West Burton C (Gas Fired Generating Station)

Appendix 9I: Riparian Mammal Survey Report

EDF Energy (Thermal Generation) Limited

Project Number: 60572265

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1. Introduction

1.1 Background

1.1.1 AECOM was commissioned to complete a survey for protected riparian mammals (water vole (*Arvicola amphibius*) and otter (*Lutra lutra*)) to inform the Ecological Impact Assessment (EcIA) for the Proposed Development.

1.1.2 Potentially suitable habitat for water vole and otter was identified within and adjacent to the Proposed Development Site during the Phase 1 Habitat survey completed as part of the initial Preliminary Ecological Assessment in February 2017 (updated December 2017, May 2018 and January 2019 and presented in **Appendix 9C:** Preliminary Ecological Appraisal, ES Volume II), in addition there are historical records of both water vole and otter in the local area.

1.1.3 The purpose of the survey was to gather baseline information on the status and distribution of water vole and otter within the zone of influence of the Proposed Development to inform an assessment of potential impacts and effects.

1.1.4 This report describes the approach and findings of the survey undertaken and provides an assessment of the relative nature conservation value of water vole and otter (where necessary) to inform the EcIA. The terms of reference used in this report to describe the different elements of the Proposed Development are consistent with those defined within the main chapters of the ES (Volume I). For the purposes of this report, 'the Site' refers to all parts of the Proposed Development, included in the Order Limits, as described within **Chapter 3**: Description of the Site (ES Volume I) and illustrated on **Figure 3.3** (ES Volume III). However the landscaping and biodiversity management and enhancement areas in the north of the Site would not be impacted in the same way as other parts of the Proposed Development and they fall outside the scope of this report.

1.2 Scope of Works

1.2.1 The survey area for the water vole survey comprised all waterbodies and wetland habitats that fall within or directly adjacent to the Site (see **Figure 9I.1**). Surveys of features within this area were extended to cover connecting habitat up to 50m from the Site boundary.

1.2.2 The survey area for the otter survey included all waterbodies, wetland habitats and associated terrestrial habitats within 100m of the Site (see **Figure 9I.1**). A larger survey area was used for the otter survey to account for the increased zone of influence over which disturbance impacts associated with the Proposed Development are likely to have an adverse effect on otter.

1.3 Relevant Legislation

Water Vole

1.3.1 Water vole receives full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 9I-1); as such it is illegal to intentionally or recklessly:

- capture, kill or injure water voles;
- damage, destroy or block access to their places of shelter or protection;
- disturb them in a place of shelter or protection; and
- possess, sell, control or transport live or dead water voles or parts of them.

1.3.2 Water vole is a species of principal importance for nature conservation in England in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 9I-2). Section 40 of the same Act requires that local and regional authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Otter

1.3.3 Otter receives full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 9I-1) and Schedule 2 of the Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018 (Ref 9I-3). This legislation, when taken together, results in a level of protection that prohibits the intentional, deliberate or reckless:

- killing, injuring, taking or disturbance of otters;
- damaging, destroying or obstructing any place used by otters for the purposes of breeding, sheltering or protection; and
- selling and/or advertising for sale an otter or any part thereof.

1.3.4 Otter is a species of principal importance for nature conservation in England in Section 41 of the NERC Act 2006 (Ref 9I-2).

2. Methodology

2.1 Desk Study

2.1.1 The following sources of information were used to gain background information on the status and distribution of water vole and otter in the vicinity of the Site:

- results of a water vole survey encompassing all of the Applicant's landholdings at West Burton Power Station in 2014 (Ref 9I-4);
- Nottinghamshire Biological and Geological Record Centre (NBGRC) (Ref 9I-5) - protected species records within 2km of the Site;
- results of a large scale survey into the distribution of otters across England (Ref 9I-6); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref 9I-7) - information on granted European Protected Species Mitigation (EPSM) licences for otter issued by Natural England within 2km of the Site.

2.2 Field Survey

2.2.1 The water vole and otter survey was completed by suitably experienced AECOM ecologists on 21st April 2017 in accordance with best practice guidance (Refs 9I-6, 9I-8 and 9I-9). A repeat survey for water vole was also completed on 24th August 2017, in line with best practice guidance for water vole survey (Ref 9I-8), which recommends that visits are completed at either end of the survey season (i.e. 1 visit between mid-April and June and a second visit between July and September).

2.2.2 Both survey visits were completed during periods of dry weather in the days preceding and during the surveys to increase the likelihood that field signs, such as droppings, would persist in the environment.

2.2.3 The survey involved searching the banks and margins of waterbodies and wetland areas, as well as areas of terrestrial habitat suitable for otter refuge (e.g. dense scrub, woodland), within the survey area for field signs of water vole and otter, as detailed below.

2.2.4 Water vole field signs include the following:

- faeces – these are 8-12mm long and 4-5mm wide, with a smooth 'tic tac' like shape, varying in colour from green to black, and odourless with a putty-like texture;
- latrines – found throughout the territory, often comprising a pile of flattened droppings, with fresh droppings on top;

- feeding stations – comprise a neat pile of chewed feeding remains, often comprising lengths of vegetation up to 10cm long, showing the marks of the two large incisors;
- burrows – these are typically wider than they are high, with a diameter of 4-8cm, and are usually located along the water's edge;
- lawns – around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young;
- footprints – as with other rodents, the footprints of the fore foot, show four toes in a star arrangement, with the hind foot showing five toes. The size of footprints for the hind foot is 26-34mm; and
- runways – these are low tunnels within the vegetation, often adjacent to the water's edge.

2.2.5 Otter field signs include the following:

- spraints – these are usually black in colour and have a sweet smell likened to jasmine or fresh cut hay. The otter uses spraints to define its home range, and these are deposited at prominent points such as on boulders and ledges;
- footprints – the otter has five toes that are webbed. The footprints are very characteristic and easy to recognise. Each print is around 50-60mm wide;
- paths - found along river banks;
- couches - flattened vegetation amongst scrub or dense vegetation, which may indicate an above ground resting area for an otter during the day;
- holts - holes in the riverbank, hollow trees, cavities amongst tree roots, piles of rocks, wood or debris may all be used as holts; and
- feeding remains – including fish remains.

2.2.6 The presence and distribution of these signs can be used to assess the likely importance of the watercourse for the local otter population.

2.3 Limitations

2.3.1 The western bank of the River Trent adjacent to the Site could only be surveyed from the top of the bank as the bank faces comprise thick silt which was not safe to access. However, this is not considered to have significantly constrained the findings of the survey as sufficient assessment could be made from the bank top to determine the likelihood of water vole and otter presence.

2.3.2 Access was limited into areas of particularly dense scrub in the survey area to search for otter refuge sites. This limitation is taken into account within the interpretation of survey results in **Section 4**.

3. Results

3.1 Desk Study

Water Vole

3.1.1 The presence of water vole was confirmed during the survey of the Applicant's landholdings in 2014 (Ref 9I-4). Limited field signs of water vole (1 feeding sign and 1 lawn) were found at the southern-most fishing pond (located directly adjacent to the Site; see below) and the reedbeds to the south-east within West Burton Reedbed Local Wildlife Site (LWS) (outside the water vole survey area). More extensive water vole field signs were found in the network of drainage ditches within Bole Ings, which are located approximately 1km to the north of the Site.

3.1.2 NBGRC data returned numerous records of water vole in drains within the wider desk study area to the north and south of the Site.

Otter

3.1.3 There is a single recent (2016) record of otter (tracks and feeding signs) within NBGRC data, located approximately 1km to the south-east of the Site.

3.1.4 There were no EPSM licences issued for otter within 2km of the Site shown on the MAGIC website.

3.1.5 The latest large-scale survey into the distribution of otters across England in 2010 (Ref 9I-6) reported that otters have now re-colonised the majority of the River Trent catchment. However, an apparent gap between otter populations was found in the River Trent from upstream of Newark to downstream of Gainsborough; this is the section within which the Site is located. Only one record of otter was found during surveys along this 50km stretch of river, near Marton approximately 8km upstream (south-east) of the Site. The report states that it would be expected that this gap between populations would be occupied within the next few years, but that colonisation by otter may be limited as this stretch of the river is heavily modified for navigation, which has reduced fish holding capacity, and there are only a few very small tributaries.

3.1.6 No anecdotal sightings of otter have been reported by anglers using the flooded gravel pits adjacent to the Site (see below).

3.2 Field Survey

3.2.1 The results of the water vole and otter survey are summarised below and presented in **Table:** 1. The habitats surveyed are illustrated on **Figure 9I.1** and selected photographs are provided in **Annex A** of this report.

Water Vole

3.2.2 No field signs of water vole were identified within any of the waterbodies within the survey area, which include a wet ditch and flooded gravel pits. The wet ditch provides sub-optimal habitat for water voles because the majority of its length is heavily shaded by scrub and woodland, lacks emergent and marginal vegetation and dries out in the summer. The flooded gravel pits are also sub-optimal for water vole as there are no banks suitable for burrowing and marginal vegetation is limited.

Otter

3.2.3 No field signs of otter were found within any of the waterbodies, wetland habitats or terrestrial habitats within the survey area. The River Trent could only be safely accessed from the top of the riverbank, but this was sufficient to determine that the bankside habitats do not provide suitable holt sites and are unlikely to be used for refuge as they provide very limited cover. An inspection of the visible banks with binoculars did not identify any otter field signs such as spraints or footprints in the mud.

3.2.4 The flooded gravel pits adjacent to the Site provide potential foraging habitat for otter as they are stocked with fish, but no anecdotal sightings of otter have been reported by anglers and no field signs (such as spraints and feeding remains) were identified around the margins of the water body. The wet ditch does not connect to ditch networks in the wider area and therefore will not be an important feature for otters moving through the landscape.

3.2.5 Dense scrub, wet woodland and reedbed habitats within and adjacent to the Site provide good cover and could support above ground laying-up sites (couches) for otter. However, the suitability of many of these habitats may be limited by disturbance from vehicles moving along a nearby access road (River Road), and other disturbances from operational activities associated with the existing West Burton Power Station and sewage works operated by Severn Trent Water to the north of the Site. No signs of refuge were found during the survey, but access was limited in places due to dense vegetation.

Table: 1: Water vole and otter survey results

Habitat feature	Description	Relationship to the Site	Suitability for Water Vole / Otter	Water Vole Field Signs	Otter Field Signs	Photograph
Wet ditch	The ditch channel is approximately 1-2m wide and 0.5m deep, with shallow earth banks. The majority of the ditch is located within woodland and as such is heavily shaded and lacks any in-channel or marginal aquatic vegetation. A short (20m) section at the southern end of the ditch is located on the edge of woodland and is less affected by shading. The channel in this section is dominated by dense common reed and the banks comprise dense scrub. At the time of the first survey visit in April 2017, the ditch held shallow water along its entire length, but by mid-summer the majority of the ditch was dry. The ditch enters a culvert at its southern end which leads to an outfall on the River Trent to the east.	An approximately 100m section of this ditch falls within the proposed boundary of the southern drainage connection corridor option.	Unsuitable for water vole along majority of its length due to heavy shading, lack of marginal vegetation and drying. The short vegetated section at southern end is isolated but has some potential. The ditch does not connect to ditch networks in the wider area so is unlikely to be used by otter moving through the landscape.	x	x	1, 2
Flooded gravel pits	Several large, longitudinal flooded gravel pits adjacent to the Site, with steep to vertical (submerged) banks and deep, clear water (over 1m deep at the margins). Aquatic vegetation is limited to narrow	Located directly adjacent to the proposed northern and southern drainage connection	Sub-optimal for water vole due to absence of exposed banks for burrowing and limited marginal vegetation. Water vole feeding signs were found around the	x	x	3, 4

Habitat feature	Description	Relationship to the Site	Suitability for Water Vole / Otter	Water Vole Field Signs	Otter Field Signs	Photograph
	fringes of common reed around the margins. The margins are generally shaded by bankside willow trees and scrub. Stocked with a range of coarse fish and used for angling.	corridor options.	southern-most pond during a survey in 2014. Potential foraging habitat for otter.			
River Trent	The River Trent adjacent to the Site is approximately 50m wide with exposed silt banks. The water is turbid with suspended sediment and there is little or no in-channel or marginal vegetation. A narrow band of scattered scrub and associated tall ruderal vegetation is present along the bank top. The river is within the tidal reach of the Humber Estuary and is typical of the heavily modified nature of the river in the wider area.	Located approximately 30m to the east of the proposed northern and southern drainage connection corridor options.	Outside water vole survey area and unsuitable due to wide and fast flowing nature and lack of bankside vegetation for cover and food. The river channel is suitable for otter movements and potentially foraging. The banks are unlikely to provide refuge due to a lack of cover.	n/a	x	5, 6
Terrestrial habitats	Terrestrial habitats in the vicinity of water bodies that could be used by otter for refuge, including dense scrub, wet woodland and reedbed areas.	Present within and adjacent to the Site boundary.	Dense vegetation provides potential above-ground refuge sites (couches), but suitability may be limited by disturbances from nearby access road and other operational activities.	n/a	x	7, 8

4. Conclusions and Evaluation

4.1 Water Vole

4.1.1 No evidence of water vole presence was identified within the survey area and the habitats present are considered to be sub-optimal for the species. However, water vole field signs have been found previously around a flooded gravel pit directly adjacent to the Site, and water vole populations are known to be present in the wider area.

4.1.2 It is possible that the waterbodies within and adjacent to the Site could be colonised by water vole in the period prior to construction. Therefore, an updated water vole survey will be required prior to construction to determine the status of water vole at the time and the need for any mitigation. This will need to be completed within the water vole active season (mid-April to September) prior to the commencement of construction activities affecting relevant water bodies.

4.2 Otter

4.2.1 The River Trent adjacent to the Site is likely to form part of an otter territory, given the desk study records of otter nearby. Although no signs of otter presence were identified within the survey area, it is possible that otters take refuge within, or pass through, terrestrial habitats associated with the Site, such as dense scrub and wet woodland. The survey of terrestrial habitats was limited in particularly dense areas of vegetation and as a result it is possible that signs of otter refuge were missed. The occasional presence of otter cannot therefore be entirely ruled out. However, any such presence of otter within or adjacent to the Site is likely to be very transitory, given that otters typically have large home ranges in the order of 11km to 18km of a main river and its associated tributaries. The habitats present within the vicinity of the Site are not considered suitable for breeding because no suitable holt habitat was identified.

4.2.2 It is unlikely that the habitats adjacent to the River Trent associated with the Site are used by any more than a single otter or a single otter family group. On this basis, and given the typical large home range occupied by otters, it is considered that any otter population associated with the Site would be of district nature conservation value.

5. References

Ref 9I-1 HM Government (1981) Wildlife and Countryside Act 1981.

Ref 9I-2 HM Government (2006) Natural Environment and Rural Communities Act 2006.

Ref 9I-3 HM Government (2018) The Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018.

Ref 9I-4 Jacobs (2014) *West Burton Power Station – EDF Energy Landholdings Water Vole Survey Report.* Jacobs U.K. Limited, Wokingham.

Ref 9I-5 Nottingham City Council (2017) Nottinghamshire Biological and Geological Record Centre [Online] Available from: http://www.nottinghamcity.gov.uk/events-markets-parks-and-museums/parks-and-open-spaces/nottinghamshire-biological-and-geological-record-centre-nbgrc/ [Accessed February 2017].

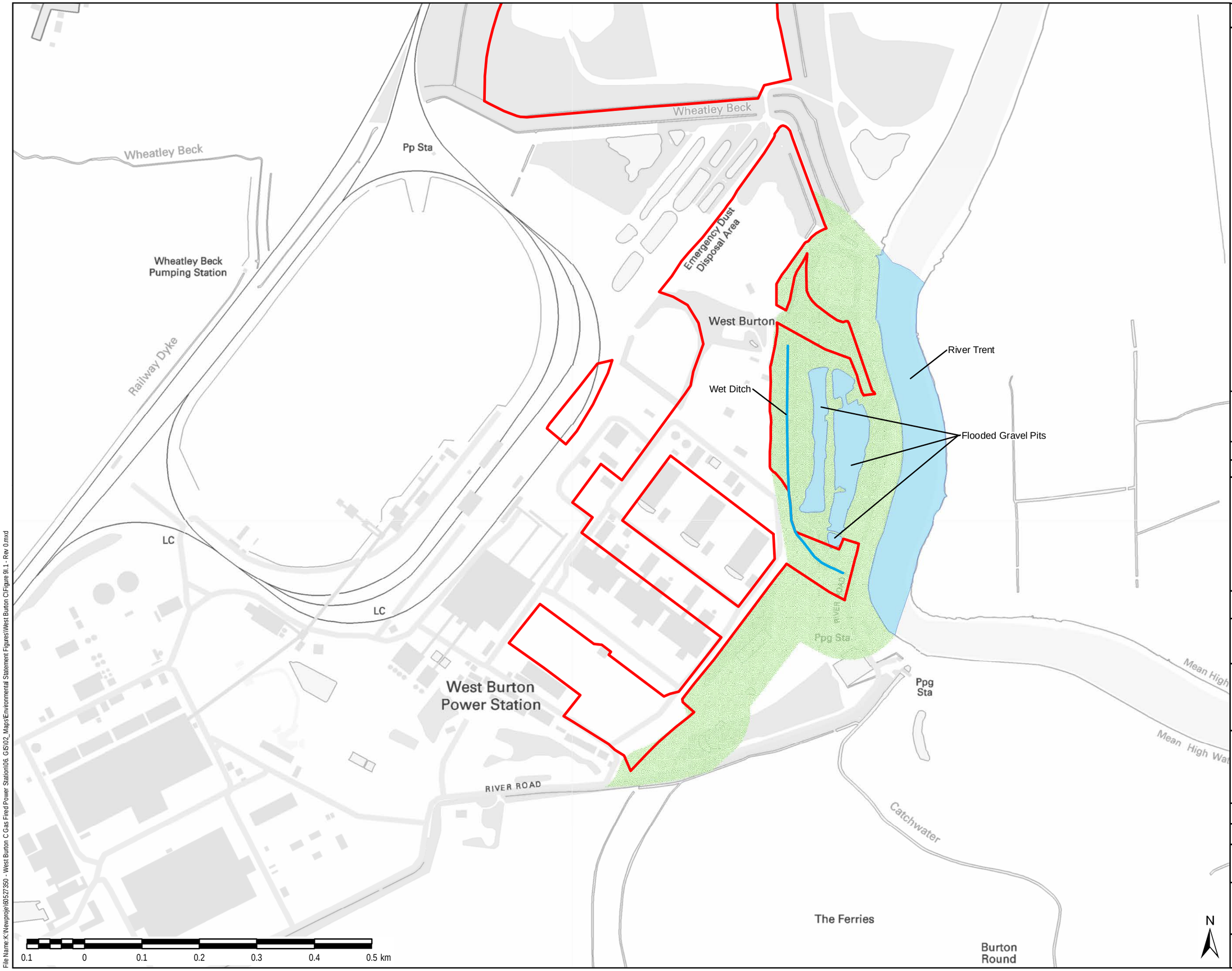
Ref 9I-6 Crawford, A. (2010) *Fifth otter survey of England 2009 – 2010*. Environment Agency.

Ref 9I-7 Department for Environment, Food and Rural Affairs (2017) Multi-Agency Geographic Information for the Countryside (MAGIC) [Online] Available from: http://magic.defra.gov.uk/MagicMap.aspx [Accessed November 2017].

Ref 9I-8 Strachan, R. and Moorhouse, T. (2011) *Water Vole Conservation Handbook*. Third Edition. Wildlife Conservation Research Unit (WildCRU), Oxon.

Ref 9I-9 Chanin P. (2003) *Monitoring the Otter* Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No.10 English Nature, Peterborough.

Figures



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LEGEND

- The Order Limits
- Watercourse Surveyed
- Water Bodies Surveyed
- Terrestrial Habitat Survey Area

Revision Details	By	Check	Check Date	Suffix
First Issue	GB	SE	05.01.18	0

Purpose of Issue
ENVIRONMENTAL STATEMENT

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Project Title
WEST BURTON C (GAS FIRED GENERATING STATION)

Drawing Title
FIGURE 9I.1

WATER VOLE &
OTTER STUDY AREA

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AECOM Internal Project No.	Scale @ A3
60527350	1:6,000

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60527350/WBC/ES/FIGURE 9I.1

Rev
0

Annex A: Photographs

Photograph 1: Wet ditch – typical section shaded by scrub / woodland

Photograph 2: Wet ditch – southern end within footprint of Site, dominated by common reed

Photograph 3: Flooded gravel pit directly adjacent to southern drainage connection corridor option

Photograph 4: Flooded gravel pit – longitudinal section

Photograph 7: Terrestrial habitats – willow carr woodland associated with flooded gravel pits

Photograph 8: Terrestrial habitats – reedbed and dense scrub adjacent to the northern drainage connection corridor option