

Natural Resources Wales

**Stephenson Street Flood Defence
Scheme**

Preliminary Ecological Appraisal
Addendum – Nash Wall

Issue | 8 August 2019

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 246344-00

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1 Introduction

1.1 Background

Ove Arup and Partners Limited (Arup) has been commissioned by Natural Resources Wales (NRW) to undertake a Preliminary Ecological Appraisal (PEA)¹ in relation to proposed improvement works to the Stephenson Street flood defence embankment, to reduce flood risk from the River Usk on the Spytty area of Newport.

An existing 1,350 m long flood defence embankment is located on the left (eastern) bank of the River Usk from Stephenson Street at the north to Corporation Road (Bird Port) in the south. This section of flood defence is commonly referred to as Stephenson Street Embankment.

Stephenson Street Embankment (hereafter referred to as the Site) provides tidal flood risk protection to much of the Spytty area of Newport. This includes significant industry, leisure and residential properties. In the embankment's current condition, it would be classified as a failing asset due to subsidence and structural failures. Modelling predicts that defence enhancements are required both along the Stephenson Street Embankment parallel to the River Usk, and to the south at Corporation Road (within Bird Port).

The preferred solution comprises:

1. Stephenson Street Embankment enhancement; two different designs proposed. An earth bund next to the Coronation Park (250 m section) and a sheet piled wall along the remainder of the length (950 m section) until Bird Port.
2. Corporation Road (Bird Port) flood defences, comprising road raising and flood walls.

The proposed works will be divided into two phases. Phase 1 comprising the Stephenson Street Embankment enhancements, and Phase 2 comprising Bird Port works. Additional works are now proposed as part of Phase 2 and which include a flood wall at the Railway site, further to the south of Bird Port, adjacent to Liberty Steel works.

A PEA report was written by Arup in February 2019² covering part of the Phase 2 works. This PEA Addendum covers an additional area of the Phase 2 works to the south of the Site. It should be read in conjunction with the PEA report from 2019 and the previous ecological report which covers the Phase 1 works³.

¹ Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Preliminary Ecological Appraisal. Second Edition.

² Arup (2019). Stephenson Street Preliminary Ecological Appraisal.

³ Arup (2018). Ecological appraisal report: Stephenson Street.

See sections 1.2, 1.3, 1.4 and 1.5 of the 2019 PEA report² for Proposed Works, Study Area, Objectives and Legislative Context.

2 Methods

See Section 2 of the 2019 PEA report² for the methodology used for Extended Phase 1 Habitat Survey and great crested newt Habitat Suitability Index (HSI) assessment.

The Extended Phase 1 Habitat Survey and HSI was undertaken over several visits including on the 18th June, 27th June, and 18th July 2019, led by Arup ecologist Claire Pooley.

On the 27th June, Claire Pooley (NRW Licence no. 78081:OTH:SA:2018), with assistant, also undertook environmental DNA (eDNA) surveys to confirm the likely presence or absence of great crested newt within four waterbodies as shown in Figure 2. In accordance with guidelines⁴, surveys were undertaken within the optimum timeframe following the recommended methodology. Collected samples were sent to NatureMetrics for analysis.

A riparian mammal survey was also undertaken on 28th June 2019, to ascertain the presence or likely absence of water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) in suitable habitat on site as shown in Figure 3. The surveys were undertaken on behalf of Arup, by TerrAqua Ecological Services ecologists Carmen Jones and Dyfrig Jones.

2.1 Limitations

During the Extended Phase 1 Habitat Survey, some areas of dense scrub were not accessible for survey. It is therefore not possible to rule out the presence of protected species in this area.

In addition, due to dense scrub and reeds, the majority of the waterbodies including ditches and pond were difficult to access. Open areas of water were therefore targeted to carry out eDNA surveys and samples were limited to sample areas of approximately 10 m x 2 m (for the ditches), and 5 m x 5 m (for the pond). Due to the length of the ditch on the eastern side of the railway, two locations (north and south of the culvert) in areas of open water, were selected to obtain samples for eDNA. Due to the lower habitat suitability of dense / overgrown waterbodies, the smaller sample areas are considered sufficient to obtain a representative water samples and confirm the likely presence / absence of great crested newts. Furthermore, the additional sample taken from the longer ditch ensures that samples are taken from all suitable habitat.

It should be stressed that 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 species, such as temporal weather conditions, migration patterns and behaviour.

⁴ <https://naturalresources.wales/media/3509/guidance-on-use-of-dna-sampling-of-great-crested-newts.pdf>

The weather is not considered to be a limitation, as all surveys were undertaken during optimal weather conditions. Every effort has been made to ensure that the findings of the study present as accurate an interpretation as possible of the species and habitats within the study area.

3 Results

3.1 Desk Study

3.1.1 Statutory Designated Sites

The search using MAGIC highlighted four European Sites and four national statutory designated Sites within 5 km and 2 km of the Site boundary respectively. All statutory designated Sites and their proximity to the Site are listed in Table 1 below. See Appendix B of the 2019 PEA report² for full citations.

Table 1: Statutory designated Sites within 5 km and 2 km of the Site boundary, for international and national Sites, respectively

Site Name	Approximate Distance from the Site
Internationally Designated Sites	
River Usk Special Area of Conservation (SAC)	Within the Site boundary
Severn Estuary Ramsar Site	1 km southwest (hydrologically connected via the River Usk)
Severn Estuary SAC	1 km southwest (hydrologically connected via the River Usk)
Severn Estuary Special Protection Area (SPA)	1 km southwest (hydrologically connected via the River Usk)
Nationally Designated Sites	
River Usk Site of Special Scientific Interest (SSSI)	Within the Site boundary
Newport Wetlands SSSI	450 m south (hydrologically connected via the River Usk/Severn Estuary)
Gwent Levels – Nash and Goldcliff SSSI	500 m east (hydrologically connected via the River Usk/Severn Estuary)
Severn Estuary SSSI	1.3 km southwest (hydrologically connected via the River Usk)

3.1.2 Non-Statutory Designated Sites

There are five non-statutory designated sites within 2 km of the Site, all of which are Sites of Importance for Nature Conservation (SINCs). All non-statutory designated Sites and their proximity to the Site are listed in Table 2 below. See Appendix B of the 2019 PEA report² for full citations.

Table 2: Non-Statutory Designated Sites within 2 km of the Site boundary

Site Name	Approximate Distance from the Site
Julian's Gout Land SINC	Within the Site boundary
Alpha Steel Site SINC	Within the Site boundary
Gwent Wetland Reserve SINC	550 m south of the Site
Solutia Site SINC	1 km north of the Site
Marshall's SINC	1.4 km northeast of the Site

Julian's Gout Land is a maritime influenced semi-improved neutral grassland, with willow car and large populations of marsh helleborine (*Epipactis palustris*), marsh orchids (*Dactylorhiza* spp.) and narrow leaved bird's-foot trefoil (*Lotus glaber*).

Alpha Steel is an area of former levels, scrub, and other habitat that supports a range of species including scarce moth species, birds such as Cetti's warbler, plants including orchids: marsh helleborine (*Epipactis palustris*), bee orchid (*Ophrys apifera*), pyramidal orchid (*Anacamptis pyramidalis*), and spotted orchid sp. (*Dactylorhiza* spp).

Gwent Wetland Reserve is a mosaic of wet grassland reed beds, open water, hedgerows and saline lagoon, which supports internationally important numbers of wildfowl as well as species such as water vole (*Arvicola amphibius*), great crested newt (*Triturus cristatus*) and brown hare (*Lepus europaeus*).

Solutia SINC supports a series of improved and semi-improved grasslands with traditional ditches and ponds, supporting a range of species including nesting birds such as Cetti's warbler (*Cettia cetti*) and invertebrates including hairy dragonfly (*Brachyton prantense*).

Marshall's SINC is notified for its mosaic of habitats including scrub and tall ruderal, post-industrial land, neutral grassland and wetland along the banks of the Usk.

3.1.3 Protected and Notable Species

SEWBRc provided data on protected and notable species within 2 km of the Site boundary. Reptiles, amphibians and mammal records are detailed in Table 3 below.

Table 3: Summary of protected reptile, amphibian, mammal records within 2 km of the Site boundary from the last ten years. Distances are approximate

Species / Group	Status ⁵	Summary of Records	Year of nearest record ⁶
Amphibians and Reptiles			
Great crested newt (<i>Triturus cristatus</i>)	EPS, WCA, Section 7	Seven records with the closest being 1 km northeast.	2017
Smooth newt (<i>Lissotriton vulgaris</i>)	WCA	Ten records, with the closest being 1 km southwest.	2012
Common frog (<i>Rana temporaria</i>)	WCA, Section 7	Two records, the closest of which is 550 m southeast.	2014
Common toad (<i>Bufo bufo</i>)	WCA, Section 7	Two records, the closest of which is 900 m southeast.	2017
Grass snake (<i>Natrix helvetica</i>)	WCA, Section 7	Over 10 records, the closest of which is 1 km south.	2017
Bats			
Noctule bat (<i>Nyctalus noctula</i>)	EPS, WCA, Section 7	Three records, the closest of which is 1 km south.	2016
Pipistrelle species (<i>Pipistrellus</i> sp.)	EPS, WCA, Section 7	Two records, the closest of which is 1.2 km southwest.	2009
Common pipistrelle (<i>P. pipistrellus</i>)	EPS, WCA, Section 7	Six records with the closest being 650 m southwest.	2016
Soprano pipistrelle (<i>P. pygmaeus</i>)	EPS, WCA, Section 7	Two records, the closest of which is 900 m south.	2016
Nathusius' pipistrelle (<i>P. nathusii</i>)	EPS, WCA, Section 7	One record 1 km southeast.	2015
Natterer's bat (<i>Myotis nattereri</i>)	EPS, WCA, Section 7	One record 1.4 km northeast.	2011

⁵ EPS = European Protected Species as listed under Schedule 2 of the Conservation of Habitats and Species Regulations (2010)

WCA = Species protected under Schedule 5 (animals) or Schedule 8 (plants) of the Wildlife and Countryside Act (1981) as amended

Section 7 = Species listed in Section 7 of the Environment (Wales) Act 2016

⁶ Only records from the last ten years are used.

Species / Group	Status ⁵	Summary of Records	Year of nearest record ⁶
Mammals			
Water vole (<i>Arvicola amphibius</i>)	WCA, Section 7	Three records, the closest of which was 950 m south.	2017
Badger (<i>Meles meles</i>)	BA	One record approximately 1 km northeast.	2016
Brown hare (<i>Lepus europaeus</i>)	Section 7	Eight records, the closest of which is 1 km southwest.	2013

3.1.3.1 Birds

SEWBReC provided records of ten birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 within the 2 km search area from the last 10 years. Of these (listed in Appendix B in full), two are considered to have to potential to breed locally, Cetti's warbler and little ringed plover (*Charadrius dubius*).

SEWBReC also provided numerous records of Section 7 birds. These are listed in full in Appendix B in the 2019 PEA report².

3.1.3.2 Section 7 Species

SEWBReC returned data on Section 7 species within the 2 km search area. These included flowering plants: Deptford pink (*Dianthus armeria*), divided sedge (*Carex divisa*), yellow bird's-nest (*Monotropa hypopitys* subsp. *hypophegea*), and cornflower (*Centaurea cyanus*).

Fish species included: European eel (*Anguilla anguilla*), whiting (*Merlangius merlangus*) and smelt (*Osmerus eperlanus*).

There are numerous Section 7 moth and butterfly species records, including small square spot (*Diarsia rubi*), shaded broad bar (*Scotopteryx chenopodiata*), rosy rustic (*Hydraecia micacea*), grayling (*Hipparchia semele*), ghost moth (*Hepialus humuli*), august thorn (*Ennomos quercinaria*), large wainscot (*Rhizedra lutosa*), centre barred sallow (*Atethmia centrago*), sallow (*Cirrhia icteritia*), small heath (*Coenonympha pamphilus*), grizzled skipper (*Pyrgus malvae*), latticed heath (*Chiasmia clathrata*), mottled rustic (*Caradrina morpheus*), rustic (*Hoplodrina blanda*), garden tiger (*Arctia caja*), ear moth (*Amphipoea oculea*), dot moth (*Melanchra persicariae*) and cinnabar moth (*Tyria jacobaeae*).

Other insects include shrill carder bee (*Bombus sylvarum*) and brown-banded carder bee (*Bombus humilis*).

3.2 Field Survey

3.2.1 Habitats – Extended Phase 1 Survey

A total of nine habitat types were identified on Site. They are shown on Figure 1 and summarised below. All Target Notes (TN) recorded during the survey are also shown on Figure 1.

The Site encompasses the habitats east of the River Usk, between the river and the Nash Wastewater Treatment Works (WTW). The River Usk is designated as a Special Area of Conservation (SAC) and as a Site of Special Scientific Interest (SSSI). See Appendix B of the 2019 PEA report² for details of the site designations.

Much of the Site comprised dense or scattered scrub, consisting of bramble (*Rubus fruticosus* agg.) and buddleia (*Buddleja davidii*).

Two watercourses were present on Site. There was a reen (TN5) that runs along the northern edge of the treatment works and discharged into the River Usk (TN2). It was a slow-flowing, steep-sided channel with a large amount of silt build-up in addition to dense riparian vegetation (largely common reed (*Phragmites* sp.)) along both sides – therefore leaving only a small channel of open water. The water flowed through a culvert into the River Usk to the west. West of the culvert, it flowed into the river, where it had a wide open channel with muddy banks. Common reeds were present on the higher banks, and behind these was dense scrub.

There was also a number of areas of open standing water bodies. There were two ditches, running parallel to the railway line (TN4), on both sides. The majority of these waterbodies were choked with silt / debris and or common reed. In some places there were small areas of open water and including deep water. At these locations, species such as hemlock water dropwort (*Oenanthe crocata*) and fool's watercress (*Apium nodiflorum*) occurred. Gypsywort (*Lycopus europaeus*) and water figwort (*Scrophularia umbrosa*) occurred in areas with shallower water.

Adjacent to these ditches were scattered trees and scrub. Bramble, common nettle (*Urtica dioica*), wild strawberry (*Fragaria vesca*), hart's tongue fern (*Asplenium scolopendrium*) and hemp agrimony (*Eupatorium cannabinum*) were present in the ground flora. Willow scrub (*Salix* sp.) was scattered through these areas and one tree was identified as having moderate bat roosting suitability (TN14). Giant hogweed (*Heracleum mantegazzianum*) was also identified at one location, along the bank of the ditch, east of the railway line (TN11).

A treeline was present, east of the ditch and forming the boundary between the Nash treatment works and Uskmouth Power station. This consisted of mature planted poplar trees (*Populus* sp.). The trees appeared largely unsuitable for roosting bats with no suitable roosting features. A few of the trees did, however, support dense ivy in places and would therefore be assessed as having at least some (low) suitability for roosting bats.

There was rough grassland / ruderal habitat present adjacent to the reen (TN5) in the Nash treatment works. Species present here included Yorkshire fog (*Holcus*

lanatus), cock's foot (*Dyctalis glomerata*), common nettle, hemp agrimony, common hogweed (*Heracleum sphondylium*), willowherb species (*Epibolium* sp.) and cleavers (*Galium aparine*). In addition, occasional species such as common knapweed (*Centuarea nigra*) also occurred within the sward. In places, grassland / ruderal habitats was encroached by dense bramble scrub.

3.2.2 Target Notes

Descriptions of the Target Notes identified on Site are detailed in Table 4 below. The results of the riparian mammal survey are also summarised in the table.

Table 4: Target Notes

Target Note Number	Target Note Description
TN1	Large and extensive stand of <i>Phragmites</i> sp. and adjacent bramble scrub on left bank. No evidence of otter activity but suitable as lying up area. Evidence of activity by fox. Unsuitable for water vole.
TN2	Tidal watercourse with large areas of exposed mud at low tide. No evidence of otter activity recorded. Unsuitable for water vole.
TN3	Extensive stand of <i>Phragmites</i> sp. and adjacent scrub on right bank. Area suitable for use as lying up area for otter. No evidence of otter activity found. Unsuitable for water vole.
TN4	Water course along railway line. Choked with vegetation including dense bramble, <i>Phragmites</i> and water dropwort. Low water levels. No evidence of otter activity (survey limited by access difficulties and partially surveyed). Sub-optimal habitat for water vole. No evidence of water vole activity recorded.
TN5	Water course adjacent to treatment works. Steep sided deep channel choked in places by extensive <i>Phragmites</i> sp. Northern side suitable otter lying up area but no evidence of otter activity found. Sub-optimal water vole habitat. No evidence of water vole activity found.
TN6	Dense area of scrub, willow and <i>Phragmites</i> sp.
TN7	Mammal hole - likely fox / rat.
TN8	Mammal hole – likely fox / rat.
TN9	Mammal hole – likely fox / rat

Target Note Number	Target Note Description
TN10	Gap under fence - potential badger entrance and track leading into north east to very dense scrub.
TN11	Giant hogweed.
TN12	Track under fence to ditch – badger.
TN13	Mammal path runs south along fence – possible badger.
TN14	Crack willow tree with moderate bat roost suitability. Possible start of woodpecker hole with wearing sap. Viewed from across reed so not possible to confirm whether if urine or sap.

3.3 Species

3.3.1 Amphibians – Great crested newts

Six waterbodies were present on Site and was subjected to HSI assessment, as detailed in Table 5 below. The HSI score for all waterbodies is either poor or below average. Locations of these waterbodies are shown on Figure 2.

HSI were completed for each waterbody on Site. The details of the HSI scores are reported in the table below.

Table 5: HSI for Waterbodies on Site.

Waterbody Number	Description	HSI Score	Classification of HSI Score	Other comments
1	Pond (in treatment works)	0.52	Below average	Very silted and overgrown with common reed and bramble. Small area (5 m x 5 m) of open water accessible.
2	Ditch (west of the railway)	0.39	Poor	Very overgrown with common reed and bramble. Few locations with open water.

Waterbody Number	Description	HSI Score	Classification of HSI Score	Other comments
3	Ditch (east of railway - south)	0.39	Poor	Very overgrown with common reed and bramble. Few locations with open water.
4	Ditch (east of railway - south)	0.39	Poor	Very overgrown with common reed and bramble. Few locations with open water. Deep water. Appears very polluted.
5	Ditch	0.39	Poor	Dry at time of survey. Very overgrown similar to other ditches.

The reed was not subject to an HSI due to supporting running water, which is unsuitable habitat for this species.

eDNA surveys were also found to be negative for all waterbodies (see eDNA report in Appendix B). As such, great crested newts are not considered further in this assessment.

It is likely that the waterbodies may support common amphibians such as common frog and smooth newt, which may also use adjacent terrestrial habitat for foraging.

3.3.2 Bats

One potential roost feature was identified on one tree on Site (TN14). A number of trees in a line of poplar trees (along the boundary between Nash treatment works and Uskmouth power station) were also identified as having low potential for roosting bats.

The Site has the potential to support foraging and commuting bats that may be roosting in the surrounding area due to the presence of dense scrub, waterbodies and linear features.

3.3.3 Badger

Mammal paths, likely to be created by badgers, were observed on Site during the Extended Phase 1 Habitat Survey. No badger setts were found during the survey; however, they are known to be present within the treatment works and Uskmouth power station (greater than 100m from the Site). It was not possible to inspect all areas of dense areas of scrub within the Site, and therefore the presence of badger setts within these areas cannot be ruled out.

3.3.4 Birds

The scrub, trees and reedbeds on Site may support nesting birds. Reed warbler (*Acrocephalus scirpaceus*), reed bunting (*Emberiza schoeniclus*), blackcap (*Sylvia atricapilla*), sedge warbler (*Acrocephalus schoenobaenus*), blackbird (*Turdus merula*), robin (*Erithacus rubecula*), magpie (*Pica pica*), long tailed tit (*Aegithalos caudatus*), willow warbler (*Phylloscopus trochilus*) and chiffchaff (*Phylloscopus collybita*) were all recorded in adjacent habitats during the Extended Phase 1 habitat survey.

The reedbeds may also support Schedule 1 bird species such as Cetti's warbler. In addition, the adjacent estuary may support species of waders which are qualifying features of the Severn Estuary Ramsar and SPA.

3.3.5 Dormice

The brambles and scrub on Site provide suitable foraging and nesting habitats for dormice. However, fragmentation from other potential dormouse habitat including those with dormouse records within the wider area due to barriers such as roads, rivers and rail means dormouse are unlikely to occur within the Site. Furthermore, M4 surveys undertaken in the area of the Site did not find any evidence of this species being present.

3.3.6 Reptiles

The mosaic of habitats, including scrub and also wetland areas, provide suitable habitat for reptiles specifically common lizard, slow worm and grass snake.

3.3.7 Otter and Water Vole

No signs of otter or water vole were observed during the Extended Phase 1 Habitat Survey or riparian mammal survey. No suitable habitat was identified on Site for water vole. Water vole are therefore not considered further in this assessment.

Otter may use the River Usk for commuting and foraging. None of the areas within the site were assessed as being suitable for breeding, or places of permanent rest; however, a number of locations were considered to provide lay-up areas for resting otters (including TN1, TN3 and TN5 on Figure 1).

Otter are a qualifying feature of the River Usk SAC, which the Site is immediately adjacent to.

3.3.8 Invertebrates

Areas of woodland / scrub within the Site are likely to support at least a moderate range of invertebrate species, potentially including Section 7 species. However, significant populations of any of these species are considered unlikely to occur within the Site.

3.3.9 Other Mammals

It is likely that small mammals such as rabbit (*Oryctolagus cuniculus*) would occur within the Site in wooded / scrub habitats, and potentially more notable species such as the European hedgehog (*Erinaceus europaeus*), a Section 7 species.

3.3.10 Fish

Sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), river lamprey (*Lampetra fluviatilis*), twaite shad (*Alosa fallax*), Allis shad (*Alosa alosa*), Atlantic salmon (*Salmo salar*) and bullhead (*Cottus gobio*) are all qualifying features of the River Usk SAC and may therefore be present immediately adjacent to the Site, in connecting watercourses. The river is also likely to support European eel (*Anguilla anguilla*).

4 Recommendations

Recommendations for further consultation, further species surveys or general best practice mitigation to minimise impacts of the Proposed Works on habitat and species are stated below, in line with PEA guidance⁷. Measures to enhance biodiversity are also recommended in this section.

4.1 Pre-construction & Vegetation Clearance

4.1.1 Designated Sites

A Habitat Regulation Assessment (HRA) screening report should be written to assess potential pathways for effect on internationally designated sites within 10 km of the Site. As a result of new case law as ruled by the European Court of Justice (ECJ, 2018)⁸, mitigation measures relating to qualifying features of the protected sites cannot be included within the Screening Stage of HRA, and therefore any potential pathways for effect will need to be evaluated within an Appropriate Assessment. The HRA report will require consultation with Conservation Staff in NRW.

For any planning applications, the Local Planning Authority (LPA) will also require a copy of the Appropriate Assessment as it assumed they would become the ‘competent authority’.

Pending confirmation of the final design, consideration should be given to the requirement for obtaining a SSSI assent from NRW (if works are likely to impact the SSSI) to allow the works to proceed.

4.1.2 Habitats

Consultation should be undertaken with relevant teams within NRW regarding impacts on the River Usk SSSI and a National Vegetation Classification (NVC) of the habitats along the river bank on Site may be required.

4.1.3 Species

4.1.3.1 Bats

The Site provides potential roosting habitat in one single tree (TN14). If this tree is to be removed or if there is potential for disturbance within 50m of the tree, a further survey should be undertaken to confirm presence or likely absence of bats.

⁷ Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal. Second Edition. Available online at: <https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/> (accessed 16/07/19).

⁸ ECJ (2018). People over Wind, Case C323/17 European Court of Justice, 12th April 2018.

4.1.3.2 Badger

Given the mobile nature of this species and dense scrub present, ecological supervision is recommended for any vegetation clearance ahead of construction to ensure no setts are present.

If any setts are found and could be damaged by the works, a licence will be required from NRW. The impact of any vibration effects should also be considered.

4.1.3.3 Breeding Birds

All vegetation clearance of suitable bird nesting habitat should be undertaken outside of the core bird nesting season (the bird nesting period is 1 March to 31 August, subject to regional and seasonal variations) to avoid damage or destruction of occupied nests or harm to breeding birds. If this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for breeding birds and their occupied nests by a suitably qualified ecologist no more than 24 hours prior to any works commencing. If any nesting birds are identified during the survey they should be left in situ for their entire nesting period and alternative approaches to the work proposed. This may include leaving an exclusion zone around the nests to avoid disturbance.

4.1.3.4 Reptiles

All vegetation clearance should be carried out under an ecological watching brief, due to the likely presence of reptiles in the scrub and grassland habitat on Site. Vegetation should be cut in two stages - the first cut to 300mm (to allow any reptiles to move away from the works) and the second cut to ground level.

4.2 During Construction

4.2.1 General

A toolbox talk should be given to all contractors on Site by a suitably qualified ecologist prior to works, detailing the potential for protected species on Site, the working methods to be employed and the procedure to follow should any species be identified. A record of attendance should be kept on Site, which contractors should sign to indicate they have understood the toolbox talk.

4.2.2 Habitats

Best practice guidelines should be implemented for all works in proximity to a watercourse:

- No works will be undertaken within 30m of Mean High Water Springs (MHWS) tide limit to prevent changes in the flow regime/physical habitat of the River Usk.

- An Environmental Action Plan will be produced and should be maintained by the contractor during the construction phase. This will include Site-specific methods to ensure that all Site activities, especially those in proximity to watercourses and waterbodies are controlled and are in accordance with relevant legislation and undertaken in compliance with the relevant Guidance for Pollution Prevention (GPPs) and industry best practice (GPP5⁹, CIRIA¹⁰).
- Where possible any disturbed habitats should be re-instated post construction, and re-seeded / planted with an appropriate seed / plant mix or left to revegetate naturally, as approved by NRW.

4.2.3 Species

4.2.3.1 Bats

Due to suitable foraging and commuting habitat present on site, the following should be implemented:

- All works should be carried out during daylight hours (typically up to 30 mins before sunset and 30 minutes after sunrise) within the main active period (April to October) where possible, to avoid disturbance to commuting or foraging bats.
- Any task lighting required for health and safety or security reasons should be directional lighting (towards the ground) to avoid light spill onto habitats immediately within or adjacent to the Site.

4.2.3.2 Otter

The following mitigation should be implemented to minimise impacts on commuting / foraging otter:

- Good practice working methods should be adhered to which to prevent any adverse impact to otter; i.e. materials should not be left overnight in an area accessible to these species and excavations should not be left uncovered overnight. If any excavations are required to be left open overnight, a ramp should be created to allow any animals to escape, including other mammals at the Site.
- Access for otter along all waterbodies should be maintained during construction and operation, thus ensuring that movement of otter is not impeded during operation of the Proposed Works.
- All works should be carried out during daylight hours (up to 30 minutes after sunrise and 30 minutes before sunset) where possible, to avoid disturbance to

⁹ Natural Resources Wales (NRW), the Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA) (2018). Guidance for Pollution Prevention – Works or maintenance in or near water: GPP5 v1.2 Feb 2018. <http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf> (accessed 15.02.19)

¹⁰ CIRIA (2018) CIRIA <http://www.ciria.org> (accessed 15.02.19)

commuting or foraging otters. Any use of task lighting should be directional to avoid illumination of the river corridor at night.

- If any otter resting places are found during pre-construction checks, additional mitigation measures may also be required to reduce disturbance, which may be included in an EPS licence.
- Any further mitigation measures that may be highlighted in the HRA will also need to be adhered to.

4.2.3.3 Fish

The following mitigation should be implemented to minimise impacts on fish species:

- Strict pollution prevention measures must be adhered to so as not to cause an adverse effect on the River Usk.
- All works should be carried out during daylight hours (up to 30 minutes after sunrise and 30 minutes before sunset) where possible, to avoid disturbance to spawning and migrating fish. Any use of task lighting should be directional to avoid illumination of the river corridor at night.
- All piling works should be undertaken at least 30 m from the MHWS limit, following advice from NRW. Once more details of proposed works are known, further consultation with NRW may be necessary.
- Any further mitigation measures that may be highlighted in the HRA will also need to be adhered to.

4.3 Post-Construction

4.3.1 Habitat Re-instatement

All habitats that require removal to facilitate the works must be re-instated on at least a like-for-like basis. This will likely be a requirement of the SSSI assent and HRA.

4.3.2 Enhancement Measures

The following measures are recommended to enhance the biodiversity within the Site and surrounding area, in line with national and local planning policy^{11 12}:

¹¹ Welsh Government (2018). Planning Policy Wales. Edition 10. Available online at: <https://beta.gov.wales/sites/default/files/publications/2018-12/planning-policy-wales-edition-10.pdf> (accessed 15/02/19).

¹² Newport City Council (2015). Newport Local Development Plan 2016-2015. Available online at: <http://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/LDP-Adopted-Plan-January-2015.pdf> (accessed 15/02/19).

- The planting of native fruiting species to provide a food source for invertebrates and mammals;
- The installation of bird and bat boxes on retained trees within the Site; and
- The inclusion of logs / brash piles to encourage invertebrates and also act as a refuge for reptiles, amphibians and small mammals.

5 Summary and Conclusions

An Appropriate Assessment will be required to assess any likely significant effects on the River Usk SAC and other European designated sites within 10 km. Consultation with the LPA should be undertaken regarding any potential impacts to the River Usk SSSI.

General mitigation is recommended during construction to protect existing habitat and species such as badger, bats, birds and other mammals.

Measures are suggested to enhance the value of the Site for biodiversity, in line with planning policy and the Environment (Wales) Act 2016.

Once the design of the Proposed Works has been finalised, an Ecological Impact Assessment should be undertaken, detailing results and recommendations from any further ecological surveys.

This report is the result of survey work undertaken in June and July 2019. This report refers, within the limitations stated, to the condition or Proposed Works at the Site at the time of the inspections. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment / survey. It is also advised that if there is a delay of over a year in undertaking the works, an updated walkover survey is recommended to ensure the baseline conditions have not changed. No warranty is given as to the possibility of future changes in the condition of the Site.

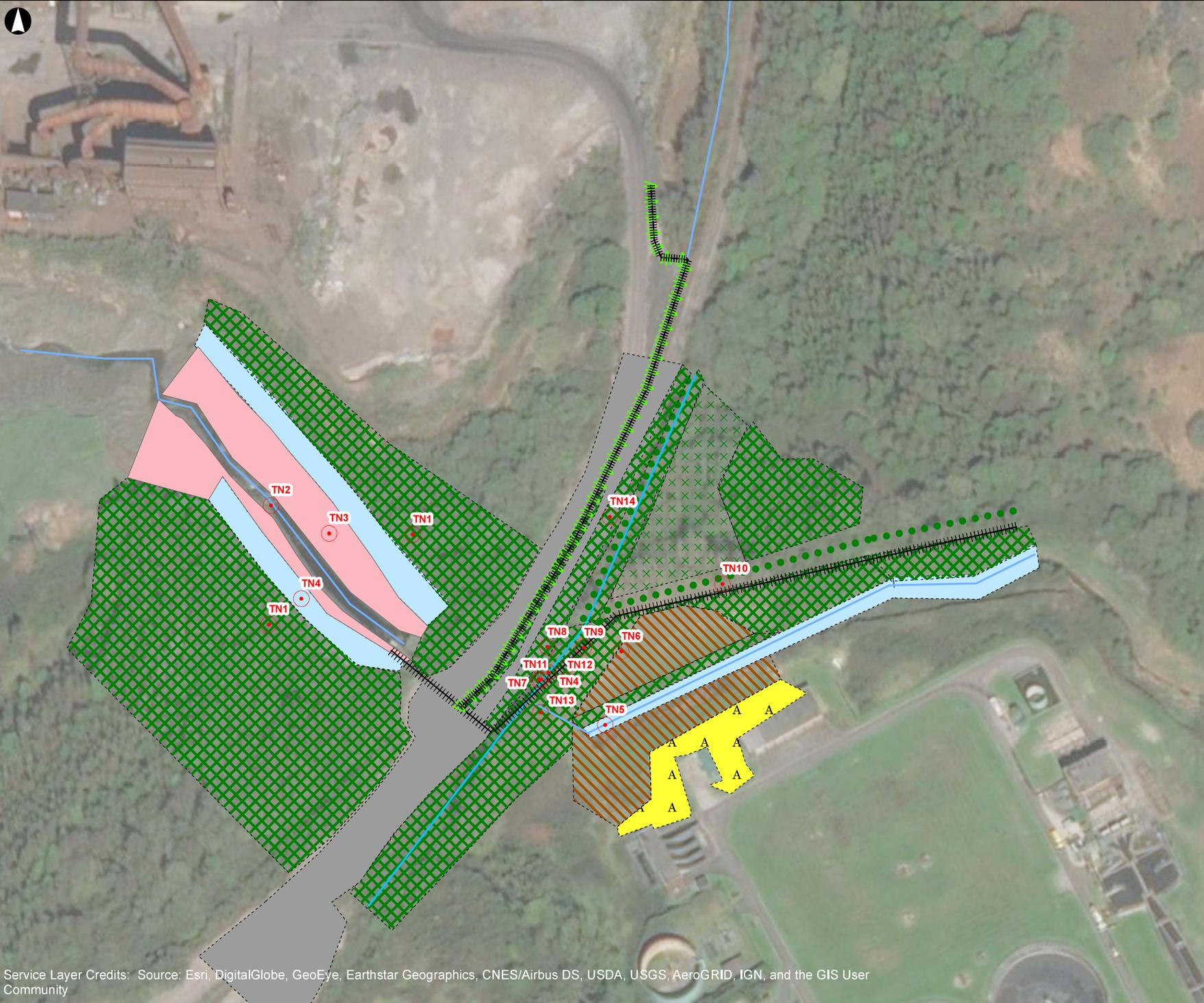
This report is produced solely for the benefit of NRW and no liability is accepted for any reliance placed on it by any other party. This report is prepared for the proposed uses stated in the report and should not be used in a different context.

Figures

Figure 1 Extended Phase 1 Habitat Survey

Figure 2 eDNA and HSI Survey Locations

Figure 3 Riparian Mammal Survey



- Legend**
- Target Notes
 - A3.1 - Broadleaved parkland/scattered trees
 - J2.4 - Fence
 - J2.4.2 - Fence with scattered scrub
 - G2 - Running water
 - A2.1 - Scrub - dense/continuous
 - H1.1 - Intertidal - mud/sand
 - J5 - Gravel/hard standing
 - A3.1 - Broadleaved parkland/scattered trees
 - G2 - Running water
 - G1 - Standing water
 - A2.1 - Scrub - dense/continuous
 - A2.2 - Scrub - scattered
 - C3.1 - Other tall herb and fern - ruderal
 - F1 - Swamp
 - J1.2 - Cultivated/disturbed land - amenity grassland

F1	2019-07-31	KSJ	CP	NH
Issue	Date	By	Chkd	Appd



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Job Title
Stephenson Street

Extended Phase 1 Habitat Survey

Scale at A3
1:1,250

Job No 246344-00	Drawing Status For Issue
Drawing No 001	Issue F1

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- eDNA locations - negative result

GCN_HSIs

- <all other values>

Great crested newt habitat suitability index

- Average (0.6-0.69)
- Below average (0.5-0.59)
- Poor (<0.5)

World Imagery

Low Resolution 15m Imagery

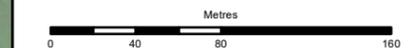
High Resolution 60cm Imagery

High Resolution 30cm Imagery

Citations

F1	2019-07-31	KSJ	CP	NH
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eDNA and HSI Surveys

Scale at A3

1:3,325

Job No 246344-00	Drawing Status For Issue
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Drawing No 001	Issue F1
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Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

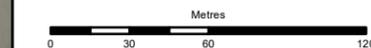


Legend

Waterbodies surveyed for riparian mammals

F1	2019-07-31	KSJ	CP	NH
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Issue	Date	By	Chkd	Appd
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Scale at A3
1:2,692

Job No 246344-00	Drawing Status For Issue
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Drawing No 001	Issue F1
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Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix A

Photographs

A1 Photographs of the Site

	
<p>Photograph 1 showing location where the reeN discharges into the River Usk.</p>	<p>Photograph 2 showing line of planted poplar trees.</p>
	
<p>Photograph 3 showing the reeN overgrown with scrub and reeds.</p>	<p>Photograph 4 showing the ditch with standing water.</p>
	
<p>Photograph 5 showing ruderal habitat.</p>	<p>Photograph 6 showing dense scrub habitat.</p>

Appendix B

eDNA Report

Report: 19442-AGL-CP-1

Order number: AGL-19005-CP

Great Crested Newt eDNA Results

Company: Ove Arup and Partners Ltd (Arup)
 Contact: Claire Pooley
 Project code | Task code: Stephenson
 Date of Report: 15 July 2019
 Number of samples: 4

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in 'WB7', 'WB11', 'WB11-B', and 'WB12',. All controls performed as expected and so the results are conclusive.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Arrived	Inhibition	Degradation	Score	GCN status
341	'WB7'	02-Jul	No	No	0	Negative
343	'WB11'	02-Jul	No	No	0	Negative
334	'WB11-B'	02-Jul	No	No	0	Negative
342	'WB12'	02-Jul	No	No	0	Negative

End of report



Report issued by: Dr. Cuong Tang

Contact: ct@naturemetrics.co.uk | 01491 829042

Understanding your results

Positive: GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).

Negative: No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided. Samples marked as 'Negative after dilution' are those where inhibition was detected (when the marker added in the lab fails to amplify) but overcome by diluting the DNA. Inhibition can be caused by certain chemicals or organic compounds that may be present in the water sample.

Inconclusive: No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

