Lincolnshire Lakes, Scunthorpe

Water Vole Survey Report

Keepmoat

May 2023

Ecus Ltd

Report to: Keepmoat

Report Title: Lincolnshire Lakes, Scunthorpe – Water Vole Survey Report

Version: V4.0
Issue Date: May 2023
Report Ref: 18552

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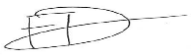

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Version	Author	Description	Date
V0.1	Francesca Thorley	Report drafted	13.07.2022
V0.2	Jennie Caddick	QA1	18.07.2022
V0.3	Francesca Thorley	Amendments after QA1	27.07.2022
V0.4	Faye Durkin	QA2	28.07.2022
V1.0	Francesca Thorley	Final Report for Issue	29.07.2022
V2.0	Francesca Thorley	Update to refer to new layout	19.01.2023
V3.0	Francesca Thorley	Update to refer to new layout	18.05.2023
V4.0	Francesca Thorley	Update to refer to new layout	31.05.2023

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Ecus accepts no responsibility for the accuracy of third party data used in this report.

Contents

Executive Summary

Ecus Limited (Ltd) was commissioned in April 2022 by Keepmoat to undertake water vole *Arvicola amphibius* surveys at the Lincolnshire Lakes, land east of M181 and north of Burringham Road, Scunthorpe. (central Ordnance Survey National Grid Reference (OSNGR) SE 86163 08625), hereafter referred to as 'the Site' (Figure 1a and 1b).

The Site is approximately 24.95 hectares (ha) and comprises mainly arable farmland with additional habitats including dense bramble scrub, tall ruderal vegetation, semi-improved grassland, a hedgerow and one ditch (D5), linked to offsite ditches (D1– D4 and D6).

Ecus Ltd have previously undertaken a '*Preliminary Ecological Appraisal and Water Vole Survey'* (report ref. 17942, V5.0 May 2023) at ditches D1- D6 during which time evidence of the presence of water vole was recorded on D2 and D3, therefore further survey was recommended.

The proposals for the Site are taken from Nineteen47 '*Planning Layout – Lincolnshire Lakes'* (Dwg. 008, 26th May 2023), which includes the development of 599 dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station.

During field survey visits in May and July 2022 water vole presence was confirmed on D2 and D3. Despite being suboptimal at the time of surveys, D6 was also considered suitable for supporting water vole. D5 will be directly impact by the development and whilst no signs of water vole were identified within this ditch, there is evidence of water vole in adjacent/adjoining ditches D2 and D3 which have potential to disperse into D5. As such, a precautionary approach will need to be used to safeguard water voles when undertaking works on D5. D1 and D4 were considered unsuitable to support water vole.

The precautionary approach relating to D5 should include: prior to working on the Site, a toolbox talk should be given to all site personnel. Throughout the construction phase of the development a 5 m buffer zone around D5, and off-site ditches D2, D3 and D6, should be created and maintained using appropriate fencing. Any working to take place within the 5 m buffer zone of D5 will require a pre-works check, at least 3 months prior to any works occurring, by a suitably qualified ecologist, however it is recommended that the pre-works check should be carried out in tandem with any vegetation clearance works to aid the visibility of water vole signs. Pollution prevention methods should be adhered to throughout the construction phase. Materials should not be stored within 10 m of the ditches. Details of the Environment Agency and Internal Drainage Board should be stored in the site office during construction works should any pollution incident occur which may impact upon the ditches.

Enhancements in the form of rewetting D5, management of the vegetation currently present supplemented

with planting where necessary and planting within the lake to allow for dispersal between D3 and D5 once the development is operational. This planting should be focussed around areas in which members of the public will not use to limit disturbance and should be protected once planted from members of the public using this area of the lake.

The Charted Institute of Ecology and Environmental Management (CIEEM) advise that surveys and reports between 18 months and three years old may still be valid in certain circumstances. In order to determine validity, an ecologist should be commissioned to undertake a site visit, to compare the current site status with that recorded during the original survey(s). Where significant changes to the original survey conditions are identified it may be necessary to undertake some or all of the surveys again, including the desk study. There is also the possibility that surveys for 'new' species may be identified.

1. Introduction

1.1 Background

1.1.1 Ecus Limited (Ltd) was commissioned in April 2022 by Keepmoat to undertake water vole *Arvicola amphibius* surveys at the Lincolnshire Lakes, land east of M181 and north of Burringham Road, Scunthorpe (central Ordnance Survey National Grid Reference (OSNGR) SE 86163 08625), hereafter referred to as 'the Site' (Figures 1a and 1b).

1.1.2 The Site is approximately 24.95 hectares (ha) and supports predominantly arable farmland with boundary habitats comprising dense bramble scrub, tall ruderal vegetation, semi-improved grassland, a hedgerow and a ditch (D5). Ditch D5 links to offsite ditches D1– D4 and D6.

1.1.3 Ecus Ltd have previously undertaken a '*Preliminary Ecological Appraisal and Water Vole Survey'* (report ref. 17942, V5.0, May 2023) at ditches D1- D6 during which time evidence of the presence of water vole was recorded on D2 and D3. It was determined that whilst the ditches were due to be retained as part of the development proposals, the surrounding change in land use and potential for pollution may indirectly impact water vole and further survey would be needed to identify the level of water vole activity on and immediately adjacent the Site and further understand potential impacts to this species as a result of the proposed Site development.

1.1.4 The purpose of the surveys was to record and map evidence of water vole activity, which are protected under UK and/or European nature conservation legislation, namely the Wildlife & Countryside Act 1981 (as amended). For full details of legislation visit http://www.legislation.gov.uk.

1.1.5 This report details the findings of water vole surveys carried out during May and July 2022. Methodologies employed during the surveys are described along with the survey findings, an evaluation and assessment of potential impacts, and the requirement for any further survey work and/or mitigation/enhancement, as required.

2. Methodology

2.1 Desk Study

2.1.1 Previous information regarding water vole at the Site, obtained as part of the PEA report (May 2023), was reviewed prior to these surveys and data was used to inform the assessment of impacts to this species.

2.1.2 The PEA report (May 2023) included a data consultation undertaken by Ecus Ltd in October 2021 with local record centre Lincolnshire Environmental Records Centre (LERC), part of the Greater Lincolnshire Nature Partnership (GLNP), and the Multi-Agency Geographic Information for the Countryside (MAGIC) at http://magic.defra.gov.uk.

2.2 Water Vole Survey

2.2.1 A water vole survey was undertaken along D1– D6, within 50 metres (m) of the Site, on the 19th May 2022 (spring survey) by Consultant Ecologist Francesca Thorley BSc MSc ACIEEM, with assistance from Graduate Ecologist Fern Harrison BSc MSc, followed by a second (summer survey) visit on the 12th July 2022.

2.2.2 The surveys searched for and recorded signs of water vole activity, including water vole sightings, burrows, latrines, footprints, pathways in vegetation, feeding remains and cropped grass around tunnel entrances, in accordance with current best practice guidance (Dean et. al., 2016). The general characteristics of the watercourse channel and banks was also recorded as part of the survey.

2.2.3 During the water vole survey any evidence of otter *Lutra lutra*, white-clawed crayfish *Austropotamobius pallipes* or any other protected species was also noted, if present.

2.3 Survey Limitations

2.3.1 Water vole surveys were not undertaken along D1 or D4– D6 during the September 2021 survey (conducted as part of the PEA) due to these ditches being dry at the time of this survey. However, due to the vegetation present within D5 it was considered that water may be present at other times of the year.

2.3.2 During the May and July 2022 survey visits, ditches D1 or D4– D6 were again identified as dry, with vegetation shading the majority of the ditch, and were therefore considered unsuitable for water vole and not surveyed.

2.3.3 The 2022 water vole surveys were undertaken during the optimal time of year for water vole surveying, however, during the July 2022 survey vegetation within the western and northern half of ditches D2 and D3 respectively had become extremely dense and overgrown with common reed *Phragmites australis*, preventing surveyor access at this time. Along these stretches, the banks were surveyed from the top and every 10– 20 m a surveyor accessed down the bank into the ditch and surveyed from a standing position. However, vegetation was also dense on the ditch banks and the banks were steep, restricting visibility and accessibility, and resulting in a reduced survey effort.

2.3.4 It was noted that water levels were unseasonably low during the 12th July 2022 survey due to the survey being preceded by a spell of extremely hot weather and limited rainfall. D2 held an average depth of just 5 centimetres (cm) of water and the water level of D3 had also dropped, evident from the level of silt that was waded through when surveyors entered the ditch. Due to the drop in water level in D3 pollution within the northern half of the ditch was evident: with an orange coloured algae, an oily rainbow sheen as well as a strong smell. It was considered that due to the low water levels pollution from arable pesticides used in adjacent fields and runoff from the adjacent M181 motorway which are likely to readily enter the ditches, was more apparent. As a result, for surveyors' health and safety, only the southern half of D3 was surveyed in July 2022.

3. Findings and Evaluation

3.1 Desk Study

3.1.1 Within the original PEA (May 2023), LERC returned 60 records of water vole for locations within 2 km of the Site which were dated between 1977- 2017. The closest record to the Site was from 1978, approximately 380 m north of the Site.

3.1.2 As part of the PEA site visit, the 2021 water vole survey recorded signs of water vole presence in D2 which included three potential water vole burrows at SE 86475 08835, SE 86445 08835 and SE 86267 08861 and one off-Site at SE 86542 08825. Feeding stations were also identified along D2. A further two potential water vole burrows were identified within D3 at SE 85958 08826 and SE 85941 08775.

3.2 Site and Ditch Descriptions

3.2.1 The Site comprises two arable fields that lie to the east of the M181 in Scunthorpe, North Lincolnshire (Figure 1a and 1b). Habitats found on the Site include arable farmland, semi-improved grassland, dense scrub, tall ruderal vegetation, a dry ditch (D5), and a hedgerow.

3.2.2 D1 is an off-site dry ditch measuring approximately 100 m in length and adjacent to the north eastern Site boundary. The banks were shallow earth banks. No vegetation was noted growing within the ditch, however, the channel was full with leaf litter from over hanging scrub and trees.

3.2.3 D2 is a wet ditch with steep earth banks and is approximately 625 m in length. The ditch is located just outside of the northern boundary of the Site. The water depth varied between survey visits, however it was less than 0.5 m at each visit with a width of 1 m. The flow also varied between survey visits from slow to static and dry. Tall grasses were abundant on the banks, with frequent herbs, rare reeds, sedges. During the July 2022 survey visit, reeds had started to colonise the ditch channel, being dense in the western half of the ditch. Both the northern and the southern bank had evidence of machine re-profiling and subsequent slumping.

3.2.4 D3 is a wet ditch with steep earth banks and is approximately 510 m in length. The ditch lies adjacent the western boundary of the Site. The depth varied between survey visits, however it was less than 0.5 m at each visit with a width of 1 m. The channel in the ditch was very silty and the current was slow during both visits. Herbs were abundant on the banks, with frequent tall grasses, reeds and sedges and rare scrub. During the July 2022 survey visit, reeds started to colonise the ditch channel and became dense along most of the ditch. Both the northern and the southern bank had evidence of machine re-profiling and slumping.

3.2.5 D4 is a dry ditch measuring approximately 200 m in length and is located to the south west within

a small wooded copse outside the Site. The banks were shallow earth banks, with no vegetation growing within the ditch, however, the channel was full with leaf litter from over hanging scrub and trees.

3.2.6 D5 is a dry ditch measuring approximately 510 m in length. The ditch runs east to west across the centre of the Site. The banks were steep earth banks supporting abundant tall grasses and herbs. Dense bulrush *Typha spp.*, flag iris *Iris spp.* and common reed were recorded within the channel.

3.2.7 D6 is a dry ditch outside of the northern Site boundary. D5 runs north to south and a 50 m section of the ditch closest to the Site was surveyed. The ditch supported steep earth banks, with the channel and banks colonised by dense tall grasses with occasional herbs and rare scrub.

3.2.8 For the purposes of the field surveys, D1 and D4– D6 were not surveyed as these ditches were dry during both survey visits. D1 and D4 were also shaded with limited vegetation suitable for water vole foraging and, therefore, were considered unsuitable to support water vole. D5 and D6 whilst also dry were dense with vegetation suitable for water vole foraging.

3.3 Field Survey

19th May 2022

3.3.1 The May 2022 spring survey visit identified the presence of water vole on both D2 and D3, immediately adjacent the Site. Signs recorded included burrows, feeding stations and latrines, mammal runs, mammal digging, as well as audible squeaking which may be attributed to water vole was also recorded. The majority of the signs were identified along the most southern third of the ditch bank. Locations and description of field signs are provided in Table 1 and displayed in Figure 1a.

Table 1. Field Sign Descriptions and Locations (May 2022)

Field Sign Description	Grid Reference Location
Mammal digging	SE 85818 08427
Feeding station	SE 85815 08430
Feeding station	SE 85815 08436
Mammal digging	SE 85821 08433
Feeding station	SE 85815 08439
Mammal run	SE 85815 08442
Feeding station	SE 85821 08439
Feeding station	SE 85818 08448
Feeding station	SE 85824 08455

Latrine	SE 85827 08467
Feeding station	SE 85832 08482
Latrine	SE 85832 08488
Latrine	SE 85835 08494
Burrow	SE 85838 08500
Burrow	SE 85844 08518
Burrow	SE 85844 08524
Latrine	SE 85846 08527
Burrow	SE 85849 08536
Burrow	SE 85852 08539
Burrow	SE 85855 08545
Burrow	SE 85858 08557
Feeding station	SE 85858 08566
Feeding station	SE 85878 08617
Mammal run	SE 86439 08838
Burrow	SE 86331 08854
Squeaking	SE 86319 08853
Burrow	SE 85932 08759
Burrow	SE 85927 08747
Burrow	SE 85921 08735
Burrow	SE 85907 08687
Burrow	SE 86511 08830

3.3.2 It should be noted that the mammal digging and mammal runs are not conclusively created by water vole, but due to their location relative to the other signs observed, it is expected that water vole have been digging to create new burrows and using the runs. Likewise, audible squeaking is also not conclusively water vole and could be attributed to other small mammal(s). Vegetation that made up the feeding signs all consisted of grasses and reeds, with the majority having bite marks that were at a 45 degree angle typical of water vole.

12th July 2022

3.3.3 The July 2022 summer survey visit identified possible survey signs that could be attributed to the presence of water vole on D3 only. Signs included feeding stations, mammal runs and mammal digging. The signs were identified along the bottom of the bank. Locations and description of field signs are given in Table 2 and displayed in Figure 1b.

Table 2. Field Sign Descriptions and Locations (July 2022)

Field Sign Description	Grid Reference Location
Mammal digging	SE 85815 08424
Feeding station	SE 85850 08524
Feeding station	SE 85855 08539
Mammal run	SE 85850 08524
Mammal run	SE 85855 08539

3.3.4 It should be noted that the mammal digging and mammal runs, as noted previously, are not conclusively of water vole presence, although due to the location of other signs observed during the survey, it is expected that water vole have been digging to create new burrows and creating runs. Vegetation that made up the feeding signs all consisted of grasses and reeds, with the majority having bite marks that were at a 45 degree angle typical of water vole.

Incidental Records

3.3.5 During the survey visit on the 12th July 2022, a large mammal path was identified at SE 86397 08843, cutting across the D3. It is possible this was created by badger *Meles meles* or deer. Also within the channel of D2, deer prints were observed with three red deer *Cervus elaphus* disturbed resting on the northern bank of D2.

4. Impact Assessment and Recommendations

4.1.1 The Charted Institute of Ecology and Environmental Management (CIEEM) advise that surveys and reports between 18 months and three years old may still be valid in certain circumstances. In order to determine validity, an ecologist should be commissioned to undertake a site visit, to compare the current site status with that recorded during the original survey(s). Where significant changes to the original survey conditions are identified it may be necessary to undertake some or all of the surveys again, including the desk study. There is also the possibility that surveys for 'new' species may be identified.

4.2 Proposals

4.2.1 The proposals for the Site are taken from Nineteen47 '*Planning Layout – Lincolnshire Lakes'* (Dwg. 008, 26th May 2023) which includes the development of 599no. dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station.

4.2.2 Only D5 lies within the Site boundary and will be impacted directly by the Site development proposals - due to be culverted at two locations to facilitate the installation of roads and meet other infrastructure needs. D5 will be enhanced as part of the proposals, so that it features as a wildlife corridor, and will enter the lake located in the west of the Site (G. Peace, personal communication, 14th July 2022). The enhancement will consist of re-wetting the ditch, management of vegetation within the ditch channel and planting along the banks. No development will encroach within 5 m of off-site ditches D1- D4 and D6.

4.3 Legislation

4.3.1 Water vole are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, they are a priority conservation species and a Local Biodiversity Action Plan species. It is illegal to intentionally capture, kill or injure water voles; damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care); disturb them in a place of shelter or protection (on purpose or by not taking enough care) or possess, sell, control or transport live or dead water voles or parts of them (not water voles bred in captivity).

4.4 Impacts and Mitigation

Off Site Ditches

4.4.1 Field surveys confirmed the presence of water vole along D2 and D3. Signs were concentrated toward the east and south ends of the ditches respectively, this is partly due to access restrictions due to dense vegetation growth in other areas of the ditches and, therefore, does not confirm

absence in these extents.

4.4.2 D1 and D4 were dry, shaded by overhanging vegetation and supported limited vegetation suitable for water vole foraging therefore, were considered unsuitable to support water vole and have not been considered further in this report.

4.4.3 D6 whilst also dry, supported dense vegetation suitable for water vole foraging and, given the type of vegetation present within the channel and the connectivity to D2 and D3, was considered likely suitable for supporting water vole.

On Site Ditch

4.4.4 D5 will be directly impact by the development and whilst no signs of water vole have been identified within this ditch, there is evidence of water vole in adjacent/adjoining ditches D2 and D3 which have potential to disperse into D5. As such, a precautionary approach will need to be used to safeguard water voles when undertaking works on D5.

4.4.5 Prior to working on the Site, site personnel should receive a toolbox talk detailing the potential for encountering water vole on the Site, identification and what to do if water vole or signs of water vole activity are identified. Throughout the construction phase of the development (including Site mobilisation, e.g. vegetation clearance, soil stripping etc.), a 5 m buffer zone around the ditch will be created and maintained using appropriate fencing (to be agreed with an ecologist).

4.4.6 In advance of any works commencing within the 5 m buffer zone a pre-works check of D5 should be undertaken by a suitably qualified ecologist, however due to the density of vegetation within the ditch, it is advised that any clearance works should occur in tandem with the pre-works check to allow for the ecologist to accurately determine presence or absence of water vole.

4.4.7 No works should occur within 5 m of the offsite ditches D2, D3 and D6, and throughout the construction and operational phases this 5 m buffer should be maintained and protected using appropriate fencing to ensure no construction activities or site personnel enter these areas.

4.4.8 Pollution prevention methods should be adhered to throughout the construction of the development. Guidance for Pollution Prevention (GPP) documents produced but now withdrawn by the Environment Agency, the Northern Irish Environment Agency (NIEA) and Scottish Environmental Protection Agency (SEPA) should be referred to for site works which may impact the local environment. Relevant examples include:

- PPG1 - Understanding your environmental responsibilities – good environmental practice (EA, NIEA and SEPA, 2013);

- PPG5 – works and maintenance in or near water (EA, NIEA and SEPA, 2007);
- PPG21 – pollution incident response planning (EA, NIEA and SEPA, 2009); and,
- PPG22 – dealing with spills (EA, NIEA and SEPA, 2011).

4.4.9 Materials should not be stored within 10 m of ditches. Details of Environment Agency and Internal Drainage Board contacts for the Site location should be stored in the Site office during construction works so that they can be informed immediately should any pollution incident occur which may impact (either directly or indirectly) upon the ditches.

4.4.10 Night time work should be avoided to prevent disturbance, however if night time work is required lighting used for the proposed works should be faced away from the ditches. Light towers should have hoods to prevent light spill onto ditches.

4.5 Enhancements

4.5.1 In order to enhance the Site for water vole and compensate for loss of possible water vole habitat, D5 should be rewetted and the vegetation within the channel enhanced and managed during the operational phase of the development. Water voles favour grasses, sedges and rushes as well as herbs, such as rosebay willowherb *Chamaenerion angustifolium,* purple loosestrife *Lythrum salicaria* and meadowsweet *Filipendula ulmaria*. The enhancement should favour these plants and where certain types of plants are not present, the ditch should be supplemented with planting of these plant types. Water vole will also utilise scrub such as willow and bramble for food and shelter, however the ditch should not be shaded, therefore any bankside vegetation should be managed to maintain a diverse herby rich grassy sward.

4.5.2 The lake, which is planned to hold water, could also be planted to enhance this feature for water vole and facilitate dispersal between D3 and D5, once the development is operational. Lake planting should be focussed within areas in which members of the public will not use and protected once planted, to limit disturbance and damage.

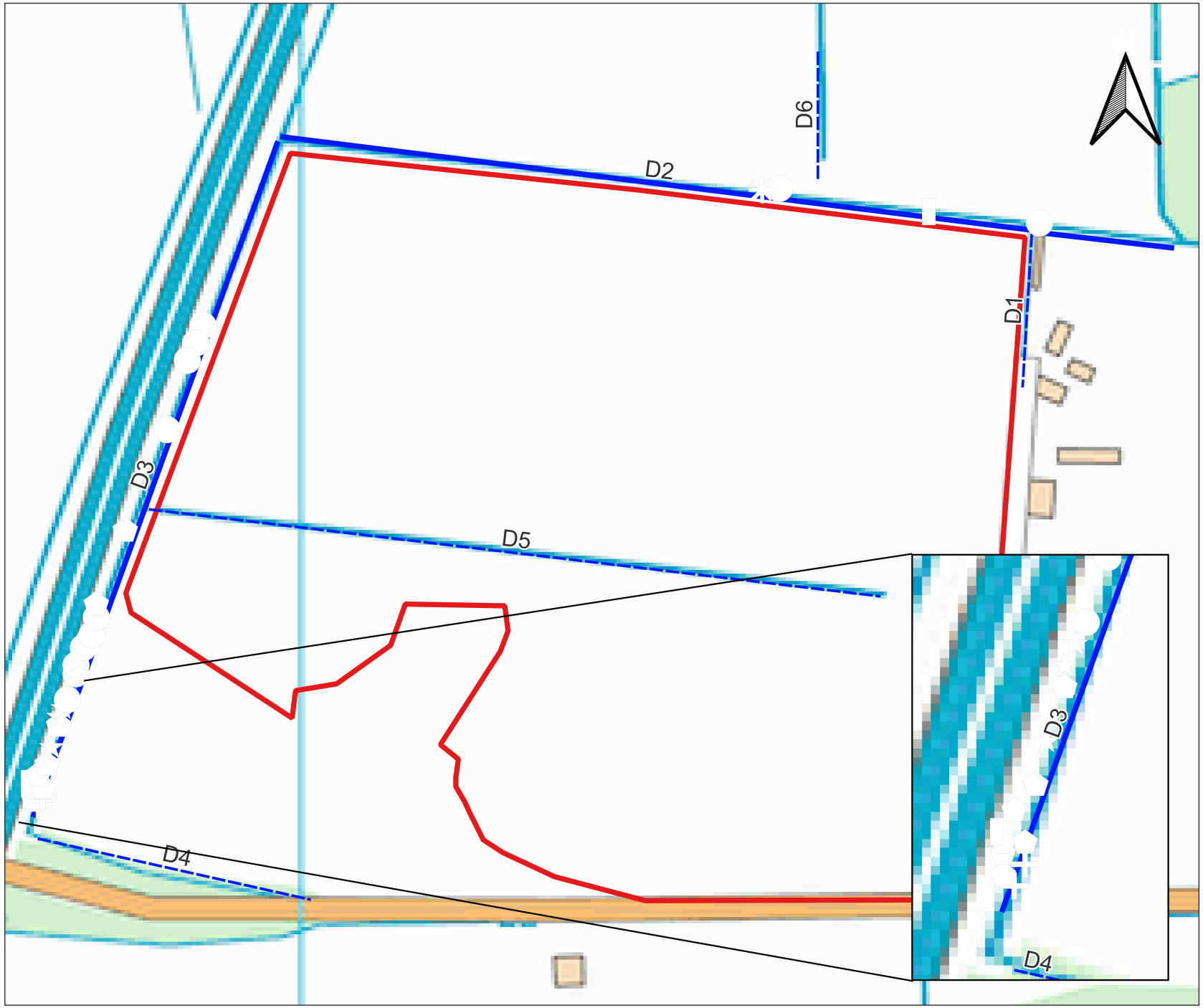
5. References

Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) *'The Water Vole Mitigation Handbook'* (The Mammal Society Guidance Series), eds. Fiona Mathews and Paul Chanin. The Mammal Society, London.

Ecus Ltd (November 2021) '*Lincolnshire Lakes Site, Scunthorpe – Preliminary Ecological Appraisal and Water Vole Survey'. Report r*ef 17942 V1.0. Ecus Ltd, Sheffield.

EA, NIEA and SEPA (2014) *The National Archives – 'Pollution prevention advice and guidance (PPG)'*. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20140328090931/http:/www.environment-agency.gov.uk/business/topics/pollution/39083.aspx [Accessed July 2022].

Figure 1a. Water Vole Survey Results Plan (May)



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Legend

- Site boundary
- Wet Ditch
- Dry Ditch

Spring Water Vole Survey Signs

- Burrow
- Feeding station
- Latrine
- Mammal digging
- Mammal run
- Squeaking

0 75 150 m

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Water Vole Survey Report

Figure 1a
Water Vole Survey Results Plan (May)

Brook Holt 3 Blackburn Road Sheffield s61 2DW
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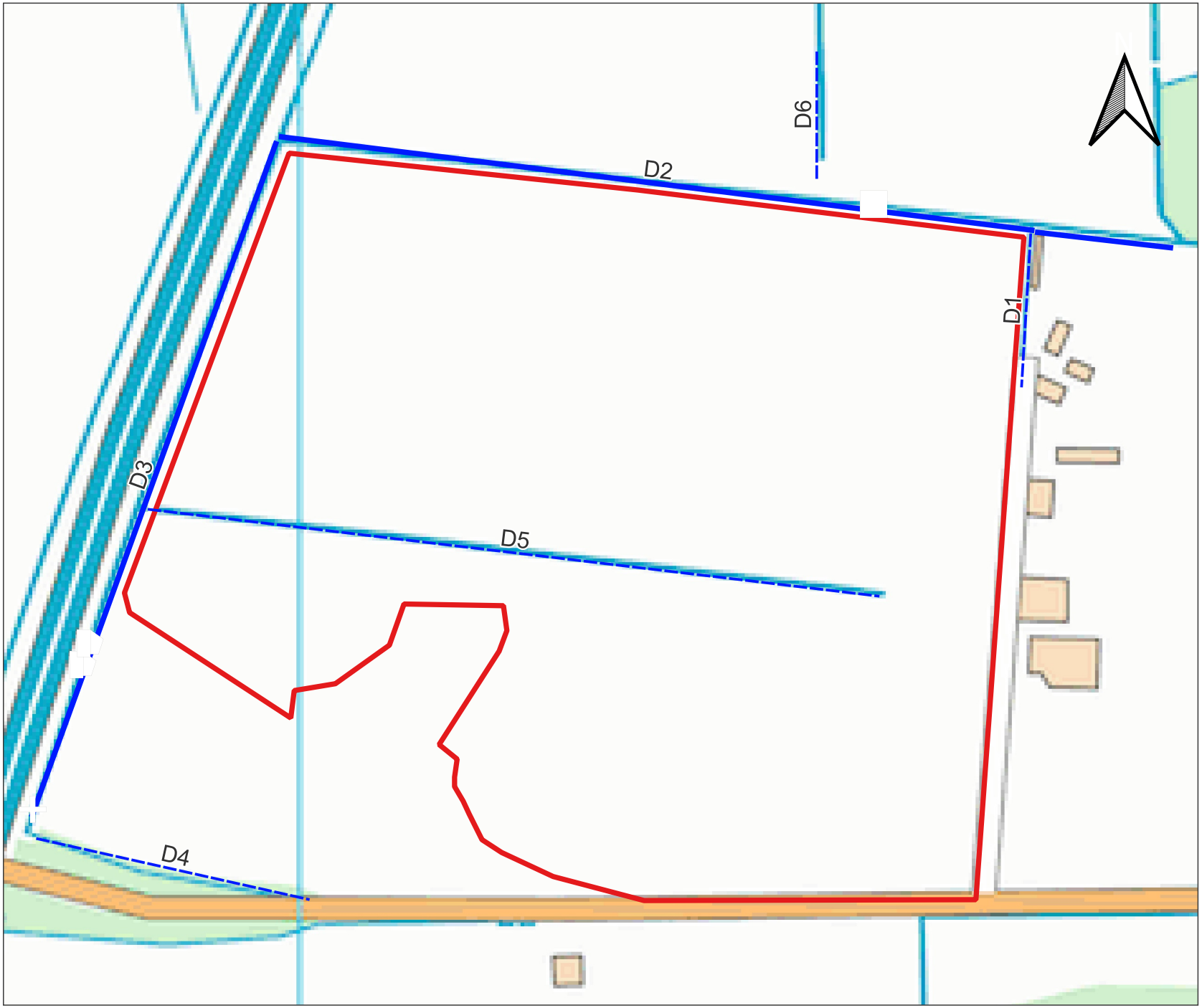
Date: July 2022 | Scale 1:3,750 @A3 | Drg.Ref: FT/18552WV/F1a

Figure 1b. Water Vole Survey Results Plan (July)



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Legend

- Site boundary
- Wet Ditch
- Dry Ditch

Summer Water Vole Survey Signs

- Feeding station
- Mammal digging
- Mammal run
- Mammal path

0 75 150 m

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Water Vole Survey Report

Figure 1b
Water Vole Survey Results Plan (July)

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