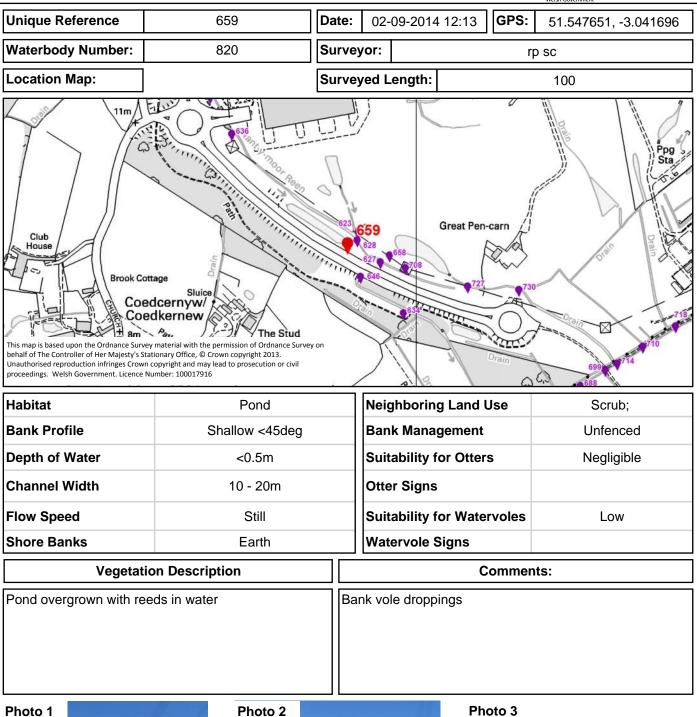










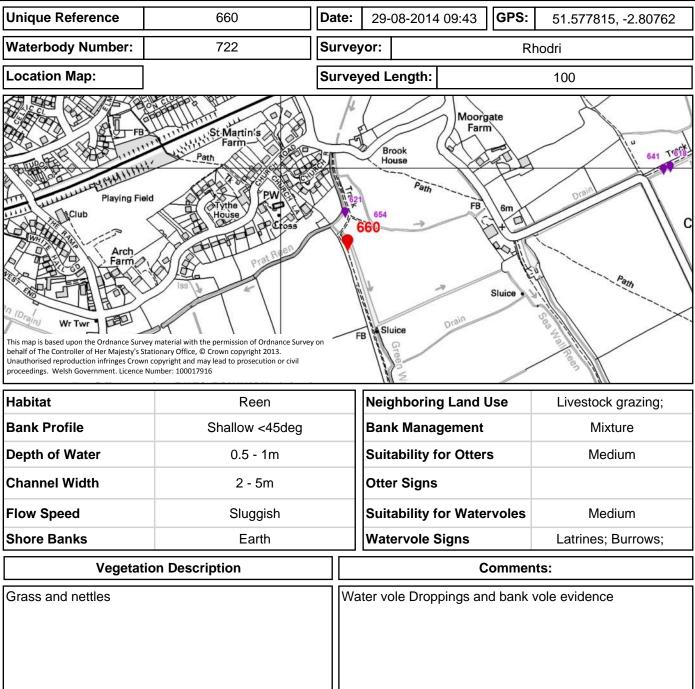


















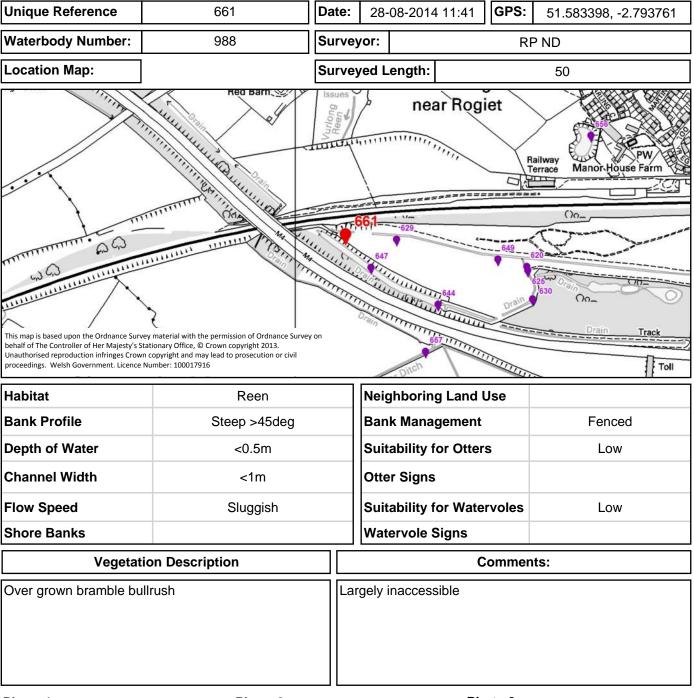
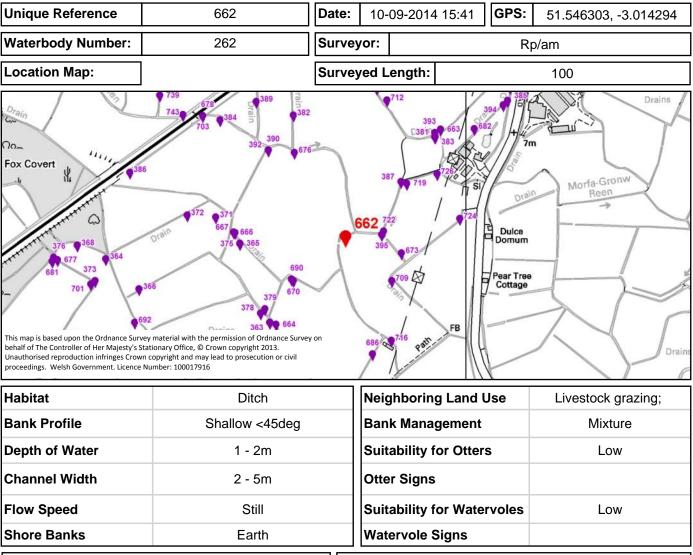


Photo 1

Photo 2

Photo 3

🖗 ARUP



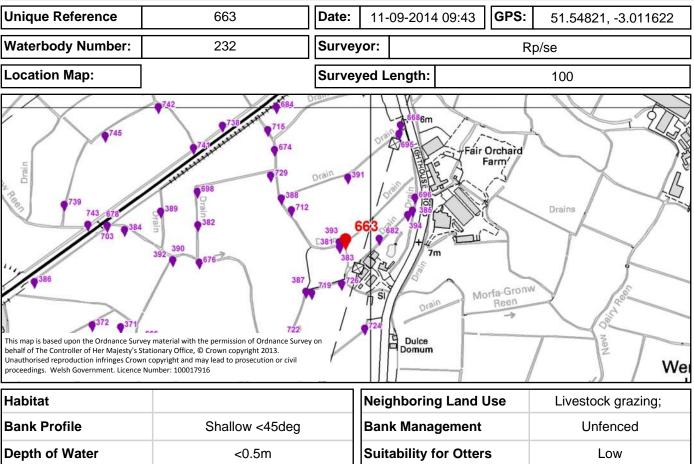
Vegetation Description	Comments:
Reed sweet grass, willow, thistle, nettle, willow herb.	Bank vole feeding and droppings found











Flow Speed	Still	Suitability for Watervoles	Low	
Shore Banks	Earth	Watervole Signs		
Vegetatio	n Description	Comments:		
Reed sweetgrass other re	eeds bramble willow	Hevily poached and dries up in se	ections	

Otter Signs



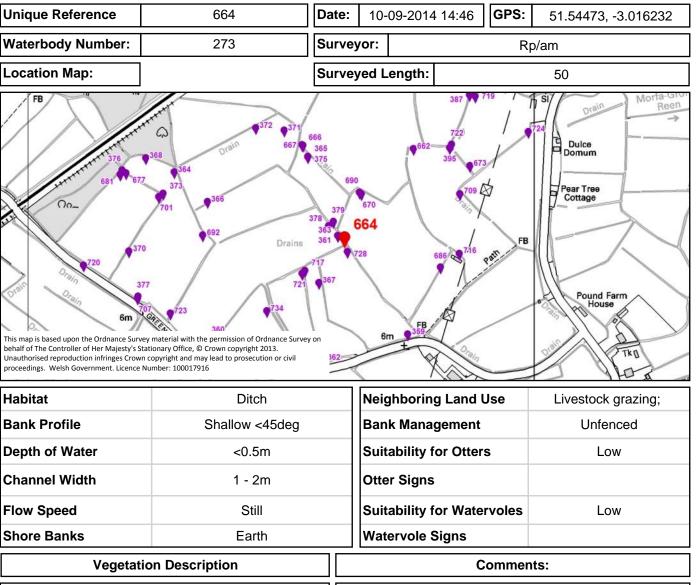
Channel Width



2 - 5m







regetation Decemption		
Hawthorn, blackthorn, reef sweet grass	Very little water	water

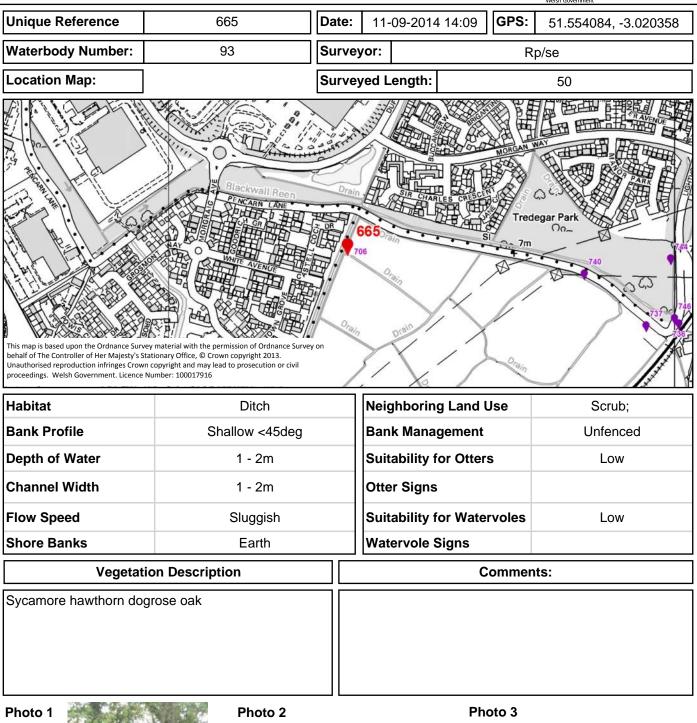




Photo 3

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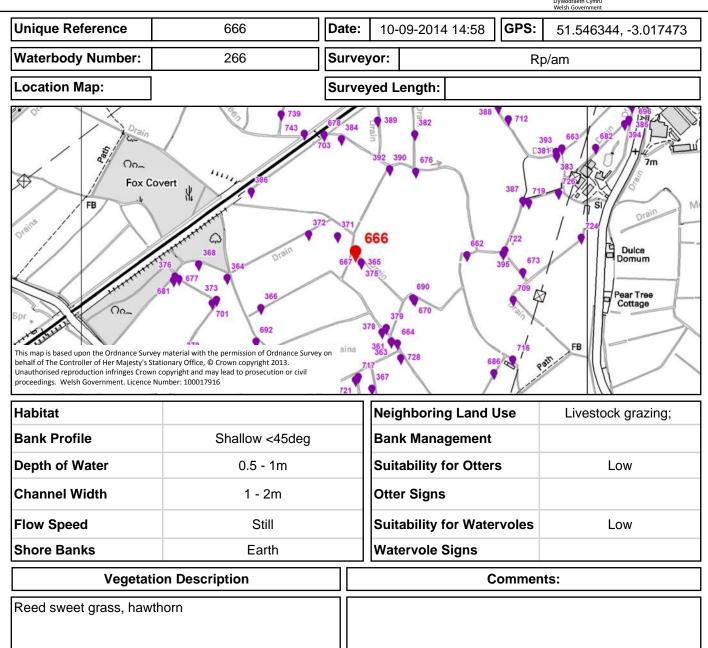


Photo 1

Photo 2

Photo 3

ARUP

Do



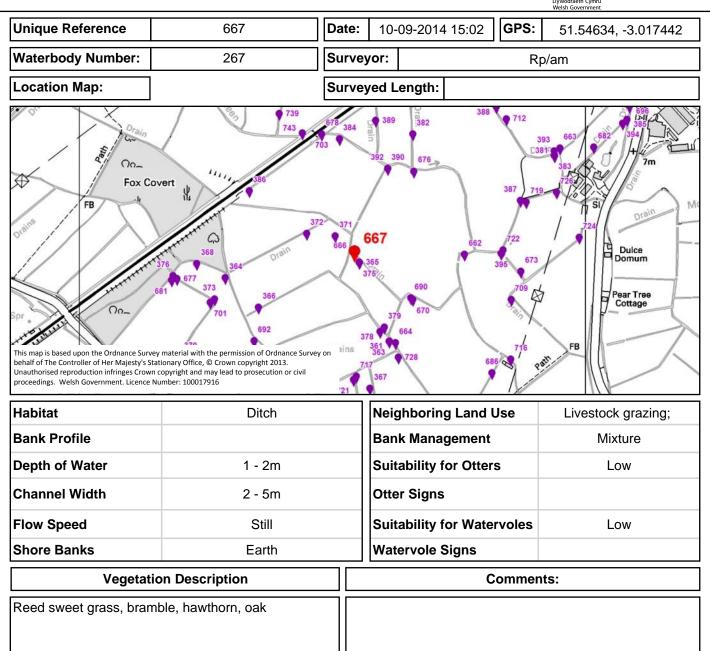




Photo 2

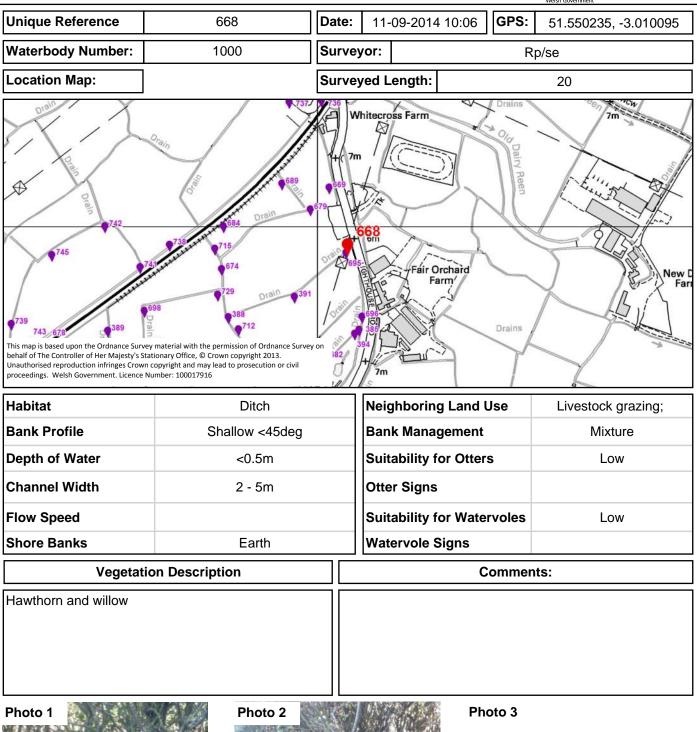
Photo 3

ARUP

Zo-



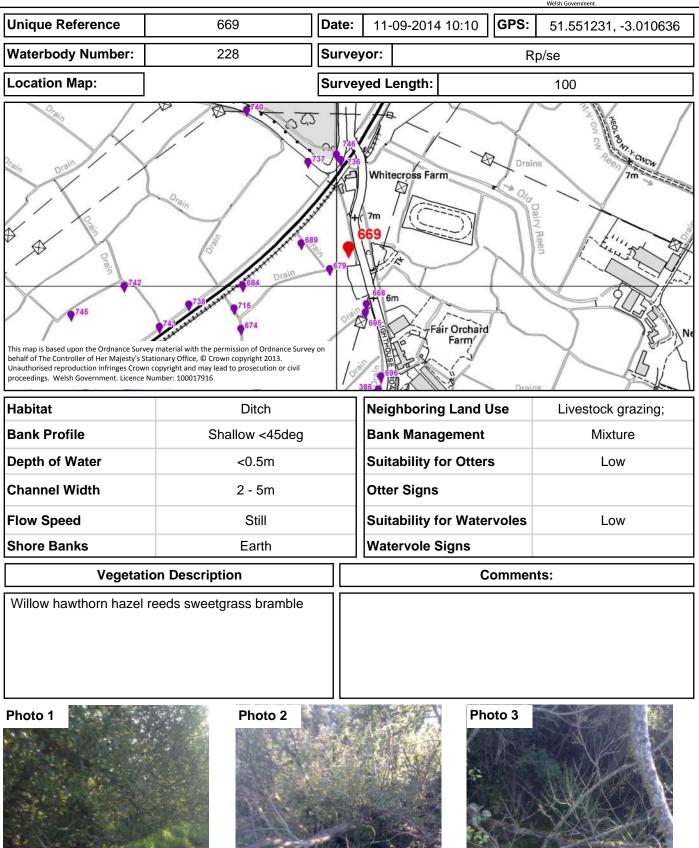








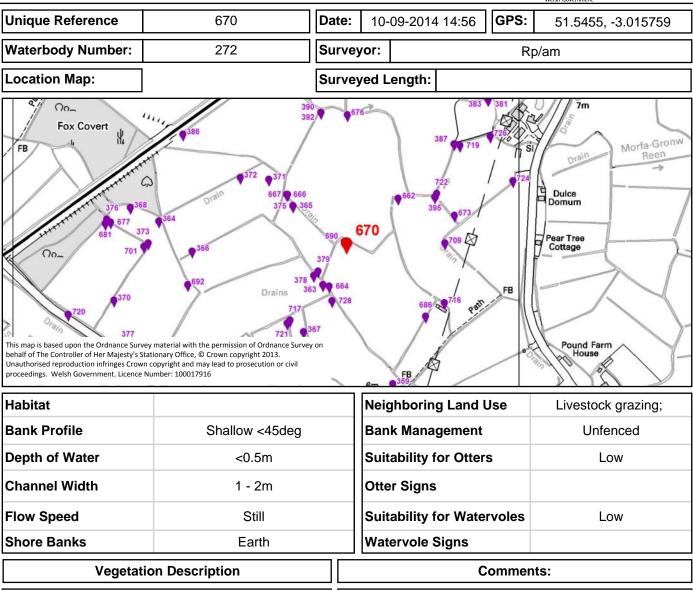












Comments:
Limited accessibility due to dense vegetation



Photo 2

Photo 3

ARUP

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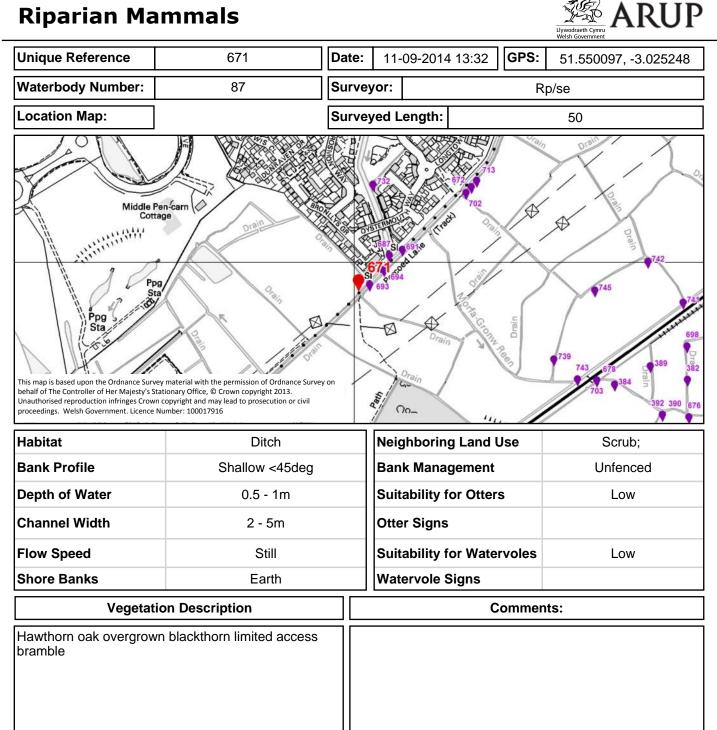




Photo 2

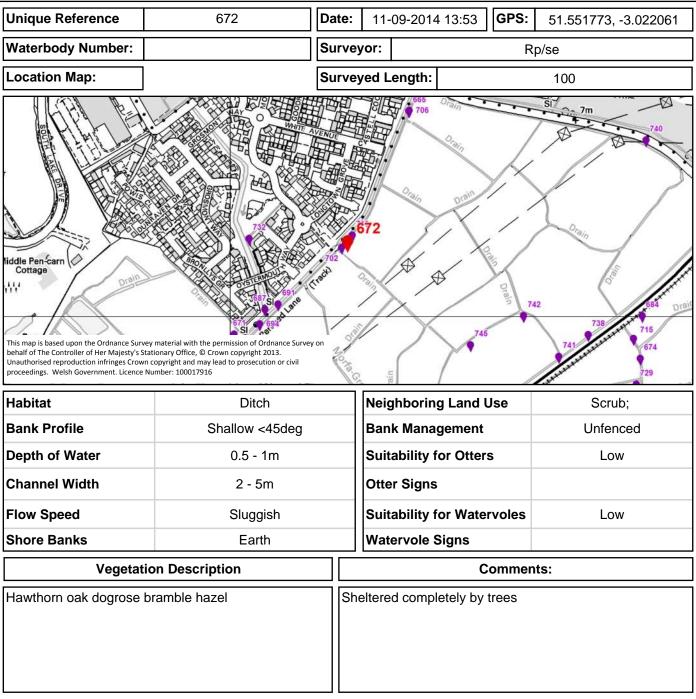


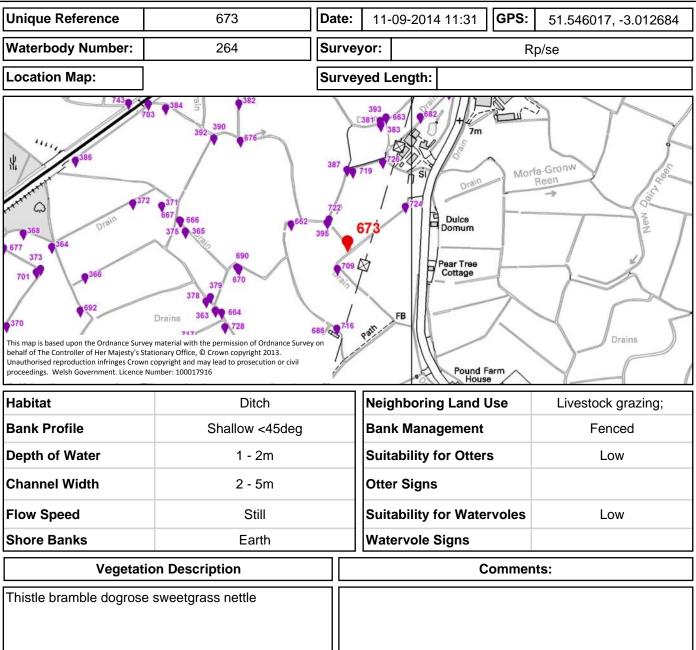


Photo 2

Photo 3

🖗 ARUP



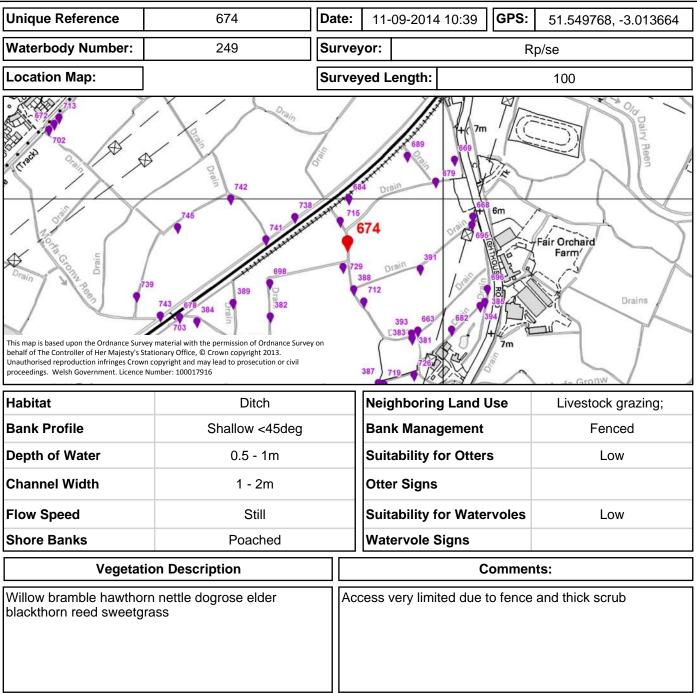








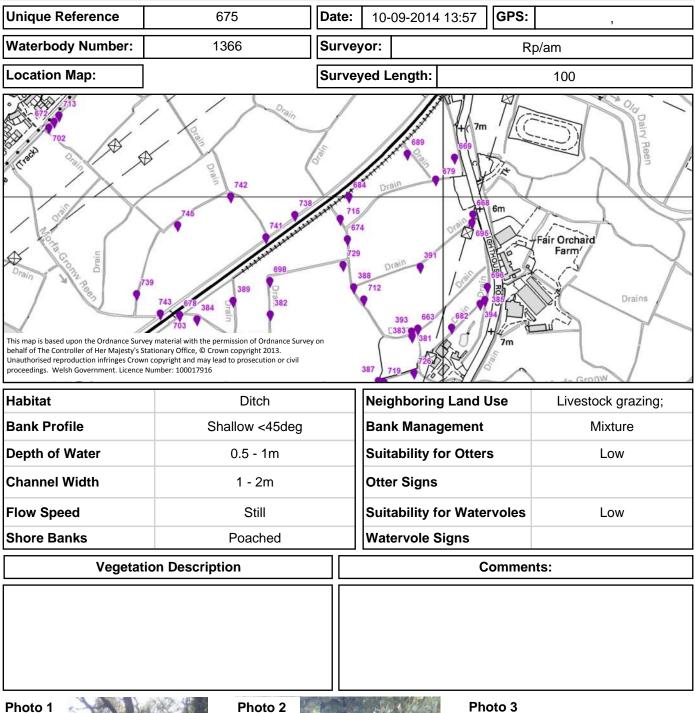












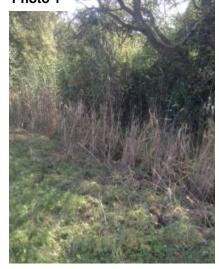
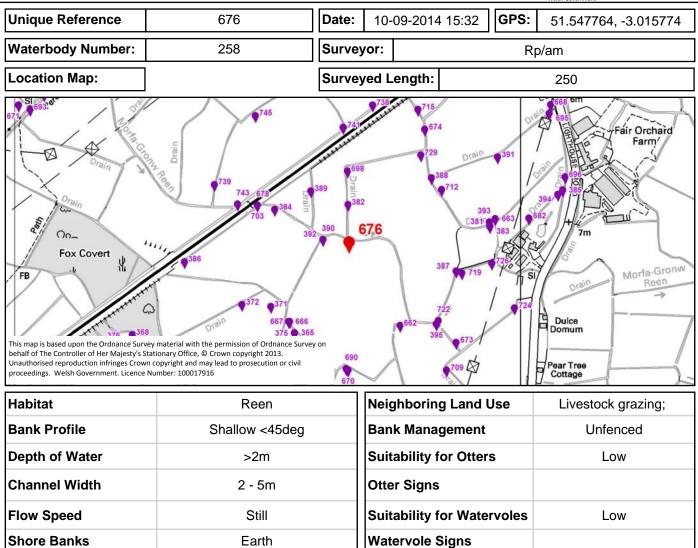


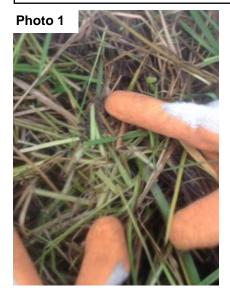


Photo 3



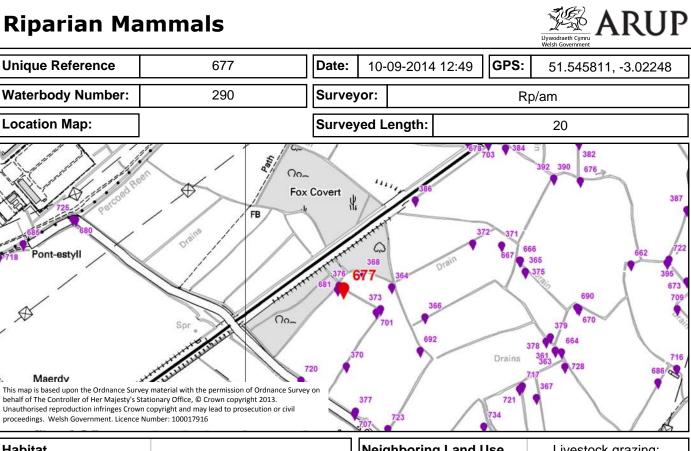


Vegetation Description	Comments:
Reed sweet grass, duckweed, reed, lily	Bank vole latrine









Habitat		Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Oak, willow, reed, reed sweet grass, hawthorn,	





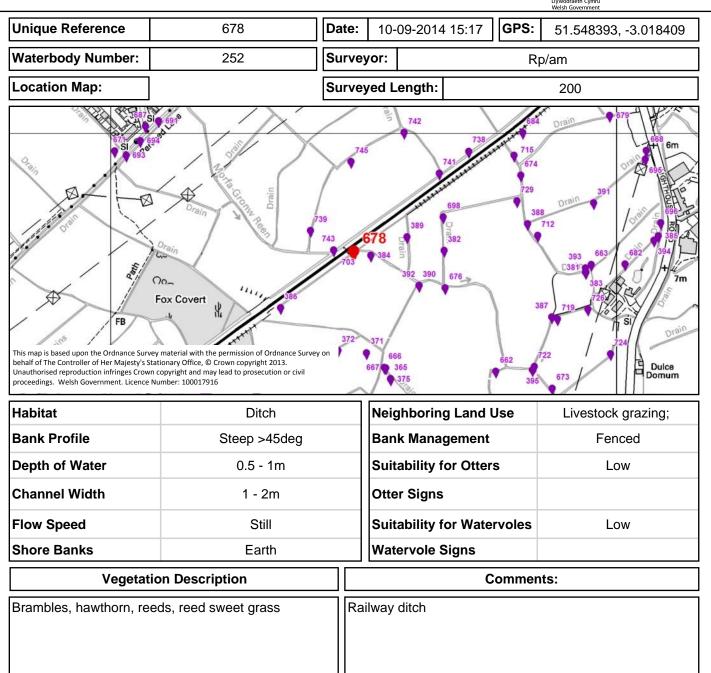


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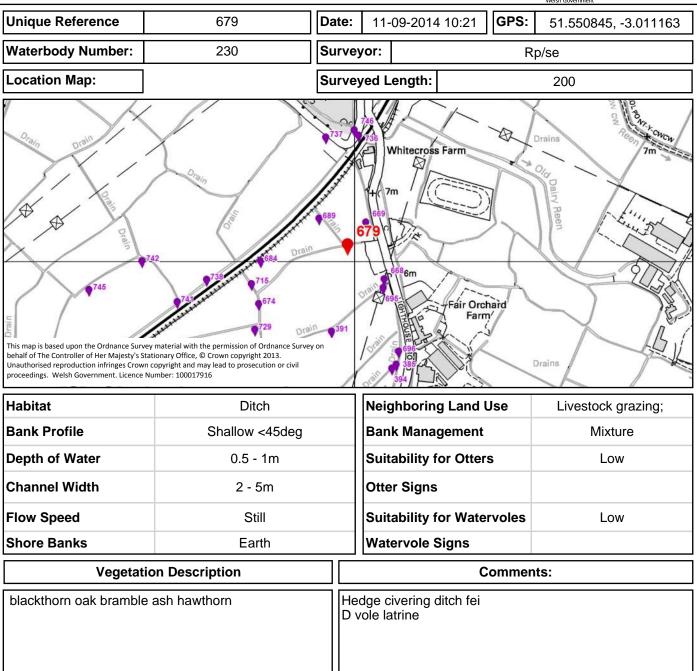
Photo 2

Photo 3

ARUP 🖉





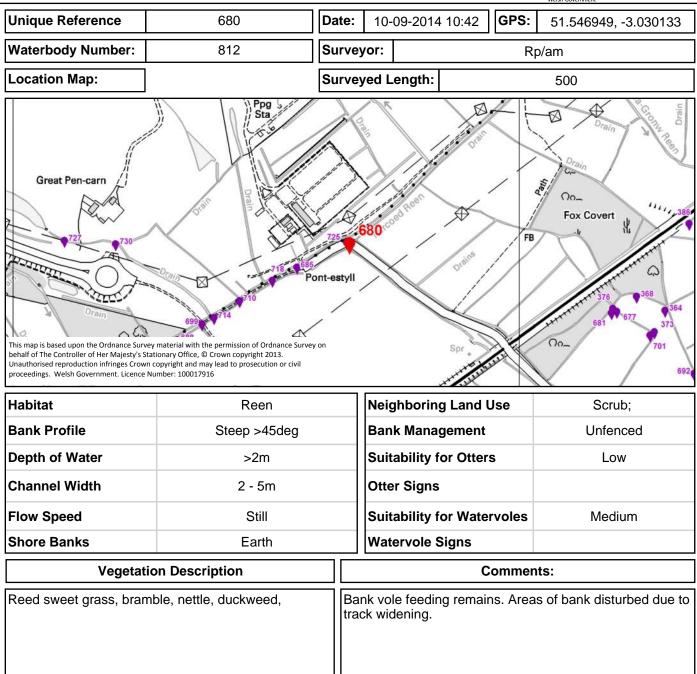






















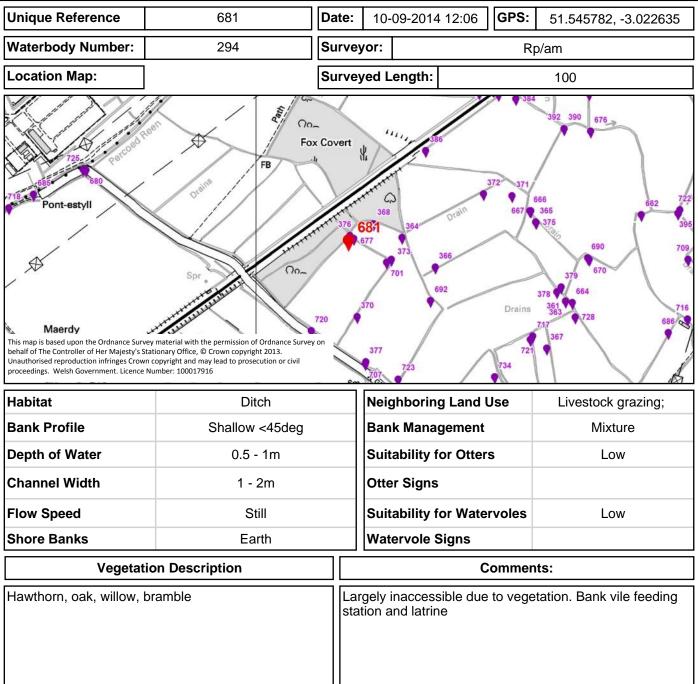
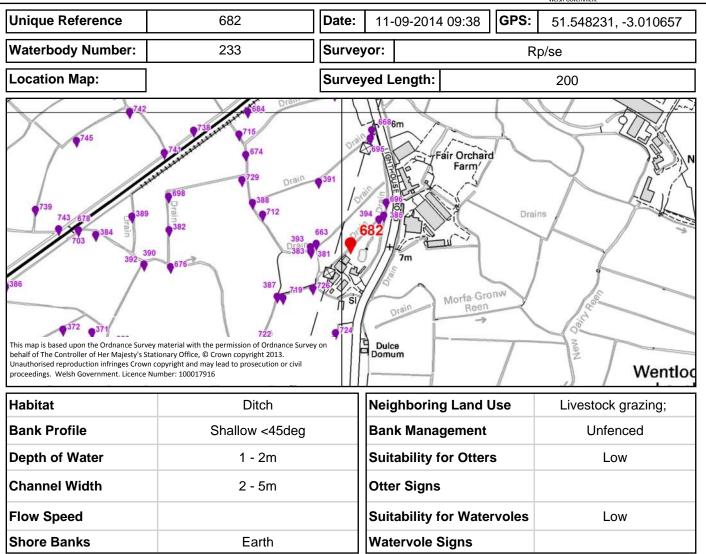


Photo 1









 Vegetation Description
 Comments:

 Bramble reed sweetgrass hawthorn willow nettles ash blackthorn
 Access limited and heavily poached where possible

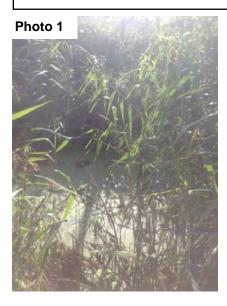




Photo 3

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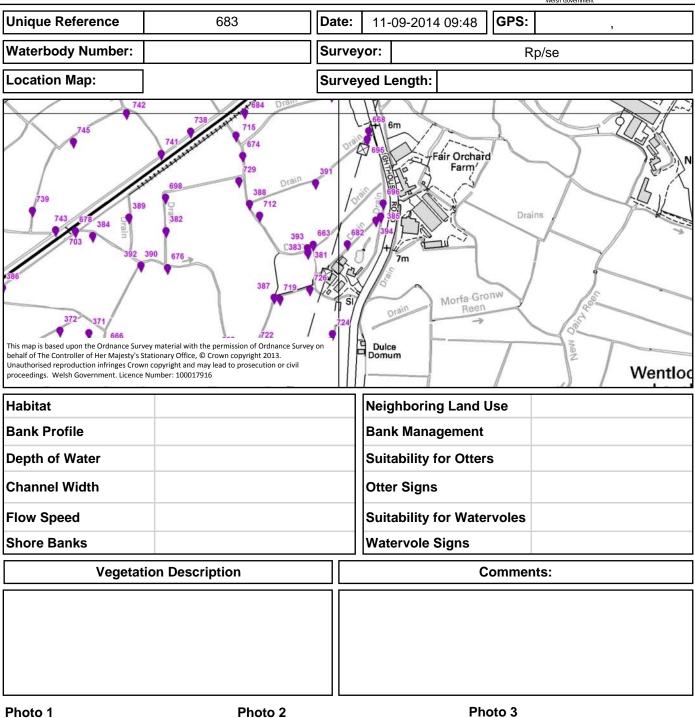


Photo 2

Photo 3

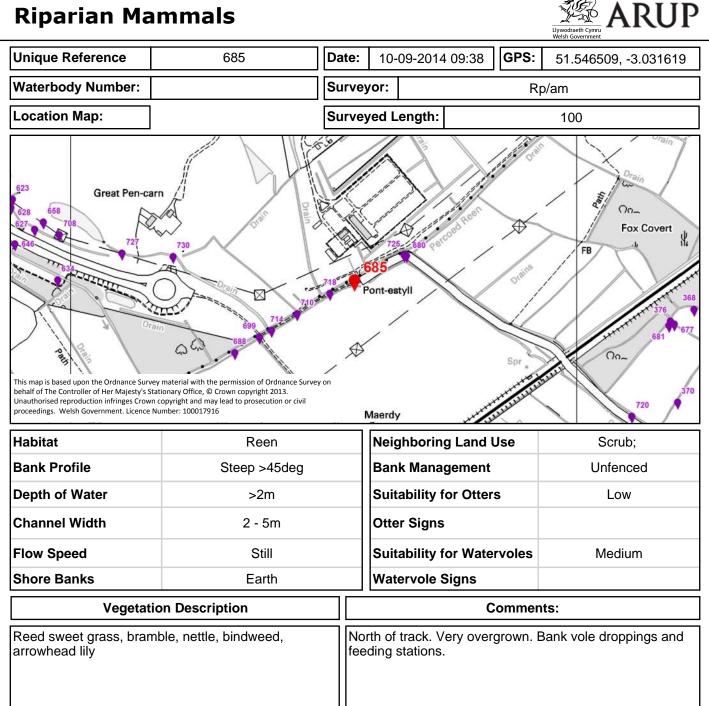
ARUP

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					Welsh Government
Unique Reference	684	Date:	11-	09-2014 10:29 GP	5: 51.550525, -3.013627
Waterbody Number:	253	Surveyor: Rp/se			
Location Map:		Survey	ved L	ength:	
This map is based upon the Ordnance Survice behalf of The Controller of Her Majesty's S	n copyright and may lead to prosecution or civil	×	184 Dre	393 663 682 394	ss Farm
Habitat	Ditch		Nei	hboring Land Use	
Bank Profile			Ban	k Management	Fenced
Depth of Water			Suit	ability for Otters	
Channel Width			Otte	r Signs	
Flow Speed			Suit	ability for Watervole	s
Shore Banks			Wat	ervole Signs	
Vegetat	ion Description			Comm	ents:
Dry ditch		No	acce	ss due fencing and th	ck shrub
Photo 1	Photo 2			Photo 3	











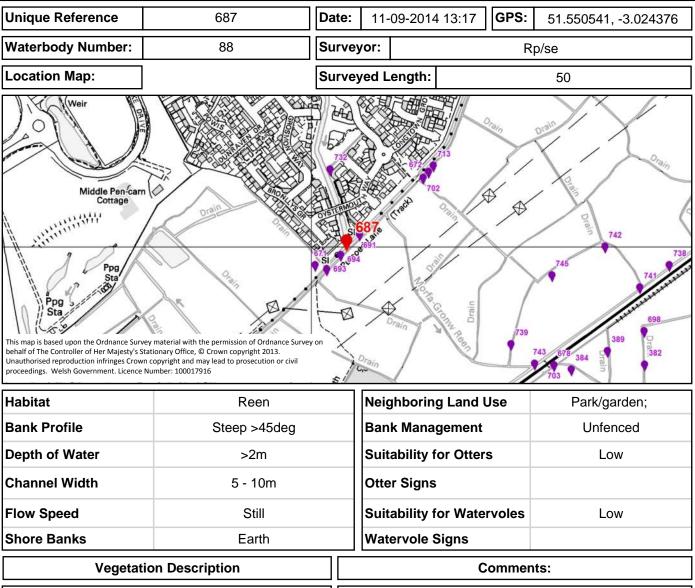




						Llywodraeth Cymru Welsh Government
Unique Reference	686	Date:	11	09-2014 11:46	GPS:	51.544226, -3.013474
Waterbody Number:	1370	Survey	or:		R	p/se
Location Map:		Survey	ved L	ength:		200
This map is based upon the Ordnance Surv behalf of The Controller of Her Majesty's S	ey material with the permission of Ordnance Survey tationary Office, © Crown copyright 2013. n copyright and may lead to prosecution or civil	662 394 716 716	722 57 709 886	Pan FB	um Tree age ound Farm House	Drains kg New House
Habitat	Ditch		Nei	ghboring Land U	Jse	Livestock grazing;
Bank Profile	Shallow <45deg		Ban	k Management		Mixture
Depth of Water	0.5 - 1m		Suit	ability for Otters	5	Low
Channel Width	2 - 5m		Otte	er Signs		
Flow Speed	Still		Suit	ability for Water	voles	Low
Shore Banks	Poached		Wat	ervole Signs		
Vegetat	ion Description			C	ommer	nts:
Oak hawthorn bramble	reed sweetgrass willow	Lim	ited	access		



Photo 2



vegetation Description	Comments:
Reed sweetgrass nettle willow	Bank vole runs and droppings







Photo 3

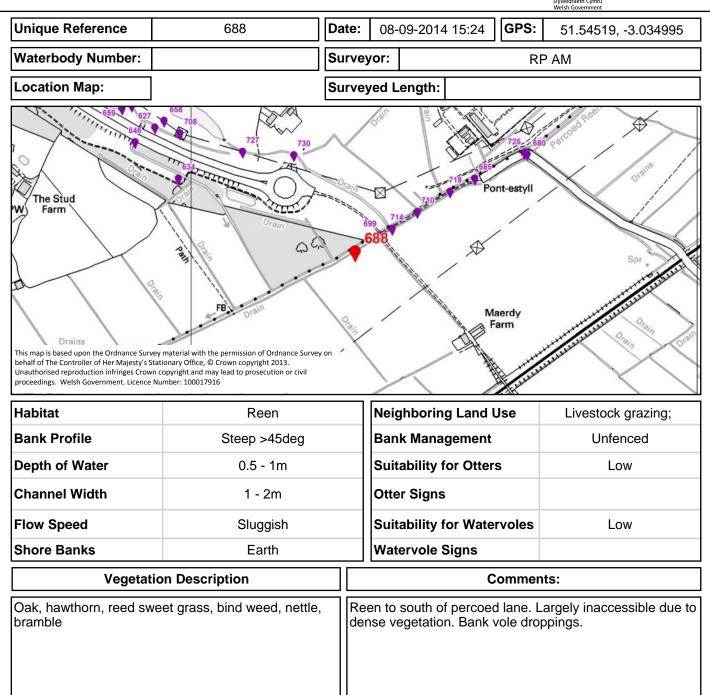


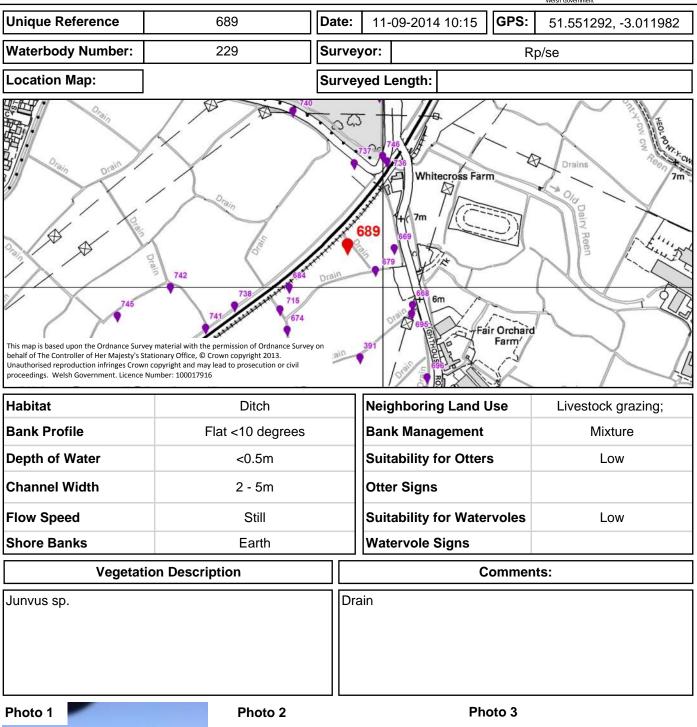


Photo 2

Photo 3

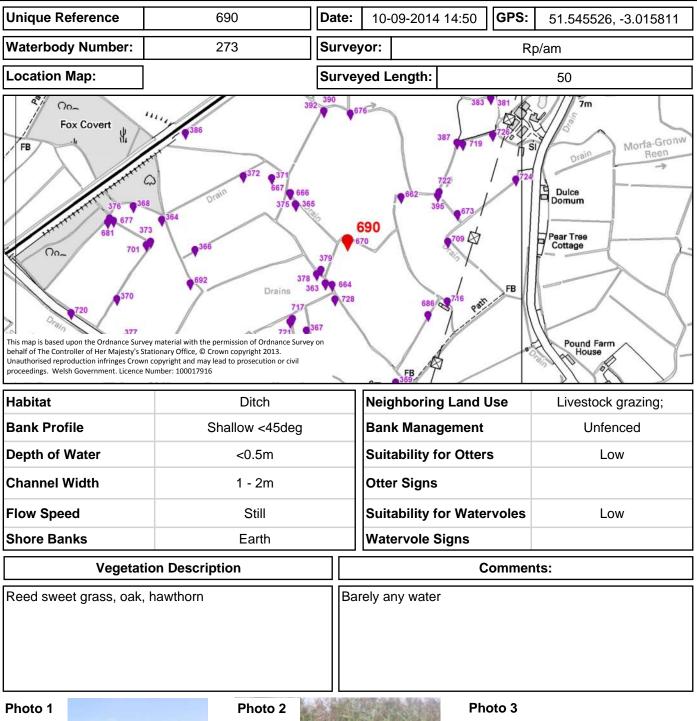
ARUP







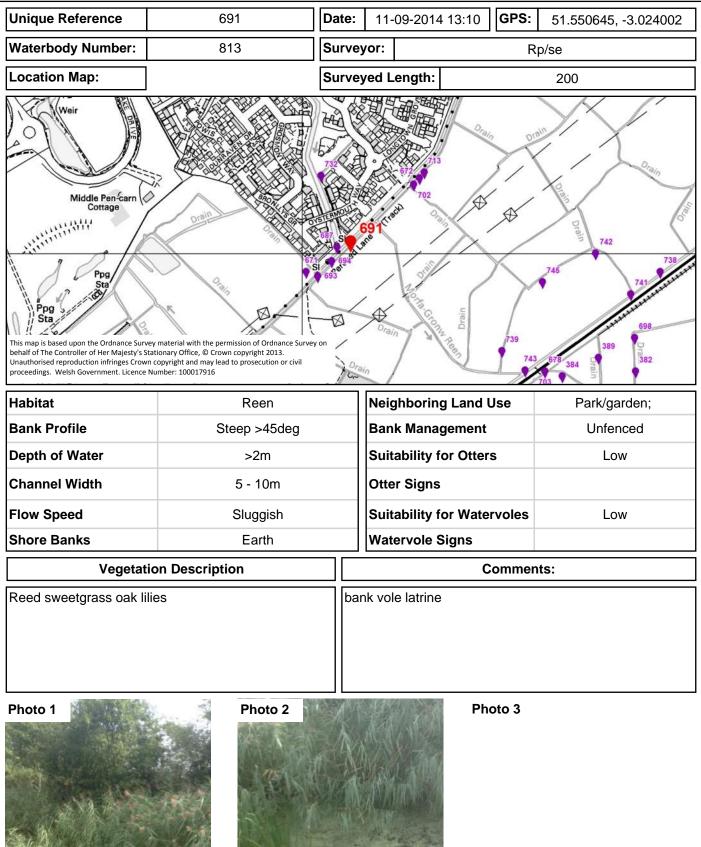






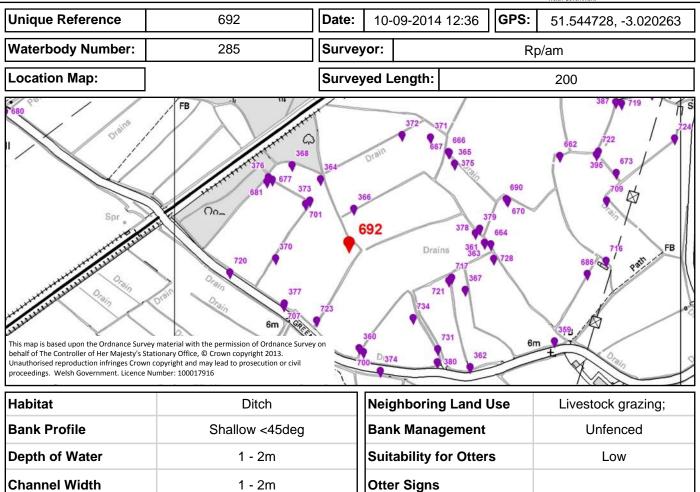












Shore Banks	Earth		Watervole Signs		
Vegetatio	n Description		Co	mmer	nts:
Bulrush, oak, reed sweet	grass, hawthorn	Ba	ank vole		

Still



Flow Speed





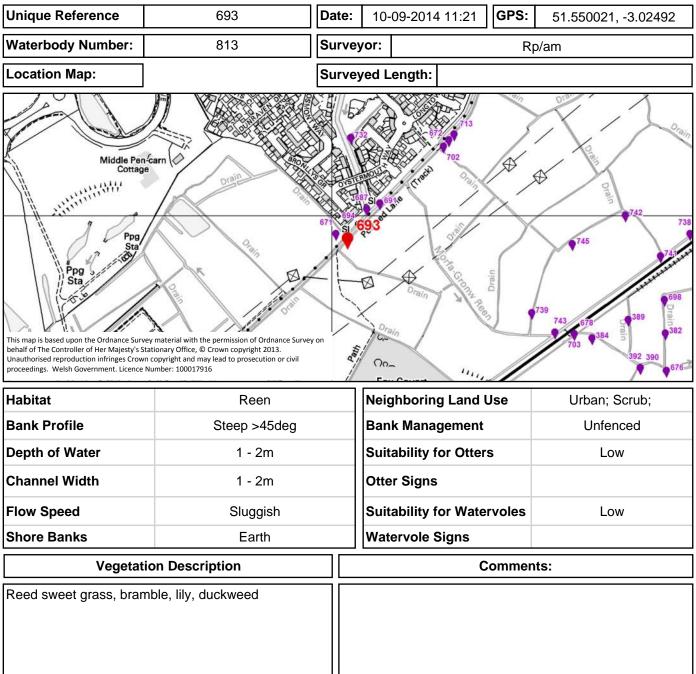
Low





Suitability for Watervoles



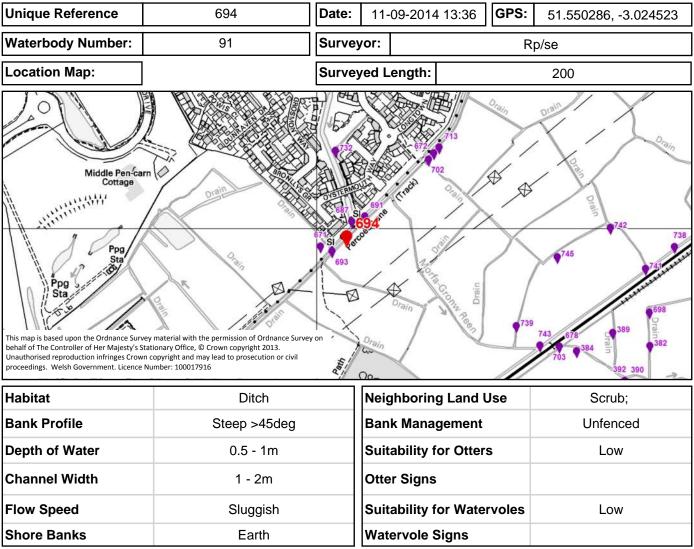












Vegetation Description	Comments:
South of track. Oak hawthorn willow blackthorn dogrose bramble	









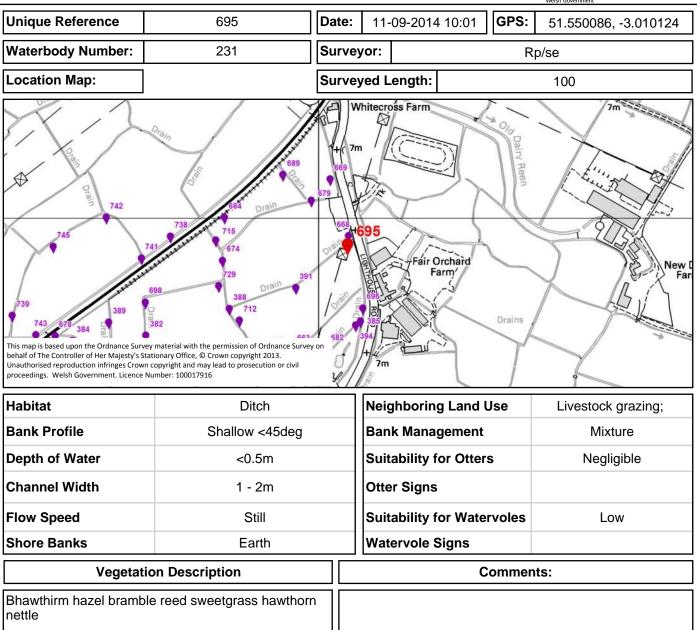
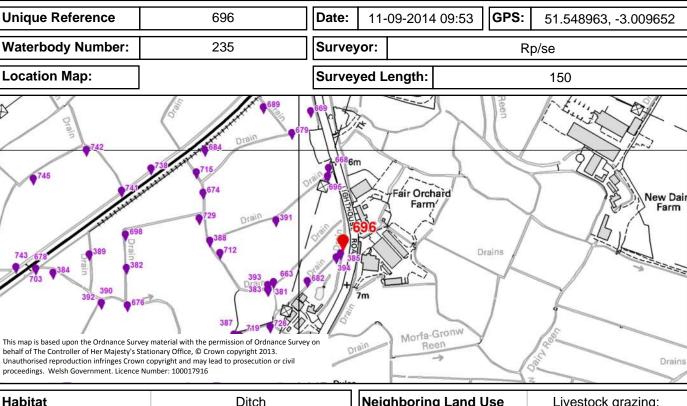


Photo 1







Habitat	Ditch	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Fenced
Depth of Water	<0.5m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed		Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation DescriptionComments:Hawthorn bramble dog-rose sweetgrass reeds willow
blackthornDitch covered by hedge access limited ditch dries up in
places

Photo 1





Photo 3

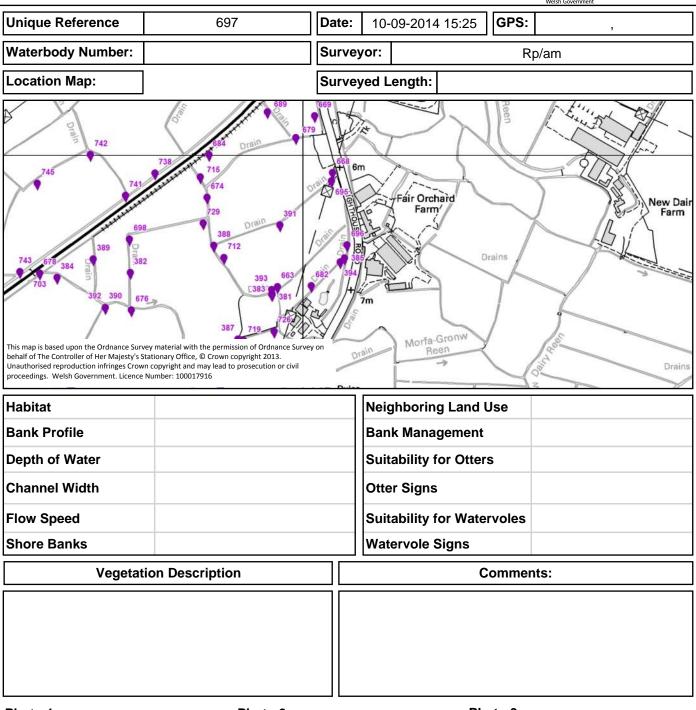


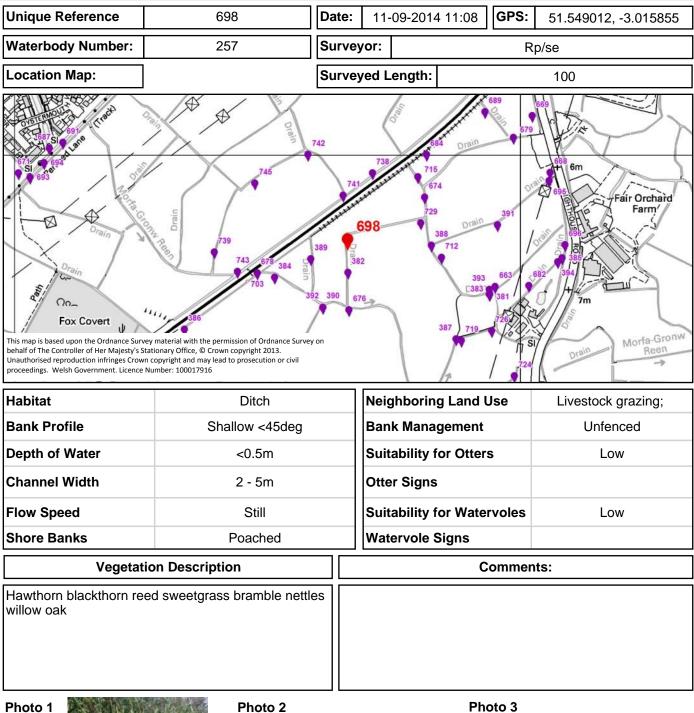
Photo 1

Photo 2

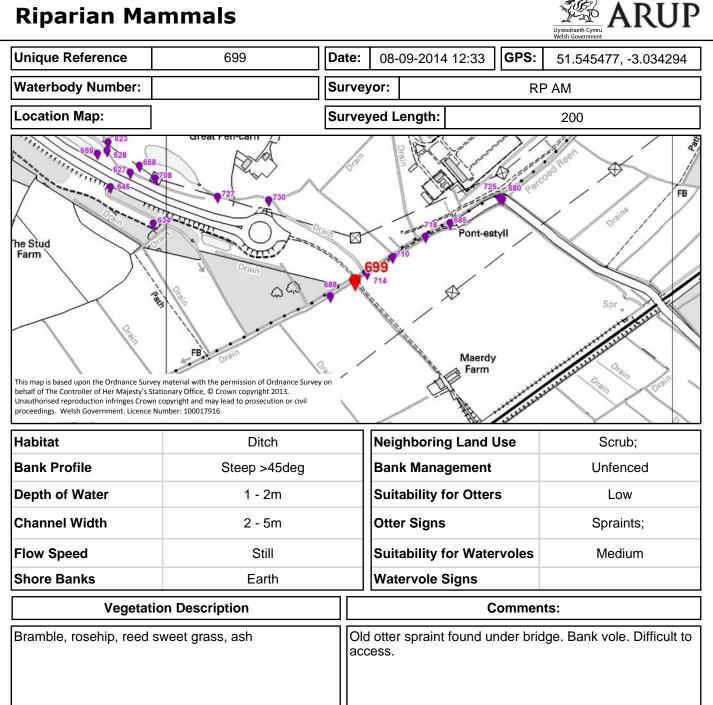
Photo 3

Se ARUP

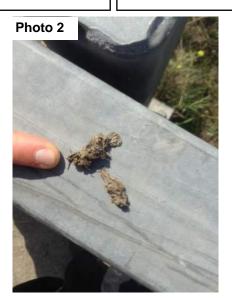




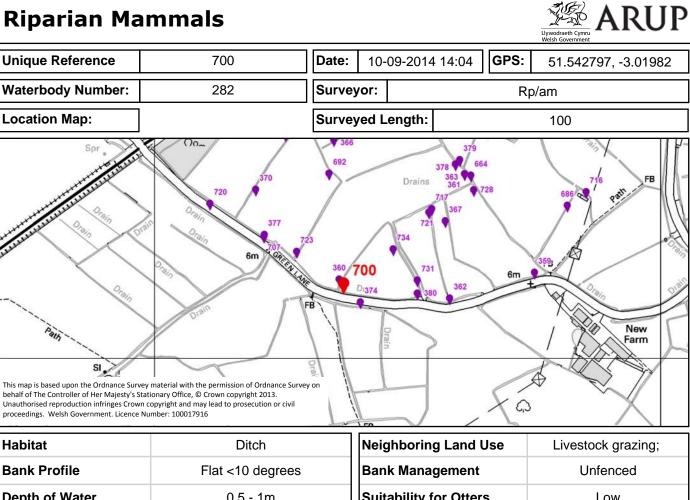












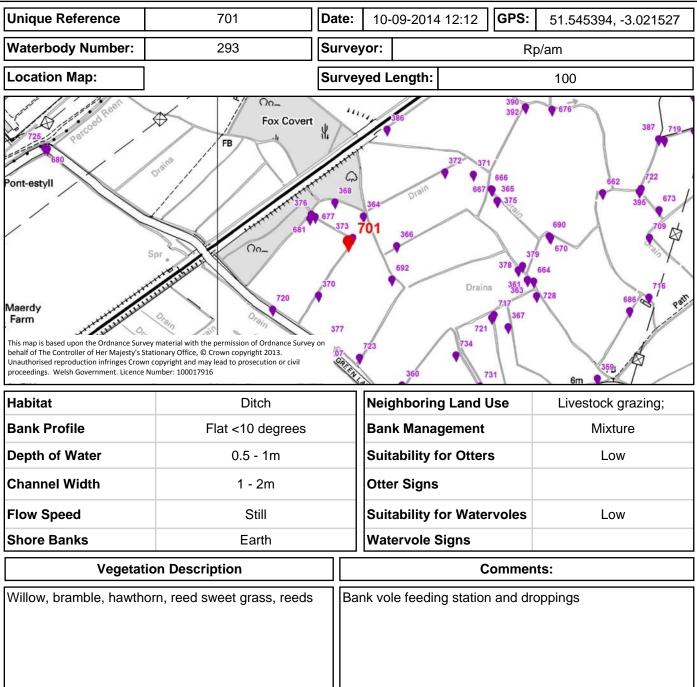
Vegetation Description		Comments	
Shore Banks	Poached	Watervole Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Channel Width	2 - 5m	Otter Signs	
Depth of Water	0.5 - 1m	Suitability for Otters	Low

Vegetation Description	Comments:
Oak, willow, reed sweet grass, hawthorn, blackthorn, bramble	Cattle in field













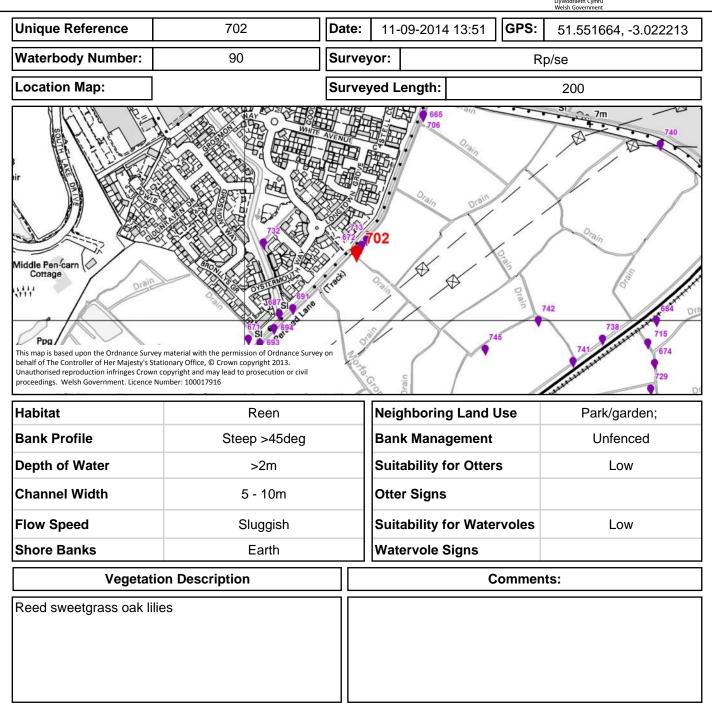




Photo 2

Photo 3

🖗 ARUP

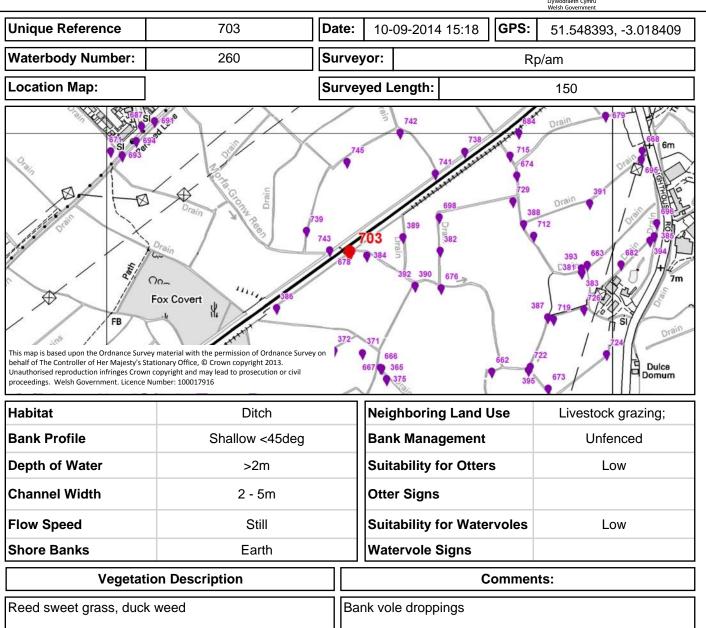










Photo 3

🖗 ARUP

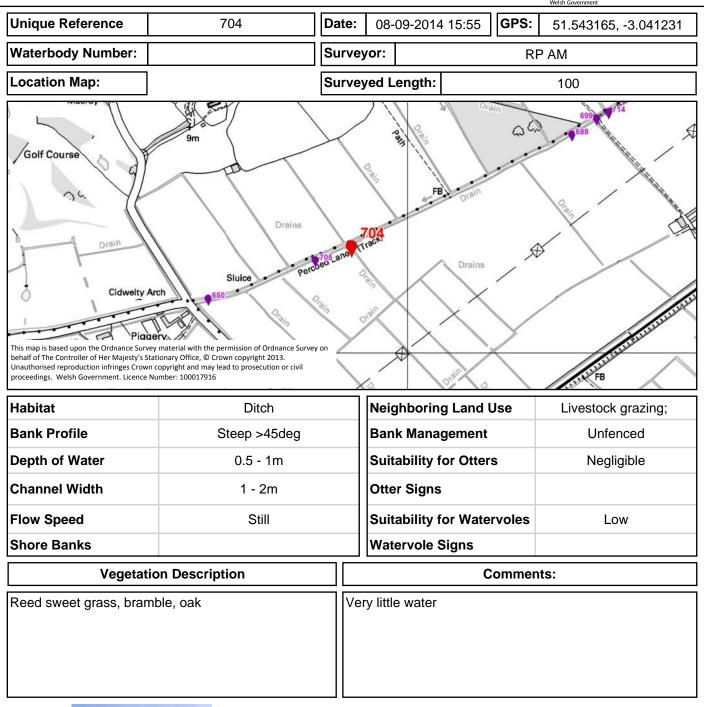


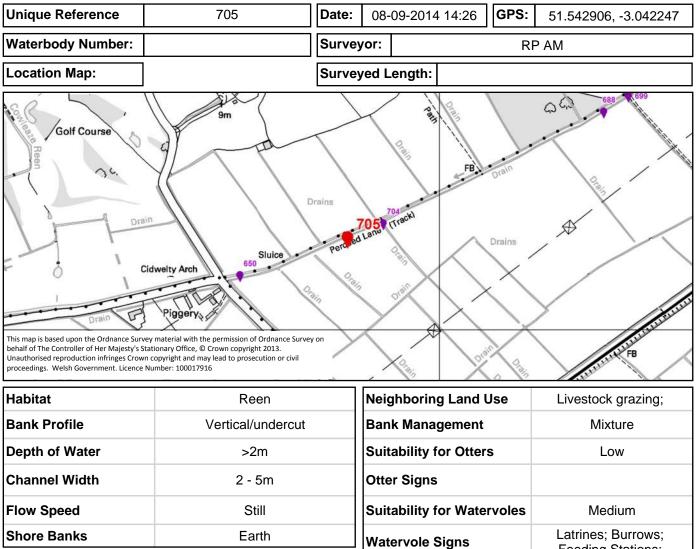
Photo 1

Photo 2

Photo 3

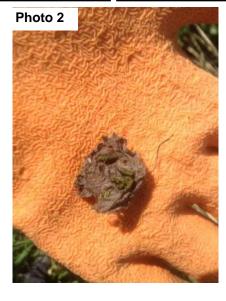






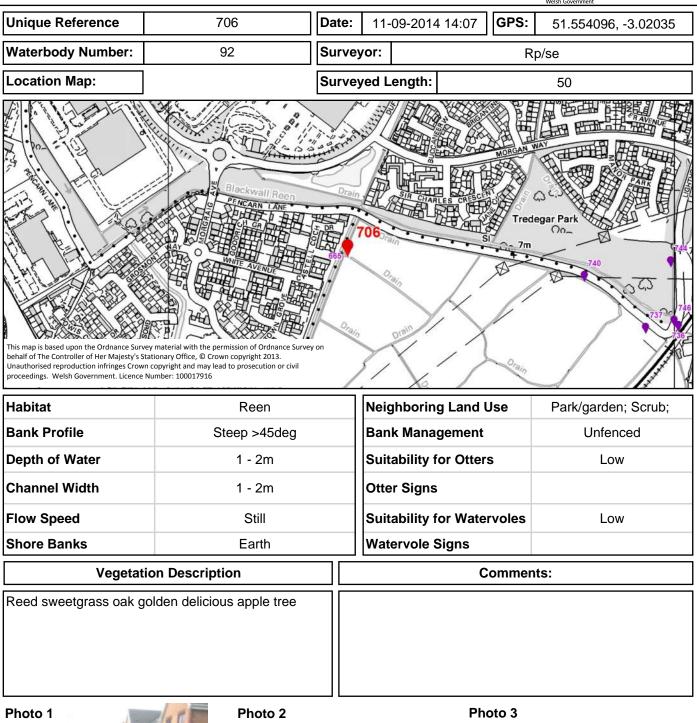
		Feeding Stations;
Vegetation Description	Comr	nents:
Reed sweet grass, bramble, spearhead lily.	Bank vole. Watervole latrine. several places. Wv burrows.	Wv Feeding stations in



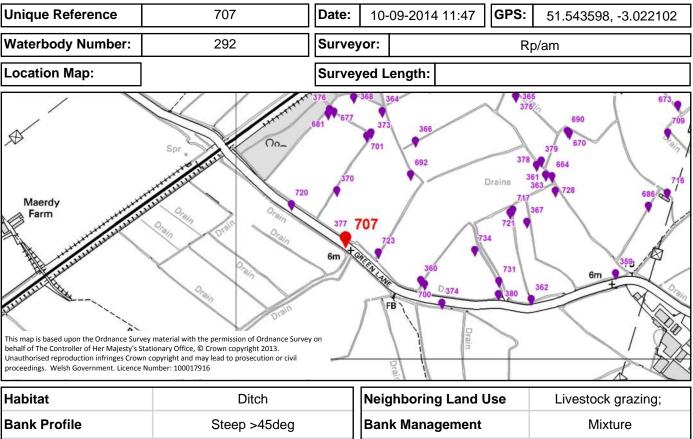












Shore Banks	Earth	Watervole Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Channel Width	1 - 2m	Otter Signs	
Depth of Water	<0.5m	Suitability for Otters	Low
Bank Profile	Steep >45deg	Bank Management	wixture

Vegetation Description	Comments:
Hogweed, reed sweet grass, willow, hawthord, willow herb	Largely inaccessible due to vegetation





Photo 3

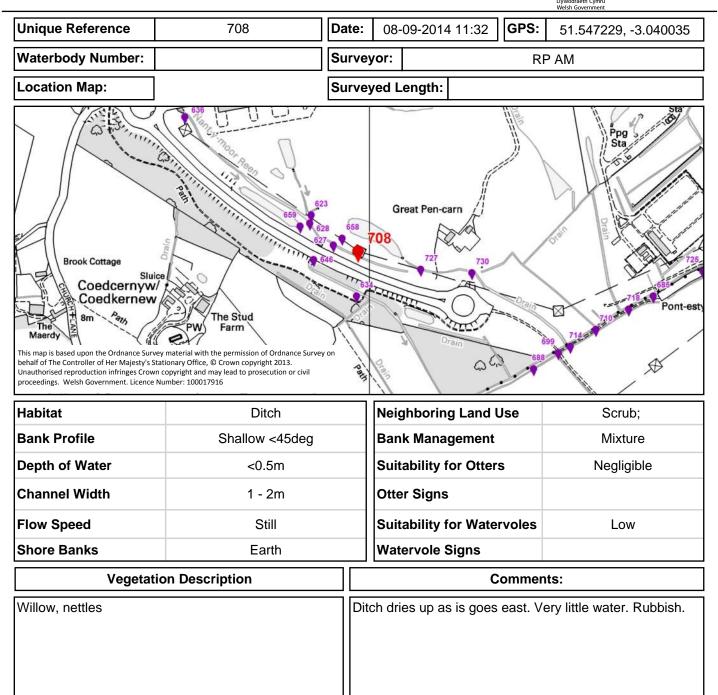


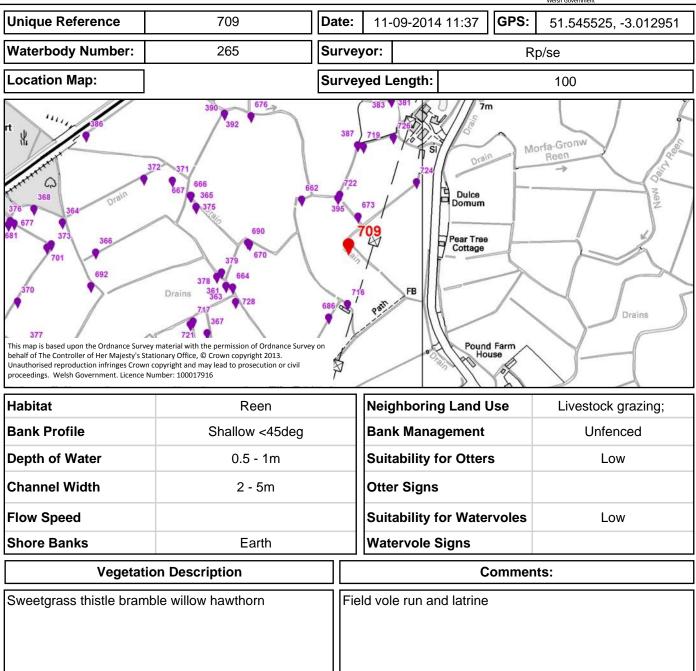




Photo 3

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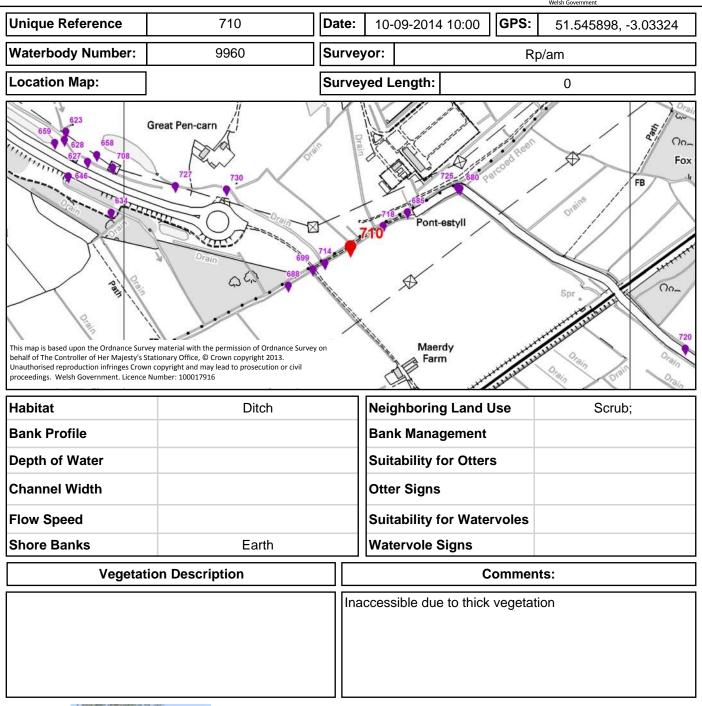
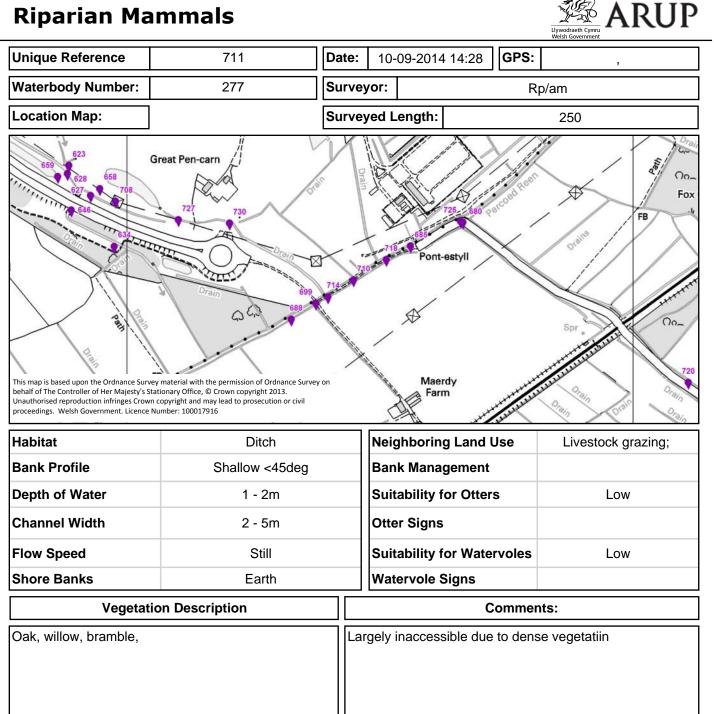




Photo 2

Photo 3

🖗 ARUP









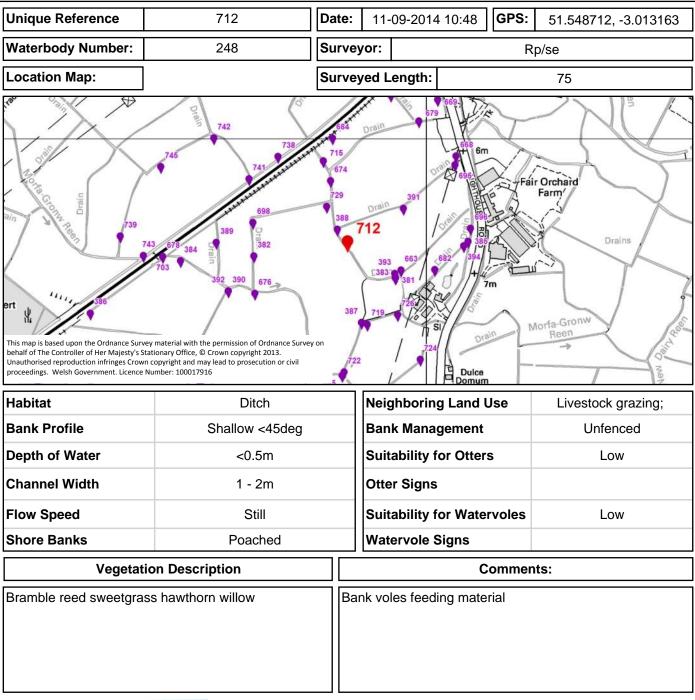


Photo 1

Photo 2



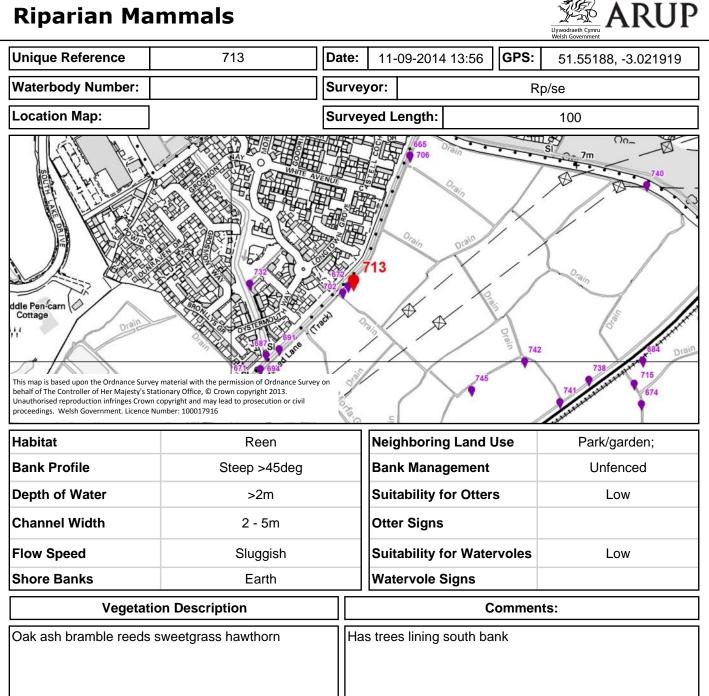
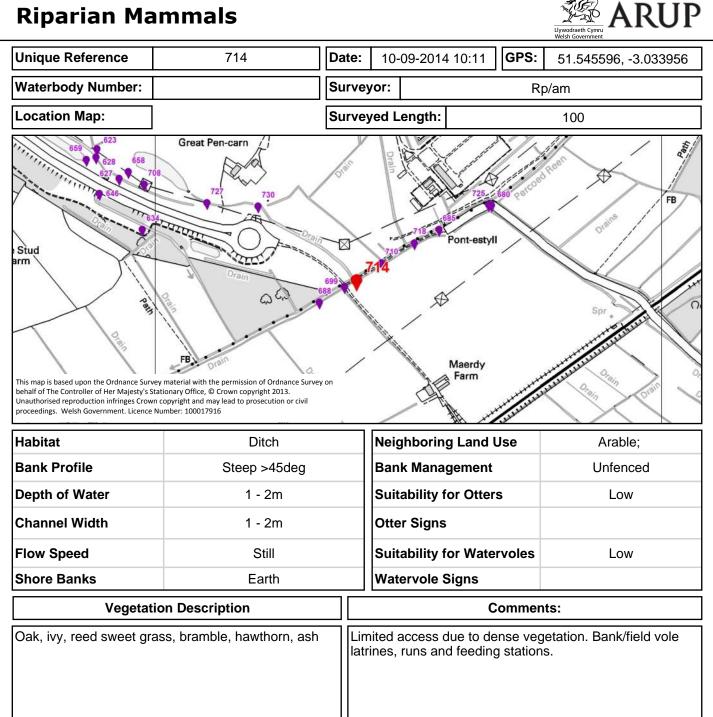




Photo 2











						Welsh Government
Unique Reference	715	Date:	11-09-201	4 10:33	GPS:	51.550123, -3.013869
Waterbody Number:	251	Survey	Surveyor: Rp/se			
Location Map:		Survey	ed Length:			40
This map is based upon the Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office, © Crown copyright 2013. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Welsh Government. Licence Number: 100017916		72	15 388 Drain 393 6 1393 7 1395 7 1405 7	4 (7m 869 779 779 779 779 779 779 779 7	hitecross 6m 7m	Fair Orchaid Fair Orchaid Farm
Habitat	Ditch		Neighborir	ng Land U	se	Livestock grazing;
Bank Profile	Shallow <45deg		Bank Mana	agement		Fenced
Depth of Water	<0.5m		Suitability	for Otters	;	Low
Channel Width	1 - 2m		Otter Sign:	5		
Flow Speed	Still		Suitability	for Water	voles	Low
Shore Banks	Poached		Watervole	Signs		
Vegetation Description				Co	ommen	ts:
Blackthorn dog rose ree	ed sweet grass					









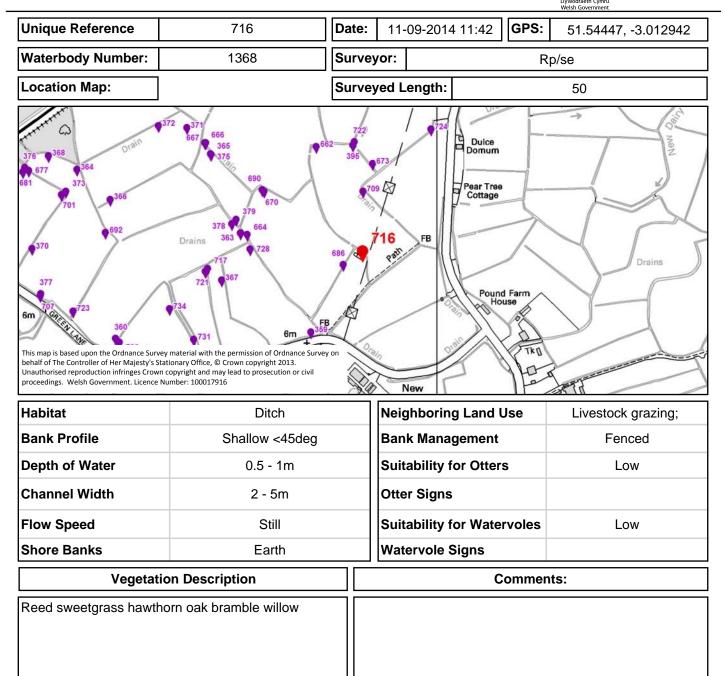
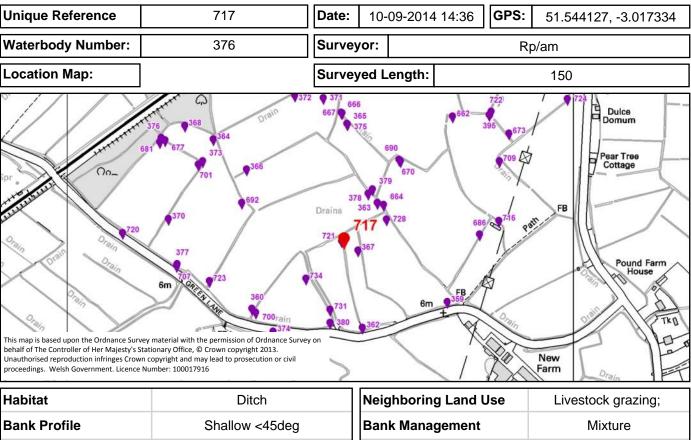




Photo 2

Photo 3

🖗 ARUP



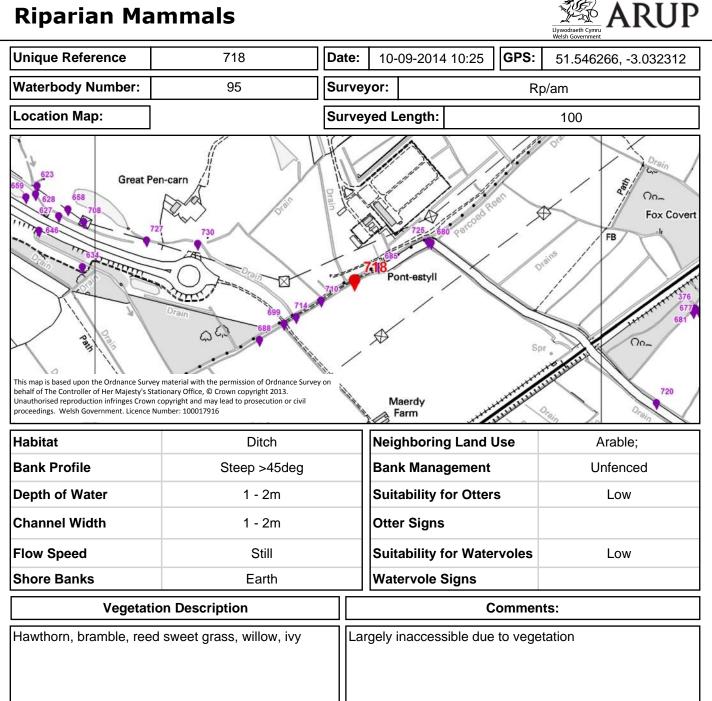
Bank Profile	Shallow <45deg	Bank Management	wixture
Depth of Water	<0.5m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Bramble, reed sweet grass, ivy, oak	Limited access due to dense vegetation



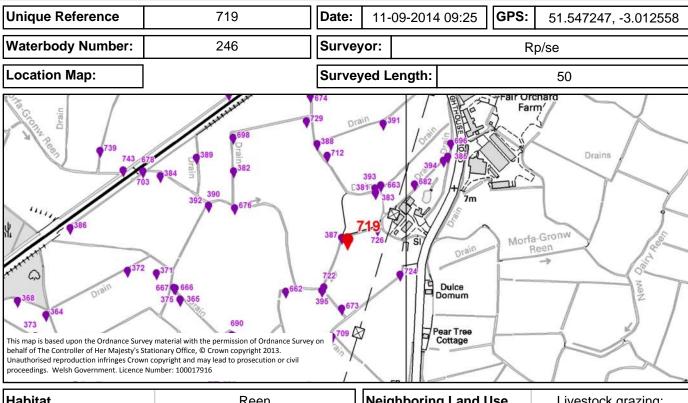


Photo 3









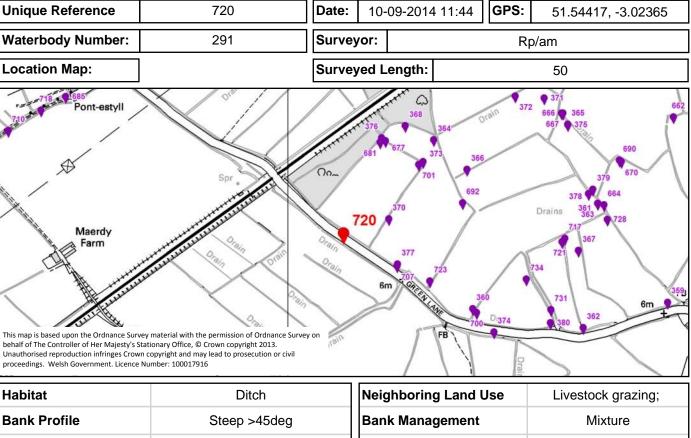
Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	0.5 - 1m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Reed sweet grass thistle hawthorn and bramble dog rose	Bank vole feeding material





Photo 3



Bank Profile	Steep >45deg	Bank Management	Mixture
Depth of Water	0.5 - 1m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

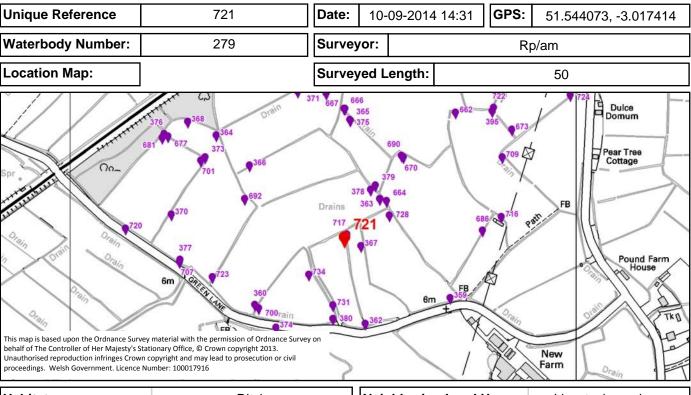
Vegetation Description	Comments:
Hawthorn, bramble, willow, ivy	Largely inaccessible due to vegetation. Accessible sections poached.











Habitat	Ditch	Neighboring Land Use	Livestock grazing;
Bank Profile	Flat <10 degrees	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

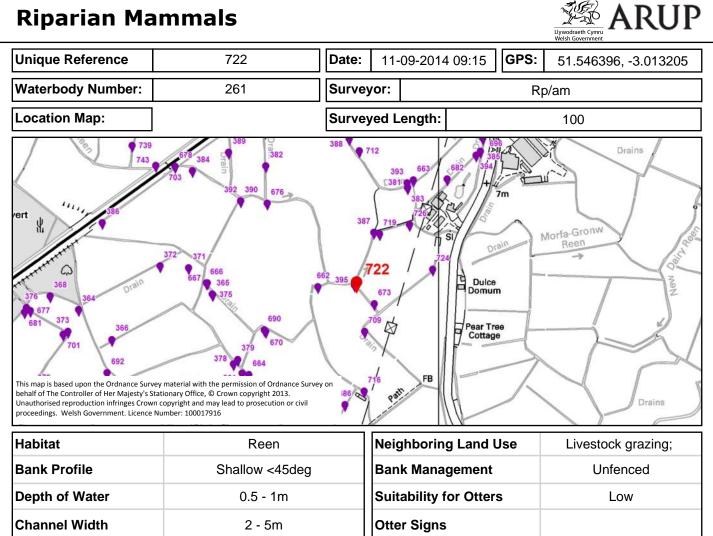
Vegetation Description	Comments:
Oak, willow, bramble, hawthorn, blackthorn, thistle	Bank vole feeding station







Photo 3



Flow Speed	Still	Suitability for Watervoles Low
Shore Banks	Earth	Watervole Signs
Vegetatio	on Description	Comments:
Reed sweet grass thistles nettles poached		Bank vole runs feedings and remains









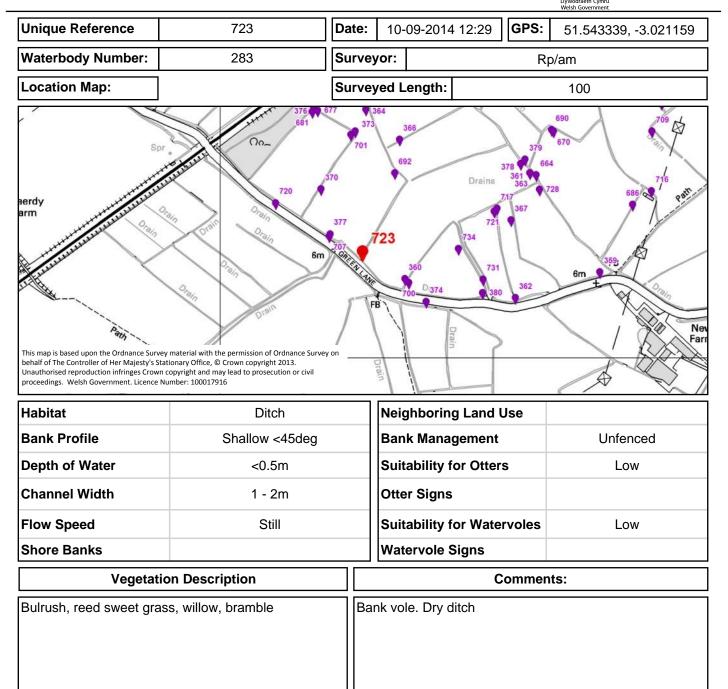
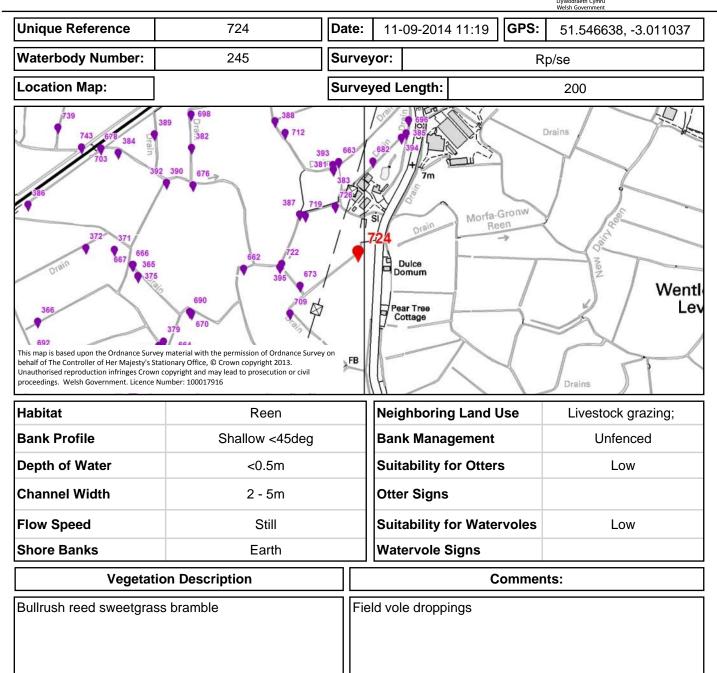




Photo 2

Photo 3





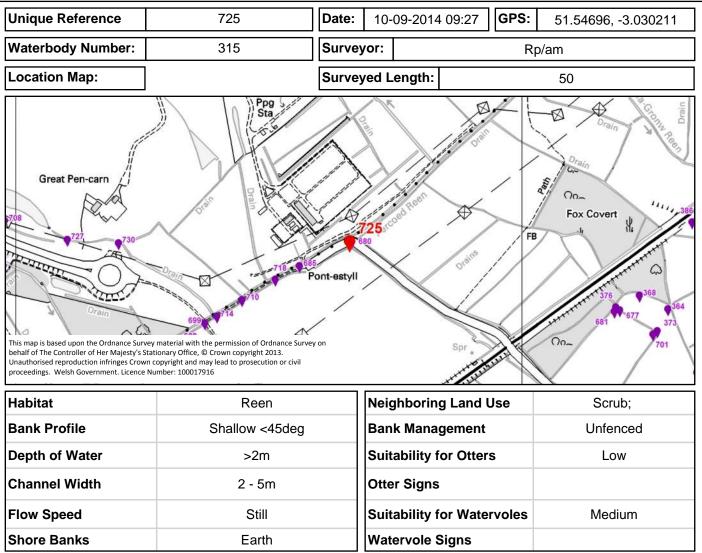








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Vegetation Description	Comments:
Reed sweet grass nettle, bramble, duck weed, arrowhead lily.	Reen to north of track. Bank vole droppings







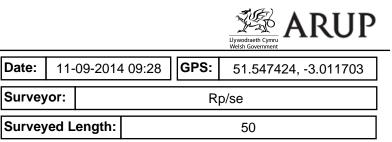
Photo 3

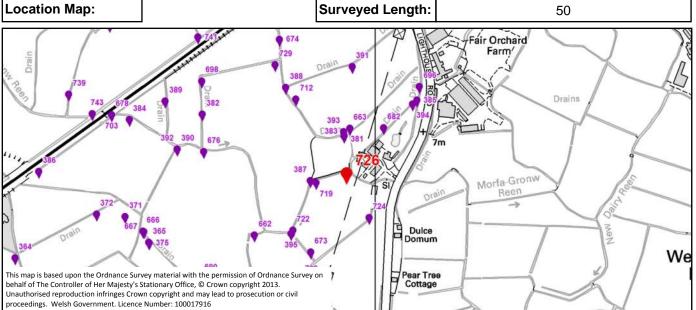
726

247

Unique Reference

Waterbody Number:





Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Bramble reed sweet grass hogweed thistle nettles	Bank vole feeding material

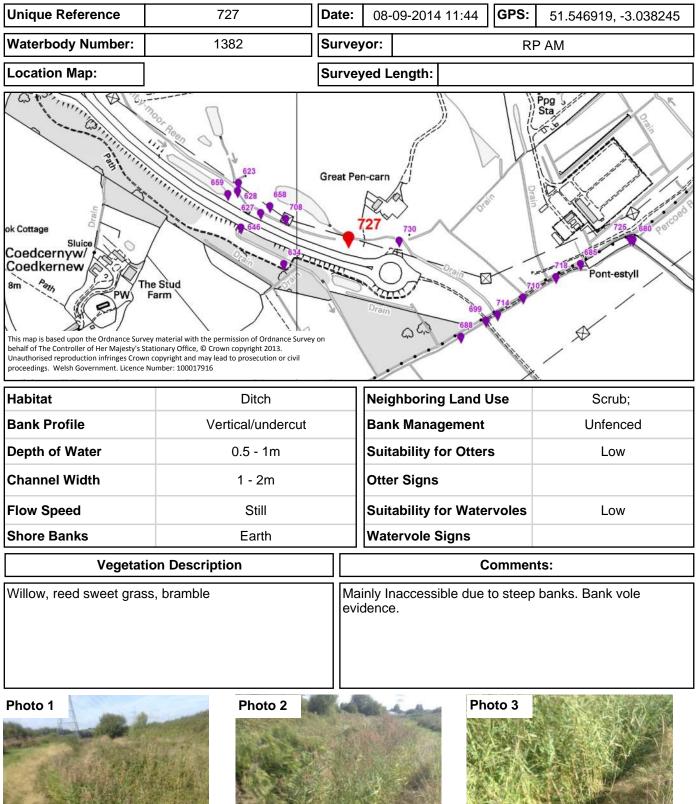










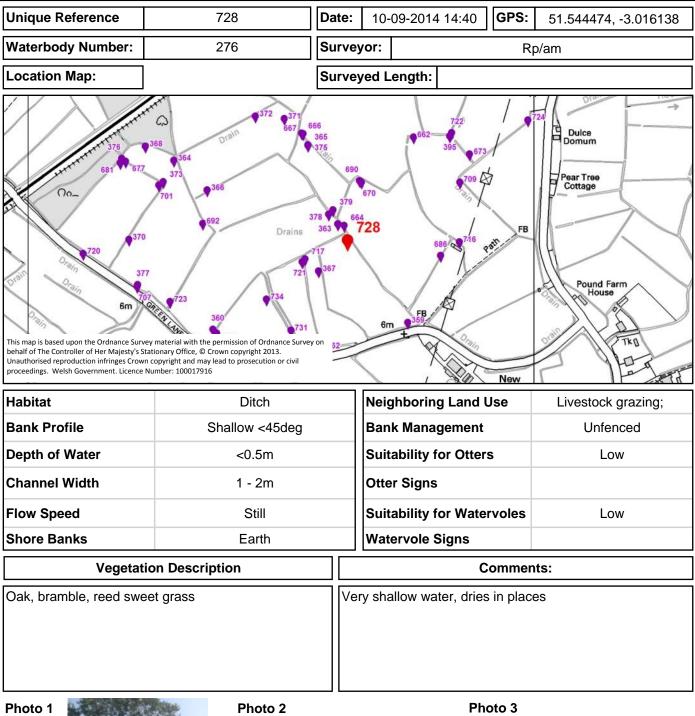






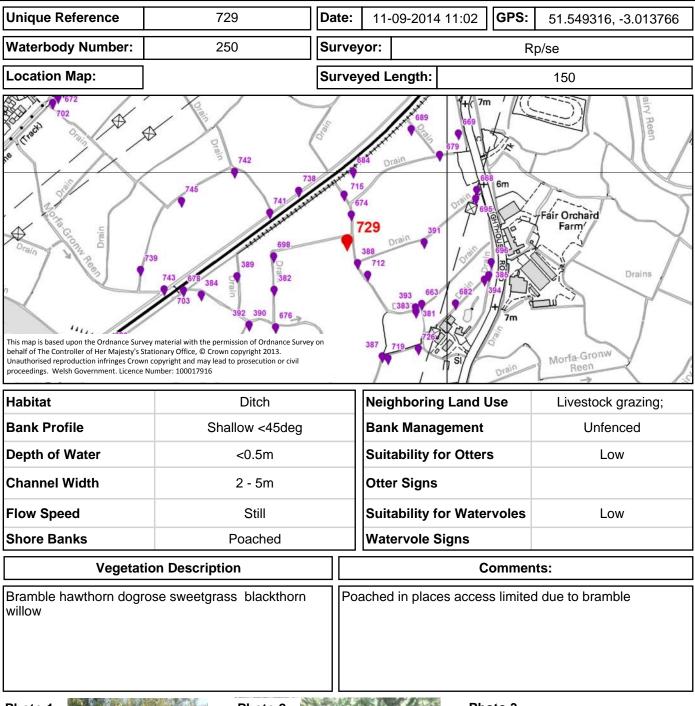








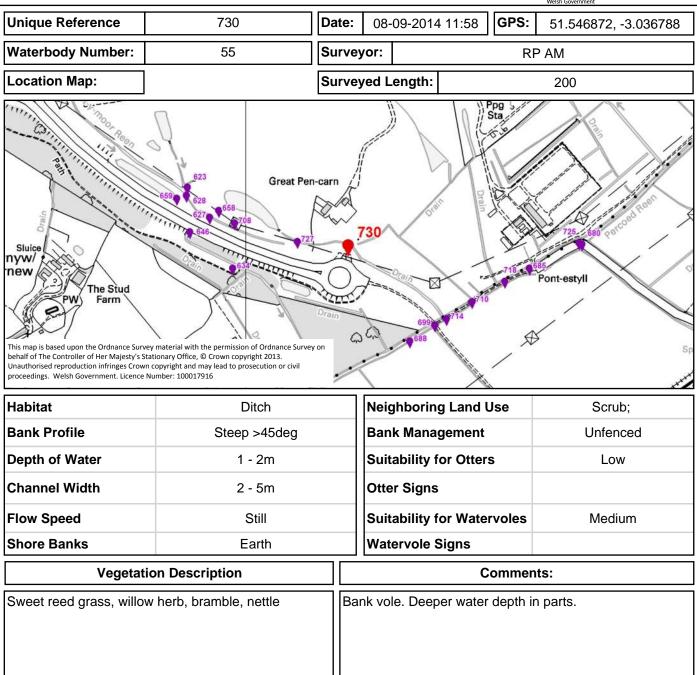








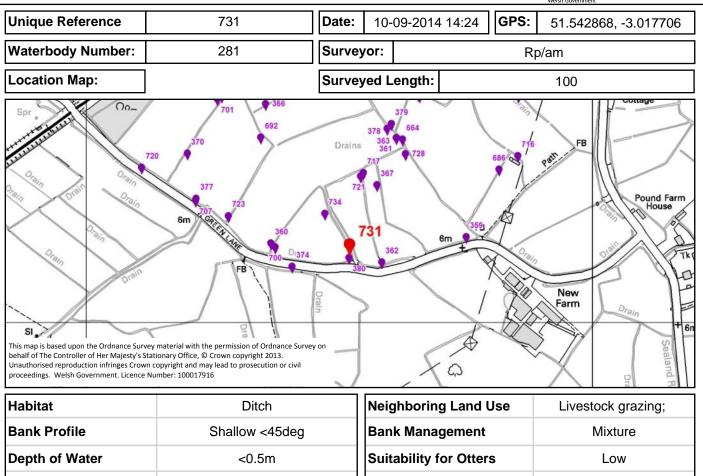












Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	
Vegetation Description		Comme	nts:
Oak, hawthorn, bramble, willow		Mostly inaccessible due to dens	e vegetation





Photo 3



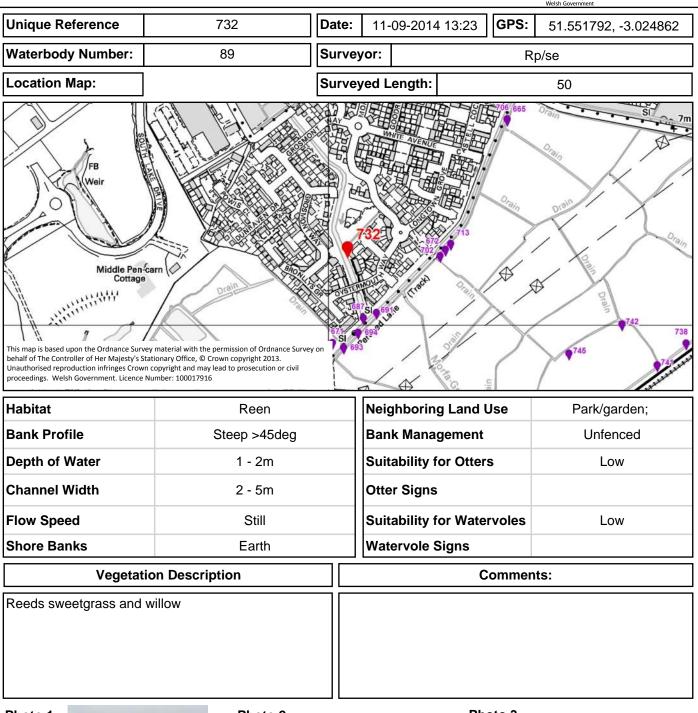




Photo 2



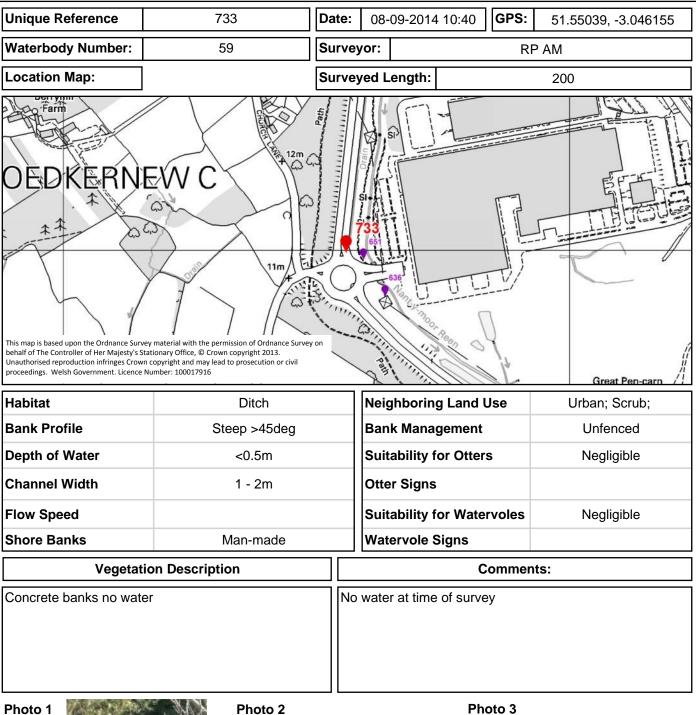
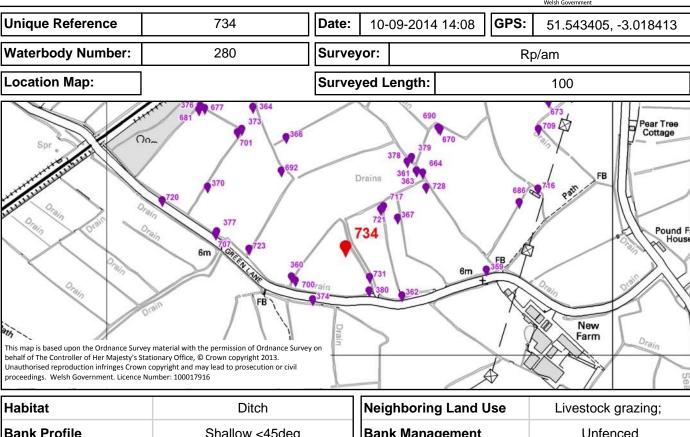




Photo 2

th



Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	<0.5m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Oak, hawthorn, willow, reed sweet grass	Bank vole feeding remains and latrine







Photo 3



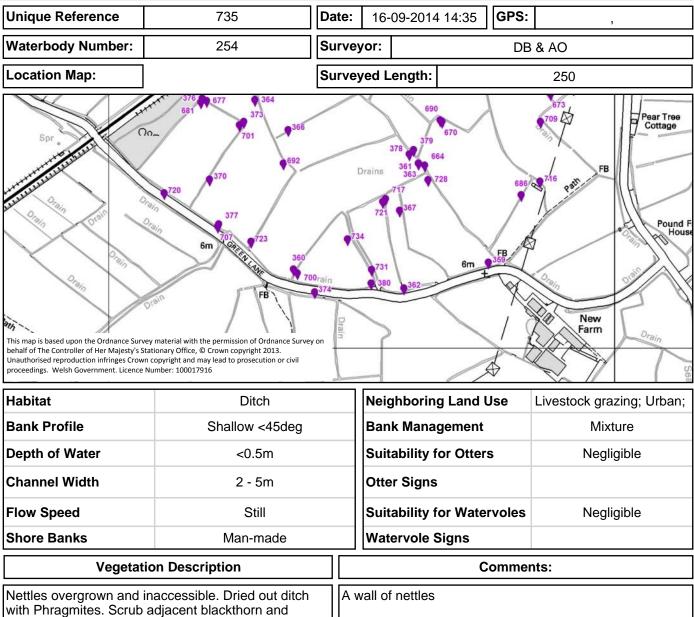


Photo 1

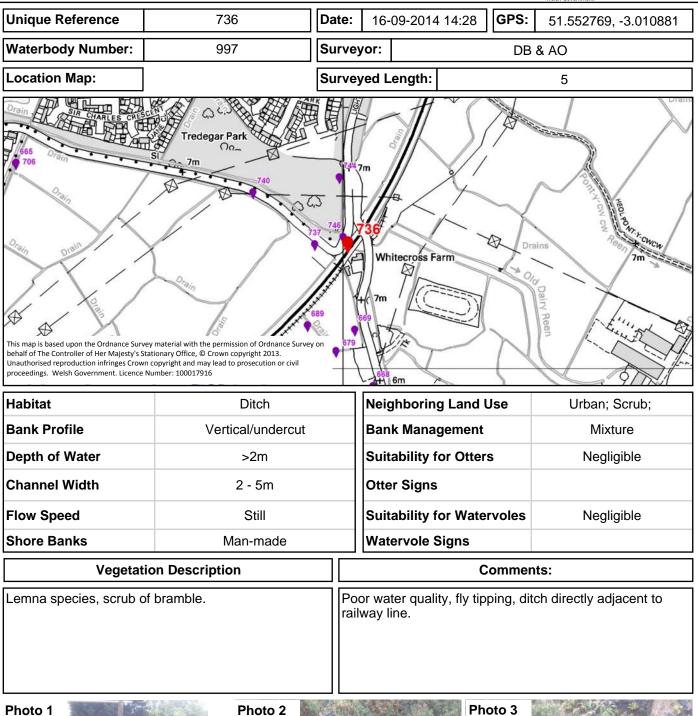


brambles. Adj to railway line.



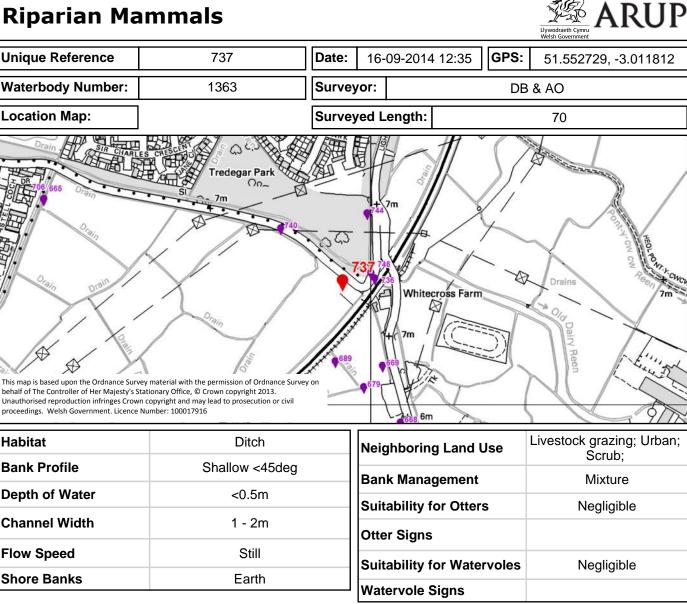












Vegetation Description

Lemna covering surface of water, bramble scrub overgrowth on both sides. Young sycamore trees growing along banks.



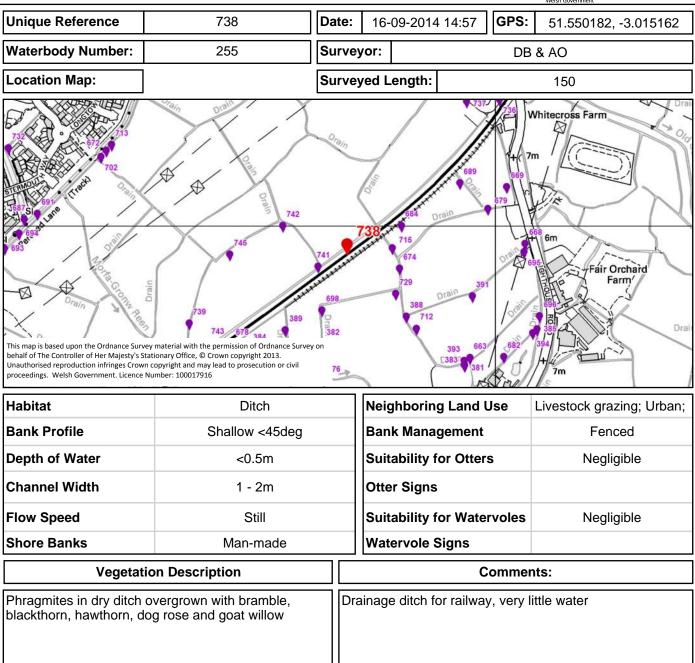




Photo 3

Comments:





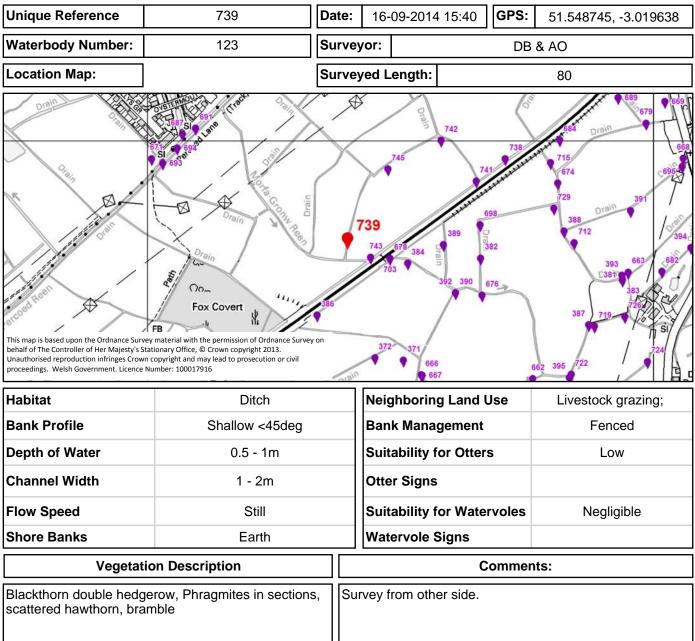


















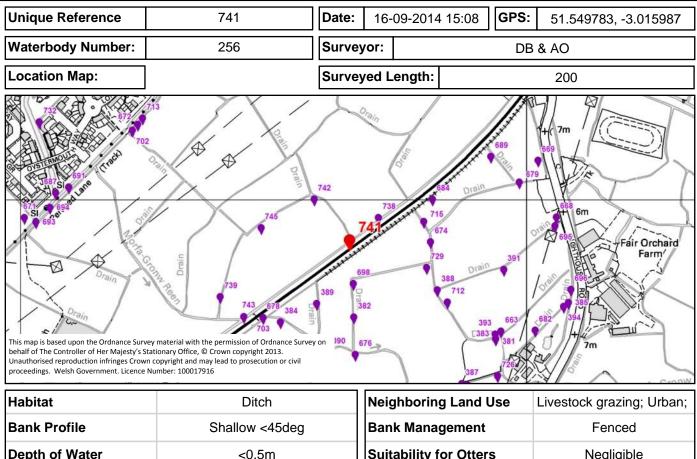


						Welsh Government
Unique Reference	740	Date:	16-09-2	2014 12:28	GPS:	51.553632, -3.013586
Waterbody Number:	141	Surve	yor:		DB	& AO
Location Map:		Surve	yed Leng	jth:		100
The provide of the Majesty's Stationary Office, @ Crown copyright 2013.						
proceedings. Welsh Government. Licence N	Number: 100017916		Neighb			
Bank Profile	Shallow <45deg			oring Land anagement		Livestock grazing; Urban; Unfenced
	0.5 - 1m			_		
Depth of Water				ity for Otte	S	Low
Channel Width	2 - 5m		Otter Si	gns		
Flow Speed	Still		Suitabil	ity for Wate	ervoles	Low
Shore Banks	Earth		Waterve	ole Signs		
Vegetati	on Description			(Commer	nts:
Double hedged, ivy on bank side. Bramble, hawthorn, goat willow, oak.						
Photo 1 Photo 2 Photo 3						









	-	-	
Depth of Water	<0.5m	Suitability for Otters	Negligible
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Negligible
Shore Banks	Man-made	Watervole Signs	

Vegetation Description	Comments:
Phragmites, overgrown with hawthorn, bramble, dog rose, sweet reed grass, blackthorn, crack willow	Overgrown railway drainage ditch











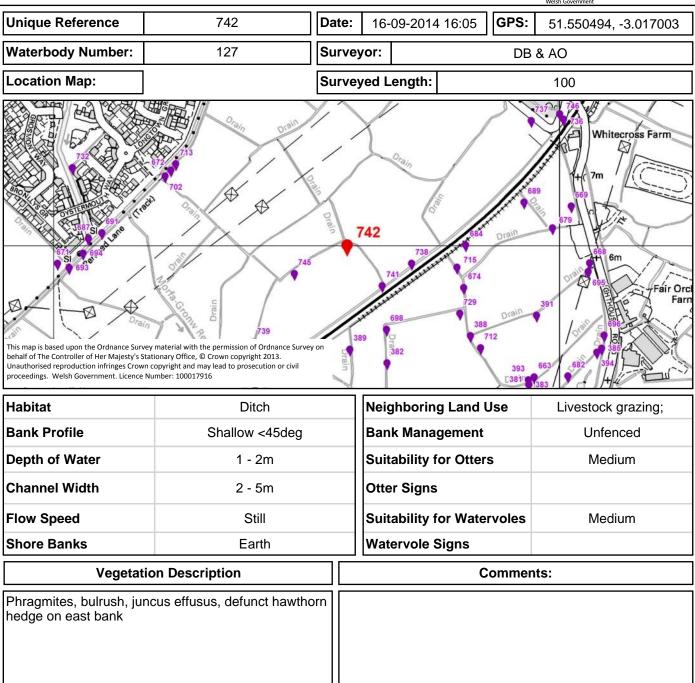
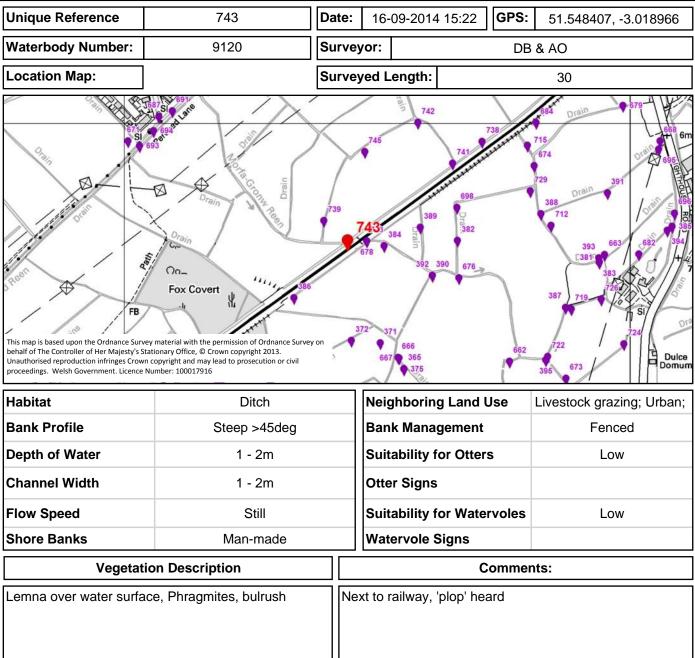


Photo 1

Photo 2







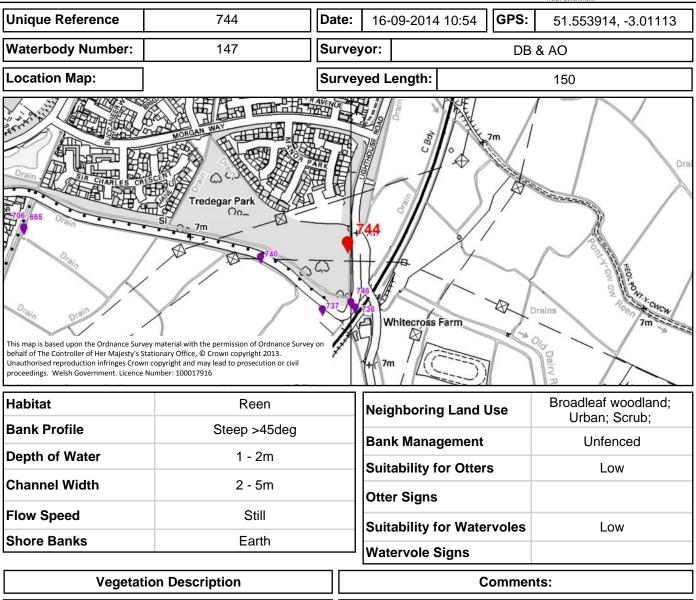












Lemna in channel. Scrub adjacent (bramble, nettles).	Fly tipping in the water channel. Otter - commuting route.
Bullrush. Phragmites.	Low Water quality.

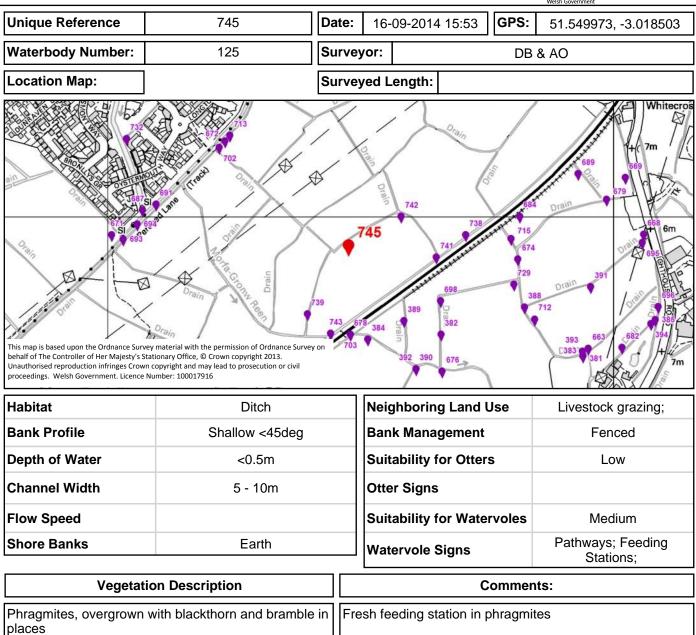










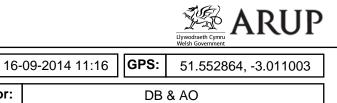












Location Map:

Shore Banks

Surveyor:

Date:

746

146

Waterbody Number:

Unique Reference

Surveved Length:

	Surv		
behalf of The Controller of Her Majesty's Stat	copyright and may lead to prosecution or civil	Whitecross Farm	Drain Drain Drains Drains Drains Drains Drains Drain Cov Cov Cov Cov Cov Cov Cov Cov Cov Cov Cov
Habitat	Reen	Neighboring Land Use	Broadleaf woodland; Urban; Scrub;
Bank Profile	Steep >45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	5 - 10m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Chara Danka	Гани	, ••••••••••••••••••••••••••••••••	

Shore Banks Earth		Watervole Signs	Feeding Stations;	
Vegetation Description		Comments:		
Phragmites in channel, Lubank side. Sweet reed gr		Poor water quality (smells bad) adjacent to reen.	. Corridor for otters	

....

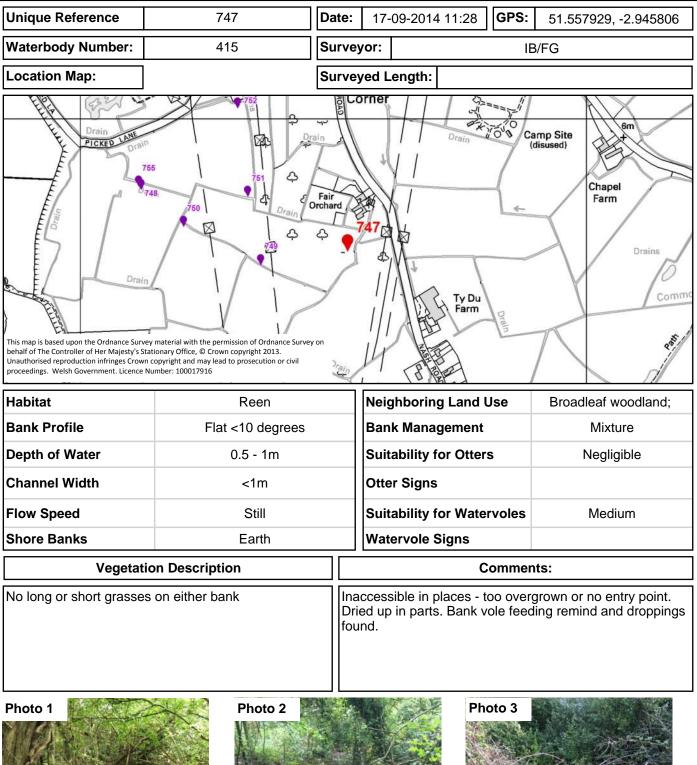
Earth



















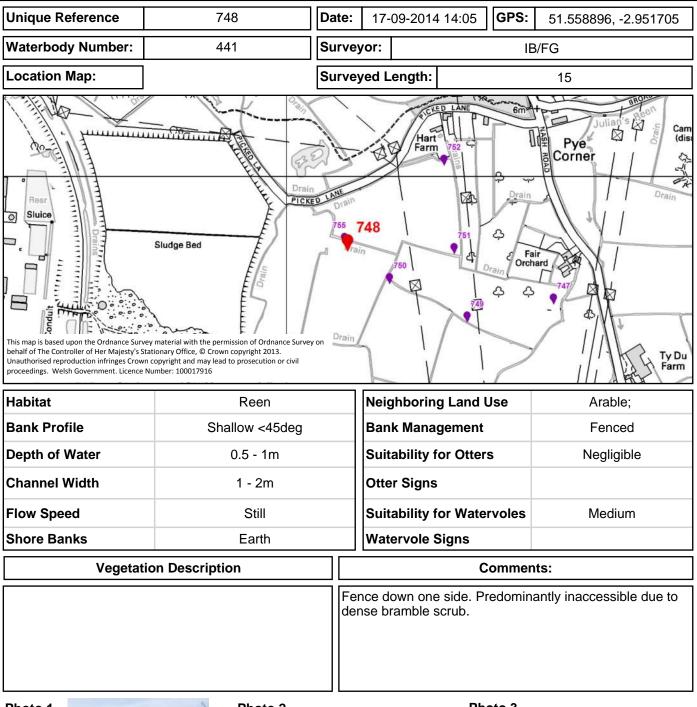
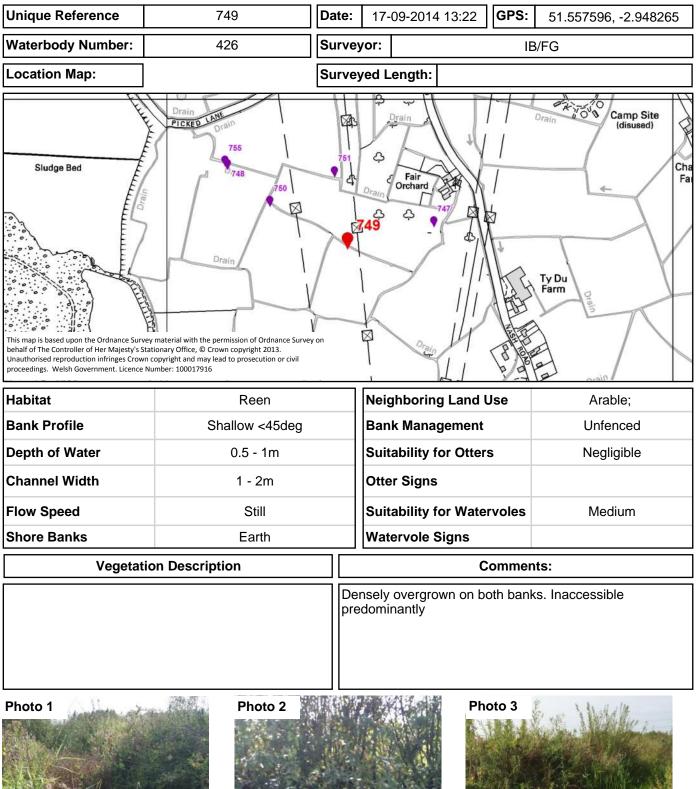




Photo 2



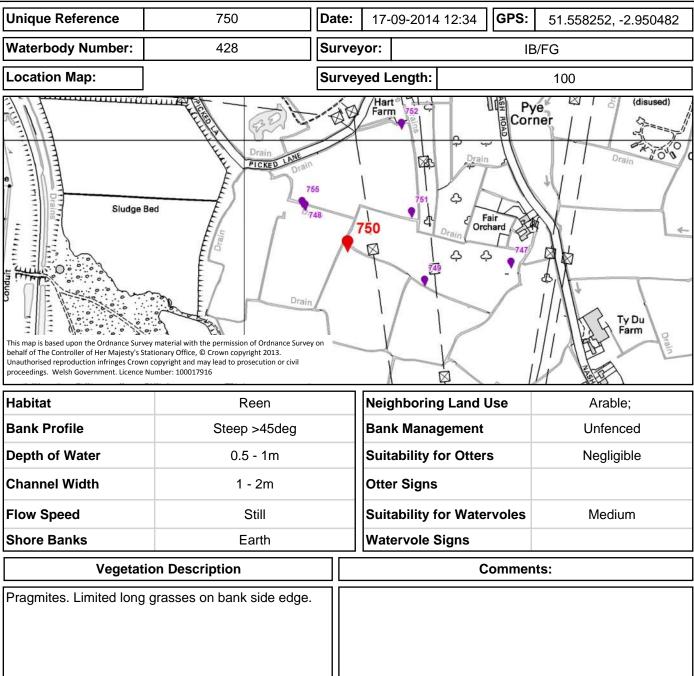






















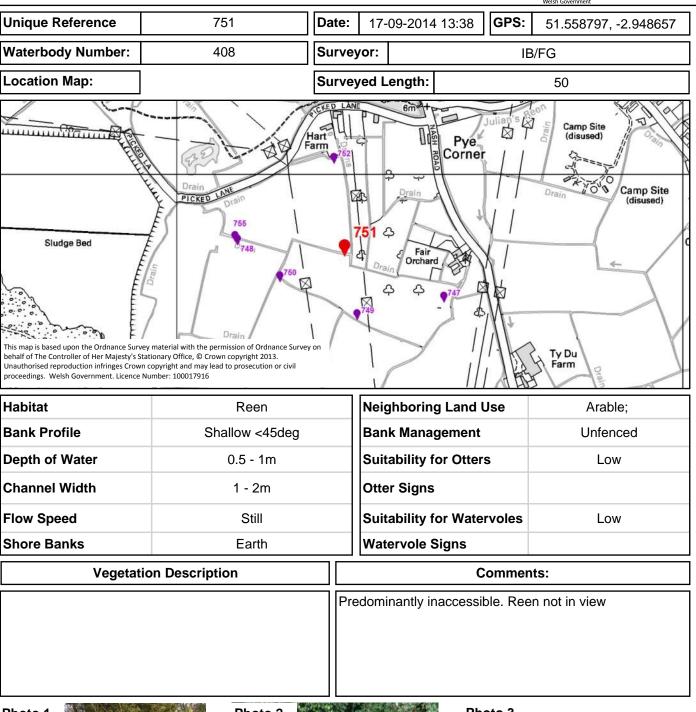
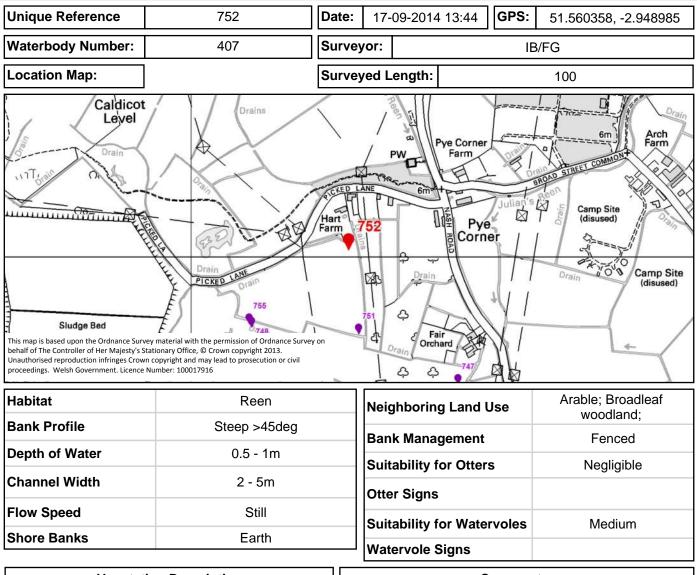






Photo 3





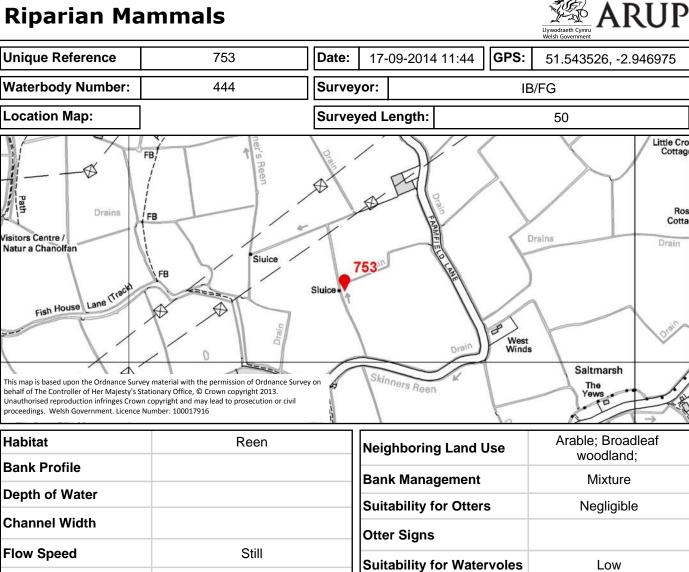
Vegetation Description	Comments:
Long grasses and hawthorn on both banks.	Predominantly inaccessible











Watervole Signs

Comments:

Vegetation Description

Earth

Banks predominantly tree lined with willow and hawthorn. Limited areas of long and short grasses.

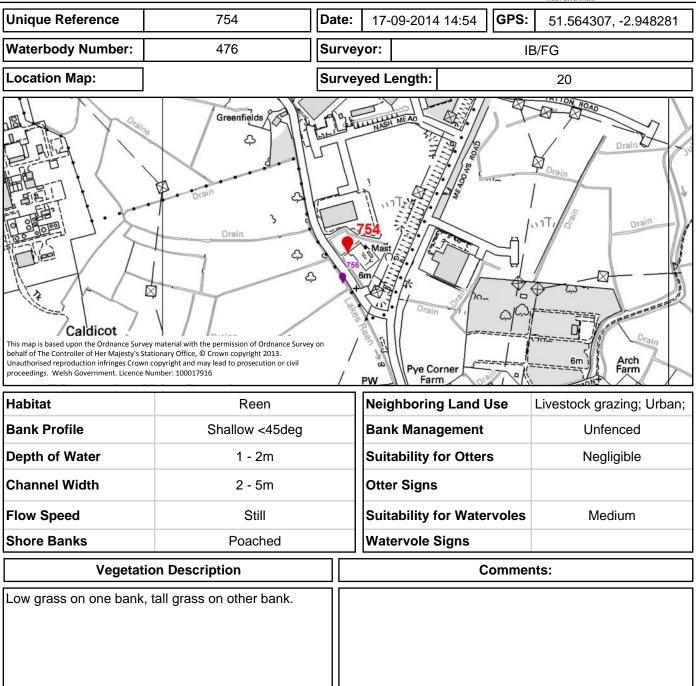
Shore Banks







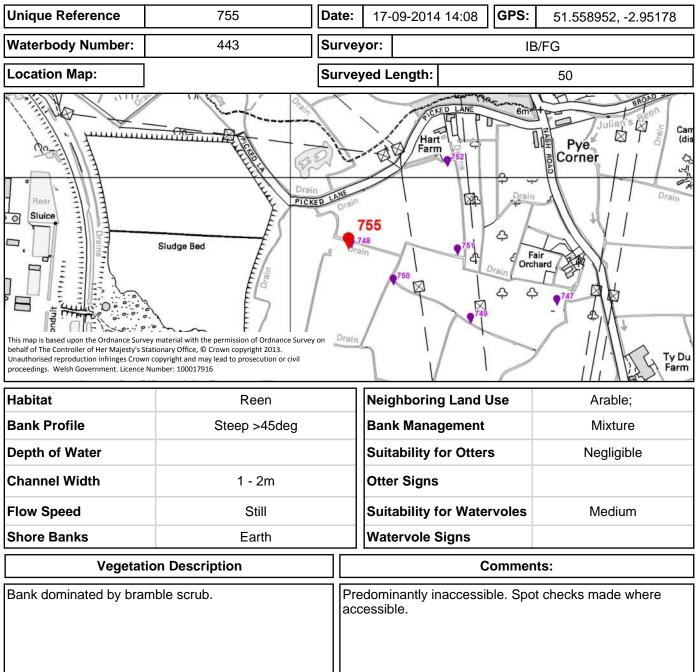




















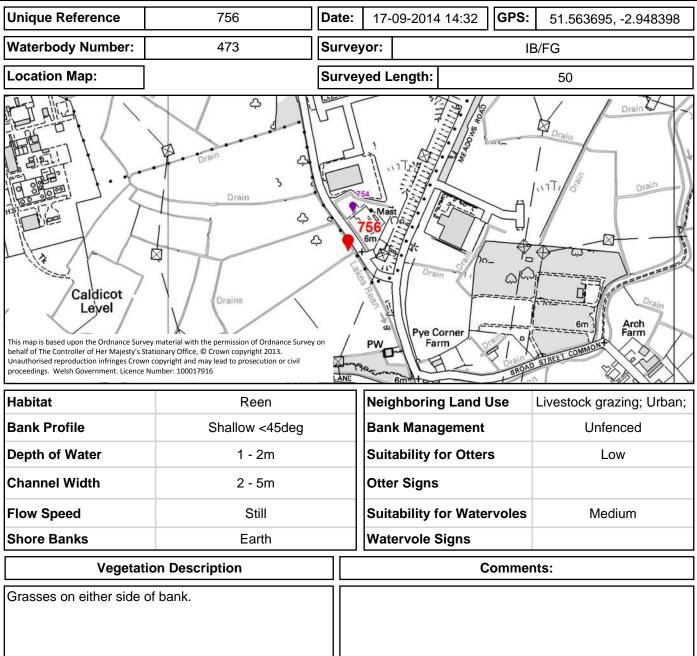


Photo 1







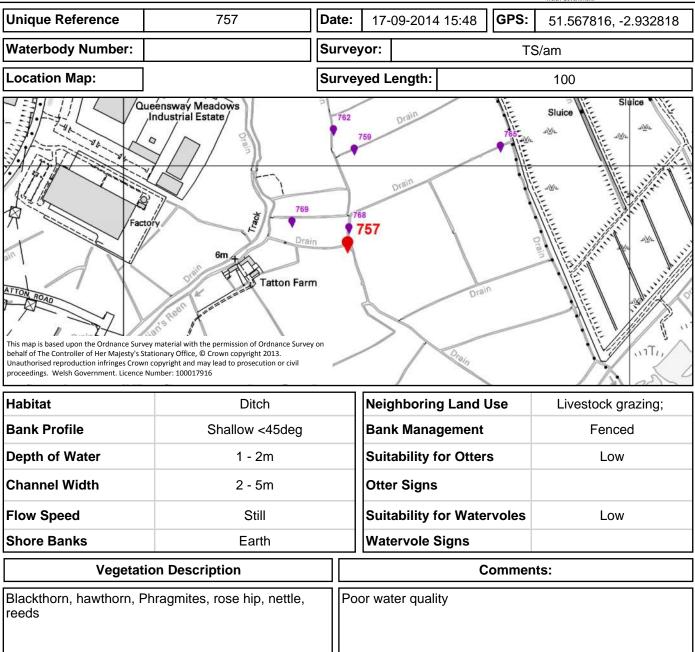
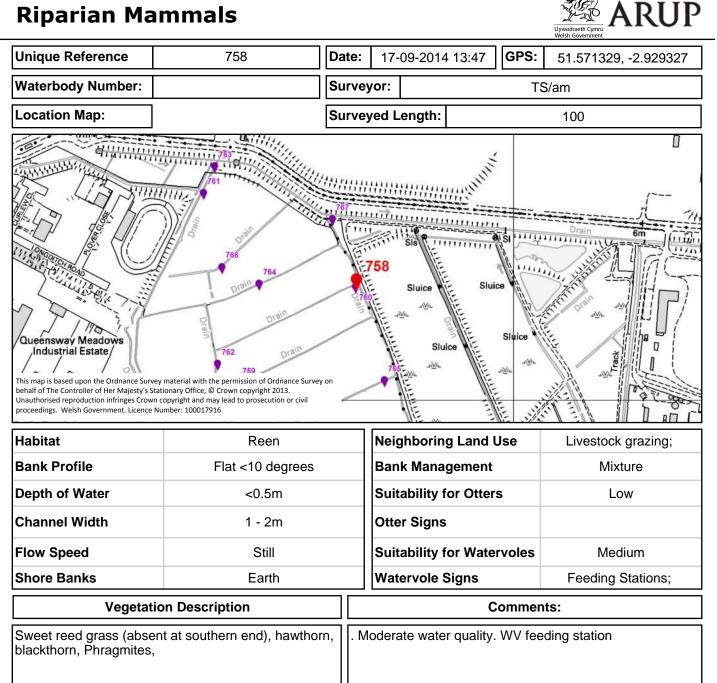


Photo 1

Photo 2



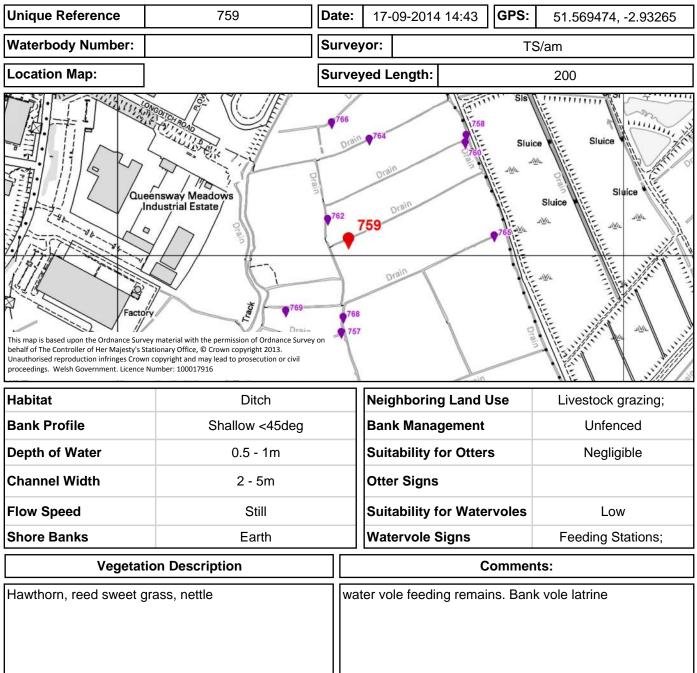








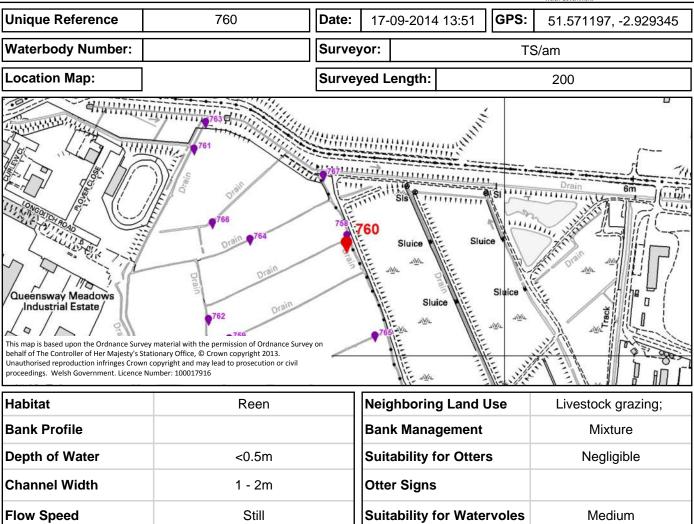












· · ·		Stations;
Vegetation Description	Comm	ents:
Reed sweet grass, hawthorn, blackthorn. Rose hip.	Bank vole feeding station. Run vole burrow.	through duckweed, bank

Watervole Signs

Earth



Shore Banks

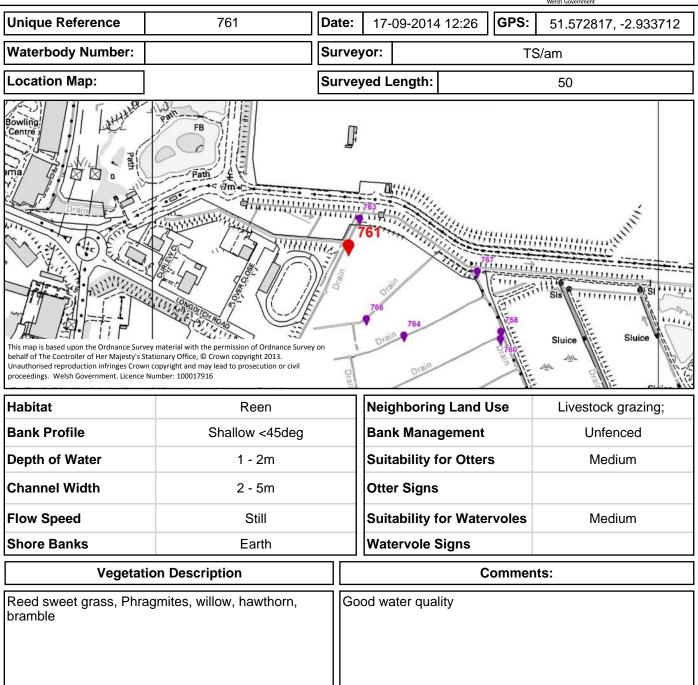




Sightings; Feeding



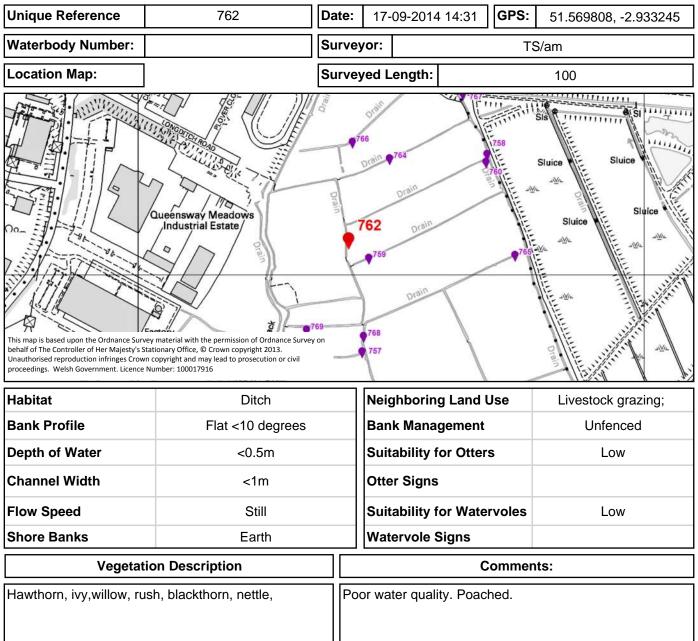


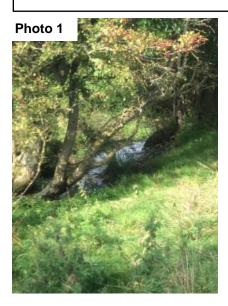






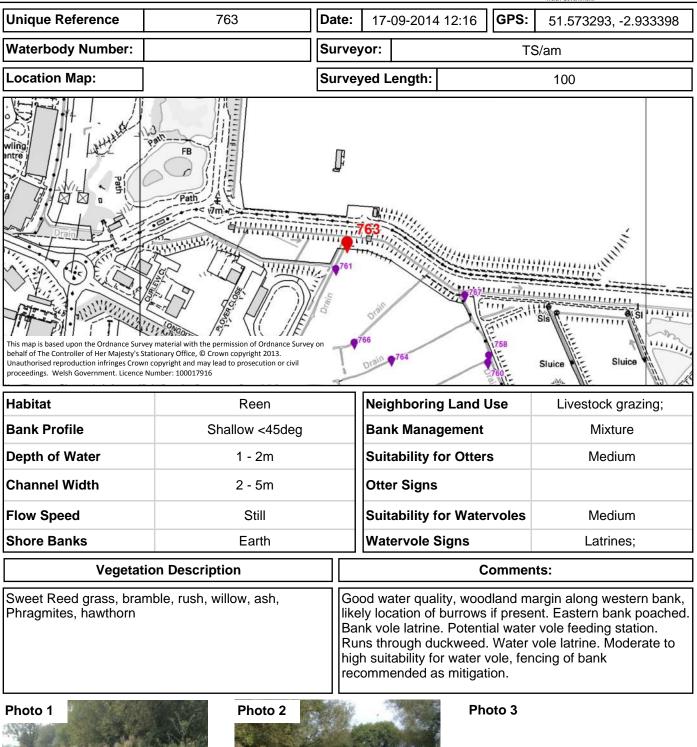






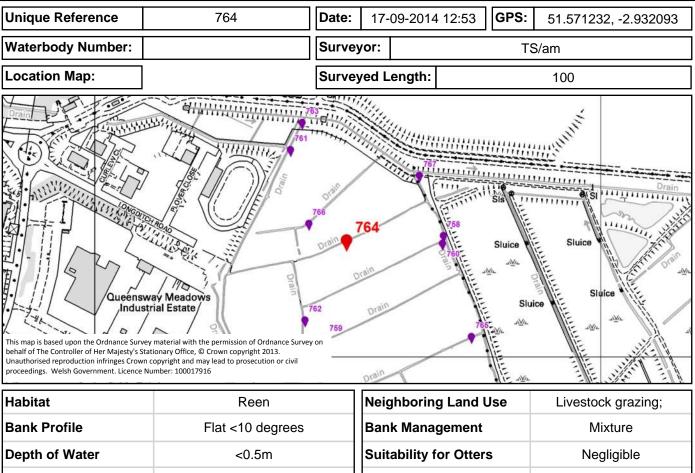












Flow Speed	Still		Suitability for Watervoles	Low
Shore Banks	Earth		Watervole Signs	
Vegetation Description		Comments:		
Blackthorn, reeds, nettle, oak, willow, bramble, sweet reed grass		, ba	ank vole latrine and feeding st	ation. Poached

Otter Signs

1 - 2m



Channel Width



Photo 3



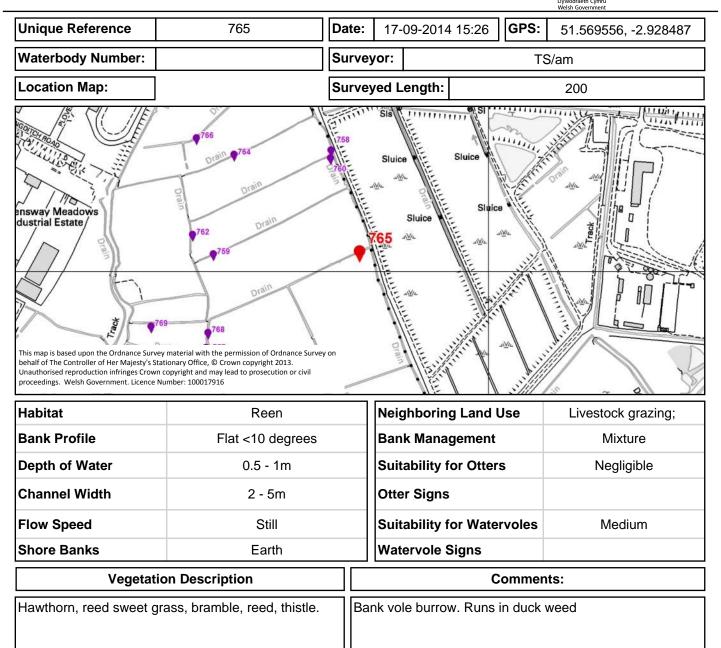


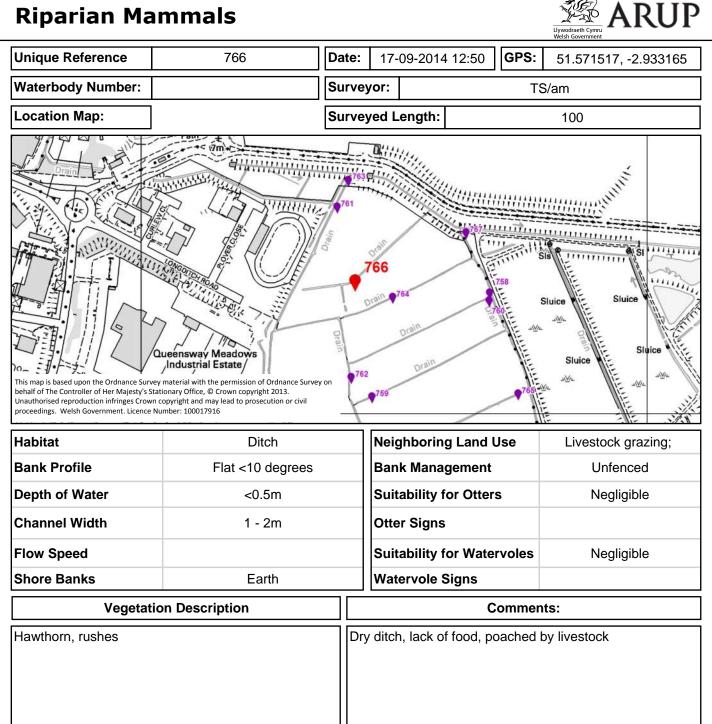






Photo 3

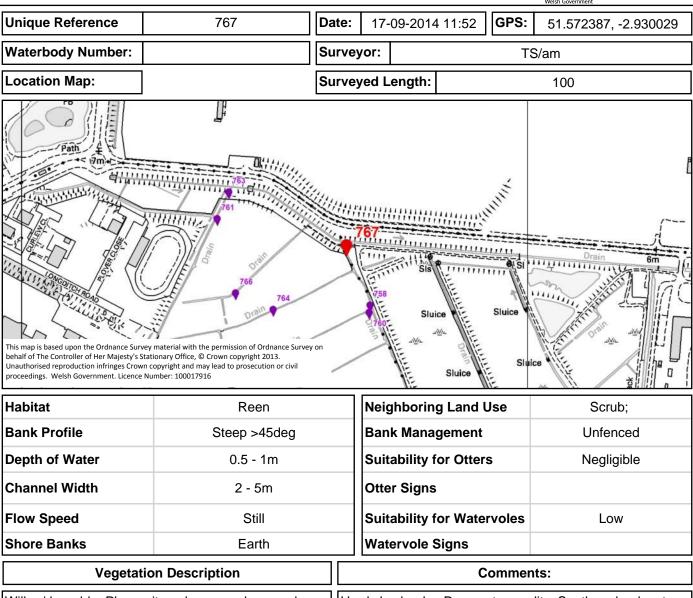
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Willow' bramble, Phragmites, dog rose, dog wood, hawthorn

Hard clay banks. Poor water quality. Southern bank cut, northern bank







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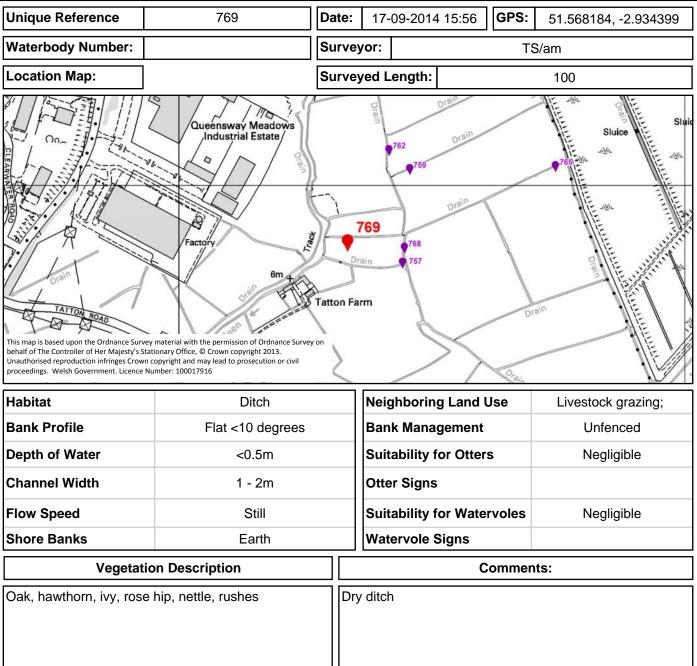


					Welsh Government
Unique Reference	768	Date:	17-09-2014 15:43	GPS:	51.568086, -2.932771
Waterbody Number:		Surveyo	r:	τ	S/am
Location Map:		Surveye	d Length:		50
This map is based upon the Ordnance Surp behalf of The Controller of Her Majesty's S	ey material with the permission of Ordnance Survey itationary Office, © Crown copyright 2013. In copyright and may lead to prosecution or civil			7860-11/2 7800-11/2	
Habitat	Ditch	Ν	leighboring Land	Use	Livestock grazing;
Bank Profile	Shallow <45deg	E	Bank Managemen	t	Mixture
Depth of Water	<0.5m	s	Suitability for Otte	ers	Negligible
Channel Width	1 - 2m	C	Otter Signs		
Flow Speed	Still	s	Suitability for Wat	ervoles	Low
Shore Banks	Earth	v	Vatervole Signs		
Vegetat	ion Description			Commen	its:
Hawthorn, blackthorn, F reed sweet grass, nettle	Phragmites, rush, bramble,				
Photo 1	Photo 2		P	hoto 3	







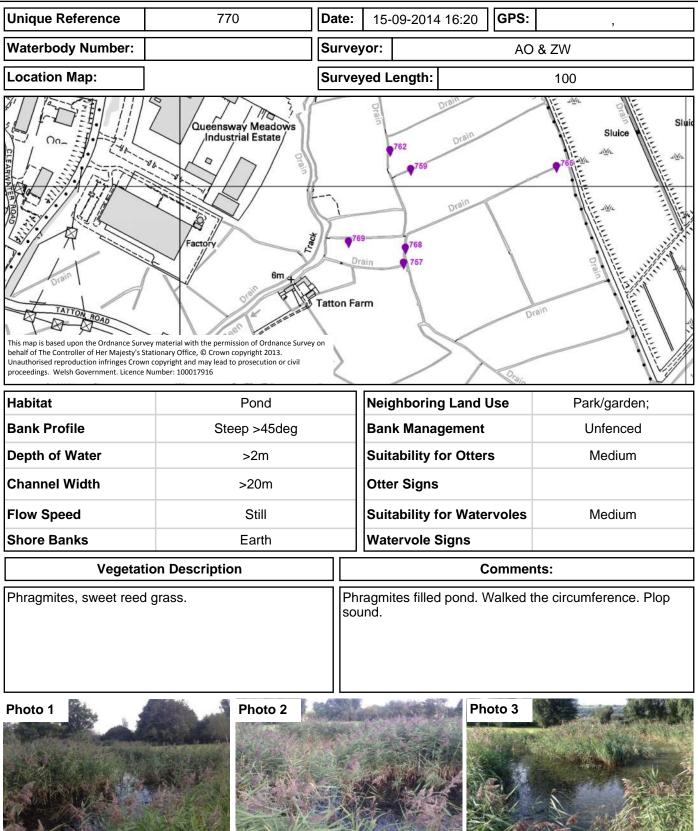


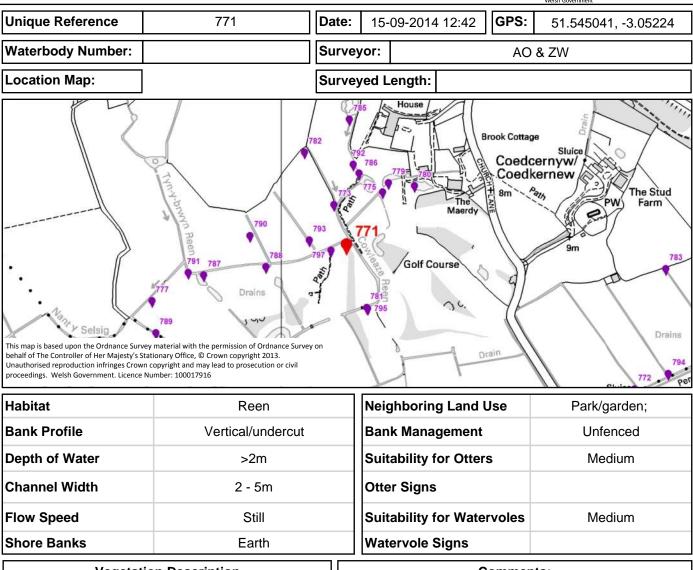












 Vegetation Description
 Comments:

 Lemna, sweet reed grass, cut on north side, south of reen is heavily vegetated grey willow, elder, phragmites.
 Recently cut, suggest returning when vegetation has recovered.

Photo 1

Photo 2

Photo 3

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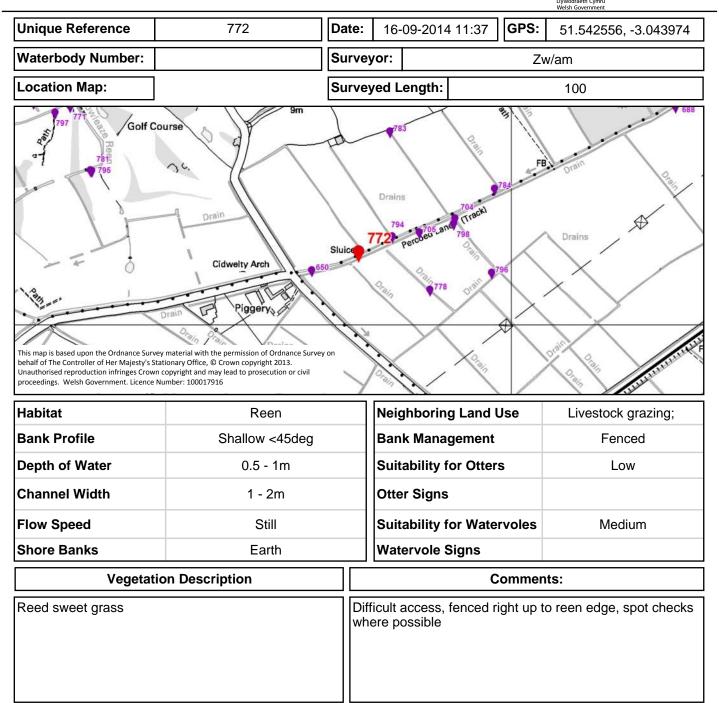


Photo 1

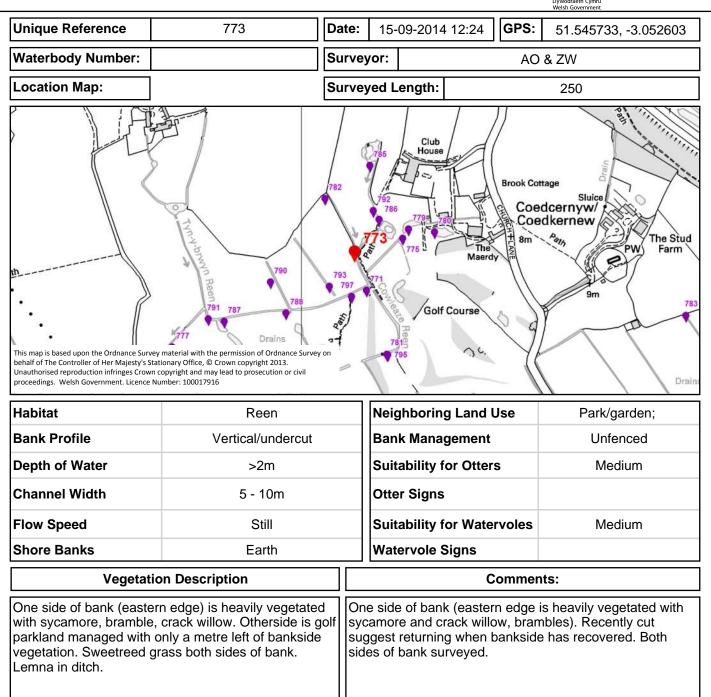






Photo 3

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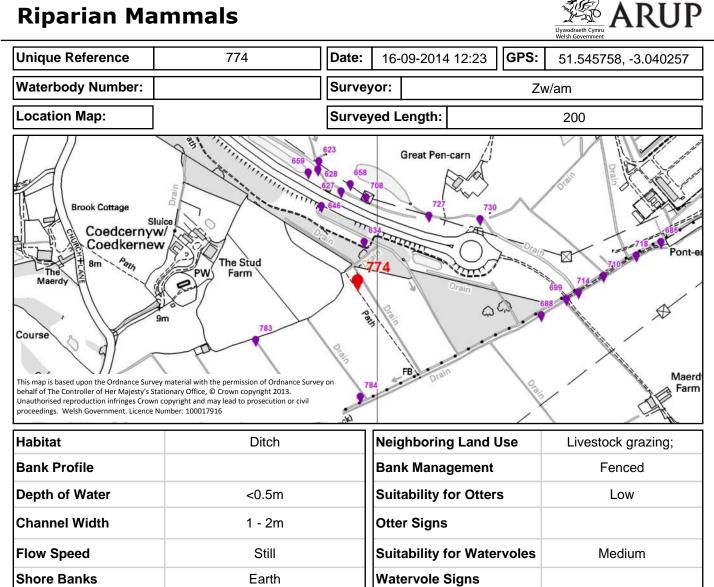








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Vegetation Description	Comments:
Reed sweet grass bramble, hawthorn, blackthorn, nettle	Fenced up to edge of reen

Photo 1

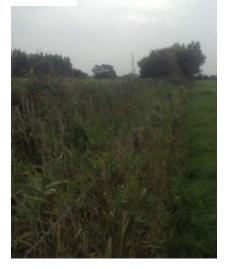
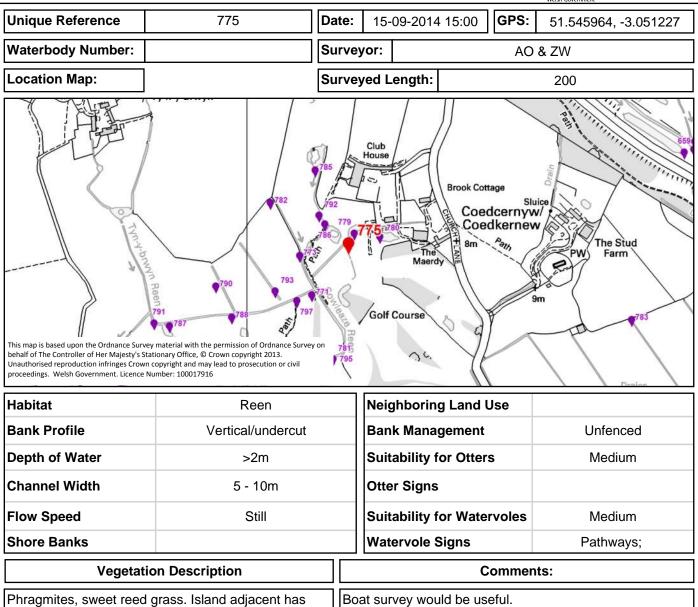




Photo 3

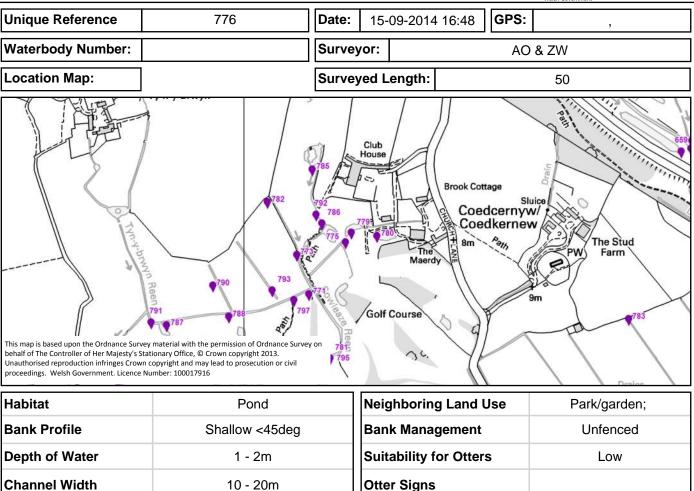




weeping willow and hawthorn, juniper, bramble. Lemna in channel.





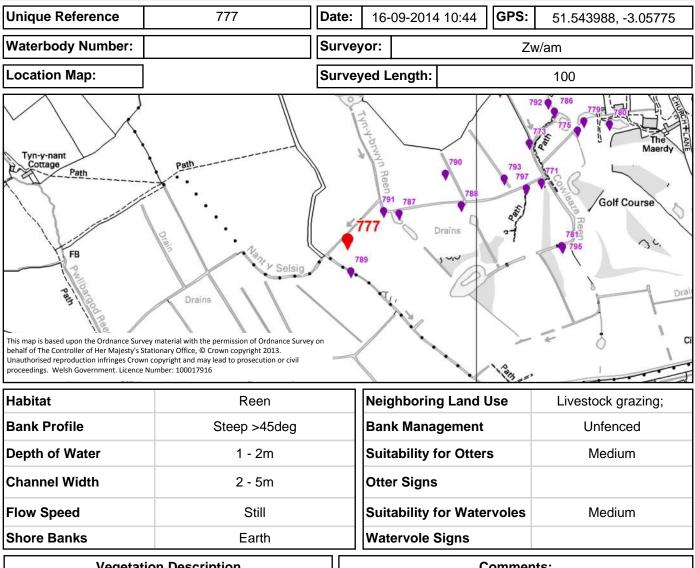


	10 - 20m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Low
Shore Banks	Earth	Watervole Signs	
Vegetat	on Description	Comment	s:
Horsetail, sweet reedgra	ass on margins.		









Vegetation Description	Comments:
Reed sweet grass hawthorn, sycamore, willow, bramble.	Golf course on south side. North bank recently managed













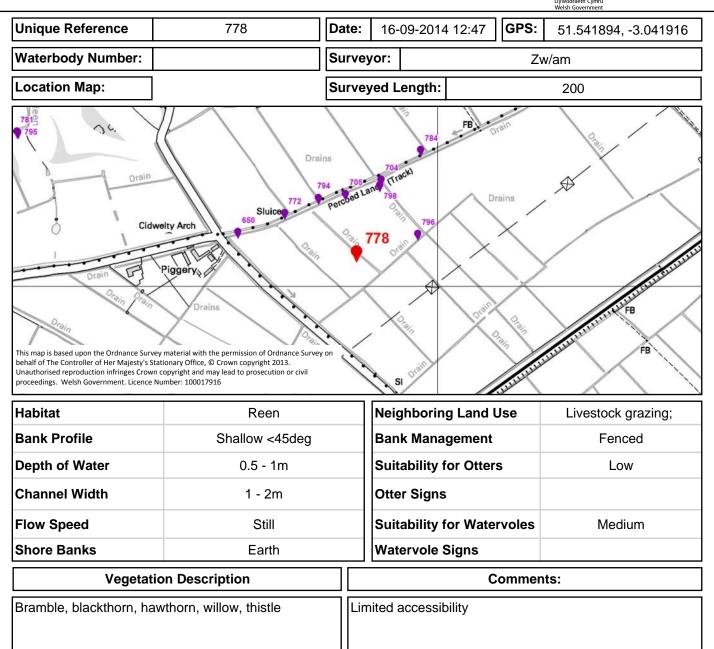






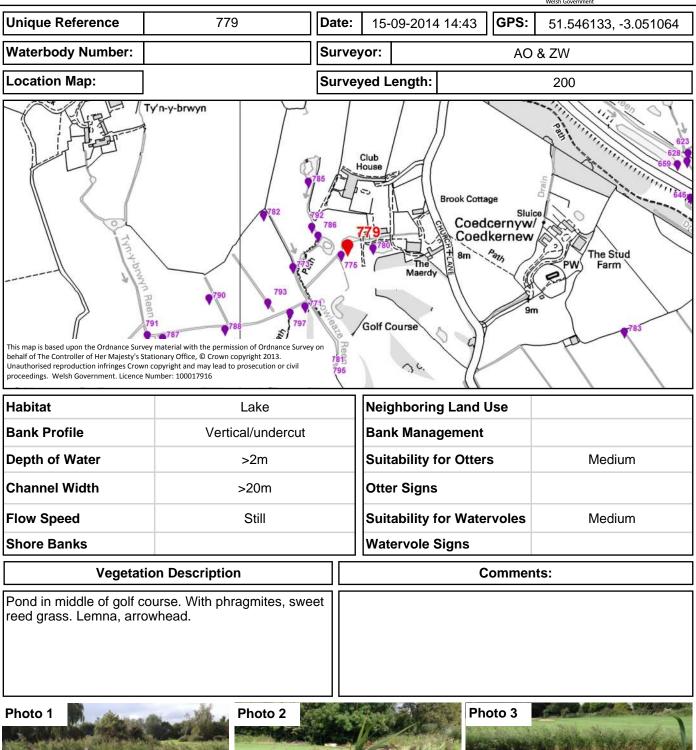




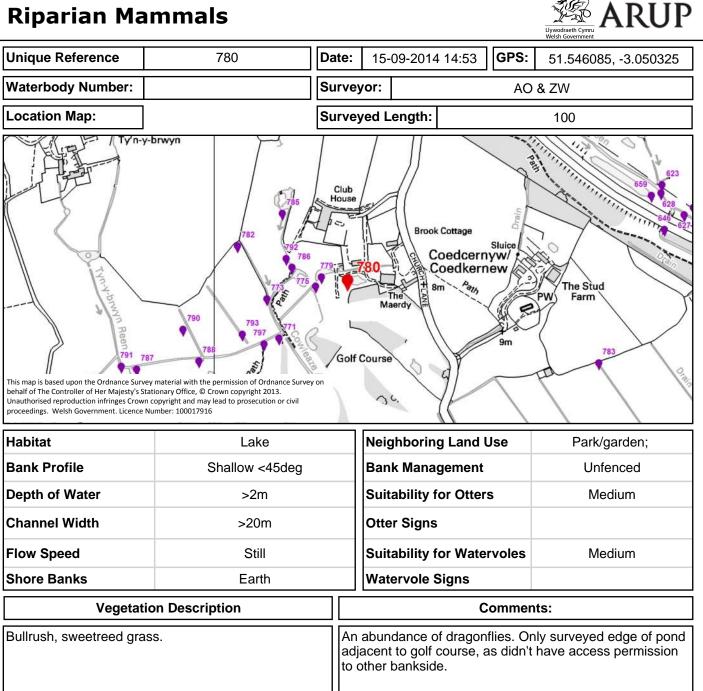
Photo 3

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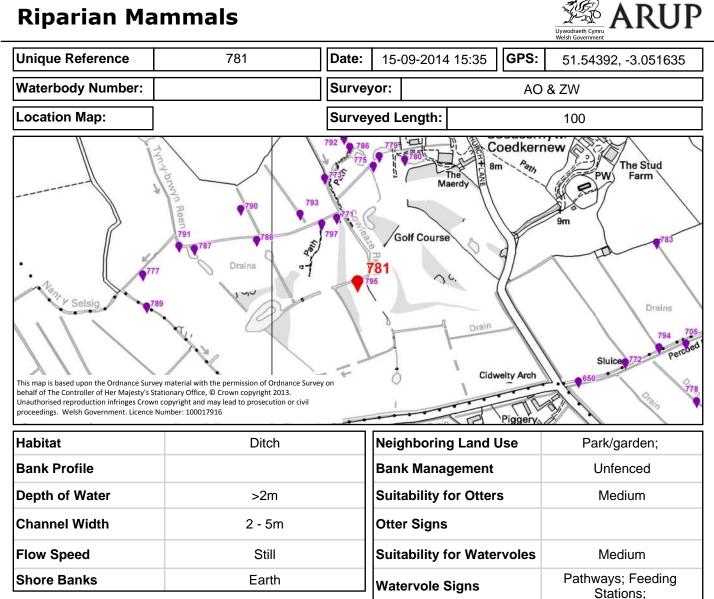






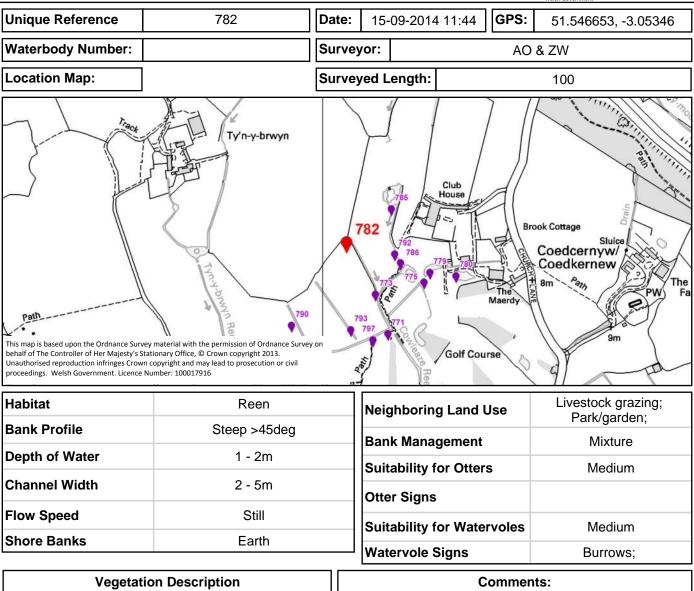






Vegetation Description		Commen	ts:
Bullrush, sweet reed grass. Adjacent to copse of crack willow. Lemna covers water body.		h sides of bank surveyed. Fre ding remains.	esh sweet reed grass





Lemna, Sweet reed grass on edge and eastern side of ditch bank has a vegetated corridor of woodland with ash crack willow, bramble, ivy.	entire







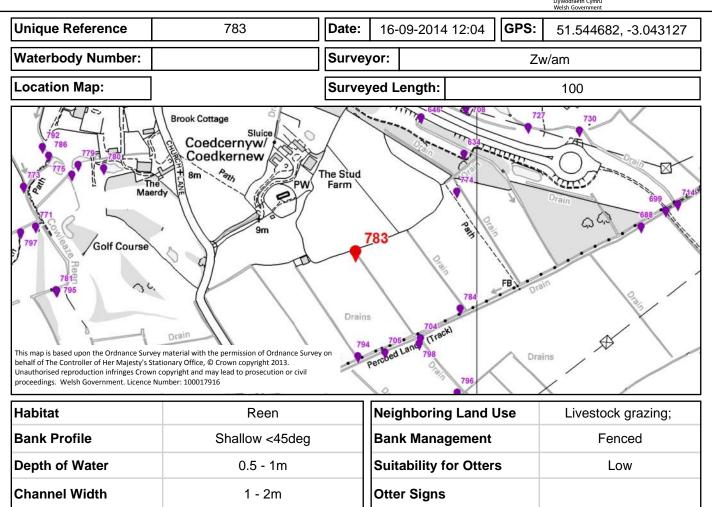
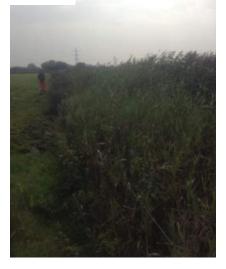


Photo 1

Flow Speed

Shore Banks



Reed sweet grass, bramble, nettle



Still

Earth

Vegetation Description



Comments:

Suitability for Watervoles

difficult to accessFenced up to reen edge

Watervole Signs

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Medium



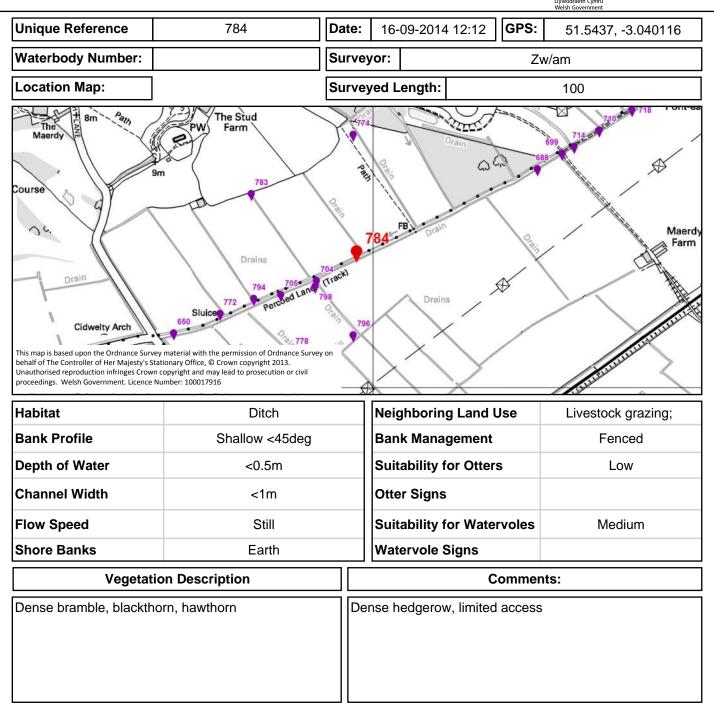




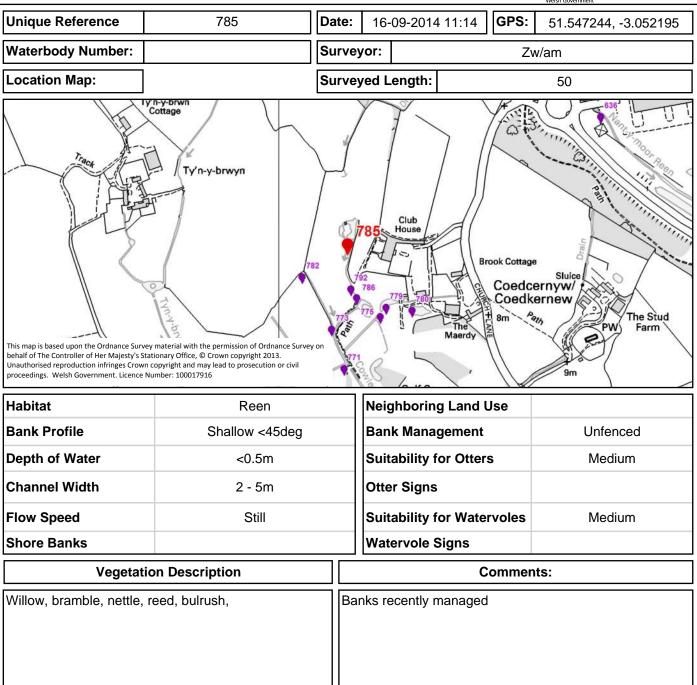
Photo 2

Photo 3

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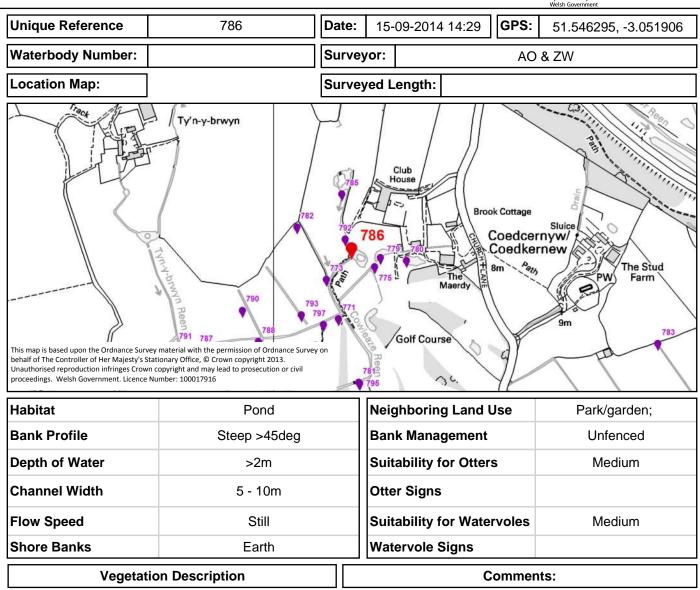




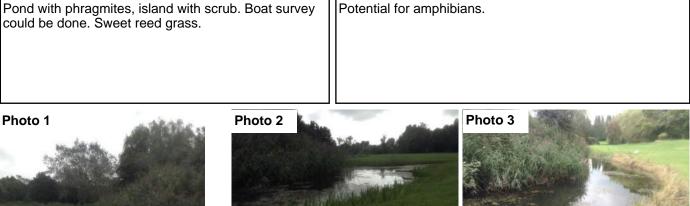








Pond with phragmites, island with scrub. Boat survey could be done. Sweet reed grass.







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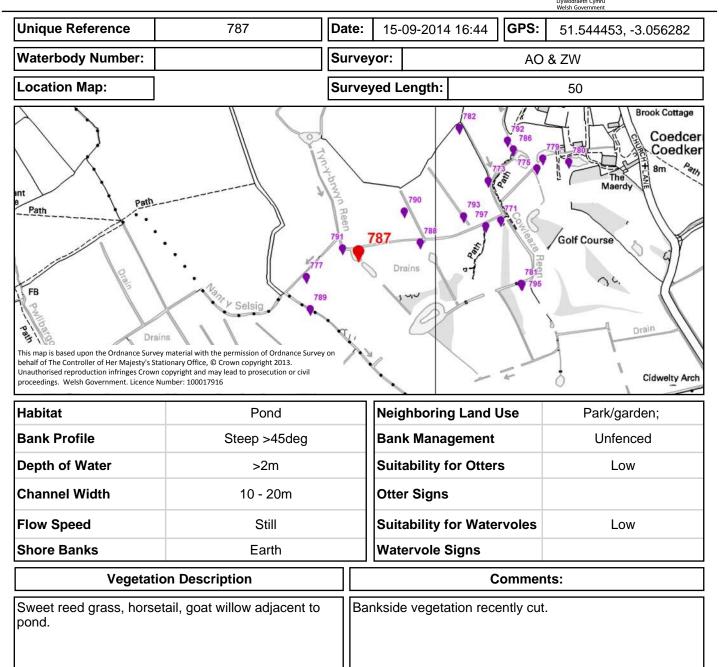




Photo 3



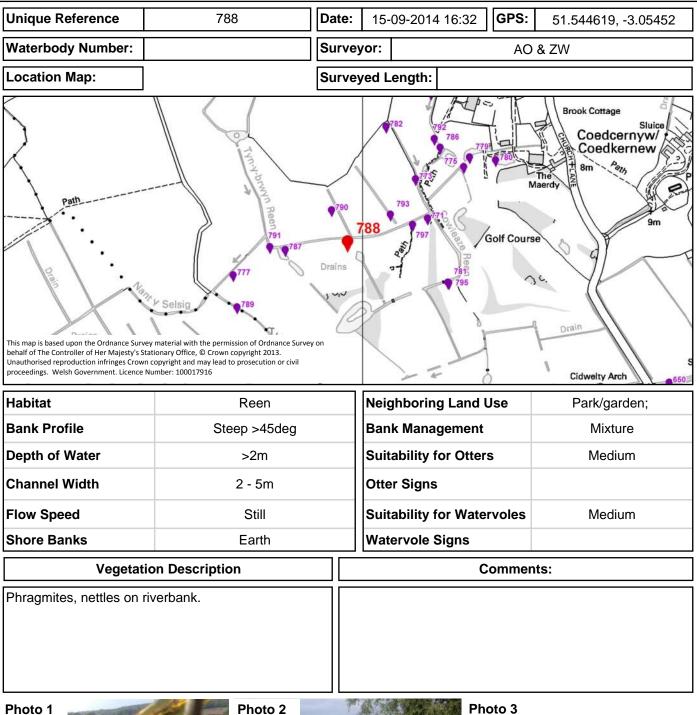






Photo 3

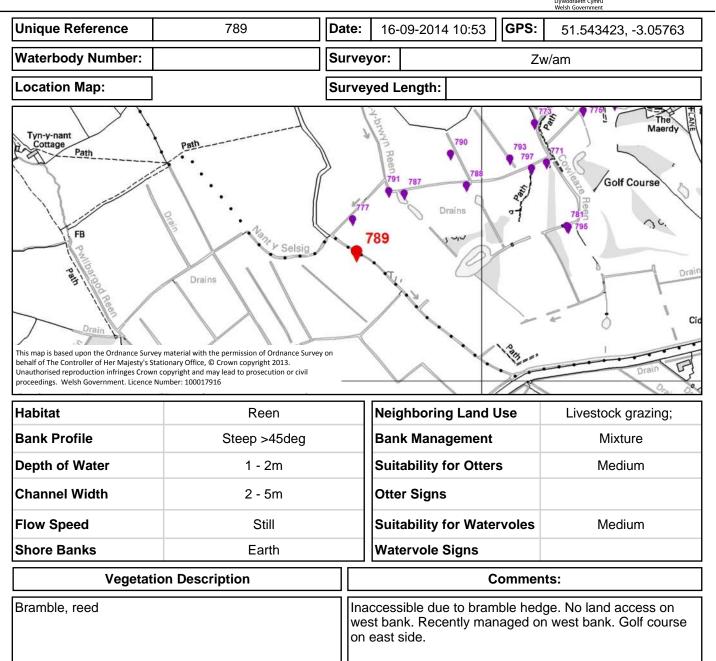
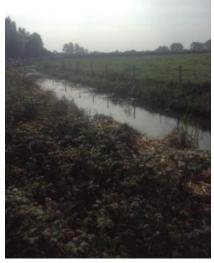


Photo 1

Photo 2

Photo 3

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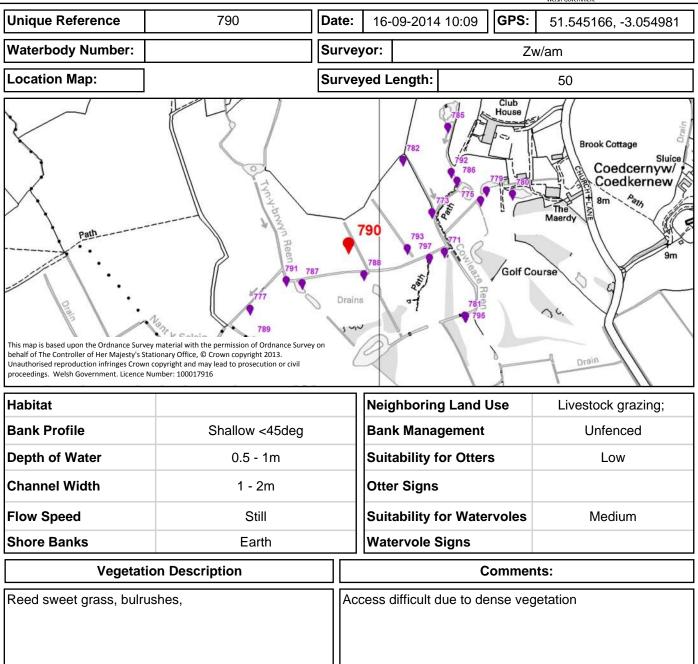


Photo 1

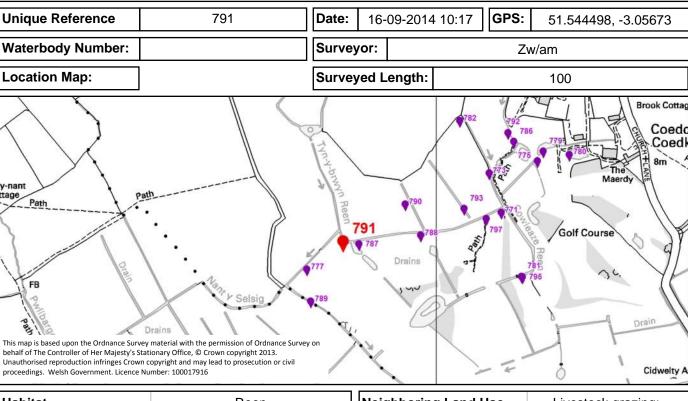




Photo 2







Habitat	Reen	Neighboring Land Use	Livestock grazing;
Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Medium
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	

 Vegetation Description
 Comments:

 Brambles, reeds, reed sweet grass
 East bank recently managed

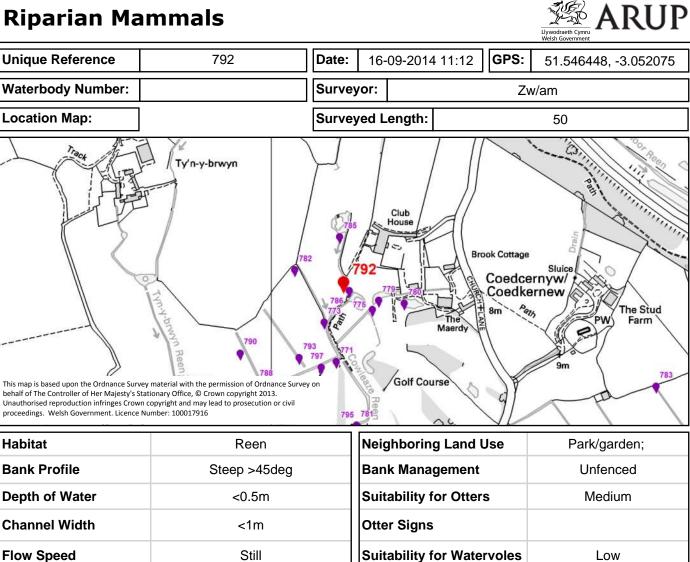
Photo 1











Shore Banks	Earth		Watervole Signs	
Vegetation Description			Comments:	
Willow, nettle, bramble, oak, r	eed,	В	Banks recently managed. On golf course	



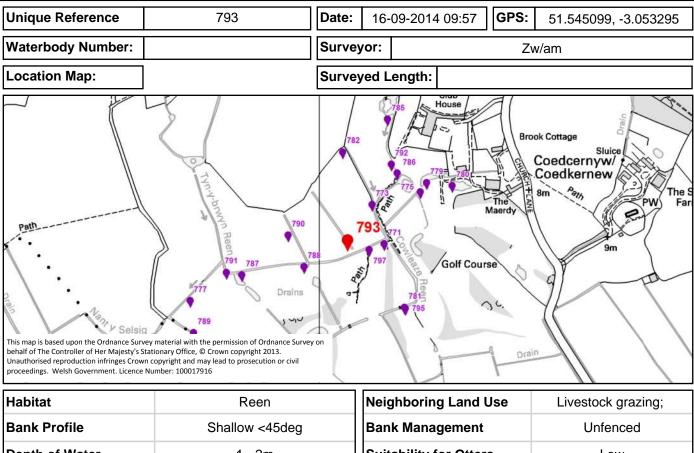
Photo 1





Photo 3





Bank Profile	Shallow <45deg	Bank Management	Unfenced
Depth of Water	1 - 2m	Suitability for Otters	Low
Channel Width	1 - 2m	Otter Signs	
Flow Speed	Still	Suitability for Watervoles	Medium
Shore Banks	Earth	Watervole Signs	

Vegetation Description	Comments:
Nettles, bulrushes, reeds	







Photo 3

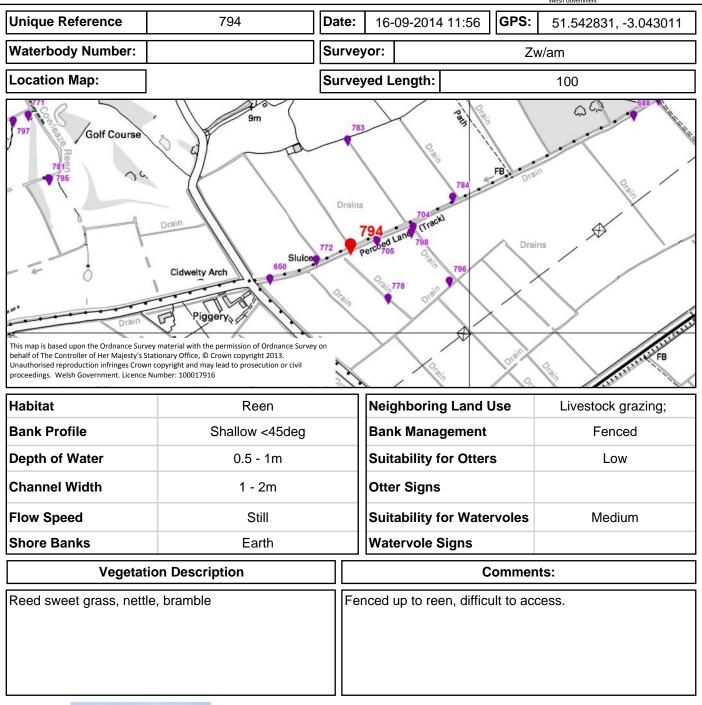




Photo 2

Photo 3

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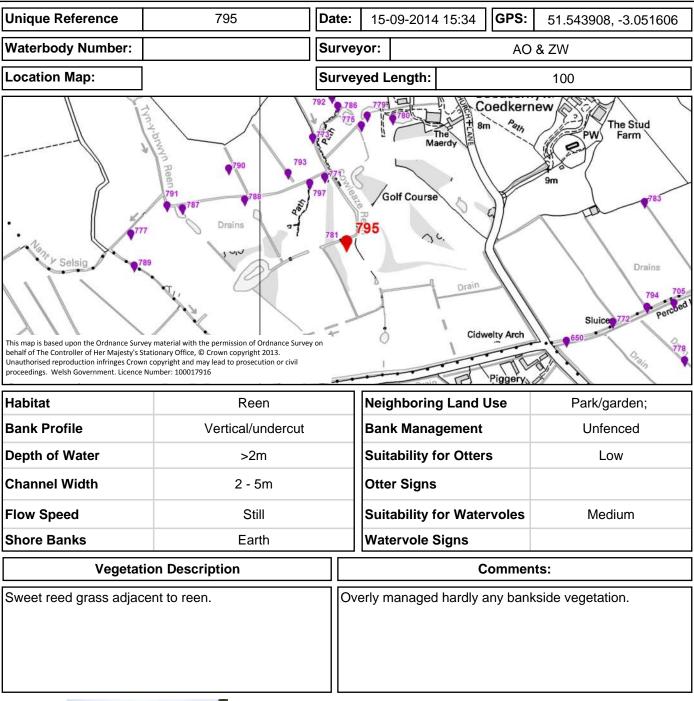
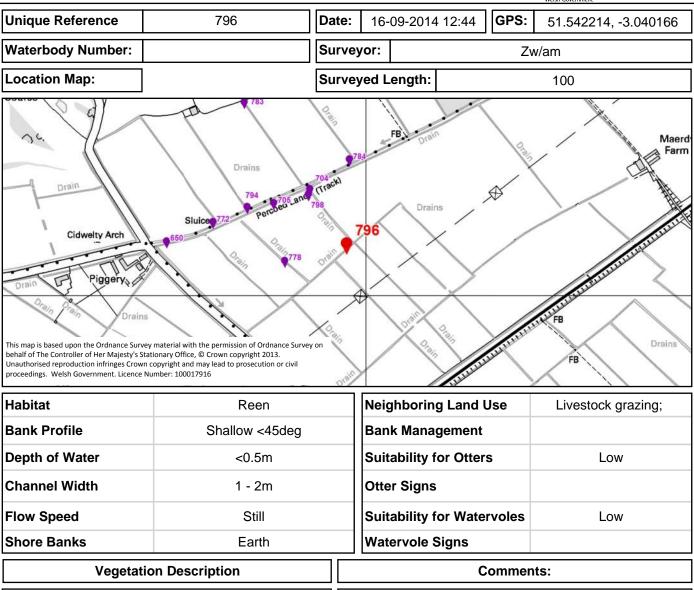




Photo 2

Photo 3

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vegetation Description	Comments:
Dense. Bramble, hawthorn, blackthorn, reed sweet grass	Limited accessibility due to fencing and dense vegetation

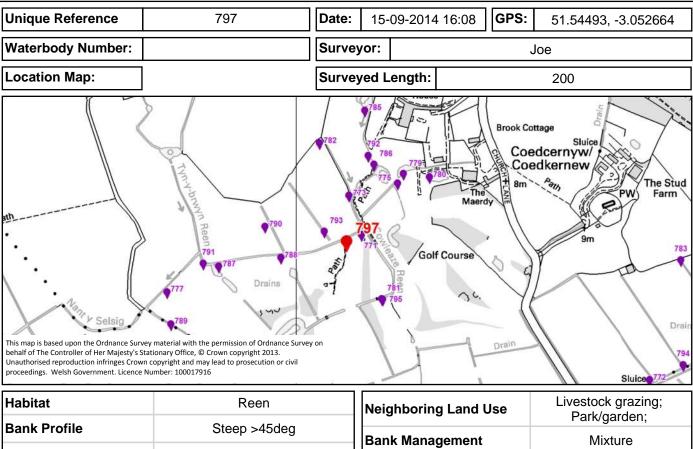
Photo 1





Photo 3

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Bank Profile	Steep >45deg	Bank Management	Mixture
Depth of Water	>2m	Bank Management	WIXTUR
		Suitability for Otters	Medium
Channel Width	2 - 5m	Otter Signs	
Flow Speed	Still		Madium
Shore Banks	Earth	Suitability for Watervoles	Medium
	Earth	Watervole Signs	

	Trator volo elgilo	
Vegetation Description	Comments:	
Phragmites, sweet reed grass, nettles. Lemna in channel.	Bank recently managed on northern side of bank.	





Photo 3

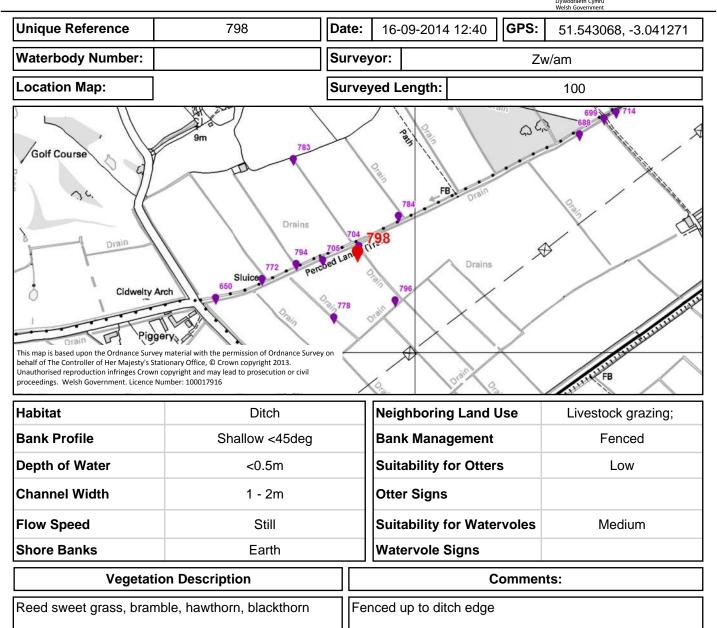










Photo 3

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