



Site: Wombwell TW (Update),
Barnsley

Survey: Ecological Impact Assessment
(EcIA)

Client: Yorkshire Water

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Table of Contents

1	SUMMARY.....	4
2	INTRODUCTION.....	5
2.1	Background to Development.....	5
2.2	Ecological Background.....	5
2.3	Objectives.....	5
2.4	Agreed Brief.....	5
3	METHODOLOGIES	6
3.1	General	6
3.2	Desk Study	6
3.3	UK Habitat Classification Survey.....	6
3.4	Faunal Surveys	6
3.5	Impact Assessment.....	8
3.6	Habitat Condition Assessment	8
3.7	Limitations.....	8
4	RESULTS AND IMPACTS	9
4.1	Desk Study	9
4.2	UK Habitat Classification Survey.....	11
5	RECOMMENDATIONS	18
5.1	General	18
5.2	Statutory and non-Statutory Sites	18
5.3	Habitats and Faunal Species	18
6	REFERENCES.....	20
6.1	Cited References	20
7	FIGURES	21
7.1	Figure 1 – Site Location and Desk Study Results.....	21
7.2	Figure 2 – UK Habitat Classification Map	21
7.3	Figure 3 – Photographs	21
8	APPENDIX 1 - PROPOSALS.....	22
9	APPENDIX 2 – IMPACT ASSESSMENT CRITERIA.....	23
10	APPENDIX 3 – HABITAT CONDITION ASSESSMENTS	25

1 Summary

1.1.1 This EclA report has been produced to inform the works to Wombwell Treatment Works, at Barnsley. 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	In survey area	Within 1km	
Statutory sites	NO	YES	Consultation with Natural England required.
Non-statutory sites	NO	YES	No action required.
Botany			
Biodiversity Action Plan (BAP) Habitat	NO		No action required.
Invasive non-native species (INNS)	POTENTIAL		Ensure biosecurity protocols are in place.
Faunal Species			
Badger	POTENTIAL (foraging only)		See general below.
Bats	POTENTIAL		Precautionary works/measures around buildings with roosting potential. See general below.
Birds	POTENTIAL		Removal of scattered scrub should take place outside the breeding bird season (or after a check by a suitably qualified ecologist).
Great crested newts	POTENTIAL		Low risk therefore further survey not required. Precautionary mitigation. See general below.
Otters	POTENTIAL (nearby watercourse)		Pollution control measures for nearby watercourses.
Reptiles	POTENTIAL		Low risk therefore further survey not required. Precautionary mitigation. See general below.
Water vole	POTENTIAL (nearby watercourse)		Pollution control measures for nearby watercourses.
White-clawed crayfish	POTENTIAL (nearby watercourse)		No action required.
Migratory and coarse fish	POTENTIAL (nearby watercourse)		Pollution control measures for nearby watercourses.
BAP species	POTENTIAL		See general below.
General			
General actions which cover multiple botanical and faunal factors	- 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 night lighting where possible, reduce light spill onto boundaries if lighting is required. - Open excavations should be checked daily by contractors for trapped fauna. - g3c (1) grassland to be strimmed to 15cm 48 hours prior to works.		

1.1.2 In conclusion, the development of this site for addition of ferric dosing 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) plans to carry out works at several sites in Yorkshire. Wombwell Treatment Works (TW) is one of the chosen sites and will be the focus of this ecology report.

2.1.2 Wombwell TW is located to the south-east of Barnsley in South Yorkshire, at Ordnance Survey grid reference SE 40937 03521, and is hereby referred to as the 'TW site', as shown on Figure 1. The area of works under consideration at the TW site is referred to as the 'survey area', outlined on Figure 1 and shown in detail on Figure 2.

2.1.3 The proposal involves construction of a centrate tank (replacing existing Wet Weather Storage Tank 3) and ferric dosing kiosk. The works, hereby referred to as 'the development', can be found in Appendix 1 (Drawing Number WOM02- N0D- WWT- WWT- DR- C- 0800 REV P01).

2.2 Ecological Background

2.2.1 BL Ecology Ltd carried out a Preliminary Ecological Appraisal (PEA) in May 2020 (report reference: 006_20_22_RE01 (YW Phosphorus Sites) Wombwell TW – Preliminary Ecological Appraisal Report). This survey covered the whole TW site and while no evidence of protected species or habitats was identified, further surveys for badger, bats, birds, reptiles, water vole and BAP species were recommended, depending on the final scope of the works.

2.3 Objectives

2.3.1 The purpose of this report is to update the previous assessment and identify any ecological constraints to the development at Wombwell TW. 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 30th September 2022 to undertake an ecological impact assessment of the site. The agreed brief was to:

- Update the existing desk study to ascertain protected species and nature conservation sites known within 2km of the TW site;
- Update the existing Phase 1 Habitat survey into UK Habitat Classification survey, targeting the updated plans of the areas likely to be affected by works;
- Carry out a Condition Assessment of all habitats within the survey area
- Determine the Nature Conservation Value of floral habitats and the magnitude of any anticipated impacts;
- Assess the habitat suitability for protected and BAP species; and
- Submit a report with associated mapping, outlining the likely mitigation for the survey area.

3 Methodologies

3.1 General

3.1.1 A 'survey area' within the TW site was defined which is outlined on Figure 1 and shown in detail on Figure 2. The walkover was undertaken 10th November 2022 by Ben Brown BSc (Hons) ACIEEM, who has been an ecologist for 6 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, an assessment of habitats available for the potential presence of protected faunal species and an impact assessment of impacts to habitats and species, along with measures to reduce and mitigate the impacts. This methodology follows the CIEEM 'Guidelines for Ecological Impact Assessment' (April 2022).

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.

3.3 UK Habitat Classification Survey

3.3.1 A walkover survey was undertaken in accordance with the 'UK Habitat Classification User Manual' (UKHab, 2020). 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 along with some indication of the relative abundance of these species using the "DAFOR" scale (D = dominant; A = abundant; F = frequent; O = occasional; R = rare). UK Habitat Classification maps are produced to illustrate the results. 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 Faunal Surveys

Badger Survey

3.4.1 Badgers (*Meles meles*) can be found on a variety of habitat types. They generally prefer to create setts in undisturbed areas and within topography that is sloped. Preferred habitats

for foraging include woodlands and grassland (Woods, 1995). The survey area was searched for any signs of badger presence. Signs searched for included entrance holes (setts), dung pits, hair, footprints, badger footpaths, scratching posts, and snuffle holes.

Bat Habitat Assessment

- 3.4.2 Bats utilise a variety of floral habitats for foraging and commuting including grassland, woodland and watercourses. An assessment was made of the survey areas potential to support foraging and commuting bats, and the potential values of the habitats identified. The survey area did not comprise any features suitable for roosting bats, such as buildings or trees.

Breeding Bird Habitat Assessment

- 3.4.3 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 survey area were assessed for their suitability for breeding birds.

Great Crested Newt Habitat Assessment

- 3.4.4 Great crested newts (*Triturus cristatus*) require standing water on the site or on adjacent land. Any ponds within 250m of the survey area were considered.
- 3.4.5 Great crested newts require different habitats at different times of the year; the survey area was searched for terrestrial habitat most suitable for newts including scrub, unimproved grassland, woodland and gardens (Oldham *et al.*, 2000).

Otter Habitat Assessment

- 3.4.6 Otters (*Lutra lutra*) 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 survey area were assessed for their suitability for otters.

Reptile Habitat Assessment

- 3.4.7 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 survey area were assessed for their suitability for reptiles.

Water Vole Habitat Assessment

- 3.4.8 Water voles (*Arvicola amphibius*) 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 survey area were assessed for their suitability for water voles.

White-Clawed Crayfish Habitat Assessment

- 3.4.9 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 survey area were assessed for their suitability for crayfish.

3.6 Habitat Condition Assessment

- 3.6.1 The condition of each habitat within the survey area was measured against the condition assessment criteria set out in Biodiversity Metric 3.1 – Habitat Condition Assessment Sheets with Instructions (Natural England, 2021).

3.7 Impact Assessment

- 3.7.1 A preliminary 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 2.

3.8 Limitations

- 3.8.1 The survey was conducted during a sub-optimal time of year to survey for fauna and flora and only obtained a snapshot of the conditions in the survey area within winter. However, it is considered that whilst the full list of species has not been obtained, the assessment has been sufficient to determine the broad habitat types and likely faunal groups present, and therefore their likely significance to the project.
- 3.8.2 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.

4 Results and Impacts

4.1 Desk Study

Protected Species

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

Table 2: Faunal Data Search Results

Distance	Records
On site	Four records of WCA Sch 9 invasive non-native plants species¹ (INNS), comprising three records of Japanese knotweed and one record of Himalayan balsam, all dated 2016. The TW site falls within the County Stewardship (CS) Priority Species targeting area for lapwing (<i>Vanellus vanellus</i>). The site also lies within areas highlighted as suitable for breeding farmland and grassland assemblages of curlew (<i>Numenius arquata</i>), grey partridge (<i>Perdix perdix</i>), lapwing, redshank (<i>Tringa totanus</i>), snipe (<i>Gallinago gallinago</i>), tree sparrow (<i>Passer montanus</i>) and yellow wagtail (<i>Motacila flava</i>).
Within 500m	13 records of bats comprising common pipistrelle (<i>Pipistrellus pipistrellus</i>), soprano pipistrelle (<i>Pipistrellus pygmaeus</i>), Daubenton's (<i>Myotis daubentonii</i>) and noctule (<i>Nyctalus noctula</i>). The nearest records to the TW site were of foraging common and soprano pipistrelle bats, located 0.2km north-east, dated 2016. No roost records within 500m. 16 records of INNS fauna, comprising Canadian goose (<i>Branta canadensis</i>), grey squirrel (<i>Sciurus carolinensis</i>), ruddy duck (<i>Oxyura jamaicensis</i>) and signal crayfish (<i>Pacifastacus leniusculus</i>). The nearest record to the TW site was of Canadian goose, located 0.2km north, dated 2017. 52 records of INNS flora, comprising New Zealand pigmy-weed (<i>Crassula helmsii</i>), Himalayan balsam, Japanese knotweed, Canadian waterweed (<i>Elodea canadensis</i>) and Canadian goldenrod (<i>Solidago canadensis</i>). 17 records of terrestrial mammals (excluding bats), comprising: one record of a hedgehog (<i>Erinaceus europaeus</i>), located 0.4km north-east of the TW site, dated 2016; three records of harvest mouse (<i>Micromys minutus</i>), the nearest to the TW site located 0.1km west, dated 2015; and 13 records of water vole, the nearest to the TW site located 0.1km west, dated 2005.
Within 2km	27 records of amphibians, comprising: seven records of great crested newts (<i>Triturus cristatus</i>), the nearest to the TW site located 1.0km south, dated 2019; and 20 records of common toad (<i>Bufo bufo</i>), all located 1.5km south-west of the TW site, dated 2019. 37 records of bats, comprising common pipistrelle, soprano pipistrelle, Daubenton's, noctule and brown long-eared (<i>Plecotus auritus</i>). Eight records of birds, comprising lesser redpoll (<i>Carduelis cabaret</i>), skylark (<i>Alauda arvensis</i>), little ringed plover (<i>Charadrius dubius</i>) and reed bunting (<i>Emberiza schoeniclus</i>). The nearest records to the TW site were of little ringed plover, located 1.7km south, dated 2010 and 2011. 64 records of INNS fauna, comprising Canadian goose, ruddy duck, grey squirrel, American mink (<i>Neovison vison</i>) and signal crayfish. 240 records of INNS flora, comprising giant hogweed (<i>Heracleum mantegazzianum</i>), Himalayan balsam, Japanese knotweed, New Zealand pigmyweed, Nuttall's waterweed (<i>Elodea nuttallii</i>), Japanese rose (<i>Rosa rugosa</i>), water fern (<i>Azolla filiculoides</i>), Canadian goldenrod, Turkey oak (<i>Quercus cerris</i>), false-acacia (<i>Robinia pseudacacia</i>) and rhododendron (<i>Rhododendron sp.</i>) One record of fish, comprising European eel (<i>Anguilla anguilla</i>), located 1.5km south-east of the TW site, dated 2018. 22 records of flowering plants, comprising 20 records of bluebell (<i>Hyacinthoides non-scripta</i>) and two records of cornflower (<i>Centaurea cyanus</i>). The nearest record to the TW site was of cornflower, located 1.3km south-west, dated 2013.

¹ The Wildlife and Countryside Act 1981 (as amended) Schedule 9

	112 records of invertebrates comprising wall (<i>Lasiommata megera</i>), dingy skipper (<i>Erynnis tages</i>), little whirlpool ram's-horn snail (<i>Anisus (Disculifer) vorticulus</i>), shoulder-striped wainscot (<i>Leucania comma</i>), cinnabar (<i>Tyria jacobaeae</i>), latticed heath (<i>Chiasmia clathrata</i>), small heath (<i>Coenonympha pamphilus</i>), shaded broad-bar (<i>Scotopteryx chenopodiata</i>), buff ermine (<i>Spilarctia luteum</i>), blood-vein (<i>Timandra comae</i>), dark-barred twin-spot carpet (<i>Xanthorhoe ferrugata</i>), mouse moth (<i>Amphipyra tragopoginis</i>), small phoenix (<i>Ecliptopera silaceata</i>), rosy minor (<i>Litologia literosa</i>), dusky thorn (<i>Ennomos fuscantaria</i>), dot moth (<i>Melanchra persicariae</i>), sawfly (<i>Cirrhia icteritia</i>), powdered quaker (<i>Orthosia (Cororthosia) gracilis</i>), grey dagger (<i>Acronicta psi</i>), white ermine (<i>Spilosoma lubricipeda</i>) and mud snail (<i>Omphiscola glabra</i>). 145 records of terrestrial mammals (excluding bats), comprising: five records of brown hare (<i>Lepus europaeus</i>), the nearest was located 1.5km south-east of the TW site, dated 2016; two records of harvest mouse; 10 records of hedgehog; 12 records of otter, the nearest record to the TW site was 0.6km east, dated 2005; and 116 records of water vole.
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Protected Sites

- 4.1.2 Dearne Valley Wetlands Site of Special Scientific Interest (SSSI) lies approximately 100m from the south-west survey area, and 200m from the north-east survey area, and the TW site is within the Impact Risk Zone (IRZ) for this SSSI. The SSSI is split across 22 separate sites within the river Dearne catchment. It is designated due to supporting lowland open water, margins and fen habitats, along with diverse assemblages of breeding birds and non-breeding gadwall (*Anas strepera*) and shoveler (*Anas clypeata*). The SSSI holds '**national**' nature conservation value (NCV).
- 4.1.3 The development will be limited to two small areas within the TW site and will not directly impact the SSSI – **neutral direct impact**.
- 4.1.4 The TW site may provide limited commuting habitats linking separate areas of the SSSI. However, the survey areas and development cover a small fraction of the overall TW site therefore it is not expected that there will be any loss of connective/commuting habitats – **neutral impact**.
- 4.1.5 Indirect impacts, through noise, dust and light during ground preparation/ clearance and the construction phase could potentially impact habitats, breeding and non-breeding birds – **large adverse impact**.
- 4.1.6 The TW site lies within the SSSI IRZ and potentially meets the criteria for actions likely to impact the SSSI under the '*Air Pollution*' category during the construction phase, as the criteria includes "any development that could cause air pollution or dust either in its construction or operation" – **large adverse impact**.
- 4.1.7 Table 3 below provides a list of all non-statutory nature conservation sites within 2km of the TW site and the potential impact from the development.

Table 3: Nature Conservation Sites within 2km

Receptor	Details	Impact	Legislation (if relevant)
Parkhill Nature Reserve local wildlife site (LWS)	Adjoining the south-west boundary of the TW site, designated due to comprising scrub, grassland, inundation vegetation, open water and reedbed. Former brickworks.	No anticipated impact due to the small size of the proposed development and low value of habitats within development area – neutral impact .	Barnsley Local Plan
Broomhill Flash and Wombwell Ings LWS	0.1km east of the TW site (at the closest point), designated due to comprising grassland and open water.		

Gipsy Marsh LWS	0.9km south-east of the TW site, designated due to comprising scrub, heathland, grassland, marsh, standing water and running water. Managed by the RSPB.	No anticipated impacts due to the small size of the development and the distance from TW site – the development will be located entirely within the TW boundary and will not impact habitats beyond – neutral impact .	
Old Moor and Wath Ings LWS	1.2km south-east of the TW site, designated due to comprising grassland, inundation vegetation, standing water and reedbed. Managed by the RSPB.		

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 in the survey area and consideration of the faunal groups/species that could be present.
- 4.2.2 The TW site is 11.8ha in size, with the survey area covering 0.17ha, split across two separate zones, one to the north-east and one to the south-west. The zone to the north-east comprised managed modified grassland, unmanaged neutral grassland (g3c 1), dense ephemeral vegetation growing through gravelled areas (gc3 2), along with a road and TW infrastructure. The zone to the south-west comprised managed modified grassland, a road and small area of hard standing.
- 4.2.3 The remainder of the active TW site, beyond the survey area, comprised the same habitats. Disused areas of the TW site beyond the main security fence included 2ha of grassland, with scattered scrub, trees, ruderal and woodland to the east, and 5ha of grassland and ruderal to the south.
- 4.2.4 A number of waterbodies, mostly associated with the Dearne Valley Wetlands SSSI, surround the TW site and are located within areas of grassland, scrub and ruderal vegetation. The nearest flowing watercourse is Bulling Dike, which dissects the TW site in a south-west-north-east line and is located 20m from the south-west survey area.

Table 4: Survey Results and Impacts

Receptor	Details	Impact	Legislation (if relevant)
Habitats			
g4 – modified grassland	0.074ha present across the survey area (Figure 3 – Photograph 1), regularly managed with a sward height of less than 5cm. Mainly comprising grass species, dominated by perennial rye-grass (<i>Lolium perenne</i>) and annual meadow-grass (<i>Poa annua</i>) with frequent Yorkshire-fog (<i>Holcus lanatus</i>) and rough-meadow-grass (<i>Poa trivialis</i>). Forb species dominated by creeping buttercup (<i>Ranunculus repens</i>), abundant in common dandelion (<i>Taraxacum officinale</i>), with occasional ribwort plantain (<i>Plantago lanceolata</i>), dove's-foot crane's-bill (<i>Geranium molle</i>), broad-leaved dock (<i>Rumex obtusifolius</i>), daisy (<i>Bellis perennis</i>) and rare cover of cow parsley (<i>Anthriscus sylvestris</i>) and creeping cinquefoil (<i>Potentilla reptans</i>). A single elder (<i>Sambucus nigra</i>) (Figure 3 – Photograph 2) was present on the edge of the grassland adjacent to the wet weather storage tank. Grassland classified as 'poor' condition, failing to meet essential criteria No. 1, species per m², required to achieve moderate condition or higher. Though modified grasslands are listed under the Barnsley Biodiversity Action Plan, they must be in favourable condition for the grassland to provide 'regional' NCV; as this grassland was assessed as being in poor condition, it only supports 'local' NCV.	Loss of approximately 0.014ha for construction of dosing kiosk. Minor loss of receptor supporting limited ecological value – slight adverse impact. Anticipated temporary loss/damage to approximately 0.04ha during removal of existing wet weather storage tank and construction phase through movement of machinery and storage of equipment. Minor temporary loss of receptor supporting limited ecological value – slight adverse impact.	N/A
g3c (1) – other neutral grassland	0.017ha present, an unmanaged rank grass area situated within the g4 grassland (Figure 3 – Photograph 3). Dominant species comprised cock's-foot (<i>Dactylis glomerata</i>) and broad-leaved dock, with abundant Yorkshire fog, frequent bramble (<i>Rubus fruticosus agg.</i>), common dandelion, occasional white clover (<i>Trifolium repens</i>), common vetch (<i>Vicia sativa</i>), cow parsley, creeping buttercup, spear thistle (<i>Cirsium vulgare</i>) and ribwort plantain and rare cover of black medick (<i>Medicago lupulina</i>). Grassland classified as 'poor' condition, passing only two of the available six criteria. Habitat supports 'local' NCV, failing to meet the description of local priority neutral grassland habitat.	Temporary loss/damage to approximately 0.01ha during removal of existing wet weather storage tank and construction phase through movement of machinery and storage of equipment. Minor temporary loss of receptor supporting limited ecological value – slight adverse impact.	N/A
g3c (2) – other neutral grassland	0.007ha present surrounding TW infrastructure in the north-east zone of the survey area (Figure 3 – Photograph 4). Comprised entirely of tall herb and ephemeral/ruderal species, dominated by bristly oxtongue (<i>Picris echioides</i>), with abundant cleavers (<i>Galium aparine</i>), common nettle (<i>Urtica dioica</i>), occasional groundsel (<i>Senecio vulgaris</i>), cow parsley and spear thistle. Grassland classified as 'poor' condition, passing only two of the available six criteria.	Anticipated total loss through removal of existing wet weather storage tank and construction phase through installation of infrastructure for new centrate tank, movement of machinery and storage of equipment. Minor loss of receptor supporting limited ecological value – slight adverse impact.	N/A

	Habitat supports ' local ' NCV, failing to meet the description of local priority neutral grassland habitat.		
u1e – built linear features	0.032ha present comprising tarmac roads (Figure 3 – Photograph 5) passing through the survey area. This urban habitat is automatically assigned ' N/A – other ' condition. This habitat supports ' negligible ' NCV.	No anticipated impact, habitat does not provide any ecological value – neutral impact .	N/A
u1b – developed land; sealed surface	0.036ha present comprising TW infrastructure and hard surfaced areas for loading/storage. This urban habitat is automatically assigned ' N/A – other ' condition. This habitat supports ' negligible ' NCV.	Loss of 0.025ha through removal of existing wet weather storage tank and nearby hard surfaced areas to facilitate construction of new centrate tank. Habitat does not provide any ecological value – neutral impact .	N/A
Invasive non-native species (INNS)	High number of records returned within the desk study, including records on the TW site and immediately adjacent to the survey area. No signs of INNS recorded during the survey, majority of habitats regularly managed. Survey undertaken during sub-optimal season however evidence of INNS would still be present through dead stems/old growth.	Low risk of transferring INNS around the TW site and to other sites – magnitude of impact dependant on value of affected receptor site.	WCA Sch9
Faunal Species			
Amphibians	Nearby records of great crested newts (GCN) were returned within the desk study. Potential aquatic habitat within concrete lined tank on TW site (r1 – 1040) and in two waterbodies north-east of the survey area beyond the TW site boundary (r1 – 39), shown on Figure 2 and briefly described below: r1 (1040) – 0.053ha concrete lined water storage tank to the east of the TW site (Figure 3 – Photograph 6). Tank had vertical high sides with common reed (<i>Phragmites australis</i>) and bulrush (<i>Typha sp.</i>) and submerged aquatics. r1 (39) – 0.32ha comprising two waterbodies separated by a narrow inlet. r1 (1) (Figure 3 – Photograph 7) had no aquatics present and marginal vegetation comprised tall herb, dominated by rosebay willowherb (<i>Chamerion angustifolium</i>). r1 (2) (Figure 3 – Photograph 8) contained stands of bulrushes and marginal tall herb species. Habitat Suitability Index (HSI) assessments carried out to determine the suitability of r1 (39) (1) and (2) for GCN in 2020 by BL Ecology Ltd determined that the ponds supported	Killing/injury of GCN and Biodiversity Action Plan (BAP) amphibians (such as toads) during the site preparation and construction phase, through ground clearance, movement of machinery and storage of equipment and materials, if g3c (1) grassland is impacted. Killing/injury of great crested newts would be a moderate adverse impact and contravention of wildlife legislation . Permanent loss g4 modified grassland not considered a significant impact due to small area of expected loss and low value of managed habitat for amphibians – slight adverse impact .	The Habitat Regs. 2017 ² WCA 1981 ³ CRoW Act 2000 ⁴ Barnsley BAP ⁵

² The Conservation of Habitats and Species Regulations 2017 (as amended)

³ Wildlife and Countryside Act 1981 (as amended)

⁴ The Countryside and Rights of Way Act 2000

⁵ Barnsley Biodiversity Action Plan Species

	'below average' and poor' suitability, respectively. Feature r1 (1040) was not assessed as high vertical concrete sides was pose a major barrier to GCN dispersal. GCN environmental DNA (eDNA) surveys undertaken by BL Ecology Ltd in 2020 on both r1 (39) waterbodies were <u>negative</u> for GCN eDNA, suggesting that the ponds are not used for breeding. Survey area would provide limited suitability for refuge for GCN and BAP species (common toad) within unmanaged grassland g3c (1). Though the presence of GCN is highly unlikely, they, and common toad, cannot be completely ruled out. Survey area supports 'local' NCV for GCN and BAP amphibians.		
Badger	No records returned within the desk study and no setts or sign of badger presence observed within the survey area. Previous assessment in 2020 by BL Ecology Ltd, covering all accessible areas of the TW site, did not reveal any setts or signs of presence. Grassland within survey area would provide foraging habitat, though its value is limited by the small size of the area and the amount of higher quality foraging habitat in the wider TW site and beyond. Survey area supports 'local' NCV, at best, for badger.	Loss of 0.014ha foraging habitat through construction of new dosing kiosk. No signs of current badger usage were observed and the small development area is unlikely to have a noticeable impact on badgers – slight adverse impact. Low risk of minor disturbance during the construction phase and during operation if night working is undertaken or lighting is implemented post-construction – slight adverse impact. Entrapment and injury to foraging badger within excavations left open overnight with no means of escape for trapped fauna – slight adverse impact.	Protection of Badger Act 1992
Bats	Records of various species of bats were returned within the desk study. No trees or buildings were present within the survey area therefore roosting bats will not be directly impacted by the proposed works. However previous assessment by BL Ecology Ltd in 2020 identified two buildings (Figure 3 – photograph 9) within 10m of the survey area (as seen on Figure 2) that supported low bat roosting potential. Grasslands within the survey area offer foraging habitat though its value is limited by the small size of the area and the amount of higher quality foraging habitat in the wider TW site and beyond. Survey area supports 'local' NCV, at best, for bats.	Low risk of disturbance to roosting bats within nearby buildings during site preparation and the construction phase through increased, noise, dust and light. Buildings on support low roosting potential therefore slight adverse impact. Permanent loss of 0.014ha, and temporary impacts to 0.05ha, of foraging grassland habitat. Low value habitat and small development area – slight adverse impact.	The Habitat Regs. 2017 WCA 1981 CRoW Act 2000 Barnsley BAP (brown long-eared, noctule and soprano pipistrelle only)
Birds	Limited number of bird records returned within the desk study, with most of these species associated with wetland habitat, not found within the survey area. Low risk of birds nesting within elder scrub in g4 modified grassland in the north-east zone of the survey area. Other habitats in survey area do not provide any nesting habitat due to high levels of management/disturbance and lack of cover.	Low risk of destruction/damage to nests and hence killing/injury of birds during site preparation and removal of elder scrub if undertaken during the breeding bird season (between March and September inclusive dependent on weather conditions). This	WCA 1981 Barnsley BAP (various species)

	Survey area supports ' negligible ' NCV for nesting notable birds.	would constitute a moderate adverse impact and contravention of wildlife legislation.	
Otter	Records of otter were returned within the desk study. There are no aquatic habitats present within the survey area, a small stream/drainage channel, Bulling Dike (figure 3 – photograph 10), passes through the TW site 20m to the south of the south-west zone of the survey area (as seen on Figure 2). However, previous assessment by BL Ecology Ltd in 2020 did not identify any potential holts within the channel. Furthermore, due to distance from survey area and small-scale development, otter within holts will not be directly impacted by the works. Survey area is separated from the channel by a high security fence therefore otters are highly unlikely to be present within this part of the TW site. Furthermore, habitats in the survey area do not offer any potential for refuge or laying up due to levels of disturbance/management and lack of cover. Survey area supports 'negligible' NCV for otter.	No anticipated direct impact to otter due to lack of aquatic habitats and disturbance/management of terrestrial habitats – neutral impact. Low risk of pollution incidents affecting the Dike and downstream watercourses and reducing the functionality for otter through loss of prey – slight adverse impact.	N/A
Reptiles	No records of reptiles were returned within the desk study. Habitats within the survey area would provide some limited habitat for reptiles for refuge within unmanaged g3c (1) grassland and within surfaced areas and g3c (2) grassland for basking. However, this is limited due to disturbance in the survey area and small area of the habitats and the development. Furthermore, greater areas of higher quality habitat are present within the wider TW site and beyond within the SSSI. Survey area does not offer habitats suitable for hibernation. Survey area supports 'local' NCV, at best, for reptiles.	Low risk of killing/injury of reptiles during site preparation and construction phase through disturbance to gc3 (1) grassland. This would be a moderate adverse impact and contravention of wildlife legislation. Permanent loss of 0.014ha, and temporary impacts to 0.05ha, of grassland habitat. Low value habitat and small development area – slight adverse impact.	WCA 1981 Barnsley BAP (grass snake and common lizard only)
Water vole	Large number of water vole records returned within the desk study. There are no aquatic habitats within the survey area, and the closest potential habitat is Bulling Dike, 20m away. A preliminary assessment undertaken by BL ecology Ltd in 2020 considered the channel to be suitable for water vole and connected to known populations. Survey area supports 'negligible' NCV for water vole.	No anticipated direct impact due to distance of nearest aquatic habitat from survey area; water vole highly unlikely to be found more than 5m away from riparian habitats – neutral impact. Low risk of pollution incidents affecting the Dike and downstream watercourses and reducing the functionality for water vole through damage to aquatic and marginal vegetation – slight adverse impact.	WCA 1981 Barnsley BAP
White-clawed crayfish	No records were returned within the desk study, record of invasive signal crayfish in the desk study would further indicate absence of native crayfish species being present within the area. No aquatic habitat within the survey area, and closest potential habitat is Bulling Dike, 20m away. Assessment carried out by BL Ecology in 2020 considered the channel suitable to support white-lawed crayfish however it was determined that	No anticipated impact due to lack of aquatic habitat in survey area and absence of this species in the district – neutral impact.	N/A

	they are not present within the lower Dearne area. This species will no longer be considered as part of this report. Survey area supports 'negligible' NCV for white-clawed crayfish.		
Brown hare	Though records were returned within the desk study, small survey area is located within the centre of the TW site, subject to frequent disturbance and management. Habitats in the wider TW site and beyond would offer higher levels of suitability. This species will no longer be considered as part of this report. Survey area supports 'negligible' NCV for brown hare.	No anticipated impact due to small development area and levels of management/disturbance – neutral impact .	N/A
Harvest mouse	Records of harvest mouse were returned nearby to the TW site within the desk study. g3c (1) grassland within the survey area would provide some limited habitat for this species however it covers a limited area and is surrounded by heavily managed habitats, reducing its suitability. Habitats within the wider TW site, particularly to the east and south, and beyond in the SSSI, would provide higher levels of suitability for this species. Due to the limited size and value of the gc3 (1) grassland in the survey area, this species will no longer be considered as part of this report. Survey area supports 'negligible' NCV for harvest mouse.	No anticipated impact due to limited size and functionality of habitat within survey area – neutral impact .	N/A
Hedgehogs	Records of hedgehog were returned within the desk study. Survey area provides foraging habitat within g3c and g4 grasslands. Some limited refuge habitats present within g3c (1) grassland though scrub cover not considered dense enough to provide adequate cover. Survey area supports 'local' NCV, at best, for hedgehogs.	Potential killing/injury or entrapment of hedgehog should excavations be left open overnight with no means of escape for trapped fauna – moderate adverse impact and contravention of the objectives of the UK BAP by reducing the population size. Permanent loss of 0.014ha, and temporary impacts to 0.05ha, of foraging grassland habitat. Small development area with more favourable habitats in the wider area – slight adverse impact.	UK BAP/S41 NERC
Invertebrates	Large number of invertebrate records returned within the desk study. Grassland habitats in survey area have the potential to support invertebrates but diversity is limited due levels of management and low ecological value/poor condition of the habitats present. Survey area provides 'local' NCV, at best, for invertebrates.	Permanent loss of 0.014ha, and temporary impacts to 0.05ha, of grassland habitat. Small development area with more favourable habitats in the wider area – slight adverse impact .	UK BAP/S41 NERC
Migratory and coarse fish	Single record of fish returned within the desk study. No aquatic habitats present within the survey area though Bulling Dike is located 20m away. Dike would only support limited suitability for salmonoid and coarse fish due to small size. Survey area supports 'negligible' NCV for fish species.	Low risk of pollution incidents affecting the Dike and downstream watercourses – slight adverse impact .	

Invasive non-native species (INNS)	Records of INNS were returned within the desk study. Habitats within survey area are largely managed and low value therefore only provide limited habitat for most faunal species. The highest risk in this area is from signal crayfish and the transfer of diseases to new watercourses however there are no aquatic habitats within the survey area and works will not be taking place within Bulling Dike. These species will no longer be considered as part of this report.	No anticipated impacts due to limited pathways for spreading of INNS fauna – <i>neutral impact</i> .	N/A
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5 Recommendations

5.1 General

- 5.1.1 The development only covers a small proportion of the overall TW site (0.02ha from an overall 11.8ha) and, due to the limited ecological value of the floral habitats present, will not have any significant impacts in protected or notable fauna. No further surveys are required due to the small scale of the proposed development; precautionary measures will mitigate and reduce the impacts and risks to fauna species and habitats.

5.2 Statutory and non-Statutory Sites

- 5.2.1 As set out in Natural England's (NE) 'SSSI Risk Zones User Guide' the developer should consult NE regarding the proposals and potential impacts to Dearne Valley Wetlands SSSI (NE site reference 1481838) as the development potentially meets the 'air pollution' and criteria for developments likely to affect a SSSI.
- 5.2.2 NE can be contacted at ProtectedSites@naturalengland.org.uk for further information. The NE officer responsible for the SSSI is Helen Dews-Smith. NE contact number: 0845 600 3078.
- 5.2.3 The development may also impact key features of the SSSI (breeding birds, if the development is undertaken between March and August, and non-breeding birds throughout the year, particularly over winter) through noise disturbance during the site preparation and construction phase.
- 5.2.4 Yorkshire Water may be required to complete a notice of proposal to carry out an operation affecting a SSSI, found here - <https://www.gov.uk/government/publications/give-notice-and-get-assent-for-a-planned-activity-on-or-near-an-sssi>.
- 5.2.5 Mitigation required within the notice would likely include sensitive timings of works and measures to reduce/control noise and dust, reducing the impact to the SSSI to '**neutral**'.

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	
Grasslands (g4 and g3c)	Natural recolonisation to temporarily affected areas to occur, habitats provide limited ecological value and anticipated slight adverse impact is an acceptable level therefore further mitigation is not required. However, optional enhancement of increasing cover of unmanaged grassland around the TW site, through reduced mowing, would reduce the impact to 'neutral' or even 'beneficial'.
r2 rivers and streams (Bulling Dike)	Pollution prevention methods should be in place during the development to avoid polluting the waterbodies that surround the TW site. The Environment Agency's Pollution Prevention Guidelines provide relevant information and should be consulted (although withdrawn from their website they remain a valuable source of information and can still be accessed on the archives). Anticipated impact reduced to 'neutral'.
Invasive non-native species (floral)	Soil and plant material should not be removed from the site; where material has to be removed it should be disposed of as contaminated waste.

	Machinery and footwear should be cleaned prior to leaving the site to prevent the spread of INNS seeds or plant material onto other sites. Anticipated impacts to other receptors reduced to ' neutral '.
Faunal species	
General mitigation: • No night working to be carried out. • No additional security lighting to be installed if feasible (both during the construction phase and post-development) to maintain the ecological functionality for nocturnal species such as bats, badger and hedgehogs as potential foraging and commuting ground. • Open excavations should be checked daily by contractors, to safeguard amphibians, badgers and hedgehogs. • Open excavations should be covered overnight, or a slope/mammal path provided to allow any amphibians, badgers or hedgehogs that fall in safe egress out. • Pollution prevention methods should be in place during the development to avoid polluting the watercourse (see 'r2' section of the table above) and reducing functionality for fish, otter and water vole.	
Amphibians and reptiles	The works should ideally be undertaken over the winter period when amphibians and reptiles are hibernating and unlikely to be present within the grasslands where the works will take place. Areas of g3c (1) grassland to be temporarily impacted by the works should first be strimmed to a height of 15cm and left for at least 48 hours within suitable weather conditions (above 5°C) to discourage amphibians and reptiles away from the area.
Bats	Measures should be in place to avoid excessive dust and light around the buildings with bat roosting potential. Materials and stored equipment should not be placed against the buildings where they may block potential roost access points and any site welfare units should be located as far as possible away.
Birds	Elder scrub removal to be undertaken outside of the breeding bird season (i.e. undertaken between October and February). If this is not possible and vegetation has to be removed or disturbed during the active breeding bird season then a nesting check should be carried out by a suitably qualified ecologist within 48 hours of the vegetation removal.

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**'.

5.3.3 Anticipated slight adverse impact to fauna through loss of habitat is acceptable therefore mitigation not required, however, increasing area of unmanaged grassland would provide increased habitat for fauna therefore reducing the impact to '**neutral**', or even '**beneficial**'.

6

References

6.1 Cited References

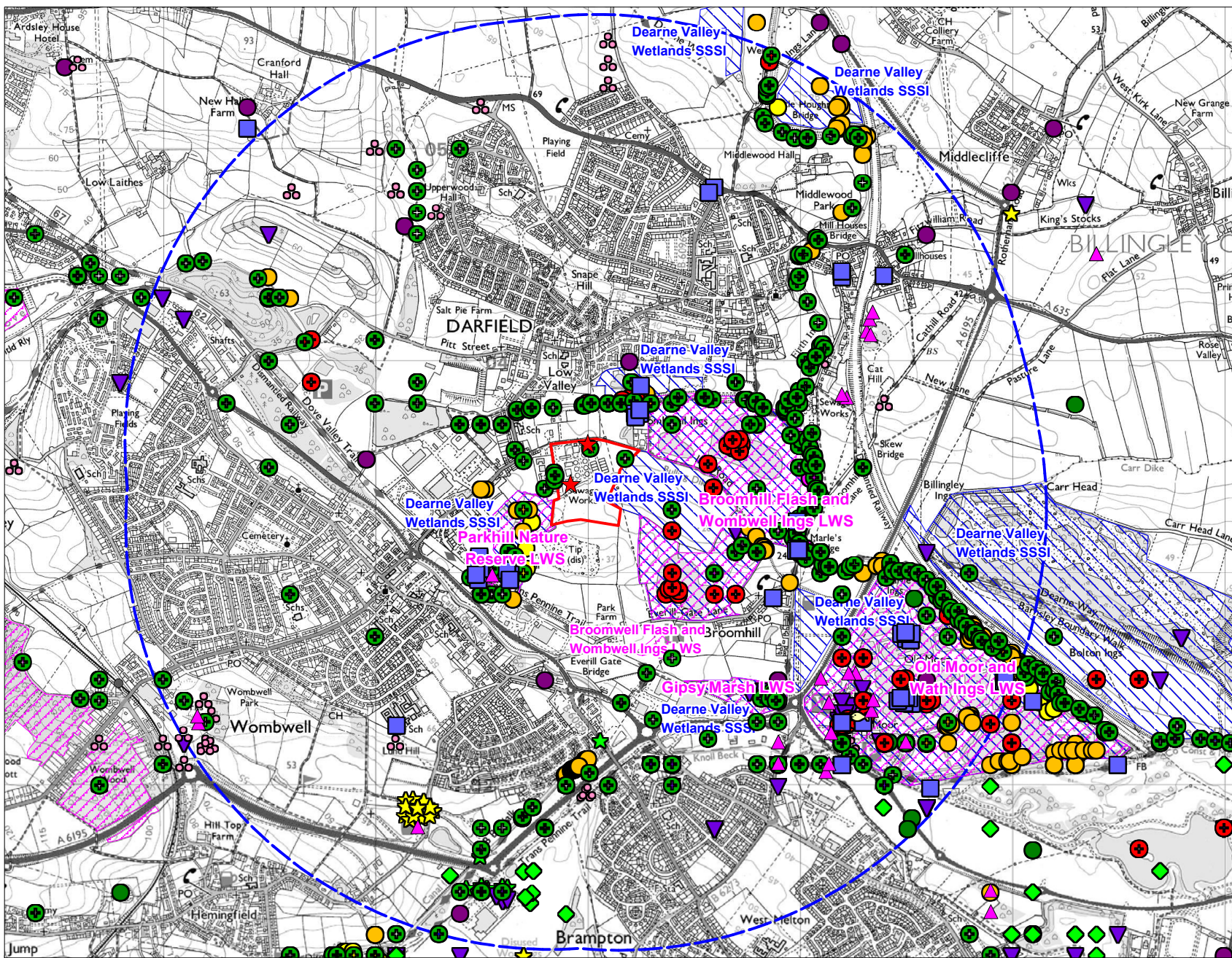
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7 **Figures**

7.1 **Figure 1 – Site Location and Desk Study Results**

7.2 **Figure 2 – UK Habitat Classification Map**

7.3 **Figure 3 – Photographs**



Key

- Site location
- ★ Survey area
- 2km search buffer
- Sites of nature conservation interest**
 - Non-statutory sites
 - Statutory sites
- ★ Amphibians (ex. GCN)
- Bats
- ◆ Birds
- 🐟 Fish
- 🌸 Flowering plants
- ★ Great crested newts
- ▼ Invertebrates
- ▲ Reptiles
- Invasive non-native species (INNS)**
 - ⊕ Fauna
 - ⊕ Flora
- Terrestrial mammals**
 - Brown hare
 - Harvest mouse
 - Hedgehog
 - Otter
 - Water vole

Figure 1 - Site Location and Desk Study Results

Wombwell TW (Update), Barnsley -
Ecological Impact Assessment (EclA)

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Ordnance Survey 0100031673



Date	10/11/2022
Map reference	132_22/RE01 - FIG 1 - V1
Drawn/Approved by	Ben Brown/Jennifer Clarke
Scale	1:25'000 at A4



Figure 2 - UK Habitat Classification Map

**Wombwell TW (Update), Barnsley -
Ecological Impact Assessment (EclA)**

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Ordnance Survey 0100031673



Date	11/11/2022
Map reference	132_22/RE01 - FIG 2 - V1
Drawn/Approved by	Ben Brown/Jennifer Clarke
Scale	1:1'700 at A4

Photograph 1: g4 grassland



Photograph 2: Elder scrub within g4 habitat



Photograph 3: g3c (1) other neutral grassland



Photograph 4: g3c (2) other neutral grassland



Photograph 5: 11 – u1e – built linear features



Photograph 6: r1 – 1040 – standing open water and canals



Photograph 7: r1 – 39 (1) standing open water and canals



Photograph 8: r1 – 39 (2) standing open water and canals



Photograph 9: u1b5 – buildings (photograph taken from 2020 assessment)

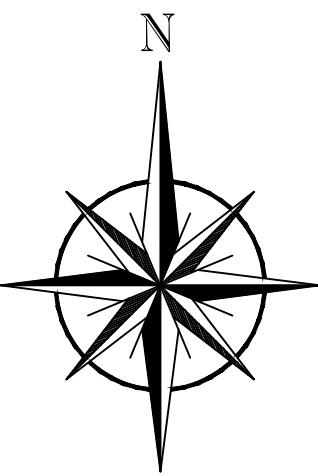


Photograph 10: r1 – rivers and streams (photograph taken from 2020 assessment)



	Project	Wombwell TW (Update)
	Title	Photographs
	Reference	132 22 RE01
	Figure Number	3, Page 2 of 2
	Created by	Ben Brown

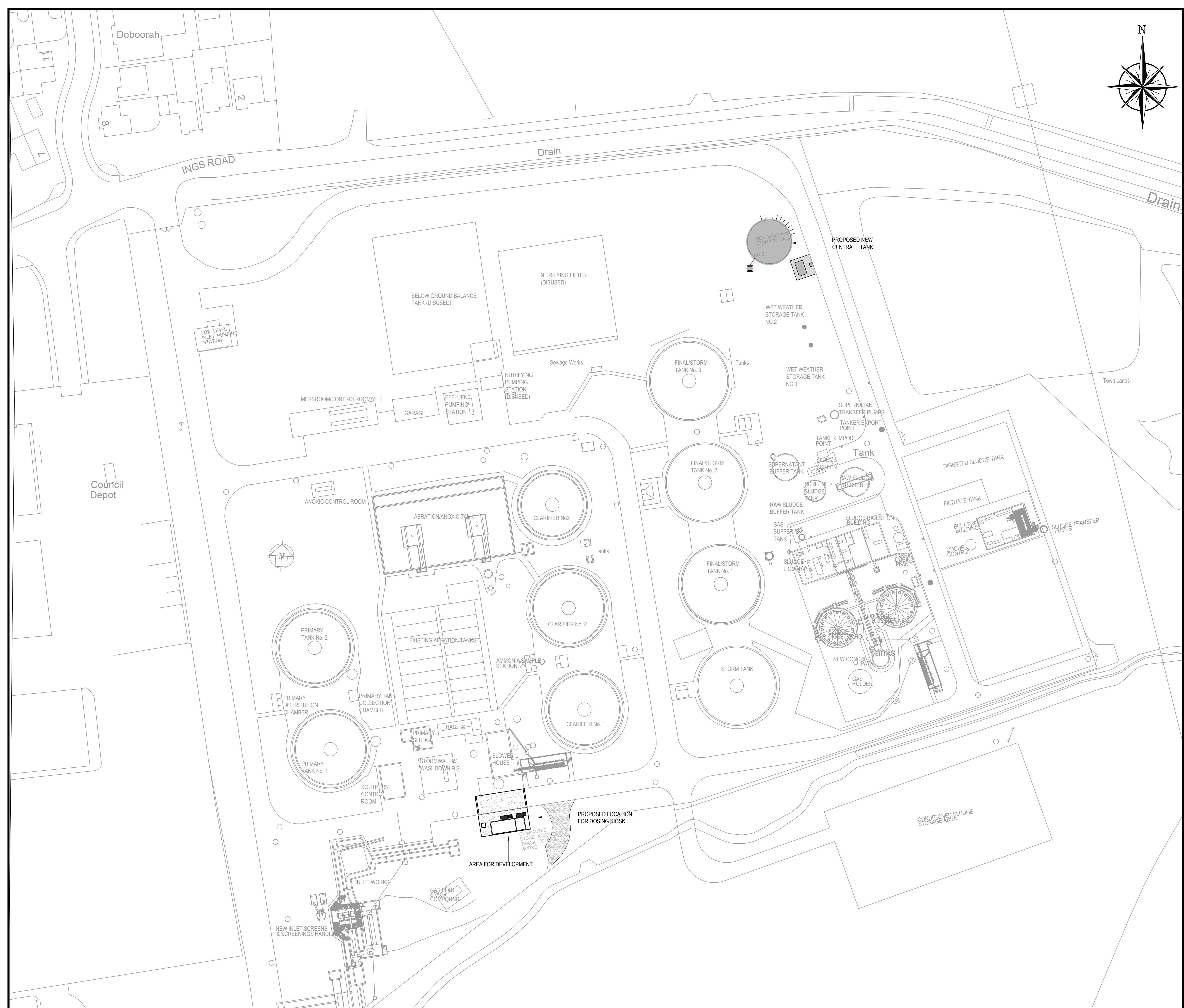
8 **Appendix 1 - Proposals**



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P01 FOR CLIENT COMMENTS					TW	DZ	CH	14.09.2022
Status Rev:	Description:	DB:	CB:	AB:	Output Date:			
Construction Date:					DATE?			
Originator / Partner / OEM Ref:					YORKSHIRE WATER ALWAYS CONSIDERS			
 								
Client:					Yorkshire Water Services Ltd Western House, Western Way, Halifax Road, Bradford, BD6 2SZ			
								
Framework: AMP 7		Work Stream: BELOW GROUND						
YV Batch ID / Project Code: YW.200356		YV Solution ID:						
Site: WOMBWELL STW WOM02								
What three words: AUCTIONED.CASINO.UNDER								
OS Grid Reference: 440828545,403601937		DAZ or DMA References: 305						
Drawing Title: PROPOSED LOCATION OF NEW CHEMICAL DESIGN KIOSK/ AND NEW CENTRATE TANK								
Original Design / OEM Reference:					Size: A1	Scale: SHOWN		
Status Description: STAGE APPROVAL					Status: S4	Revision: P01		
Drawing Number: WOM02- NOD- WWT- WWT- DR- C-08000								

9

Appendix 2 – Impact Assessment Criteria

- 9.1.1 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 receptor.
- 9.1.2 There is a fourth step to assess the 'residual' effects of the impacts with mitigation, which follows the same methodology as Step 3.
- 9.1.3 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.
- 9.1.4 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 be 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.

9.1.5 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).

9.1.6 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.

9.1.7 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

Table 9: Results of Habitat Suitability Index Assessment (Low distinctive grasslands)

g4 – modified grassland		
Criteria number	Brief Description	Score
1	6-8 species per m ²	N
2	Sward height varied	N
3	Scattered scrub less than 20% of grassland area	Y
4	Physical damage is less than 5% of total grassland area	Y
5	Cover of bare ground is between 1% and 10%	Y
6	Cover of bracken less than 20%	Y
7	There is an absence of invasive non-native species	Y
Outcome:		Poor

Table 10: Results of Habitat Suitability Index Assessment (medium to high distinctive grassland)

g3c - other neutral grasslands			
Criteria number	Brief description	Score	
		Grassland 1	Grassland 2
1	Grassland composition matches habitat description	N	N
2	Sward height varied	Y	Y
3	Cover of bare ground is between 1% and 5%	Y	N
4	Cover of bracken less than 20%, cover of scrub less than 5%	N	Y
5	There is an absence of invasive non-native species, species indicative of sub-optimal condition and damage is less than 5%	N	N
6	More than 9 species per m ²	N	N
Outcome:		Poor	Poor