Site: Cheesebottom Sewage Treatment Works

Survey: Ecological Impact Assessment Report

Client: Yorkshire Water

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1 Summary

1.1.1 This Ecological Impact Assessment (EcIA) report has been produced to inform the works to Cheesebottom Treatment Works. It updates the previous PEA carried out by BL Ecology ltd in 2021, reference 018_21_10. Table 1 below highlights the constraints identified and the actions required.

Table 1 – Summary

Factor	Presence within Zone of Influence		Recommended Action
Sites of Nature Conservation Interest	**On site**	**Within 1km**	
Statutory sites	NO	NO	No action required.
Non-statutory sites	NO	YES	No action required.
Botany			
Biodiversity Action Plan (BAP) Habitat	NO		No action required.
Invasive non-native species (INNS)	CONFIRMED		Ensure biosecurity protocols are in place.
Faunal Species			
Badger	POTENTIAL (foraging only)		Badger sett located within woodland on STW site but not near proposed area of works. See general below.
Bats	POTENTIAL		Precautionary works around buildings B3 and B5. See general below.
Birds	POTENTIAL		Precautionary works around B5 and oak tree in the south of the site.
Great crested newts	NO		No action required.
Otters	NO		No action required.
Reptiles	NO		No action required.
Water vole	NO		Low risk of presence. See general below.
White-clawed crayfish	NO		Low risk of presence. See general below.
Migratory and coarse fish	NO		Low risk of presence. See general below.
BAP species	NO		See general below.
General			
General actions which cover multiple botanical and faunal factors	• Protect retained trees in line with BS:5387 (2012) guidelines. • Areas of grassland temporarily impacted should be reseeded with a species-rich seed mix. • Excavations left open overnight should have a means of escape for trapped fauna. • Avoid night working and using security lighting during construction phase if possible. If lighting is required mitigation should be implemented to reduce the impacts to faunal species. • Avoid long-term security lighting where possible, reduce light spill onto boundaries if lighting is required.		

1.1.2 In conclusion, the development at Cheesebottom STW could be undertaken with minimal impacts to habitats and faunal species if the recommended mitigation is implemented.

2 Introduction

2.1 Background to Development

2.1.1 Yorkshire Water (YW) are planning to undertake further improvements to their Cheesebottom Sewage Treatment Works (STW) as part of the phosphorus removal programme over AMP7, driven by the Water Industry National Environment Programme (WINEP).

2.1.2 Cheesebottom STW (referred to as 'the STW site') is located at Romticle Viaduct, Hunshelf, Barnsley, South Yorkshire, England, S35 7AH. The area of land under consideration for development and surveyed under this report (hereby referred to as 'the site') is located at Ordnance Survey grid reference SE2792001252. The location of the site can be found on Figure 1.

2.1.3 The works will involve the installation of two kiosks and laying down pipelines, as well as temporary installation of site cabins and a car park.

2.1.4 The proposals are provided in Appendix 1.

2.2 Ecological Background

2.2.1 BL Ecology carried out a Preliminary Ecological Appraisal (PEA) at Cheesebottom STW in March 2021 (report reference 018_21_10_RE01). Signs and/or suitability for notable or protected species were recorded during the survey. These included badger, bats and birds.

2.3 Objectives

2.3.1 The purpose of this report is to identify any ecological constraints to the next stage of development at Cheesebottom STW. The assessment therefore sought to classify habitats within the survey area, establish the presence or likely absence of species protected by UK legislation and policy, establish the value of the species/habitats identified, assess the potential impacts, and likely further surveys or mitigation required.

2.4 Agreed Brief

2.4.1 BL Ecology was commissioned on 8th January 2024 to undertake an update ecological appraisal of the site in line with the most recent development plans. The agreed brief was to:

- Update the desk study to ascertain protected species and nature conservation sites known within 2km of the site;
- Update the UK Habitat Classification survey of the areas likely to be affected by works including a Condition Assessment for use with the Statutory Biodiversity Metric;
- Assess the habitat suitability for protected and BAP species;
- Determine the Nature Conservation Value of floral habitats and fauna;
- Undertake an impact assessment based on the Overall Site Layout Plan produced by Ward & Burke (drawing reference CHE02 WBK WWT WWT DR C 0001); and
- Submit a report with associated mapping, outlining the likely mitigation for the site including the need for additional surveys.

3 Methodologies

3.1 General

3.1.1 A survey area was defined which is shown on Figure 1 (hereafter named 'the site'). The walkover was undertaken on 28th March 2024 by Jenny Clarke Bsc (Hons) Msc MCIEEM who has been an ecologist for 20 years.

3.1.2 This chapter describes the methodologies involved for each stage of the assessment. Standard stages undertaken for this type of assessment include a desk study, UK Habitat Classification Survey, and an assessment of habitats available for the potential presence of protected faunal species. This methodology follows the CIEEM 'Guidelines for Preliminary Ecological Appraisal and Ecological Impact Assessment' (December 2017).

3.2 Desk Study

3.2.1 A standard 'study area' was defined which encompassed an area up to 2km from the site. The following sources were used in order to provide data:

- Protected sites and notable/protected faunal records from Yorkshire Water's data agreement with relevant local record centres;
- Multi-Agency Geographic Information for the Countryside (MAGIC) (www.magic.gov.uk) – to ascertain whether there are any statutory sites designated for nature conservation any recently granted (since 2009) European Protected Species (EPS) licences within 2km of the site; and
- Aerial photos – in order to aid preliminary ecological and overall assessment of the site; and
- Examination of relevant documents including the Barnsley Local Plan and Barnsley Bradford Biodiversity Action Plan (BAP) to determine the strategic significance of the fauna and flora identified on site.

3.3 UK Habitat Classification Survey

3.3.1 A walkover survey was undertaken in accordance with the 'UK Habitat Classification User Manual' Version 2 (UKHab, 2023). This methodology provides a standard technique for recording, identifying, and mapping habitats. The approach is based upon differentiating between various vegetation and other topographical and substrate features such as watercourses. Each habitat type is described in terms of size, condition, and characteristic plant species present. UK Habitat Classification maps are produced to illustrate the results.

3.3.2 All animal and plant names are referred to in the text under their common names and scientific names. All nomenclature for vascular plants follows Stace (1997). Floral diversity and broad NVC of plant communities has been recorded wherever possible.

3.3.3 Any plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) that may be present, particularly Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam *(Impatiens glandulifera*), have been recorded and mapped.

3.4 Condition Assessment

3.4.1 Habitat condition assessments have been carried out for all applicable habitats using the Statutory Biodiversity Metric, those excluded from the condition assessment are those not required by the Metric's Condition Assessment Sheets (Defra, 2024).

3.5 Faunal Habitat Suitability Assessments

3.5.1 The site walkover assessed the habitats on site for their potential to be used by protected species, including (but not limited to):

- Mammals – including protected species such as badgers (*Meles meles*), bats, otters (*Lutra lutra*), and water voles (*Arvicola amphibius*), plus 'Species of Principal Importance' under the UK NERC Act 2006[1] such as hedgehogs (*Erinaceus europaeas*), brown hare (*Lepus capensis*) and harvest mice (*Micromys minutus*);
- Birds – the site was assessed for its potential to be used by nesting, overwintering and feeding birds;
- Herptile – the site was assessed for its potential to be used by amphibians such as great crested newts (*Triturus cristatus*) and reptiles;
- Invertebrates - the site was assessed for its potential to be used by invertebrates, including terrestrial and aquatic species; and
- Migratory and coarse fish – running water in the site and zone of influence of the development were assessed for their potential for migratory and coarse fish.

3.5.2 Further information regarding the habitat requirements of these groups is provided in Appendix 2.

3.6 Faunal Presence/Absence Surveys

Badger Survey

3.6.1 The site plus woodland along the eastern site boundary was searched on for any signs of badger presence. Signs searched for included entrance holes (setts), dung pits, hair, footprints, badger footpaths, scratching posts, and snuffle holes.

3.7 Impact Assessment

3.7.1 An impact assessment of the proposed development was undertaken following the 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (Second Edition, 2016) by the Chartered Institute for Ecology and Environmental Management. Further details of the assessment methodology are provided in Appendix 3.

3.8 Limitations

3.8.1 The data collected and presented within this report is considered valid for a period of two years, after which update surveys are likely to be required to re-assess the conditions.

[1] Section 41 of the Natural Environment and Rural Communities Act 2006

4 Results and Impacts

4.1 Desk Study

4.1.1 Table 2 below provides the results of the faunal and floral data search and priority habitats, which are mapped onto Figure 1.

Table 2: Data Search Results

Distance	Records
Within STW	***BATS*** Several bat records including roosts were returned, however closer inspection of the records revealed that they were located by the Romticle viaduct rather than on site. See 'within 500m' section below for details. ***BIRDS*** The site is within a countryside targeting area for the priority species curlew (*Numenius arquata*) and lapwing (*Vanellus vanellus*). It also lies within an area favourable to farmland birds (grasslands assemblage) including lapwing and black grouse (*Lyrurus tetrix*). ***INVASIVE NON-NATIVE SPECIES - FLORA:*** Japanese knotweed in the woodland located in the northwest section of the site recorded in 2021 and Himalayan balsam and Japanese knotweed in the grassland by the southwest boundary recorded in 2015.
Within 500m	***BIRDS*** Six records of the BoCC[2] red listed species yellowhammer (*Emberiza citrinella*) in the Black Moor and Little Black Moor areas southwest of the site, with the closest record being of an individual calling by the Little Black Moor Local Wildlife Site, 300m southwest of the site, in 2019; and One record of the Schedule 1[3] species kingfisher (*Alcedo atthis*) by Conoco Pond, located near Thurgoland bridge 350m northwest of the site in 2021. ***BADGER*** One record of Badger (*Meles meles*) recently used dung pits 400m south of the site in 2013. ***BATS*** A large number of roosting bats by the Transpennine trail and Romticle Viaduct 150m south of the site. These included Common pipistrelles (*Pipistrellus pipistrellus*), with the latest records counting 25 individuals across 14 roost locations in 2019, and Daubenton's bat (*Myotis daubentonii*) with 123 individuals found roosting in 2017; Other records of note include a Natterer's bat (*Myotis nattererii*) non-breeding roost, a hibernating brown-long eared bat, and a hibernating Daubenton's bat. ***REPTILES*** One record of the WCA Schedule 5 grass snake (*Natrix Helvetica*) 200m south-east of the site in 2019. ***INVERTEBRATES*** A record of four dingy skippers (*Erynnis tages*) 200m west of the site in 2010, plus a single small heath butterfly (*Coenonympha pamphilus*) 300m west in 2019, and a white-letter hairstreak (*Satyrium w-album*) ovum 500m north. ***INVASIVE NON-NATIVE SPECIES - FLORA:*** Various records of Japanese knotweed and Himalayan balsam along the River Don dated 2015 and 2021, the closest being knotweed directly adjacent to the southwest of the site boundary. ***INVASIVE NON-NATIVE SPECIES - FAUNA:*** Two record of Canada geese (*Branta canadensis*) on the River don 400m south of the site.
Within 2km	***BADGER*** Eighteen records of Badger, including a sett 300m northwest of the site. ***BATS***

[2] Birds of Conservation Concern – The population status of birds in the UK, Channel Islands and the Isle of Man, reviewed every five years and placed into one of three lists, red, amber or green according to their level of conservation concern.
[3] Bird species with additional protection under the Wildlife & Countryside Act 1981 (as amended), during the breeding season, as do their nests, eggs and dependent young.

	Sixty-six records of bats, ten unidentified myotis species, four Daubenton's bat, eleven noctules (*Nyctalus noctule*); twenty-nine common pipistrelle, nine soprano pipistrelle (*Pipistrellus pygmaeus*), three brown long-eared. ***BIRDS*** Two hundred and eighty-five records of birds, including lesser redpoll (*Acanthis cabaret*), skylark (*Alauda arvensis*), kingfisher, cuckoo (Cuculus canorus), yellowhammer, reed bunting (*Emberiza schoeniclus*), merlin (*Falco columbiarius*), peregrine (*Falco peregrinus*), hobby (*Fringilla montifringilla*), common crossbill (*Loxia curvirostra*), red kite (*Milvuis milvus*), spotted flycatcher (*Muscicapa striata*), curlew, house sparrow (*Passer domesticus*), tree sparrow (*Passer montanus*), grey partridge (*Perdrix perdrix*), redwing (*Turdus iliacus*), fieldfare (*Turdus pilaris*), barn owl (*Tyto alba*), lapwing. ***INVERTEBRATES*** Ninety-one records of invertebrates including small heath butterfly, dingy skipper butterfly, wall butterfly (*Lasiommata megera*), white-letter hairstreak, ear moth (*Amphipoeo oculea*), small square-spot moth (*Diarsia rubi*), small phoenix moth (*Ecliptopera silaceata*), durky thorn (*Ennomos fuscantaria*), rustic moth (*Hoplodrina blanda*), rosy rustic moth (*Hydraecia micacea*), shoulder-striped Wainscot moth (*Leucania comma*), shaded broad-bar moth (*Scotopteryx chenopodiata*), buff ermine moth (*Spilosoma lutea*), blood-vein moth (*Timandra comae*), cinnabar moth (*Tyria jacobaeae*) and dark-barred twin-spot carpet moth (*Xanthorhoe ferrugata*). ***PLANTS*** Thirty-one records of plants, one cornflower (*Centaurea cyanus*), thirty records of bluebell (*Hyacinthoides non-scripta*). ***REPTILES*** Four records of grass snake. ***WATERVOLE*** One record of water vole (*Arvicola amphibius*). ***INVASIVE NON-NATIVE SPECIES – FAUNA:*** Ten records of non-native fauna, including three canada goose, six eastern grey squirrel (*Sciurus carolinensis*), one record of American mink (*Neovison vison*). ***INVASIVE NON-NATIVE SPECIES – FLORA:*** Forty records of non-native flora, including nineteen Indian balsam, sixteen Japanese knotweed, three rhododenron (*Rhododendron ponticum*), one Russian vine (*Fallopia baldschuanica*) and one Canadian goldenrod (*Solidago canadensis*).

4.1.2 Table 3 below provides a list of all protected nature conservation sites and priority habitats within 2km of the site and the potential impact from the development.

Table 3: Nature Conservation Sites and Priority Habitats within 2km

Receptor	Details	Impact	Legislation (if relevant)
Statutory Nature Conservation Sites			
There are no Statutory Nature Conservation Sites within 2km of the site however the site does lie within four Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ).			
Pye Flatts SSSI IRZ	Site is within the IRZ. The SSSI concerned is located approximately 4km north of the site, designated for its natural hay meadow grasslands on loamy brown earth. The site holds '***national'*** nature conservation value (NCV).	The proposal does not meet the criteria for developments likely to impact the SSSI. No anticipated impact.	WCA 1981[4] CRoW Act 2000[5] The Habitat Regs. 2017[6]
South Pennine Moors SAC/SPA/SSSI; Dark Peak SSSI	Site is within the IRZ. The SSSI concerned is located approximately 5.3km south west of the site, designated for its extensive moorlands and associated breeding birds.	The proposal does not meet the criteria for developments likely to impact the SSSI.	

[4] Wildlife and Countryside Act 1981 (as amended)
[5] The Countryside and Rights of Way Act 2000
[6] The Conservation of Habitats and Species Regulations 2017

	The site holds '***European'*** NCV.	No anticipated impact.	
Springs Meadows, Alderman's Head & Cow Croft Meadows SSSI	Site is within the IRZ. The SSSI concerned is located approximately 4.8km west of the site, designated for its species-rich unimproved neutral grasslands. The site holds '***national'*** nature conservation value (NCV).	The proposal does not meet the criteria for developments likely to impact the SSSI. No anticipated impact.	
Little Don Stream Section SSSI	Site is within the IRZ. The SSSI concerned is located 5.7km west of the site, designated for its geological features (exposed carboniferous rocks). The site holds '***national'*** nature conservation value (NCV).	The proposal does not meet the criteria for developments likely to impact the SSSI. No anticipated impact.	
Non-Statutory Nature Conservation Sites			
There are six Non-Statutory Nature Conservation Sites within 2km of the site, all of which hold '***regional'*** NCV.			
Romticle viaduct & Thurgoland tunnels LWS	Adjacent to the eastern site boundary. Disused railway now public bridleway designated due to its mosaic of habitats including running water and semi-natural woodland.	No anticipated impact as the works are located on the opposite side of the water tanks and are of limited scope.	Barnsley Local Plan[7]
Black Moor Common LWS	0.8km southwest of the site, designated due to woodland, heath, bracken and grassland habitats.	No anticipated impact due to the scope of the works.	
Thurgoland glowworm LWS	1km southeast of the site.	No anticipated impact due to distance from the site, lack of connectivity and dissimilar habitats.	
Forge Rocher and Tin Mill Roche LWS	1.6km southeast designated due to woodland, running water, standing water and marsh habitats.	No anticipated impact due to distance from the site, lack of connectivity and dissimilar habitats.	
Mag Wood Meadows LWS	1.76km east of the site designated due to grassland habitat.	No anticipated impact due to distance from the site, lack of connectivity and dissimilar habitats.	
Hunshelf Bank LWS	1.81km southwest of the site, designated due to grassland habitats.	No anticipated impact due to distance from the site, lack of connectivity and dissimilar habitats.	
Priority Habitats			
Deciduous woodland	The sections of deciduous woodland along the northeast section and along the southeast site boundary are listed in the National Forest Inventory 2014.	No anticipated impact due to the scope of the works.	N/A

4.2 UK Habitat Classification Survey

4.2.1 Habitats found during the UK Habitat Classification Survey are shown on Figure 2. All are common habitats found across the UK, with no rare flora or communities recorded during the survey. Table 4 below details the habitats found on the site and consideration of the faunal groups/species that could be present.

[7] http://barnsleybiodiversity.org.uk/biodiversityplan.html

4.2.2 The site is approximately 5.95ha in size predominantly comprising woodland and modified grassland. The site is situated within a rural setting being surrounded by predominantly agricultural land with the River Don forming the eastern boundary of the site and an aviation fuel storage site to the western boundary. The woodland present extends to the south of the site and connects to the Romticle viaduct corridor running perpendicular to the site from the northwest to the southeast with the closest point being 50m away from the southwest corner of the site.

Table 4: Survey Results and Potential Impacts

Receptor	Details	Potential Impact	Legislation (if relevant)
Habitats (relevant to development only)			
g4 – **Modified grassland** Frequently mown (108)	In total approximately 2.18ha of the site comprised modified grassland (Figure 3, Photographs 1, 2 and 3). A short sward of regularly mown grassland was found to be present over a large part of the site, dominated by perennial ryegrass (*Lolium perenne*). cock's-foot (*Dactylus glomerata*) and Yorkshire fog (*Holcus lanatus*) grasses were also present but rare. Other species present comprised of field wood-rush (*Luzula campestris*) and forbs including creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*) and mosses. The majority of the grassland was considered to be in '**moderate'** condition due to passing 5 of the 7 criteria (see Appendix 4). The grassland at the location of the MCC kiosk was considered to be in '**poor'** condition due to high levels of disturbance causing areas of bare ground over 10%. The habitat is common and widespread throughout the UK and is assigned '***local'*** NCV.	An area of approximately 0.03ha will be lost due to the proposed works. As this is a common, modified habitat with low floristic diversity it is considered that the works will incur a ***slight adverse impact***. Temporary impact of 0.12ha of modified grassland that will be temporarily used for the site compound and laydown of pipework during the construction phase. This would have a negative impact of minor magnitude, incurring a ***slight adverse impact***.	n/a
Individual trees (secondary code 32)	One medium-sized pedunculate oak (Quercus robur) tree was located to the south of the site.	Tree will not be directly impacted by the proposed works. Potential for accidental damage during the construction phase – ***slight adverse impact***.	
u1f – **Sparsely vegetated urban land** (earth mound)	Scattered areas of bare ground and/or spoil piles were locally present to varying extents Mound of earth adjacent to the access road, at the anticipated location of the MCC kiosk (Figure 3, Photographs 3 and 4). The condition of the habitat was assessed as being '**poor'** due to passing one out of three criteria (see Appendix 4). The habitat is assessed as being of '***negligible'*** NCV.	Permanent loss of approximately 0.03ha of bare ground for the MCC kiosk to the southern section of the works area. This is not an ecologically valuable habitat – ***neutral impact.***	n/a
u1b6 – Other developed land ruderal/ephemeral (81), car park (804), track (839)	This comprises the main treatment works infrastructure including tanks, pipelines, the paved tracks between them and small carparking areas. These featured occasional short ephemeral vegetation. This urban habitat does not require condition assessment and is assessed as being of '***negligible'*** NCV.	A ***neutral impact*** is anticipated on u1b6 as it is not to be affected by the scope of the proposed works.	n/a
u1b5 - Buildings	Two buildings were present within the site, references B3 and B5 (numbering from the original PEA report, reference 018_21_10_RE01):	The buildings are not to be impacted by the scope of the proposed works, incurring a ***neutral impact***.	n/a

	B3 – red brick, single-storey building with a cavity wall and a pitched, concrete tiled roof and concrete ridge. Wooden soffit boxes under eaves to the east and west. B5 – red brick, single-storey building with a cavity wall, including an inset, wooden porch are to the north-east of the building. Wooden soffit boxes under the eaves of the concrete tiled, concrete ridged pitched roof. B6 – prefabricated green kiosk. This urban habitat does not require condition assessment and is assessed as being of '***negligible'*** NCV (although has value for faunal species, see bird and bat sections in the table below). This habitat was classed as '***negligible***' NCV.		
u1e – **Built linear features** Ruderal/ephemeral (81), fence (612), road (800)	A tarmacked access road entered the site to the north over the gated access bridge and led through the site to B5 at the southern end of the site. Some short ephemeral vegetation was present along the edge of the road. Metal security fencing was present along the northern, western and part of the southern boundary of the site. No boundary fence was present along the eastern boundary where the River Don bounders the site.	A small section of the access road may be temporarily dug up to connect the proposed new kiosks to the existing B2. As this will be a small area of the overall habitat which has a very low ecological value, it is considered the proposed works will have a ***neutral impact***.	n/a
Target note 1: Invasive non-native floral species (INNS)	Himalayan balsam, a Schedule 9 invasive non-native species, was present in the woodland to the west of the site and wet grassland adjacent to the woodland in the south of the site (Figure 3, Photograph 5). Both of these areas are inside the STW boundary but outside the proposed development area.	Potential for spreading of INNS around the STW site and to other sites in the absence of suitable mitigation if construction vehicles enter the areas or they are used for the laydown of materials during the construction phase – ***moderate adverse impact and contravention of UK legislation***.	WCA 1981
Faunal Species			
Amphibians	No suitable standing water was found on site or within the wider STW site. During the initial PEA (report reference 018_21_10_RE01) a single pond was identified within 500m of the site, comprising a private fishing pond approximately 360m^2, located 270m north of the STW site. The pond is ecologically connected to the STW site, however the Habitat Suitability Index assessment undertaken in 2021 scored the pond as 0.40 making it poor suitability for a great crested breeding pond. The terrestrial habitats present on site were considered to be sub-optimal for amphibians due to comprising regularly managed and disturbed grassland. The infrastructure present such as the water tanks and filtration beds do not offer suitable aquatic habitats for these species. Whilst suitable habitats are present in the wider STW site, due to the	It is considered that the killing/injuring of great crested newts and other amphibians is highly unlikely should the proposed works be located exclusively within the existing infrastructure and on modified grassland. Therefore, it is predicted that there would be a ***neutral impact*** on amphibian species.	n/a

	distance of over 250m to the nearest pond the presence of amphibians on site is considered to be low risk and they will no longer be considered in the assessment.		
Badger	An active badger sett was identified during the 2021 survey within the woodland along the east boundary of the STW site and it was confirmed as still present during the recent 2024 visit. A total of six entrances (Figure 3, Photographs 6-8) were identified at the time of the survey within the woodland to the east of the site (one further when compared with 2021). Two of the sett entrances were confirmed to be actively used with fresh spoil and hair found. A further two were found to be partially used. Further fresh dung pits were also observed scattered around the entrances (Figure 3, Photograph 9). Locations were as follows: 1) A. Entrance – likely badger though no prints in spoil SE2799801179 B. SE2800101187 two fresh dung pits; 2) SE2802797801258 **sett entrance** – not currently in use; 3) SE2797901271 **sett entrance** in use, badger hair in spoil; 4) SE2798001272 **sett entrance**, partial use; 5) SE2794001360 **two sett entrances**, one in use with fresh spoil with badger hair; 6) SE2794001360 **entrance location**, partially used; and 7) SE2793801440 five fresh dung pits near site entrance.	The woodland in which the badger sett is located is over 0.05km away from the proposed area of the development works and the entrances were not located on the periphery of these habitats. It is, therefore, not considered that this sett will be disturbed during the course of the proposed works. The works are not expected to cause fragmentation of badger habitat due to clear badger paths showing used on site in locations not impacted by the works. Overall the works will incur a loss of 0.03ha foraging habitat. However, no signs of current badger usage were observed and therefore this is unlikely to have a significant impact on badgers – ***slight adverse impact.*** Although no signs of badger were recorded in the areas affected by the works, all areas of modified grassland on site have the potential to support commuting and/or foraging badgers, evidenced by gaps under fencing (Figure 3, photograph 12). Potential for entrapment of foraging badgers within any excavations left open overnight without a means of escape - ***slight adverse impact***. Potential disturbance during the construction phase and during operation if night working is undertaken or if security lighting is implemented post-construction could incur a ***slight adverse impact***. Should the location of the development change at the design stage these impacts should be revised as the destruction of habitats suitable for badger could resulting in the killing/injuring of protected species resulting in a ***moderate adverse impact and contravention of wildlife legislation***.	Protection of Badgers Act 1992
Bats	Some of the buildings present on site have the potential to support roosting bats with some potential roosts features (PRFs) being identified. Each building has been given a level of potential for supporting roosting bats:	None of the buildings with bat roosting potential are to be affected by the scope of the proposed works, therefore, there will be no loss of roosts or potential killing/injuring of bats.	The Habitat Regs. 2017 WCA 1981

	• B1 – ***negligible bat roosting potential*** – no PRFs identified at the time of the survey. • B2 – ***negligible bat roosting potential*** – no PRFs identified at the time of the survey. • B3 – ***low bat roosting potential*** – a small gap under the end tile by the southeast corner of the building's roof (Figure 3, photograph 11). • B4 – ***negligible bat roosting potential*** – no PRFs identified at the time of the survey. • B5 – ***high bat roosting potential*** – the building has a redbrick, pitched, tiled roof with a dropped soffit on the northwest face (Figure 3, photographs 12-14). A small gap in the barge board was observed to the northeast aspect. Gaps between ride tiles and underneath end tiles were noted to the south and north aspects. • B6 - ***negligible bat roosting potential*** – no PRFs identified at the time of the survey. Bats, including soprano pipistrelle and Daubenton's bats, have previously been recorded as utilising the site. The site provides both foraging opportunities, over the treatment work infrastructure and along the woodland edges, and suitable commuting routes, along the River Don. Due to the presence of numerous roosting sites along the Romtcile viaduct, it is considered that the site may act as a core sustenance zone (CSZ) for bats, meaning the site could be of high importance for bats.	There is a risk of disturbance to any bats roosting within buildings B3 and B5 temporarily during the construction phase due to potential night working, storage of materials and noise, plus post-development if any new security lighting shines onto this building – potential for ***moderate adverse impact and contravention of wildlife legislation if a maternity roost is disturbed***. It is considered that any night working during the construction phase requiring security lighting could incur a temporary disturbance to bats utilising the site for foraging and commuting resulting in a ***slight adverse impact***. Should the location of the development change at the design stage these impacts should be revised as the destruction on habitats suitable for roosting bats could result in the killing/injuring, disturbance and destruction of roosts.	CRoW Act 2000
Birds	Building B5 was in use by nesting birds at the time of the survey, with nests observed on the dropped soffit on the northwest aspect. The individual oak tree in the south of the site has the potential to support nesting passerine species, plus the grassland and bare ground have the potential to support ground-nesting species, however this is sub-optimal due to the disturbance levels on the site. Of the birds identified during the data search, only house sparrow and tree sparrow (both BoCC Red List species) are considered likely to be within the site. Within the wider Cheesebottom STW, the deciduous woodland, bramble scrub and other developed land have the potential to support breeding birds, inclusive of ground nesting birds.	There are no proposed works that would cause destruction/damage to nests and hence killing/injury of birds. The modified grasslands impacted by the works are considered unlikely to support nesting birds due to swards being kept short and management causing regular disturbance. The erection of the new kiosk to the south is adjacent to building B5 and a single oak tree which is potentially in use by the nesting birds in the vicinity. This has potential to incur slight disturbance resulting in ***a slight adverse impact.*** Should the location of the development change at the design stage these impacts should be revised as the destruction of habitats suitable for breeding birds could resulting in the killing/injuring/disturbance and destruction of protected, BoCC or BAP species.	WCA 1981

Hedgehogs	The grassland within the site could be used by foraging hedgehogs, however no suitable refugia for resting or hibernation was present. The area affected by works is considered to be of low value to hedgehogs, with substantial alternative areas of modified grassland not being impacted. Withing the wider STW, potential foraging habitat is present on site in the woodland, scrub, neutral grasslands and modified grassland. The scrub in particular could provide refugia for this species.	Temporary loss of grassland is unlikely to impact the local population of hedgehogs – ***neutral impact***. Low risk of hedgehogs falling into open excavations, however this is unlikely to impact significant numbers of hedgehogs and therefore would not impact the local population size. ***Neutral impact***.	n/a
Otter	The site is open to the river Don to the south. Numerous gaps can also be found under fences. The site itself contained no suitable resting features for otter, however they could utilise areas of brash and bramble in woods in the wider STW. There is therefore potential for otter to commute through the site. No records of otter were returned during the desk study; however, anecdotal evidence of otter was provided within the known ranges of both male and female otter; therefore, their presence cannot be ruled out.	There will be no direct impact on the River Don. Indirect impacts such as accidental pollution incidents are considered unlikely due to the intervening woodland acting as a buffer. The killing/injuring of otters is thought to be highly unlikely due to the lack of suitable features within the area of the proposed works. Disturbance during the construction phase could be possible if otters are present within the river system at the time of the works. This disturbance is not thought to put otter at risk as there are no roads to push them towards, the works would most likely displace them back towards the river. If present, killing/injury or entrapment of otter could occur should excavations be left open overnight with no means of escape for trapped fauna. Overall works would have a ***slight adverse impact*** on otter should they be present. Should the location of the development change at the design stage these impacts should be revised as the destruction of habitats suitable for otter could resulting in the killing/injuring/destruction of holts of this species.	The Habitat Regs. 2017 WCA 1981
Reptiles	A record of grass snake within 0.25km of the site was returned which is within the considered home range for reptile species. The STW affords some suitable habitat for reptiles within the deciduous woodland and the bramble scrub, there are also abundant basking opportunities around the site.	The killing/injuring of reptiles is considered to be highly unlikely due to a lack of suitable habitat within the proposed working area. Disturbance of reptiles within suitable habitats on site is also considered to be unlikely to due the distance of the proposed working area and these habitats. Overall a ***neutral impact*** on reptiles is expected Should the location of the development change at the design stage these impacts should be revised as the	WCA 1981

	However as the area of the proposed works is restricted to the modified grassland which is heavily managed (mown) with short swards throughout, it is not considered to be suitable for reptile species.	destruction of habitats suitable for reptiles could resulting in the killing/injuring/disturbance of reptile species.	
Water vole	The section of the River Don that borders the STW has the suitability to support water vole; however, the habitats present on site are not considered to be suitable for this species.	There will be no direct impact on the River Don. Indirect impacts such as accidental pollution incidents are considered unlikely due to the intervening woodland acting as a buffer. The proposed works are considered to have a ***neutral impact*** on water voles. Due to the highly unlikely presence of water vole on site this species will no longer be considered as a part of this report.	n/a
White-clawed crayfish	The substrate of the River Don could not be assessed for its suitability for supporting white-clawed crayfish due to the depth of the water in the channel. The habitats present on site are not suitable for white-clawed crayfish.	There will be no direct impact on the River Don. Indirect impacts such as accidental pollution incidents are considered unlikely due to the intervening woodland acting as a buffer. The proposed works are considered to have a ***neutral impact*** on white-clawed crayfish. Due to a lack of suitable water courses present on site, white-clawed crayfish will no longer be considered as a part of this report.	n/a
Invertebrates	The modified grassland has relatively low floristic diversity and, therefore, a low ecological value supporting limited diversity of invertebrates. The water treatment works infrastructure and bramble scrub will attract invertebrates. The site does not fall within an Important Invertebrate Area or B-Line as defined by Buglife. The presence of species protected via the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended) is considered to be a low risk, however the presence of species listed under S41 of NERC Act cannot be ruled out.	The loss of an area of the modified grassland is considered to have little impact on invertebrates due to its low ecological value and the small area of loss in comparison to that retained. The proposed works will potentially increase the light, dust and chemical pollution short-term during the construction phase, however, this is likely to be minimal. Overall, the predicted impact on invertebrate species is considered to be a ***slight adverse impact***.	Barnsley Local Plan
Migratory and coarse fish	The River Don along the eastern boundary of the site has the potential to support migratory and course fish, the records returned within 0.5km were located upriver of the site.	The river is not to be directly or indirectly impacted by the scope of the proposed works meaning said works will have a ***neutral impact*** on fish.	n/a
Invasive non-native species (INNS)	Signal crayfish presence is possible in this watercourse. This species outcompetes the native white-clawed crayfish and carries crayfish plague, which is deadly to our native crayfish and can wipe out local populations within a few years.	The river is not to be directly or indirectly impacted by the scope of the proposed works, therefore the spread of crayfish plague is not anticipated. ***Neutral impact.***	Sch.9 WCA 1981

5 Recommendations

5.1 General

5.1.1 The development footprint will cover less than 0.21ha of the 5.95ha site; and it is expected that 0.12ha of this footprint will be returned to its pre-development state once completed (works locations are mapped on figure 4). The impacts and recommendations are based on the development design at the time of writing; if the size, location or nature of the development changes, the impacts and recommendations should be reassessed.

5.2 Statutory and non-Statutory Sites

5.2.1 As set out in Natural England's 'SSSI Risk Zones User Guide' the developer does not need to consult Natural England regarding the proposals and potential impacts to Pye Flatts SSSI, South Pennine Moors/Dark Peak SSSI, Alderman's Head & Cow Croft Meadows SSSI and Little Don Stream Section SSSI as the scale and type of development does not meets the criteria for developments likely to affect a SSSI.

5.3 Habitats and Faunal Species

5.3.1 Table 5 below provides the recommendations for habitats and faunal species that will potentially be impacted by the development.

Table 5: Mitigation and Recommendations

Receptor	Mitigation
Habitats and botany	
Single tree	Root protection zones following BS:5387 (2012) guidelines should be marked out on site with fencing and clear signage.
Amenity grassland	The development footprint should be designed to minimise temporary impacts to the modified grassland, for example by utilising areas of artificial surfaces for laydown areas and site compounds. Areas of grassland temporarily impacted should ideally be re-sown with a species-rich grassland mix. A number of suppliers can provide specialist mixes that are designed for regular management. A seed mix should be selected which takes into account the soil type and pH. Manufacturer/supplier instructions regarding sowing should be followed.
Invasive non-native species	No entry to the areas containing Himalayan balsam – neutral grassland bordering the woodland in the south of the STW, and in the woodland in the east of the STW. Areas should not be used for storing materials and no entry by machinery.
Faunal species	
Bats	Measures should be in place to avoid excessive dust and light around buildings B3 and B5. Materials and stored equipment should not be placed against B3 or B5 where they may block potential roost access points and any site welfare units should be located as far as possible away. If additional security lighting is required on the new infrastructure, it should avoid shining on buildings B3, B5, and the woodlands.
Birds	Measures should be in place to avoid excessive dust around building B5 and the oak tree. Materials and stored equipment should not be placed against B5 where they may block potential nest access points and any site welfare units should be located as far as possible away.
Mitigation covering multiple fauna	Any open excavations should be covered over-night or a slope/mammal path provided to allow any fauna that fall in safe egress out. No night working should be carried out. The site should remain unlit overnight to maintain functionality of the site as a potential foraging ground for nocturnal species such as badger, bats, and hedgehogs.

5.3.2 The mitigation outlined above would prevent the risk of killing/injury or disturbance to fauna and thereby reducing the anticipated impacts to '***neutral***'. Impacts to habitats are considered to be minimal and following the mitigation outlined above would reduce the impact to '***neutral***'.

6 References

6.1 Cited References

6.1.1 Buglife website (viewed 22/05/2024). Important Invertebrate Areas https://www.buglife.org.uk/our-work/important-invertebrate-areas/

6.1.2 Buglife website (viewed 22/05/2024). Bee-Lines https://www.buglife.org.uk/our-work/b-lines/

6.1.3 Barnsley Biodiversity Action (2010) http://www.barnsleybiodiversity.org.uk/biodiversityplan.html

6.1.4 Barnsley Metropolitan Borough Council (2019) Barnsley Local Plan https://www.barnsley.gov.uk/media/17249/local-plan-adopted.pdf

6.1.5 CIEEM (2013). Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management, Winchester.

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6.1.7 Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

6.1.1 Department for Communities and Local Government (2023). National Planning Policy Framework. Department for Communities and Local Government, London

6.1.2 Department for Environment, Food and Rural Affairs (DEFRA) (February 2024). Statutory Biodiversity Metric – Technical Annex 1: Condition Assessment Sheets and Methodology https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides

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6.1.4 Environment Agency. Pollution Prevention Guidelines, Works in, Near or Liable to Affect Watercourses (PPG5). http://www.environment-agency.gov.uk/commondata/acrobat/ppg05.pdf

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6.1.8 Stace, C.A. (1997). New Flora of the British Isles. Cambridge University Press

6.1.9 Stanburty, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and

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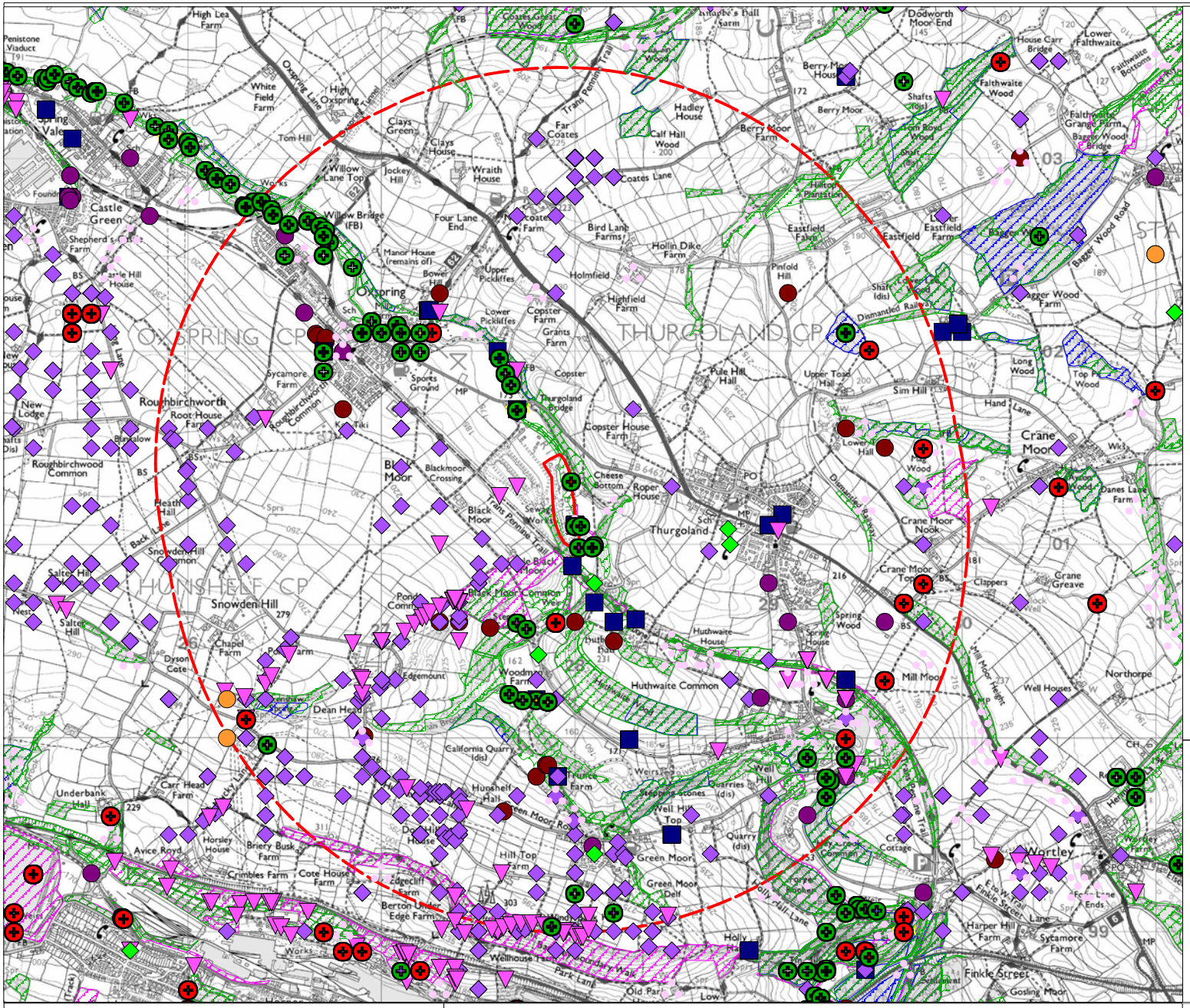
6.1.10 Strachan, R. (2006). Water Vole Conservation Handbook; Second Edition. English Nature, Environment Agency and Wildlife Conservation Research Unit. George Street Press Ltd.

6.1.11 UKHab Ltd (2023). UK Habitat Classification Version 2.0 (at https://www.ukhab.org).

6.1.12 Woods, M. (1995). The Badger. The Mammal Society

7 Figures



Legend

- Site boundary
- Buffer 2km
- Priority Habitats
- Local Wildlife Sites
- Ancient Woodland Inventory
- Bats
- Birds
- Fungi & Lichen
- Hedgehog
- Great Crested Newt
- Invertebrates
- Flora
- Reptiles
- Watervole
- Invasive flora
- Invasive fauna

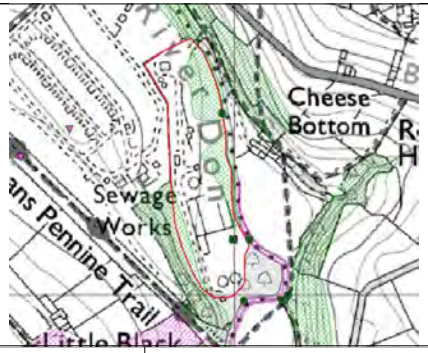


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Figure 1 - Site Location
Cheesebottom STW
Preliminary Ecological Appraisal

N

Date	08/04/2024
Map reference	150_23_RE01 - FIG 1 - V1
Drawn/Approved by	AMS/JC
Scale	1:15'000 at A4

Legend

- Site boundary
- Works area
- w1h5 - Mixed woodland, mainly broadleaved
- g4 - Modified grassland
- r2b - River
- h3d - Scrub
- u1e - Built linear features
- Buildings
- u1b6 - Other developed land
- g3c - Neutral grassland
- u1f - Sparesely vegetated urban land
- Line of trees
- Fence
- Semi-mature oak
- Himalayan balsam

Secondary codes:

15 - Rushes dominant	521 - Unamanged
16 - Tall forbs	524 - Invasive species
32 - Scattered trees	612 - Fence
47 - Natural	800 - Road
81 - Ruderal/Ephemeral	804 - Car park
202 - Young trees	839 - Track

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Figure 2 - Baseline UK Habitat Classification Map (North)

Cheesebottom STW

N

Date	13/05/2024
Map reference	150_12/RE01 - FIG 2 - V1
Drawn/Approved by	AMS/JC
Scale	1:2'000 at A4

Legend

- Site boundary
- Works area
- w1h5 - Mixed woodland, mainly broadleaved
- g4 - Modified grassland
- r2b - River
- h3d - Scrub
- u1e - Built linear features
- Buildings
- u1b6 - Other developed land
- g3c - Neutral grassland
- u1f - Sparesely vegetated urban land
- Line of trees
- Fence
- Semi-mature oak
- Himalayan balsam

Secondary codes:

15 - Rushes dominant	521 - Unamanged
16 - Tall forbs	524 - Invasive species
32 - Scattered trees	612 - Fence
47 - Natural	800 - Road
81 - Ruderal/Ephemeral	804 - Car park
202 - Young trees	839 - Track

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Figure 2 - Baseline UK Habitat Classification Map (South)

Cheesebottom STW

N

Date	13/05/2024
Map reference	150_12/RE01 - FIG 2 - V1
Drawn/Approved by	AMS/JC
Scale	1:2'000 at A4

Photograph 1: Location of the proposed TSR pump station, southern section of the site

Photograph 2: Location of proposed ferric dosing kiosk, northern section of the site

Photograph 3: Location of the proposed MCC kiosk

Photograph 4: Mound of earth adjacent to access road, centre of the site

Photograph 5: Himalayan balsam shoots in the marshy grassland area

Photograph 6: Badger sett entrance

bl-ecology ecological consultancy	Project	Cheesebottom STW EclA
	Title	Figure 3 - Photographs
	Reference	150_23
	Figure Number	3, Page 1 of 3
	Created by	Alice Miller Smitton

Photograph 7: Badger sett entrance

Photograph 8: Badger sett entrance

Photograph 9: Badger dung pits

Photograph 10: Gap under fencing

Photograph 11: Building B3

Photograph 12: Northwest corner of Building B5

bl-ecology ecological consultancy	Project	Cheesebottom STW EclA
	Title	Figure 3 - Photographs
	Reference	150_23
	Figure Number	3, Page 2 of 3
	Created by	Alice Miller Smitton

Photograph 13: East aspect of Building B5

Photograph 14: Southeast corner of Building B5

bl-ecology ecological consultancy	Project	Cheesebottom STW EcIA
	Title	Figure 3 - Photographs
	Reference	150_23
	Figure Number	3, Page 3 of 3
	Created by	Alice Miller Smitton

Legend

- Site boundary
- Works area
- w1h5 - Mixed woodland, mainly broadleaved
- g4 - Modified grassland
- r2b - River
- h3d - Scrub
- u1e - Built linear features
- Buildings
- u1b6 - Other developed land
- g3c - Neutral grassland
- u1f - Sparesely vegetated urban land
- Line of trees
- Fence
- Semi-mature oak
- Himalayan balsam

Works

- Building (built)
- Pipework
- New kiosks
- Site cabin & Car park

Secondary codes:

15 - Rushes dominant	521 - Unamanged
16 - Tall forbs	524 - Invasive species
32 - Scattered trees	612 - Fence
47 - Natural	800 - Road
81 - Ruderal/Ephemeral	804 - Car park
202 - Young trees	839 - Track

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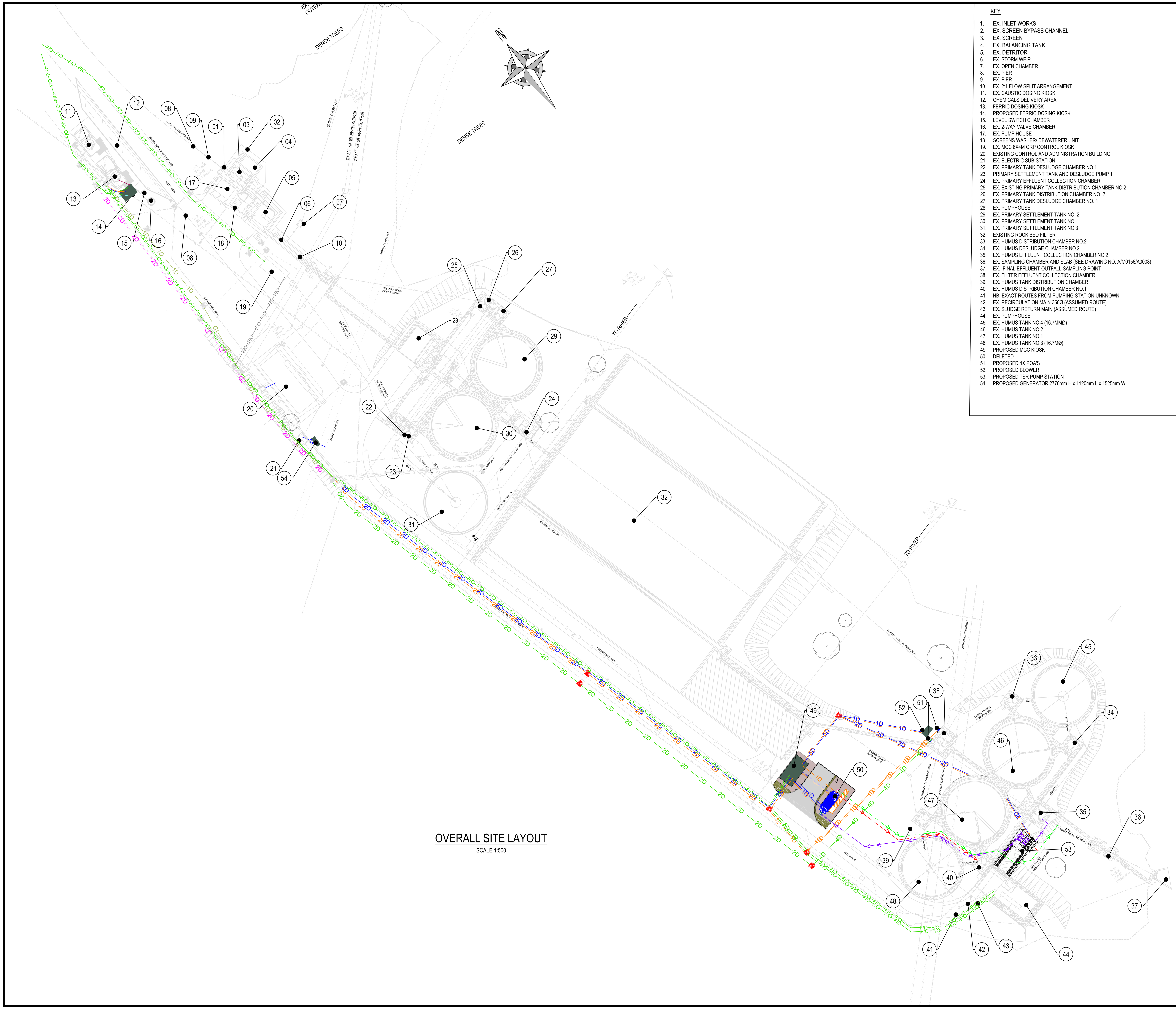
Figure 4 - Works locations

Cheesebottom STW

N

Date	13/05/2024
Map reference	150_23/RE01 - FIG 4 - V1
Drawn/Approved by	AMS/JC
Scale	1:3'000 at A4

8 Appendix 1 – Proposed Development Plans



OVERALL SITE LAYOUT

SCALE 1:500

KEY

1. EX. INLET WORKS
2. EX. SCREEN BYPASS CHANNEL
3. EX. SCREEN
4. EX. BALANCING TANK
5. EX. DETRITOR
6. EX. STORM WEIR
7. EX. OPEN CHAMBER
8. EX. PIER
9. EX. PIER
10. EX. 2:1 FLOW SPLIT ARRANGEMENT
11. EX. CAUSTIC DOSING KIOSK
12. CHEMICALS DELIVERY AREA
13. FERRIC DOSING KIOSK
14. PROPOSED FERRIC DOSING KIOSK
15. LEVEL SWITCH CHAMBER
16. EX. 2-WAY VALVE CHAMBER
17. EX. PUMP HOUSE
18. SCREENS WASHER/ DEWATERER UNIT
19. EX. MCC 8X4M GRP CONTROL KIOSK
20. EXISTING CONTROL AND ADMINISTRATION BUILDING
21. EX. ELECTRIC SUB-STATION
22. EX. PRIMARY TANK DESLUDGE CHAMBER NO.1
23. PRIMARY SETTLEMENT TANK AND DESLUDGE PUMP 1
24. EX. PRIMARY EFFLUENT COLLECTION CHAMBER
25. EX. EXISTING PRIMARY TANK DISTRIBUTION CHAMBER NO.2
26. EX. PRIMARY TANK DISTRIBUTION CHAMBER NO. 2
27. EX. PRIMARY TANK DESLUDGE CHAMBER NO. 1
28. EX. PUMPHOUSE
29. EX. PRIMARY SETTLEMENT TANK NO. 2
30. EX. PRIMARY SETTLEMENT TANK NO.1
31. EX. PRIMARY SETTLEMENT TANK NO.3
32. EXISTING ROCK BED FILTER
33. EX. HUMUS DISTRIBUTION CHAMBER NO.2
34. EX. HUMUS DESLUDGE CHAMBER NO.2
35. EX. HUMUS EFFLUENT COLLECTION CHAMBER NO.2
36. EX. SAMPLING CHAMBER AND SLAB (SEE DRAWING NO. A/M0156/A0008)
37. EX. FINAL EFFLUENT OUTFALL SAMPLING POINT
38. EX. FILTER EFFLUENT COLLECTION CHAMBER
39. EX. HUMUS TANK DISTRIBUTION CHAMBER
40. EX. HUMUS DISTRIBUTION CHAMBER NO.1
41. NB: EXACT ROUTES FROM PUMPING STATION UNKNOWN
42. EX. RECIRCULATION MAIN 350Ø (ASSUMED ROUTE)
43. EX. SLUDGE RETURN MAIN (ASSUMED ROUTE)
44. EX. PUMPHOUSE
45. EX. HUMUS TANK NO.4 (16.7MMØ)
46. EX. HUMUS TANK NO.2
47. EX. HUMUS TANK NO.1
48. EX. HUMUS TANK NO.3 (16.7MØ)
49. PROPOSED MCC KIOSK
50. DELETED
51. PROPOSED 4X POA'S
52. PROPOSED BLOWER
53. PROPOSED TSR PUMP STATION
54. PROPOSED GENERATOR 2770mm H x 1120mm L x 1525mm W

DISCLAIMERS & NOTES:

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS IN METRES RELATIVE TO ORDNANCE DATUM.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT EARTH TECH ENGINEERING DRAWINGS.
4. EXISTING SERVICE ROUTES TAKEN FROM HISTORICAL DRAWINGS. EXACT LOCATIONS TO BE CONFIRMED ON SITE.
5. DUCTS SHALL BE UNPLASTICISED PVC PIPEWORK COMPLYING WITH BS 4660.
6. ALL JOINTS AND CHANGES IN DIRECTION SHALL BE ACHIEVED BY THE USE OF PROPRIETARY BENDS.
7. ALL DUCTS SHALL RUN IN A STRAIGHT LINE. WHERE THIS IS NOT POSSIBLE THE MAXIMUM LONG RADUIS BEND PERMITTED IS 22.5°.
8. INSTRUMENT AND POWER CABLES SHALL RUN IN SEPARATE DUCTS SEGREGATED BY 300mm.
9. MINIMUM DEPTH OF DUCT 500mm ABOVE CROWN OF DUCT.
10. DUCTS PASSING THROUGH FLOORS SHALL TERMINATE APPROX 75mm PROUD OF THE SURFACE.
11. DRAWPIT TO BE PROVIDED WITH SUITABLE DRAINAGE.
12. WHERE DUCTS PASS UNDER ROADS THEY SHALL DO SO AT 90°. DUCTS SHALL BE ADEQUATELY REINFORCED AND A MINIMUM OF 750mm ABOVE CROWN DUCT.
13. UNLESS OTHERWISE STATED ALL DUCTS TO BE 150Ø

RECORDING DRAWINGS:

A. A/M 0156/M6021_INLET AREA DUCT LAYOUT AND EQUIPMENT LOCATION DRAWING
B. A/M 0156/M6022_PRIMARY SETTLEMENT TANK AREA DUCT LAYOUT & EQUIPMENT LOCATION DRG.
C. A/M 0156/M6023_FILTER BED AREA DUCT LAYOUT & EQUIPMENT LOCATION DRG
D. A/M 0156/A2102_SITE LAYOUT SHEET 01 OF 04.
D. A/M 0156/A2103_SITE LAYOUT SHEET 02 OF 04.
D. A/M 0156/A2104_SITE LAYOUT SHEET 03 OF 04.
D. A/M 0156/A2105_SITE LAYOUT SHEET 04 OF 04.

LEGEND

- EXISTING STRUCTURE
- EXISTING WOOL RAIL FENCE
- EXISTING SITE BOUNDARY
- EXISTING PROCESS PIPEWORK
- EXISTING PIPEWORK
- EXISTING SURFACE WATER DRAINAGE
- EXISTING CABLE DUCTS
- EXISTING OIL PIPELINE
- EXISTING WASHWATER
- EXISTING DRAINS
- EXISTING RETICULATION MAIN
- EXISTING SLUDGE RETURN MAIN
- EXISTING POWER DUCT REUSED
- EXISTING BT DUCT REUSED
- EXISTING DOSING DUCT
- POWER DUCT Ø100 (X = No. OF DUCTS)
- TELEMETRY DUCT Ø100 (X = No. OF DUCTS)
- DOSING DUCT Ø100 (X = No. OF DUCTS)
- EXISTING DOSING DUCT Ø150 REUSED
- EXISTING TELEMETRY DUCT Ø150 REUSED
- PROPOSED WASH WATER
- PROPOSED 50mm DOSING PROCESS LINE
- PROPOSED FERRIC PIPE
- PROPOSED BACKWASH
- PROPOSED 350mm TSR FEED LINE
- PROPOSED 500mm TREATED EFFLUENT DISCHARGE LINE
- PROPOSED POTABLE PIPE
- CHANGE IN GROUND LEVEL
- PROPOSED FIBRE OPTIC
- EXISTING FIBRE OPTIC
- NEW DRAWPIT
- EXISTING DRAWPIT (TO BE REUSED)
- NEW KIOSK
- EXISTING MCC KIOSK
- EX. LIGHTING COLUMN
- EX. SLUICE VALVE
- EX. GULLY
- EX. INSPECTION CHAMBER
- EX. SITE ACCESS

0 10 20 m

SCALE 1:500 (A1)
SCALE 1:1000 (A3)

Status.Rev:	Description:	Drawn:	Check:	App'd:	Output Date:
S5.P02	FOR DESIGN ACCEPTANCE	MS	CM	KF	15/12/2023
S4.P01	BUSINESS FOR APPROVAL	MS	CM	KF	15/12/2023

Construction Date: CONSTRUCTION COMPLETE DATE?

Originator / Partner / OEM Ref: WARD & BURKE

YORKSHIRE WATER ALWAYS CONSIDERS

LIFE SAVING RULES

Client: YorkshireWater

Yorkshire Water Services Ltd
Western House,
Western Way,
Halifax Road,
Bradford,
BD6 2SZ

Framework: COMPLEX MEICA	Work Stream: WINEP
YW Batch ID / Project Code: YW.204664	YW Solution ID: 444717
Site: CHEESEBOTTOM STW BARNSLEY	
OS Grid Reference: SAI00002387	DAZ or DMA References: ----

Drawing Title:
CHEESE BOTTOM STW
PHASE 2 PHOSPHORUS REMOVAL
SLD - SITE LAYOUT OVERALL

Original Design / OEM Reference:	Size:	Scale:
	A1	1:500
Status Description: FOR DESIGN ACCEPTANCE	Status: S5	Revision: P02

Drawing Number: CHE02 WBK WWT WWT DR C 0001

10 Appendix 2 – Faunal Habitat Assessment Methodology

Badgers

10.1.1 Badgers can be found on a variety of habitat types. They generally prefer to create setts in undisturbed areas and within typography that is sloped. Preferred habitats for foraging include woodlands and grassland (Woods, 1995). The site was assessed for its suitability for badgers.

Bats

Daytime Inspection for Signs of Roosting Bats

10.1.2 The survey included the small outbuildings to the centre and south of the site (B3 and B5). The exterior walls, the floor, windows and ledges of the buildings were assessed for signs of roosting bats using binoculars and a high-powered torch. Trees were assessed for signs of roosting bats from ground level using binoculars. Signs searched for included bat droppings, scratch and grease marks around entrances, dead juvenile bats, and noises of bats calling from within the roost.

Daytime Inspection for Bat Roost Potential

10.1.3 An assessment was also made of the potential for buildings B3 and B5 to support bats at other times of year. Features searched for within the buildings included cracked, missing or loose roof tiles, gaps in soffits, fascias or barge boards, gaps in brickwork, the presence of a cavity wall, access into the eaves, access under the ridge tiles, and any other crack or gaps at least 10mm in size.

10.1.4 Suitable bat roosting features were searched for on the trees; features searched for included loose bark, woodpecker holes, rot holes, mature ivy, dead wood, and stress splits and cracks.

10.1.5 The building and trees were then awarded a level of potential to support roosting bats in summer, the breeding period, transitionally and in winter. The level of potential is defined by the presence of suitable roosting features together with the locality, environmental conditions, age and proximity to suitable bat foraging habitat. The levels of potential are defined below:

- **Negligible** – Building with no roosting potential and located in poor bat foraging habitat;
- **Low** – Building or tree with limited roosting potential with limited suitable bat foraging habitat. No suitability for breeding and/or hibernating bats;
- **Moderate** – Building or tree with some roosting potential of varying types and sizes, connected to some optimal bat foraging habitat. Some suitability for breeding bats and/or hibernating bats;
- **High** – Building or tree with multiple potential roosting cavities of varying types and sizes. High suitability for breeding bats and/or hibernating bats and connectivity to a range of optimal bat foraging habitats; and
- **Confirmed roost** – Presence of droppings found internally, underneath roost access points or the presence of bats confirmed.

Breeding Birds

10.1.6 Nesting sites for birds depends on the species involved and can be created within structures (buildings, bridges, cliffs etc.), trees, shrubs, within ground vegetation and on bare ground, providing that suitable foraging habitat is adjacent. Habitats within the site were assessed for their suitability for breeding birds.

Great Crested Newts

10.1.7 Great crested newts require standing water on the site or on adjacent land. No ponds within 250m of the site were found. One pond was identified by the Preliminary Ecological Appraisal (PEA) in 2021 (reference 018_21_10). It was located 270m to the north of the site and was assessed via the calculation of a Habitat Suitability Index (HSI) in line with the procedure set out by Oldham *et al*. (2000). The HSI returned poor suitability for Great Crested Newts. Full details including methodology and results are provided within the PEA.

Otters

10.1.8 Otters require freshwater habitat in the form of standing or running water. The water must contain prey species, such as fish, crustaceans or amphibians. Suitable riparian habitat is required that can support resting sites and natal dens, the latter of which are created within secure, undisturbed sites such as within exposed tree roots adjacent to the water, or within disused rabbit entrances. Habitats within the site were assessed for their suitability for otters.

Reptiles

10.1.9 The habitat requirements of this group depend on the species involved. The most likely species to be encountered in the UK are common lizard (*Zootoca vivipara*), barred grass snake (*Natrix helvetica*), slow worm (*Anguis fragilis*) and adder (*Vipera berus*). Reptiles require a heterogeneous habitat with different vegetation types and structures, including bare ground patches for basking. Habitats within the site were assessed for their suitability for reptiles.

Water Voles

10.1.10 Water voles require freshwater habitat that has a relatively stable water level. Undisturbed riparian habitat is required that has an abundance of vegetation species such as grasses and rushes that provide both cover from predators and act as a food source (Strachan, 2011). Habitats within the site were assessed for their suitability for water voles.

White-Clawed Crayfish

10.1.11 This species of crayfish (*Austropotamobius pallipes*) requires calcareous streams with an abundance of suitable refuges, such as a rocky substrate, tree roots and leaf litter (Holdich, 2003). Habitats within the site were assessed for their suitability for crayfish.

Migratory and Coarse Fish

10.1.12 Fish have a wide range of habitat requirements based on species and stage of lifecycle. Habitats within the site was assessed for their suitability to support different fish species, predominantly at their spawning stage.

Invertebrates

10.1.13 Invertebrates are a large and diverse group that inhabit a wide range of habitats. Habitats with the greatest potential to support important invertebrate species or assemblages include: aggregates and quarries; brownfield sites; flower-rich grasslands; ponds and wetlands; scrubland, hedgerows and scrubby grassland; and mature and decaying trees. The most important sites will usually be where there are mosaics and combinations of these habitats. The site was assessed for its suitability for invertebrates.

12 Appendix 3 – Impact Assessment Criteria

12.1.1 It is important to be able to provide an objective, expert assessment/appraisal of the importance of an ecological receptor (habitats and species). To do this, BL Ecology Ltd followed the structure within the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (Second Edition, 2016). This provides for three steps in the process of assessing the significance of the impact of a development:

1) Evaluate the importance/sensitivity of the receptor (i.e. assign a conservation value to it);
2) Predict the scale of the impact (in terms of extent, magnitude, duration etc);
3) Assess the significance of the effect of those impacts relative to the conservation value of the site.

12.1.2 There is a fourth step to assess the 'residual' effects of the impacts with mitigation, which follows the same methodology as Step 3.

12.1.3 The first step in assessing the impact of a development is to assign a value to current ecological features and resources. Table 6 below provides a method for this assessment devised by BL Ecology Ltd. The categories of value are usually assigned in geographical terms, e.g. of international, national, local importance etc.

12.1.4 The value of an ecological receptor is determined by factors such as distribution, designation, rarity, population size, species assemblage, mobility, local distinctiveness and vulnerability. Whilst the legal protection or BAP status of a species or habitat must be taken into account, it cannot be automatically determined which category the receptor falls into, as that particular receptor may in in an unfavourable ecological condition, fragmented/ isolated, or a small area/population.

Table 6: Assigning Nature Conservation Value

Nature Conservation Value	Examples
International	An internationally designated site (or candidate site) such as a Special Area of Conservation (SAC), a Special Protection Area (SPA), and Ramsar Sites; Habitats listed on Annex I of the Habitats Directive; or Significant population of a faunal species listed on Annex II of the Habitats Directive or a hibernation site for the same species.
National	A nationally designated site such as a Site of Special Scientific Interest (SSSI) and National Nature Reserve; A Priority Habitat as listed on the UK Biodiversity Action Plan (UK BAP) within favourable status; or A significant population of a Priority Species listed on the UK BAP.
Regional	A third-tier (locally) designated site such as Local Wildlife Sites, Important hedgerows under The Hedgerow Regulations 1997; A Priority Habitat as listed on the District BAP and within favourable status; A significant population of a Priority Species listed on District BAP; or A regularly occurring significant population listed in a Local Red Data Book;
Local	Habitats classed as common and widespread throughout the UK; Small numbers (non-breeding) of protected species; or Significant population of common faunal species.
Negligible	Minor/no nature conservation value.

12.1.5 Potential impacts that the development may have on the ecological receptor are then considered by deliberation of the following factors:

- Extent;
- Magnitude;
- Duration;
- Reversibility;
- Timing and Frequency;
- Cumulative effects; and
- Confidence in predictions (level of uncertainty).

12.1.6 The predicted magnitude of an impact on the ecological receptor is determined using Table 7 below. Impacts can be positive or negative and consider the likelihood that a change or activity will occur as predicted, on a scale of certain, probable or unlikely, this is without mitigation.

Table 7: Predicted Magnitude of Impact (Without Mitigation)

Magnitude	Criteria
Major Negative	The proposed development is likely to permanently adversely affect the integrity of the ecological receptor.
Intermediate Negative	No permanent effect on the integrity of the ecological receptor however the key attributes are likely to be adversely altered.
Minor Negative	Neither of the above apply, but some minor negative impact is likely.
Neutral	No observable impact in either direction.
Beneficial	Impacts which provide a net gain for the ecological receptor.

12.1.7 Consideration of the magnitude of each impact against the nature conservation value of the ecological receptor produces a matrix table to determine the overall impact that the development is likely to have on the receptor. This is shown in Table 8 below.

Table 8: Estimating the Overall Appraisal Category (in term of significance)

Magnitude of Potential Impact	Nature Conservation Value				
	International	**National**	**Regional**	**Local**	**Negligible**
Major Negative	Very Large Adverse	Very Large Adverse	Moderate Adverse	Slight Adverse	Neutral
Intermediate Negative	Large Adverse	Large Adverse	Moderate Adverse	Slight Adverse	Neutral
Minor Negative	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Neutral
Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Beneficial	Large Beneficial	Large Beneficial	Moderate Beneficial	Slight Beneficial	Neutral

13 Appendix 4 – Habitat Condition Assessments

Condition Assessment: Modified Grassland – Statutory Biodiversity Metric			
Criteria		**Majority of grassland**	**Grassland at location of MCC kiosk**
A	6-8 vascular plant species per m2 (essential criteria for moderate or good condition)	No	No
B	Varied sward height (20% less than 7cm and 20% more than 7cm)	No	No
C	Scrub cover <20%	Yes	Yes
D	Physical damage <5%	Yes	No
E	Bare ground cover between 1% and 10%	Yes	No
F	Bracken cover <20%	Yes	Yes
G	Absence of INNS	Yes	Yes
	Criteria passed	**5**	**3**
	Condition	**Moderate**	**Poor**

Condition Assessment: Urban Habitats – Bare Ground – Statutory Biodiversity Metric		
Criteria		**Achieved Y/N**
A	Vegetation structure is varied, providing opportunities for insects, birds and. A single ecotone should not account for more than 80% of the total habitat area.	No
B	There are plant species that are beneficial for wildlife, for example by providing nectar for a range of invertebrates at different times of the year.	No
C	Invasive non-native species cover <5% of total vegetated area. Complete absence required to achieve good condition.	Yes, absent
	Criteria passed	**1**
	Condition	**Poor**