CLEVE HILL SOLAR PARK

ENVIRONMENTAL STATEMENT
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WATER VOLE SURVEY

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CLEVE HILL
SOLAR PARK

AECOM ECOLOGY

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Cleve Farm – Water Vole Survey Report.

2015

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1 Summary

AECOM was commissioned in April 2015 by Hive Energy Ltd to undertake a suite of water vole (*Arvicola amphibious)* surveys at the proposed Cleve Farm site, Graveney, Kent (hereafter known as the Site). The purpose of this was to identify any potential constraints to works related to the presence of this protected species within the Site boundary and with regards to water vole.

The Site is to be developed for a sustainable solar energy farm. The Site consists of large arable fields intersected by a network of drainage ditches. The Swale Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and Ramsar site is adjacent to the north, east and west of the Site.

Water vole is afforded full protection under the Wildlife and Countryside Act (1981 as amended). It is an offence to, intentionally kill, injure or take water voles; possess or control live or dead water voles or derivatives; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection, or to disturb water voles while using such a place; sell water voles, or offer or expose for sale or transport for sale; or publish or cause to be published any advertisement which conveys the buying or selling of water voles.

A series of surveys were conducted during September 2015 to assess the presence of water vole within suitable water courses located within the Site boundary.
Water vole was recorded spread across the Site within the drainage ditch network. Generally, higher activity levels were found in the north and west of the Site and less in the south east and east of the Site.

2 Introduction

2.1 Background

Cleve Farm is the proposed location for a solar park on a 359.5 hectare site to the northwest of Graveney, Kent (hereafter referred to as the Site). The approximate Ordnance Survey national grid reference for the Centre of the Site is TR 038 643.

AECOM was commissioned by Hive Energy in 2015 to undertaken an Extended Phase 1 habitat survey at the Site. The aim of the survey and associated desk study was to identify habitats present within the Site and the potential for these habitats to support protected and/or otherwise notable species that could be adversely affected by the proposed development works.

The Extended Phase 1 habitat survey identified the network of ditches that run through the Site as having potential to support water vole. Additionally the desk study produced by the Kent and Medway Biological Records Centre (KMBRC) provided four recent records (between 2011–2013) for water vole from a large drainage ditch that runs adjacent to the northern perimeter of the Site.

In the absence of a detailed design for the proposed scheme, the Extended Phase 1 habitat survey identified the potential for proposed scheme works, particular on or near the existing ditch crossing points, to result in adverse effects on water vole if present in this ditch habitat. A further survey for water vole was therefore recommended along the network of ditches.

2.2 Scope

Further to the recommendations in the Extended Phase 1 habitat survey, AECOM was commissioned by Hive Energy in September 2015 to undertake presence/absence surveys for water vole. The objectives of the survey were:

- to record presence/absence of water vole from across the whole site; and
- to obtain an appropriate indication of the scale and extent of water vole activity within the network of ditches that could be affected by the proposed scheme;

In the absence of a detailed design, water vole surveys covered all suitable watercourses within the extent of the Site boundary, namely all internal drainage ditches.

3 Legislation

From 2008 water voles became subject to increased legal protection and are now fully covered by the provisions of Section 9 of the Wildlife and Countryside Act 1981 (as amended). This legal protection makes it an offence to:

- Intentionally kill, injure or take water voles;
- Possess or control live or dead water voles or derivatives;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection, or to disturb water voles while using such a place;
- Sell water voles, or offer or expose for sale or transport for sale; or
- Publish or cause to be published any advertisement which conveys the buying or selling of water voles.

The water vole is listed as a priority species under Section 41 of the 2006 Natural Environment and Rural Communities Act (NERC s41). Water vole is also listed as a priority species under the Kent Biodiversity Action Plan (KBAP).

4 Methodology

4.1 Water vole survey

Water vole surveys were undertaken by experienced ecologists from AECOM from 8th to 11th September 2015.

The survey methodology used was in accordance with the Water Vole Conservation Handbook (Strachan *et al.*, 2011). This consisted of identifying the extent and distribution of water vole activity through targeted searches of the banks of the network of ditches for field signs indicating recent activity (e.g. feeding stations, latrines, footprints) as well as signs of past and potentially present activity (e.g. burrows). Latrines are recognised as good indicators of territorial behaviour, which in turn generally correlate with water vole breeding activity.

In the absence of a detailed design, the extent of the water vole surveys undertaken covered all potentially suitable watercourses within the extent of the Site boundary, using the following approach.

Due to their ubiquitous nature, all of the ditch network within the Site boundary was deemed as suitable habitat to support water vole and along with recent desk study records from adjacent similar habitat, these ditches are deemed likely to support water vole.

The Site is uniform in nature and the ditches equally so, in terms of habitat type. The ditch profiles across the Site are varied, with main ditch channels 2-3m wide and smaller ditches 0.5-1m. In general, the ditches slope steeply from bank to water's edge at angles of approximately 45 degrees and have high banks to accommodate high water levels. Vegetation is dominated by common reed (*Phragmites australis*), which occurs as a dominant species along the majority of the length of the network, allowing only limited areas of open water, where management of the ditches has taken place in the form of reed cutting or dredging. The localised species frogbit (*Hydrocharis morsus-ranae*) was observed in some of the ditches. This species is characteristic of ditches with muddy substrates.

Local, slight variations in habitat characteristic occur along each ditch length. For example, some ditches have more open water habitat which is deemed less suitable for water vole, due to a general lack of cover and some lengths have dense common reed growth which is deemed more favourable to water vole, due to both cover and food supply.

Based on the characteristics of the Site, its uniform nature, both in habitat type and topography and hydrology and its sheer size, the survey concentrated on detailed sampling of sections of each ditch length, rather than the entire length of all ditches on Site. Particular emphasis was placed on surveying existing agricultural vehicle crossing locations (which may be utilised for new development access routes), as well as optimal habitat areas within each ditch length (optimal habitat being those ditch lengths with plentiful aquatic vegetation, such as dense common reed growth, as discussed above)

At existing agricultural vehicle crossing locations, a detailed survey was conducted 30m upstream and 30m downstream of the crossing point. In optimal habitat areas within each ditch length, for each 100m section of ditch, a 30m section was targeted for detailed survey, to provide a good representation of activity within that ditch. This approach provides for a robust data set of activity to be built up across the Site and to inform any future mitigation.

The dich network is actively managed throughout the year, via both dredging and strimming. Water levels are high at times of heavy rain in the winter months and low at times of little rain during the summer months. There is the chance that American Mink (*Neovison vison*) could be present within the local area, however no signs of this species were recorded throughout the dedicated water vole surveys or any of the other ecological surveys undertaken by AECOM during 2014-2015.

4.2 Constraints

The banks of Ditch 6 were in the process of being strimmed of vegetation during the survey, making this ditch impossible to survey for field signs. However, a detailed search was conducted at existing agricultural vehicle crossing points and culverts along the length of the ditch. The search looked for footprints and feeding stations and any potential latrine locations, including upon in-channel floating debris/wood.

5 Results

5.1 Water vole presence/absence survey

In total 22 ditches were surveyed for water vole from within the Site boundary. Generally, current water vole activity was abundant and widespread across the Site within suitable habitat with, water vole activity being recorded from 10 ditches. See Table 4.1 below and Figure 1 for results. Ditch numbers absent in Table 4.1 below contained no signs of water vole presence. Detailed of results for all 22 ditches can be found in Appendix A.

Table 4-1. Ditches with water vole activity

Ditch Reference	Description of activity	Approximate length of ditch (km)	Location of Activity
D1	Burrows, feeding remains, prints, latrines and droppings.	0.45	Along all sections surveyed. Two burrows were identified within 10m to the north of the vehicle crossing point. Feeding remains and latrines identified within 30m section adjacent to the south of the crossing point.
D2	Feeding remains, dropping and latrines.	0.5	Activity including latrines recorded only within vicinity of existing vehicle crossing point located towards the centre of the ditch.
D3	Burrows, feeding remains, latrines, prints, droppings.	1.4	Activity recorded along the extent of the ditch. Dropping, latrines and feeding remains recorded within 30m of existing vehicle crossing points. Two burrows recorded within 30m to the north of existing vehicle crossing point.
D4	Burrow, feeding remains, latrines, dropping and prints.	1.3	Activity recorded along all sections of the ditch surveyed. A single burrow was recorded with 30m of the crossing point to its north.
D5	Prints, feeding remains, latrines and droppings.	1.2	Activity recorded along all sections of the ditch surveyed and within 30m sections of all existing vehicle crossing points. No burrows recorded within 30m of existing vehicle crossing points.
D8	Burrow, feeding remains, latrines.	0.2	A single burrow was recorded to the north of the ditch. A latrine and feeding remains recorded within 30m of vehicle crossing point to its south

D9	Droppings and burrow.	0.3	A single burrow was recorded within 30m of an existing vehicle crossing point to its east. Only droppings present along the section of the ditch surveyed.
D10	Burrow, feeding remains and prints.	0.9	A single burrow located near vehicle crossing point at intersection with D9. Only sporadic signs towards the northern end of the ditch.
D13	Droppings.	0.4k	Droppings only found to the north of the ditch within 30m of existing vehicle crossing point.
D21	A burrow.	0.3	A single burrow located within 30m of the vehicle crossing point to its east. Water vole droppings were also recorded on a wooden plank within the adjacent perimeter ditch.

Other species recorded throughout the ditch network included bank vole (*Clethrionomys glareolus*) and brown rat (*Rattus norvegicus*).

6 Discussion

6.1 Water Vole Distribution

Positive water vole activity was recorded spread across the Site, with the majority of activity recorded along ditches in the north of the Site, and only a single observation of water vole activity in the form of a single burrow from D21 in the southeast. Water vole droppings were recorded from a boundary perimeter ditch to the southeast that was not surveyed in detail as part of these surveys.

Within the ditches where water vole activity was recorded, burrows were noted within 30m of existing agricultural vehicle crossing points at D1, D3, D4, D9, D10 and D21. Current latrines were recorded from six of the ditches namely D1, D2, D3, D4, D5 and D8.

The presence of a latrine is a good indicator of a breeding population of water vole. It is assumed that the water voles from these ditches are dispersing from the perimeter nature reserve ditch network where the desk study records for water vole occur. This is best illustrated by the ditch network to the northwest where the majority of activity recorded was along the northern intersections of the ditch network. The adjacent nature reserve ditch network is managed in a less intensive manner than the agricultural landscape of the Site and is likely to make for a more favourable habitat for local water vole populations.

Further signs of presence for water vole recorded included individual droppings, feedings stations and footprints.

7 References

Strachan, R., Moorhouse, T. and Gelling, M. 3rd Edition (2011) *Water vole Conservation Handbook.* The Wildlife Conservation Research Unit, University of Oxford.

Appendix A. Water Vole Results

Appendix A.
Results of water vole survey

Ditch Reference	Description of activity	Approximate length of ditch	Location of Activity
D1	Water vole burrows, feeding remains, prints, latrines and droppings	0.45km	Along all sections surveyed. Two burrows were identified within 10m to the north of the vehicle crossing point. Feeding remains and latrines identified within 30m section adjacent to the south of the crossing point.
D2	Feeding remains, dropping and latrines	0.5km	Activity including latrines recorded only within vicinity of existing vehicle crossing point located towards the centre of the ditch.
D3	Burrow, feeding remains, latrines, prints, droppings	1.4km	Activity recorded along the extent of the ditch. Dropping, latrines and feeding remains recorded within 30m of existing vehicle crossing points. Two burrows recorded within 30m to the north of existing vehicle crossing point.
D4	Burrow, feeding remains, latrines, dropping and prints	1.3km	Activity recorded along all sections of the ditch surveyed. A single burrow was recorded with 30m of the crossing point to its north.
D5	Prints, feeding remains, latrines and droppings	1.2km	Activity recorded along all sections of the ditch surveyed and within 30m sections of all existing vehicle crossing points. No burrows recorded within 30m of existing vehicle crossing points.
D6	Not surveyed – ditch vegetation strimming in progress.	1.2km	N/A
D7	No signs	0.45km	N/A
D8	Burrow, feeding remains, latrines	0.2km	A single burrow was recorded to the north of the ditch. A latrine and feeding remains recorded within 30m of vehicle crossing point to its south
D9	Droppings and burrow	0.3km	A single burrow was recorded within 30m of an existing vehicle crossing point to its east. Only droppings present along the section of the ditch surveyed.
D10	A single burrow, feeding remains and prints.	0.9km	A single burrow located near vehicle crossing point at intersection with D9. Only sporadic signs towards the northern end of the ditch.
D11	No signs	0.75km	N/A
D12	No signs	0.3km	N/A
D13	Droppings	0.4km	Droppings only found to the north of the ditch within 30m of existing vehicle crossing point.
D14	No signs	0.55km	N/A
D15	No signs	0.25km	N/A
D16	No signs	0.7km	N/A
D17	No signs	0.7km	N/A
D18	No signs	0.4km	N/A
D19	No signs	0.3km	N/A
D20	No signs	0.5km	N/A
D21	A single burrow	0.3km	A single burrow located within 30m of the vehicle crossing point to the its east. Water vole droppings were also recorded along on a wooden plank within the adjacent perimeter ditch.
D22	No signs	0.35km	N/A

AECOM Hive Energy Cleve Farm

Water vole survey April 2016

Figure 1. Water Vole Survey Results

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LEGEND

- Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

Purpose of Issue: FINAL

Client: CLEVE HILL SOLAR PARK LIMITED

Project Title: CLEVE FARM

Drawing Title: WATER VOLE SURVEY OVERVIEW

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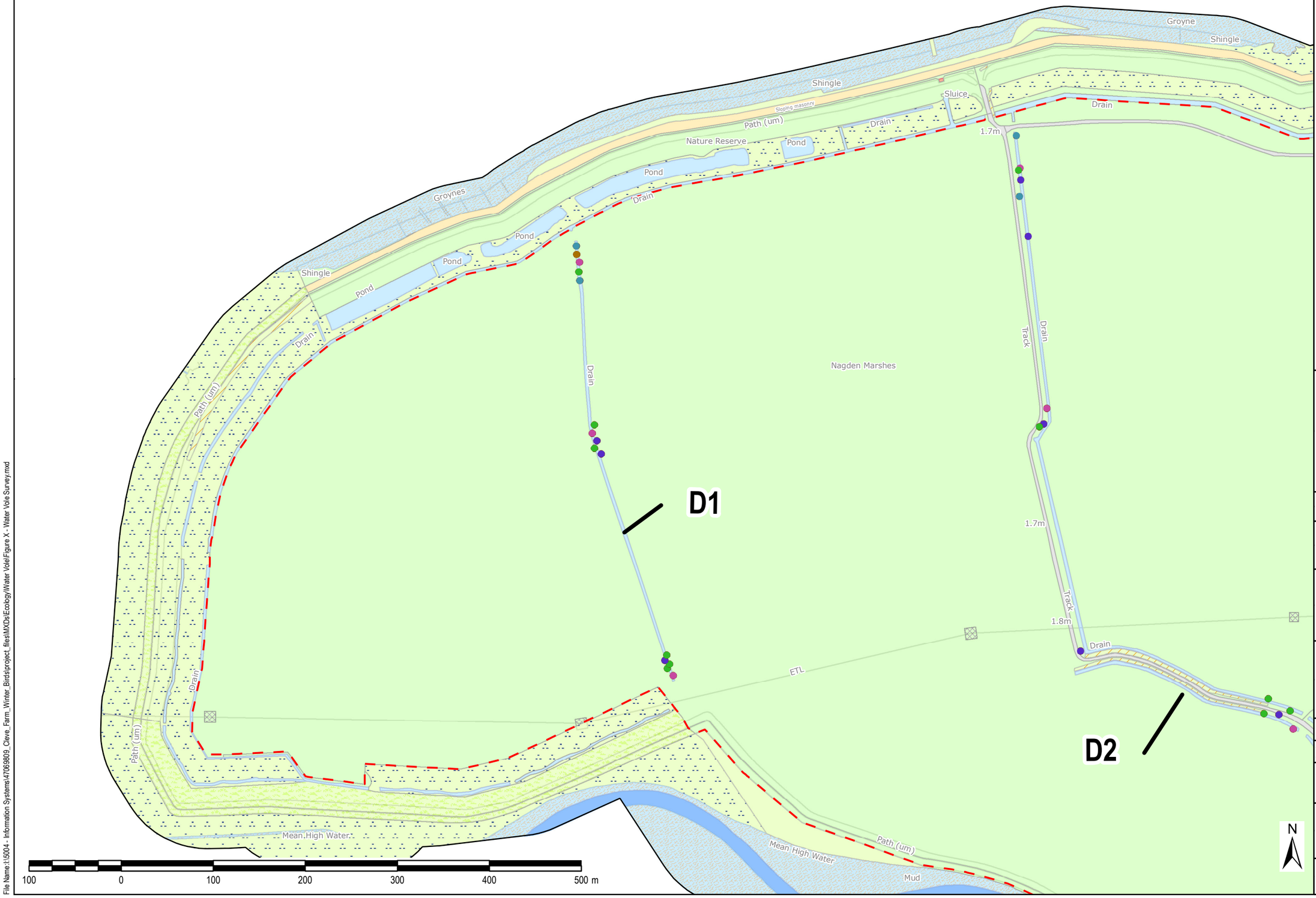

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LEGEND

Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

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Drawing Title: WATER VOLE SURVEY MAP 1

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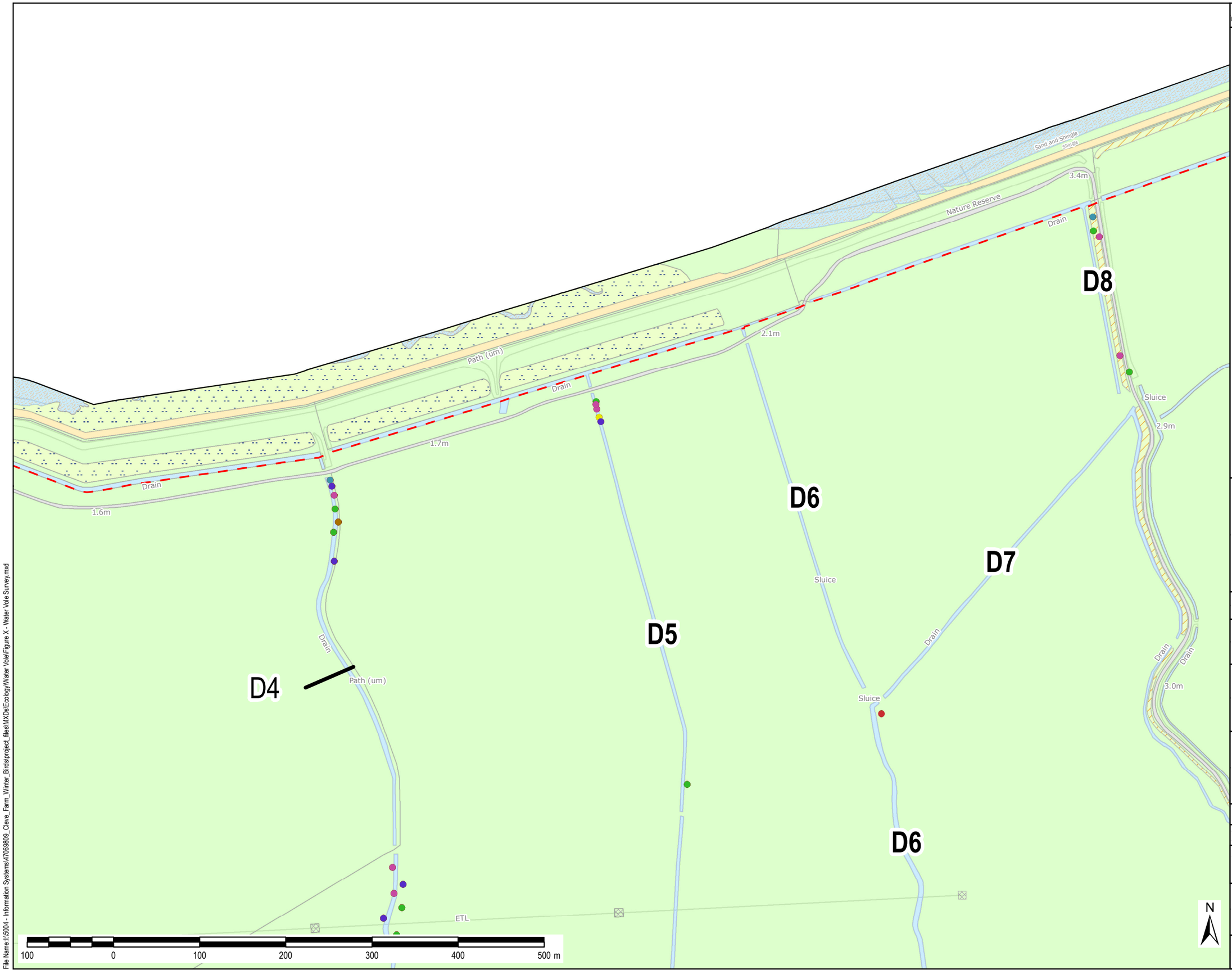

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LEGEND

Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

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WATER VOLE SURVEY
MAP 2

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LEGEND

Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

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Client
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Drawing Title
WATER VOLE SURVEY
MAP 3

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LEGEND

- Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

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Drawing Title
WATER VOLE SURVEY
MAP 4

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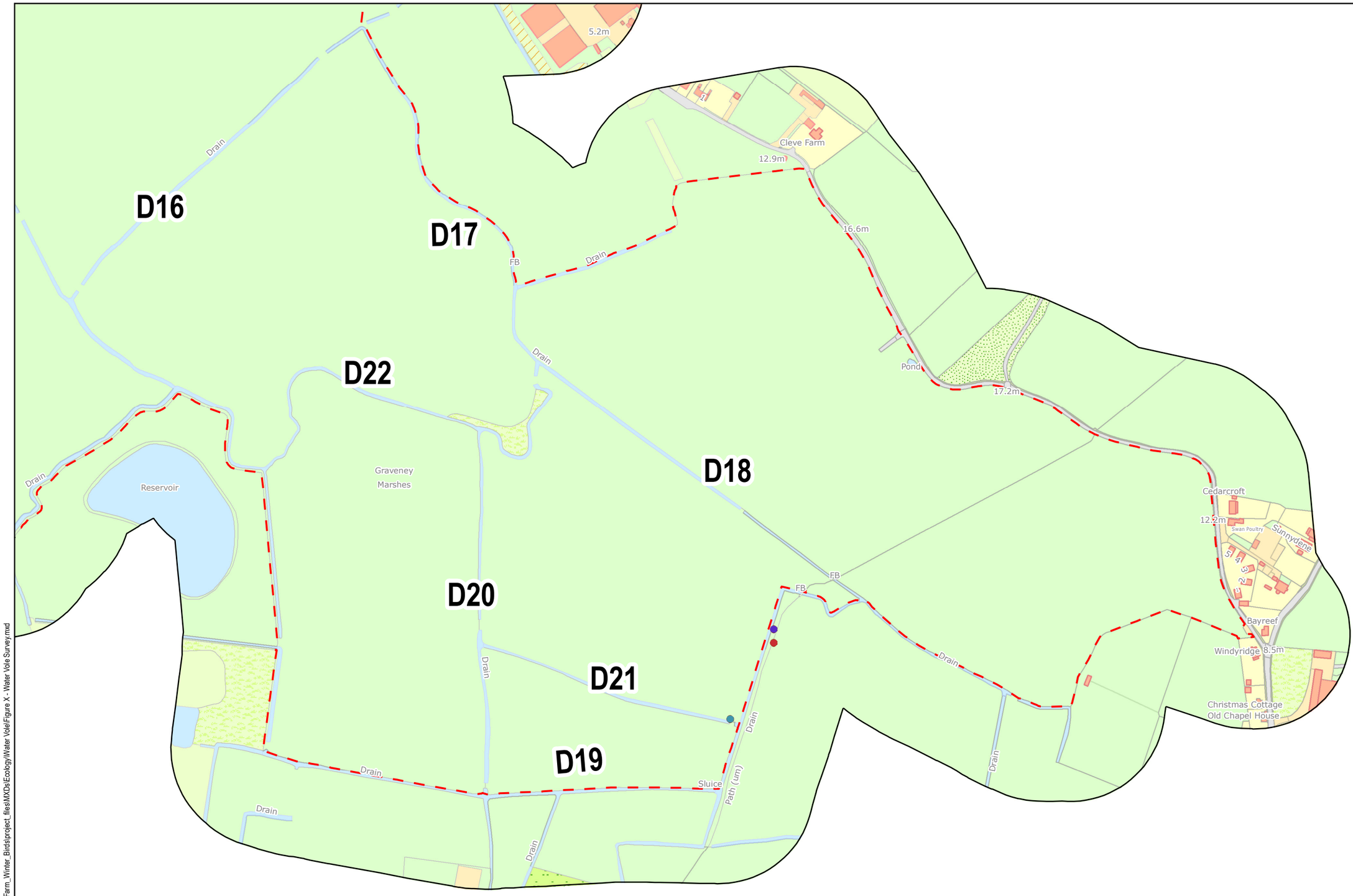

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LEGEND

- Site boundary

Water vole

- Burrow
- Ditch strimmed
- Droppings
- Feeding remains
- Feeding station
- Latrine
- Prints

Note:
Positive results are for 30m sample survey lengths, either within a 100m stretch of ditch or either side of an existing ditch crossing point

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