PORT OF TILBURY LONDON

PLANNING ACT 2008

INFRASTRUCTURE PLANNING
(APPLICATIONS: PRESCRIBED FORMS AND PROCEDURE) REGULATIONS 2009

PROPOSED PORT TERMINAL AT
FORMER TILBURY POWER STATION

TILBURY2

TILBURY POWER STATION: ECOLOGY SURVEY AND MITIGATION PLAN (DECEMBER 2015). REPORT BY WYG ON BEHALF OF RWE

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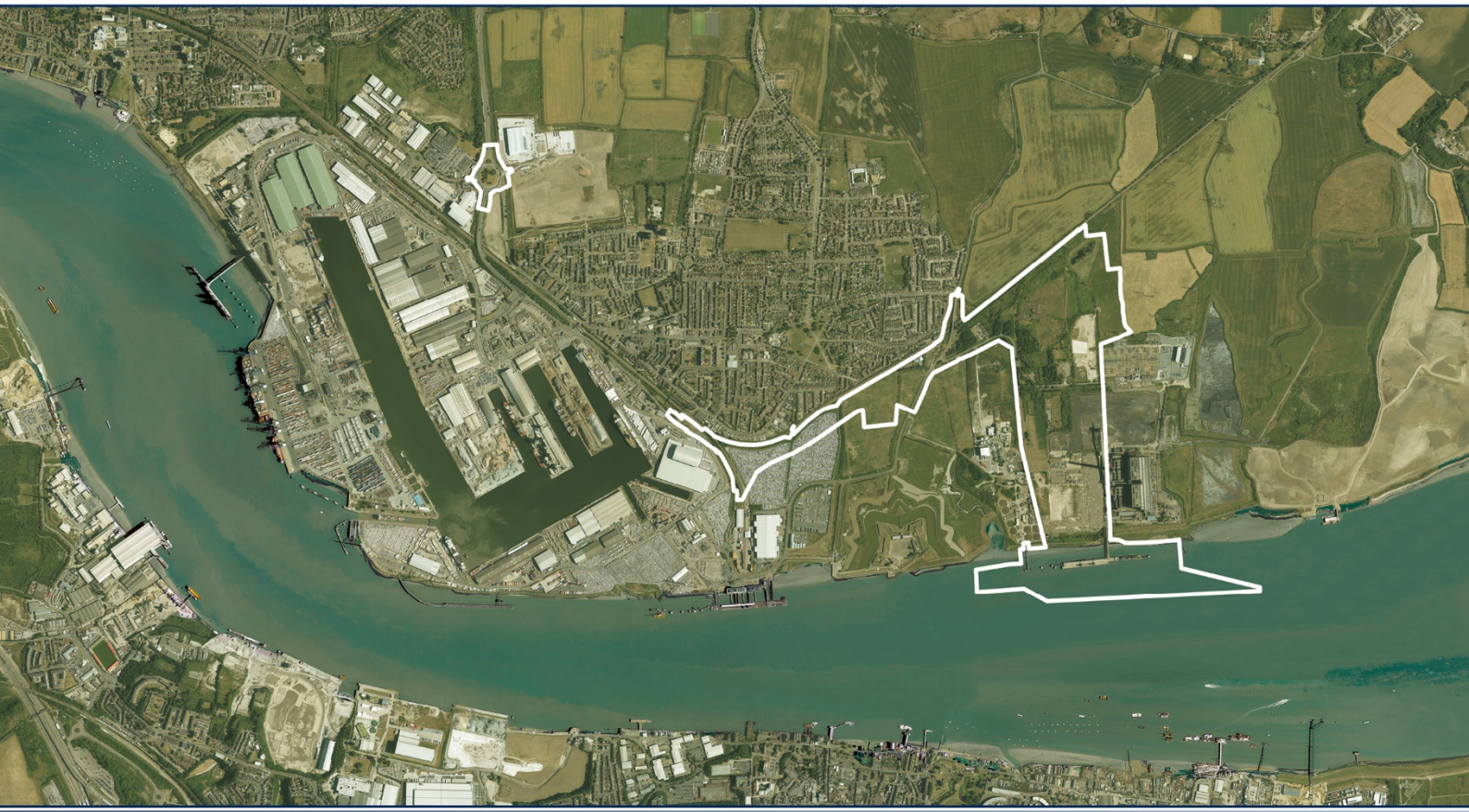

TILBURY2

RWE Generation UK plc

Tilbury Power Station

Ecology Survey and Mitigation Plan

December 2015

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1.0 Introduction

1.1 Background

WYG was commissioned by RWE Generation UK plc (RWE) in September 2014 to undertake a suite of ecology surveys to inform an ecological mitigation plan (EMP) associated with the demolition of Tilbury power station. These surveys took place in the 2015 survey season. The scope of these surveys was extended to include the area within the RWE ownership boundary to determine if there were any ecological constraints throughout the wider area which should be considered in relation to the demolition work. The aim of the Ecology Survey and Mitigation Plan is to outline measures required to allow the demolition work to be undertaken in accordance with EU and UK legislation.

Tilbury power station ceased large scale electricity generation in August 2013 and officially closed at the end of October 2013. Since closure, the station has undergone a series of decommissioning works. Demolition of buildings and built structures within the demolition boundary (Drawing Number MAP/TILB/044/A, Appendix B) is likely to take place in the period between 2016 and 2018 and will be carried out under Permitted Development rights, subject to the Prior Approval by Thurrock Council.

This report focuses on the impacts resulting from the demolition works, although reference is made to ecological data collected from the wider site to provide context and more accurately predict likely impacts on biodiversity. It is also possible that areas outside the demolition boundary will be required to provide mitigation for ecological impacts so it is important to fully understand the current ecological value of these areas. As the demolition contractor has not yet been appointed and as exact demolition methods are still to be finalised, this EMP should be considered as a working document which will be updated as methods develop and more information becomes available.

This EMP outlines mitigation required to comply with EU and UK legislation during the demolition phase of works. Reference has not been made to future redevelopment at the site as this is currently unknown but ecological mitigation measures have borne this in mind so as not to restrict options for the site's redevelopment going forward. Ecological enhancement for the species contained in this report has not been included here but will be considered as future redevelopment plans are drawn up.

1.2 Site Location

Tilbury power station is located on the northern bank of the River Thames to the east of Tilbury and south of West Tilbury (post code RM18 8UJ); it is accessed off Fort Road. Tilbury Sewage Treatment Works is located immediately to the west of the site with Tilbury Docks beyond this (site location is shown on Figure 1.1).

This report refers to a number of areas which have been defined below for clarity (refer to Figure 1.2):

- Proposed demolition boundary - the redline boundary for the demolition work is shown on Figure 1.1, Appendix A, and MAP/TILB/044/A, Appendix B; the OS grid reference for the centre of the demolition site is TQ 660 757. It includes the A and B-stations plus the Tilbury Energy and Environment Centre and a number of pylons.
- RWE ownership boundary - RWE owns a larger area of land boundary (extending to approximately 345.4 acres) around the demolition site including ashfields to the east.
- Northern Area – this is located at the north of the RWE ownership area and includes the Lytag Brownfield Wildlife Site and Tilbury Pond Wildlife Site (see below). Part of the Northern Area was also identified as a possible reptile receptor area in previous planning applications – referred to as Receptor Area A.
- Lytag Brownfield Wildlife Site is a non-statutory site located within the RWE ownership boundary to the north of the Station Approach Road. It is a brownfield site which has been designated for its invertebrates and reptiles.
- Tilbury Pond Wildlife Site is a non-designated site located within the RWE ownership boundary within the Northern Area. It was created in 2011 as mitigation for proposed works, although the mitigation works were not carried out. It has been fenced since it was created to minimise the migration of species into it until translocation work is required.
- The Tilbury Energy and Environment Centre (TEEC) Wildlife Site includes the centre itself plus a complex mosaic grassland notable for rare plants and invertebrates.
- Tilbury Riverside Project Community Meadow – this is a non-designated wildflower meadow between the southern demolition boundary and the River Thames.
- National Grid compounds – there are a number of areas within the RWE ownership boundary which are owned by National Grid but leased to others e.g. the electricity sub-station immediately to the north of the demolition boundary.

1.3 General Site Description

Extended Phase 1 habitat surveys have been completed for areas within the RWE ownership boundary and further afield as part of previous applications. Appendix A - Figure 1.4 identifies those habitats within the demolition boundary.

The majority of the site is hard standing and bare ground with buildings and built structures in the form of the A-station, B-station, jetty and associated infrastructure. Habitats are largely restricted to common and widespread categories with tall ruderal, neutral grassland and ditches towards the periphery. Connectivity with the wider landscape is provided via scattered and dense scrub, amenity,

neutral and unimproved grassland and scattered trees. Salt marsh makes up habitat along (outside) the southern boundary.

Habitats have also been discussed in the appropriate species section below.

1.4 Development Proposals

The demolition of Tilbury power station will entail the deconstruction of the buildings and structures associated with the Tilbury B station and the remaining structures of Tilbury A. No excavations will be required as part of the demolition and concrete slabs, road surfaces and other similar structures will be left *in situ*. There are a number of buildings and built structures outside the main demolition boundary which will also be demolished including the Northern Degreasing Shed (which contains the owl house) and a number of pylons. Refer to Drawing Number MAP/TILB/044/A (Appendix B) for further detail.

It is currently understood that the two chimneys of the B-station will be demolished to fall away from the River Thames although this is still to be confirmed by the demolition contractor; drawing number MAO/TILB/062/A (Appendix B) shows the currently proposed debris zone and exclusion zone. This has been considered when identifying likely impacts and appropriate ecological mitigation. Crushing and screening areas plus a metal processing area will be set up within the demolition boundary with designated traffic routes for machinery and vehicles associated with the proposed works. These areas are shown on Drawing Number MAP/TILB/044/B (Appendix B).

1.5 Survey & Reporting Objectives

Work was undertaken to inform the ecological assessment associated with the demolition of Tilbury power station and associated infrastructure and within the RWE ownership boundary with the objective of identifying appropriate mitigation to minimise impacts on protected and notable habitats and species, and to provide advice to allow the proposed works to be completed within the constraints of wildlife related legislation.

The 2015 ecological work included:

- A water vole survey of all water bodies within the RWE ownership boundary;
- Bat activity and emergence surveys within the RWE ownership boundary;
- Great crested newt surveys of ponds within 500m of the RWE ownership boundary;
- Reptile surveys within RWE ownership boundary including the Tilbury Pond Wildlife Site;

- A dormouse survey within the RWE ownership boundary;
- Breeding bird surveys of the RWE ownership boundary.-

Where required to comply with guidelines, the surveys were extended beyond the redline boundary; the study area for each species has been described under the relevant sections of this report. Although a Phase 1 habitat survey was not undertaken as part of the 2015 surveys, previous surveys have been used to prepare a Phase 1 habitat map of the demolition boundary (Appendix A - Figure 1.4).

The Tilbury Pond Wildlife Site (WS) is outside the demolition boundary but may be used as a translocation site should any species need to be removed from within the demolition boundary. The pond is currently fenced with water vole proof fencing and the WS itself is fenced with reptile-proof fencing which has been maintained in the most-part although there has been some damage as a result of ponies which were previously present on site. As the site has been in existence for a number of years and as there are some breaches within the exclusion fencing, surveys were undertaken to determine if it was still considered suitable to receive translocated animals (i.e. reptiles and water voles) from within the demolition boundary should it be available.

Please note that species have previously been recorded within the RWE ownership boundary that have not been subject to update surveys by WYG in 2015 e.g. invertebrates and badgers. The scope of the 2015 survey work has been based on previous knowledge of those species considered most likely to be impacted by the demolition activities. Where impacts are considered likely, a mitigation section has been included which is based on WYG's previous knowledge of the site e.g. for badgers. However, for all other species, it is considered that they are unlikely to be significantly impacted by the proposed demolition works, or that mitigation outlined for other species will also be applicable to them e.g. avoidance and protection of ditches will mitigate for impacts on water voles as well as invertebrates.

2.0 Legislation & Policy

The demolition of Tilbury power station will be completed under Permitted Development rights; therefore, the assessment of ecological impacts and identification of appropriate mitigation measures will be determined to allow the demolition to be undertaken in accordance with relevant wildlife related legislation. However, although it is not considered necessary to discuss planning policy in detail, it is considered pertinent to include reference to policies where relevant.

2.1 Legislation

2.1.1 General

Specific habitats and species of relevance to the site receive legal protection in the UK under various European and UK legislative provisions, including:

- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- The Natural Environment and Rural Communities (NERC) Act 2006; and
- Wild Mammals (Protection) Act 1996.

Where relevant, this report takes account of the legislative protection afforded to specific habitats and species.

2.1.2 UK Post-2010 Biodiversity Framework

The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework' covers the period from 2011 to 2020.

Although the UK Post-2010 Biodiversity Framework does not confer any statutory legal protection, in practice many of the species listed already receive statutory legal protection under UK and / or European legislation. In addition, the majority of Priority national (English) Biodiversity Action Plan (BAP) habitats and species are now those listed as Habitats and Species of Principal Importance in England (listed under Section 41 (S41) of the NERC Act 2006). All public bodies have a legal obligation or *biodiversity duty* under Section 40 of the NERC Act 2006 to conserve biodiversity by

having particular regard to those species and habitats listed under S41. For the purpose of this report, habitats and species listed under S41 of the NERC Act 2006 are referred to as having superseded the UK BAP.

2.1.3 Local Biodiversity Action Plan

The Essex Biodiversity Action Plan (LBAP) was published in 2011 by the Essex Biodiversity Project (EBP) and provides the guidance for biodiversity work in Essex. It relates to 19 Priority Habitats of the Biodiversity 2020 Strategy, as well as the list of Priority Species and Habitats provided for in S41 of the NERC Act 2006. Key influences considered by the LBAP include (i) legislation, policy and planning; (ii) climate change; (iii) habitat loss and fragmentation; and (iv) large scale habitat restoration and creation.

2.2 National Planning Policy

The National Planning Policy Framework (NPPF) was adopted in March 2012 and states that *planning policies should promote the protection of priority species populations linked to national and local targets*. Furthermore, central and local government policy now points towards ecological enhancement on development sites. The NPPF considers enhancement in the statement *The planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes….and minimising impacts on biodiversity and providing net gains in biodiversity*.

2.3 Local Planning Policy

The *Core Strategy and Policies for Management of Development* (Core Strategy) is the main local plan, adopted by Thurrock Council in 2011. It sets out the spatial vision, strategy and planning policies for Thurrock up to and beyond 2026. In 2015, the *Core Strategy and Policies for Management of Development Focused Review: Consistency with National Planning Policy Framework* was adopted and should be read together with the Core Strategy as it introduced a new policy and altered other policies and text. The Core Strategy will be replaced by the Thurrock Local Plan once it has been prepared and adopted.

Core Strategic Policies within the Core Strategy which relate specifically to biodiversity at Tilbury power station include:

- CSTP18: Green Infrastructure – puts natural environment features and processes at the centre of land use management and development. Thurrock Council's approach is to maintain a multi-functional landscape and maximise connections between assets.

- CSTP19: Biodiversity - Thurrock has unique biodiversity significance owing to a combination of factors, including its geology, orientation and microclimate together with past and present land-uses. The large amount of brownfield land that has been left unmanaged, such as that at Tilbury power station, has resulted in significant plant and invertebrate communities. There are features such as the River Thames, remnants of the Thames Terrace grasslands and the coastal marshes that also support a rich collection of marine and terrestrial species. More detail about the priority habitats and species within the Borough is provided in the Thurrock Biodiversity Action Plan (2006).

The Tilbury Energy and Environment Centre Wildlife Site and the Lytag Brownfield Wildlife Site which are within the RWE ownership boundary (Figure 1.3) are identified on *Map 5 – Location of Strategic Biodiversity Sites in Thurrock* within the Core Strategy.

3.0 Water vole

3.1 Legislation

Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). While previously only their burrows were protected from disturbance or damage, since 6th April 2008 they have been given further protection which makes it illegal to:

- Intentionally or recklessly kill, injure or take water voles;
- Possess or control live or dead water voles or derivatives thereof;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; and
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.

The water vole is on the UK list of priority species, under Schedule 42 of the Natural Environment and Rural Communities (NERC) Act 2006.

3.2 Summary of information to date

3.2.1 Biological Records

No water vole records were returned during the data search completed in 2009. A review of the NBN Gateway in 2015 indicated that the closest record for water voles to the north of the Thames was over 2km from the site.

3.2.2 Surveys to support previous planning applications

A review of existing reports has been included to provide context to the results from the 2015 surveys:

- Water Vole Survey (Tilbury power station Site only). RPS Group, final report issued October 2007.
- Water Vole Survey (Tilbury power station Site and land to a 500m radius). WYG Environment, final report issued September 2008.
- Extended Phase 1 Habitat Survey (Gas Pipeline Study Area). WYG Environment, December 2010.

Water voles were found to inhabit ditches and ponds across Tilbury power station and throughout the immediately surrounding area. Population density within large areas of the power station site was strongly linked to habitat quality with the greatest populations found within ditches which have a year-round water supply. Populations expanded outwards from two main centres from spring into summer when populations were highest (i) the TEEC WS; and (ii) ditches near the ashfields. Populations then retracted into these strongholds in September. However, many of the ditches within the power station site were degraded i.e. had little vegetation suitable for water voles and/or were dry in summer, thus restricting the expansion of populations and formation of population strongholds. This appeared to have led to the development of the two predominately isolated population centres.

3.2.3 2013 Pre-Commencement Survey

An update water vole survey was completed prior to commencement of works in relation to the previously proposed CCGT conversion and has been summarised below; it included the area now within the demolition boundary.

Seven ditches within the immediate vicinity of the B-station were surveyed in accordance with the *Water Vole Conservation Handbook* (Strachan & Moorhouse, 2006) by experienced surveyors between March and April 2013; water voles are particularly active in March / April when the onset of spring stimulates breeding behaviour and territory marking with discrete latrines. The locations of ditches referred to in Table 3.1 are shown in Figure 3.1 (Water Vole Survey Map, Appendix A).

Table 3.1 Summary of water vole survey results from 2013 pre-commencement survey

Ditch	Summary
24	Burrows, latrines and droppings were identified along the length of this ditch with the majority located on the west bank.
36/18aN	Burrows, feeding lawns and a small number of droppings and latrines were noted along the length of this ditch. Evidence of activity was also noted under a section of concrete bank. A total of 28 burrows were noted although many of these didn't show signs of activity during later visits. Evidence of bank vole activity was also noted.
17	A water vole latrine and a number of holes indicative of water vole presence were identified on later visits.
13A/13B	A single hole was identified along the bank of this ditch although it did not demonstrate any evidence of activity during the survey visits. Sticks were placed along the entrance to the hole but no disturbance was noted, indicating that the hole was not in active use.
18aS	Four holes were found to the north of the ditch – no activity was noted in association with these holes during the survey visits.
18	Three holes were identified but no water vole activity was noted. This ditch was sparsely vegetated at the time of the 2013 survey.

The southern section of Ditch 24 is outside but adjacent to the south-east of the currently proposed demolition boundary, and the northern section of this Ditch lies just inside the demolition boundary. It runs between pylons P4 and P5. Based on the amount of evidence found, it appeared to be the most important ditch for water voles of those surveyed. Ditch 36 runs along the north-eastern corner of the demolition boundary, and Ditch 18aN run just inside the northern demolition boundary between the main demolition area and pylons P7, P8 and P9. There is a gap of approximately 100m between Ditch 36 and Ditch 24 which may explain why these two ditches supported the largest numbers of water vole - habitats between the two may be traversed, especially when water voles are searching for new territories, meaning populations could be joined. D17 was used in late March when looking for suitable breeding territories. Ditch 17 lies outside the northern demolition boundary, and Ditches 13A and 13B lie outside the western demolition boundary. Ditch 18aS lies at the west of the coalfield, just inside the western demolition boundary. Ditch 18 lies inside the demolition boundary at the south of the coalfield.

3.3 Update Survey 2015

3.3.1 Scope

The objective of the 2015 update survey was to determine whether water voles were likely to be present within the demolition boundary and wider RWE ownership boundary with a view to developing an appropriate mitigation strategy for their protection in accordance with wildlife related legislation, primarily the Wildlife and Countryside Act 1981 (as amended).

3.3.2 Methods

Surveys were completed in accordance with the Water Vole Conservation Handbook (Strachan & Moorhouse, 2006) by experienced surveyors on 21st and 22nd April 2015. The labelling of the water bodies is based on the terminology as used in previous water vole surveys. The surveys took place during the optimal time period for water vole surveys (March-June), and were conducted under good weather conditions.

One hundred metre sections of the ditches and waterbodies were surveyed for water vole field signs according to the guidance, including:

- Latrines and faecal pellets;
- Feeding evidence;
- Feeding stations;

- Burrows;
- Grazed lawns;
- Footprints; and
- Runways through the vegetation.

Population estimates for water voles around the site were made using the formula outlined in Strachan and Moorhouse (2006), which states that the number of water vole latrines counted at a given site (during the breeding season) gives an indication of the strength of the water vole colony. Morris *et al.* (1998) published a predictive equation that describes the relationship between water voles and latrines (based on intensive water vole trapping along stretches of two Yorkshire rivers, $y = 1.48 + 0.68x$, where y = water vole numbers and x = number of latrines). This approximates to six latrines per adult female.

Population class densities at Tilbury power station have been assigned to high, medium and low population classes, and are the same classes as have been used in previous water vole survey for this site to allow ready comparison. The size classes are as follows:

Table 3.2 Water vole population size classes

Population class	Number of latrines per 100m of ditch/lagoon
High	> 6
Medium	3 - 6
Low	> 3

3.3.3 Results

Weather

The weather on both surveys was similar with the temperature on the 21st and 22nd and of April being 14°c both days were cloudy with cloud cover ranging from 5/8 oktas on the 21st and 7/8 on the 22nd there was no rain on either day and a fairly constant wind with a Beaufort of 2-3 in the north west direction.

Results

Table 3.2 below shows the results of the water vole survey carried out by WYG on 21st and 22nd April 2015; results are illustrated in Figure 3.1. The results show high, medium and low populations of

water voles around the site, and the populations of water voles in ditches 13b, 18, 18a S, 18a N and 36 (**bold**) that are located within the demolition boundary. The locations of ditches referred to in Table 3.2 are shown in Figure 3.1 (Water Vole Survey Map, Appendix A).

Table 3.3 Water vole populations found in the ditches and water bodies on site

Ditch/Lagoon survey location	Latrines	Burrows	Feeding signs	Number of latrine per 100m	Relative population size
6	0	0	0	0	None
7	0	0	0	0	None
9	0	0	0	0	None
11	0	0	0	0	None
12	0	0	0	0	None
12a	0	0	0	0	None
13A	**2**	**0**	**3**	**2**	**Low**
13b	0	0	0	0	None
14	1	0	1	1	Low
15	4	0	1	4	Medium
16	7	0	5	7	High
18	**2**	**0**	**1**	**2**	**Low**
18a S	**0**	**0**	**0**	**0**	**None**
18a N	**3**		**1**	**15**	**High**
24	20	0	7	20	High
25	0	0	0	0	None
26	4	0	3	4	Medium
27	0	0	0	0	None
28	0	0	0	0	None
29	0	0	0	0	None
30	1	0	0	1	Low
32	0	2	2	0	None
33A	17	0	13	17	High
33N	9	0	9	9	High
33S	0	0	1	0	None
34	11	0	28	11	Medium
36	**23**	**1**	**5**	**23**	**High**
37	15	2	18	15	High
38	24	3	26	24	High
39	5	0	1	5	Medium
40	2	0	2	2	Low
41a	2	1	4	2	Low

Ditch/Lagoon survey location	Latrines	Burrows	Feeding signs	Number of latrine per 100m	Relative population size
41b	6	2	9	6	Medium
41c	0	0	4	0	None
44	4	0	3	4	Medium
Mitigation pond	0	0	0	0	None

3.3.4 Limitations

The 2015 water vole survey was undertaken on 21st and 22nd April 2015, during the optimum time of year for water voles (March-June), when signs are readily observed and the ditches and water bodies are not obscured by vegetation. The majority of the ditches and waterbodies were fully accessible along the lengths surveyed. However, there were occasional stretches of the ditches and water bodies that were inaccessible, either due to the steepness of the bank and/or the density of scrub along the bank, which made a full survey of all the banks difficult and hazardous at times. Consequently, some sections of banks had to be by-passed due to health and safety concerns which may have resulted in a reduced number of field signs being recorded. Hazardous sections of the banks were still sampled at selected locations where access through the dense scrub or down banks was achieved. In these cases, an estimate of water vole population size was obtained by extrapolating the length to represent 100m survey sections. The results obtained are, therefore, considered to give a good representation of the water vole population size in ditches and water bodies across the site.

3.4 Discussion

This survey has established the water vole population size and occurrence across the site, including within the demolition boundary, in Ditches 18, 18a N, 24 and 36.

Direct injury or damage to water voles and their burrows could occur through the unmitigated use of heavy machinery in close proximity to ditches, including along the traffic routes around the demolition boundary. Impacts on ditches and water voles themselves could also result from airborne debris as a result of material/dust settling on the vegetation (which is then ingested) or on water voles themselves. Mitigation options have been included in Section 11.0 to minimise impacts and to allow the work to be completed in accordance with the Wildlife & Countryside Act 1981 (as amended).

Indirect impacts could occur from the unmitigated noise of machinery and vehicles close to water vole burrows during demolition; although water voles within the RWE ownership boundary may have previously been habituated to noise and vibration given the level of activity when the site was

operational, its closure in 2013 has led to much lower levels of activity. Water voles generally survive up to three winters (though more often fewer than two; Strachan & Moorhouse, 2006) so individuals now present at the site are unlikely to have experienced periods of higher human activity. This could result in water voles moving away from certain ditches into the territories of other water voles during the demolition works, leading to increased competition for resources such as food and burrowing sites.

4.0 Bats

4.1 Legislation

All British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and under Schedule 2 of the *Conservation of Habitats and Species (Amendment) Regulations 2012*.

This makes it an offence to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb bats, in particular where it is likely to:
  - Impair their ability to breed or reproduce, or to rear or nurture their young;
  - Impair their ability to hibernate or migrate; or
  - Affect significantly the local distribution or abundance of bats.
- Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
- Damage or destroy a bats breeding site or resting place.

Consequently, attention should be given to dealing with the modification or development of an area if aspects of it are deemed important to bats, such as roosts, flight corridors and foraging areas.

4.2 Summary of information to date

4.2.1 Biological Records

During consultations associated with previous planning applications, no bat records were returned for the area within 2km of the RWE ownership boundary. A review of datasets held on the NBN Gateway (September 2015) indicated that the closest bat records are for sites south of the River Thames with the closest record on the northern side of the river being approximately to the west of West Tilbury (to the north of and outside the RWE ownership boundary).

4.2.2 Surveys to support previous planning applications

Bat activity and emergence surveys completed at the site by RPS in 2007 found that three species of bat forage within the RWE ownership boundary; however, overall bat activity was low. The WYG 2009

surveys concluded that areas of the previously proposed gas pipeline study area were not frequently used by foraging or commuting bats.

Surveys completed to support previous planning applications for the site concluded that no bats were using the site for breeding, resting or hibernating and, as foraging and commuting activity throughout the site was determined to be low, it was considered to be of low value to bats.

4.3 Update Survey

4.3.1 Scope

The objective of the 2015 update survey was to determine whether bats were likely to be present within the demolition boundary and wider RWE ownership boundary. This was broken down into bat activity i.e. where they were flying and feeding, once they had left the roost, and emergence and return surveys i.e. where they were roosting. The two survey types were completed with a view to developing a mitigation strategy for their protection in accordance with wildlife related legislation, primarily the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended).

4.3.2 Methods

Activity survey

The survey was completed in line with the Bat Conservation Trust's method in Bat Surveys: Good Practice Guidelines (2012). The overall value of the land within the boundary was classed as low value for bat activity. It was classed as such as much of the land was featureless with isolated areas more suitable for feeding (e.g. water bodies and woodland). The RWE-owned land contains few complete hedgerows or tree lines, which would normally be used by bats to navigate whilst commuting. For a site of this size (over 15 ha), three site visits are required; one each in spring, summer and autumn. On each visit, there were four surveyors; they each walked one of four separate transects (routes) (see Figure 4.1) to allow sufficient coverage of the land within the RWE ownership boundary.

The dusk surveys started 15-30 minutes before sunset and finished 2 ½-3hrs after sunset. Dawn surveys commenced two hours before sunrise and finished at sunrise. Each surveyor was equipped with a bat detector and recorder. The detector allows the surveyor to hear bat calls at an audible frequency and determine what species or species group is present. The recorder allows for analysis of more difficult calls after the survey. Detectors used were bat box duet or Pettersson D240x. Zoom H2 wave file recorders were used, and calls analysed on BatScan software for PC.

On each transect an automatic bat detector was left in place for at least four consecutive nights. The detectors used were Anabat SD1, Anabat Express and Wildlife Acoustics Song Meter 2. The recordings were analysed using Analook software for Windows.

Emergence / Re-entry

A daytime assessment of the potential of building within the RWE ownership boundary was carried out by WYG on 21st May 2015 using criteria provided by the Bat Conservation Trust's Good Practice Guidelines (2012) (refer to Figure 4.2). The daytime assessment determined that that A Station, the Tilbury Office Complex and Owl House have the level of roosting bat potential shown in Table 4.1 below.

Table 4.1 Bat roost potential of the three buildings within the RWE ownership boundary with the potential to support roosting bats (as recorded in WYG's May 2015 daytime bat assessment)

Building	Building Description	Bat Roost Features	Bat Roost Potential
A Station	Disused power station, multi storey, with brick wall and flat roof. Includes a water treatment plant, and workshop stores.	Ventilation grates, windows with broken frames and missing glass.	**High**
Owl House (Northern Degreasing Shed)	Two storey, brick construction, flat roof.	Ventilation grates. Small gaps in walls.	**Medium**
Tilbury Office Complex	Single storey, brick construction, flat roof.	Gaps in ventilation bricks. Occasional small gaps in brickwork.	**Low**

Bat dusk/dawn emergence/re-entry surveys were carried out on these buildings at the level of survey effort recommended by the BCT guidelines, as shown in Table 4.2. The other buildings or trees within the RWE ownership boundary had negligible bat potential and were not subject to emergence/re-entry surveys.

Table 4.2 Summary of RWE buildings potential to support roosting bats.

Building	Potential of Building to support roosting bats	Potential of Building to support roosting bats (BCT guidelines, 2012)	Dates of RWE bat roost surveys
A Station	**High**	3 dusk emergence and/or pre-dawn re-entry surveys during May to September. Optimum period May – August.	26 May 2015 (dusk) 27 May 2015 (dawn) 22 June 2015 (dusk) 23 June 2015 (dawn) 29 July 2015 (dusk)

Owl House	**Medium**	2 dusk emergence and/or pre-dawn re-entry surveys during May to September. Optimum period: May – August.	21 July 2015 (dusk) 22July 2015 (dawn) 11 August 2015 (dusk)
Tilbury Office Complex	**Low**	1 dusk emergence and/or pre-dawn re-entry survey during May to September. Optimum period: May – August.	17 August 2015 (dusk) 18 August 2015 (dawn)

Each survey was carried out by an appropriate number of surveyors to cover all potential bat roost egress locations. Each surveyor used an electronic bat detector to identify the number and species of bat observed during the survey. On Figure 4.2, the locations of the three surveyors at the A-Station are shown as Location 1a, 2a and 3a; the location of the two surveyors at the Owl House are shown as Location 1b and 2b, and the location of the three surveyors at the Tilbury Office Complex are shown as Location 1c, 2c and 3c. The same terminology is used for the results (Section 4.2.3).

Dusk surveys commenced 15 minutes before sunset and ended 120 minutes after sunset. The dawn surveys commenced 90 minutes before sunrise and concluded at sunrise. Weather conditions (temperature, precipitation and wind speed) were recorded during each of the surveys.

Manual bat detector surveys were undertaken in accordance with the guidance set out in the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines* (2012). The surveyors used a combination of *Batbox Duet* (frequency division and heterodyne) bat detectors and a Pettersson D240X bat detector (heterodyne and time expansion detector). Bat calls were recorded on *Zoom H2* digital audio recorders and later analysed using specialist software (BatSound) on a PC. Surveyors recorded the time and a description of bat activity which may have indicated the presence of a roost (emergence and/or returning to a building) along with potential roost access locations.

4.3.3 Results

Activity Survey

<u>Weather</u>

The weather conditions during all activity surveys were optimal and in line with the guidance from the Bat Conservation Trust (2012).

Table 4.3 Weather conditions during the 2015 bat activity surveys

Date	Survey type	Time		Temp °C		Wind Beaufort		Rain		Cloud (Oktas)	
		Start	End	Start	End	Start	End	Start	End	Start	End
13/04/15	Activity dusk	19:32	22:35	14	13	2	0	-	-	0	2
14/04/15	Activity dawn	04:10	06:10	7	7	1	0	-	-	2	2
13/07/15	Activity dusk	20:50	23:25	17	18	5	4	-	-	8	8
14/07/15	Activity dawn	03:00	05:12	18	17	3	2	-	VLD	8	8
09/09/15	Activity dusk	19:12	21:47	17	15	1	2	-	-	0	2

VLD = Very light drizzle

Results

Areas and features of interest along with the transect routes are shown in Figure 4.1.

Spring: 13-14 April 2015

Bat activity within the demolition boundary was restricted to the area around the road running along the north of the coal field and activity around the A-Station. The bat species recorded were almost all common or soprano pipistrelles, *Pipistrellus pipistrellus* and *P. pygmaeus* respectively. One serotine *Eptesicus seretonii* was recorded in the vicinity of the TEEC WS. This was similar to the results of the recorder left by the A-station which found small numbers of common pipistrelle and one pass of a *Myotis* species of bat.

Within the wider RWE ownership boundary, the bat activity was lower than within the demolition boundary. No activity at all was recorded on the two ashfield transects in the dawn survey and one or two common or soprano pipistrelles were heard in the evening. To the north of the demolition boundary, the activity was concentrated around the Gatehouse Pond. Both common and soprano pipistrelles were regularly heard passing over this in the evening, though there was very little activity here in the morning.

Summer: 13-14 July 2015

On this survey, the bat activity was again mainly concentrated along the road running to the north of the coalfield. The bats heard were common and soprano pipistrelles. Activity was lower in the morning than the evening, with passes only along the road north of the coalfield. The automatic

detector recorded low numbers of common pipistrelles by the A-station with occasional serotines and *Myotis* species of bats.

Within the wider RWE ownership boundary, the activity was again very low, with no bats heard in the morning over the ashfields. Common and soprano pipistrelles were again heard regularly feeding over the pond adjacent to the Security Gatehouse and regular feeding picked up over the water body in the south-west of the ashfields by the automatic recorder stationed there.

Autumn: 9 September 2015

The bat activity was mostly heard at the rear (south) of the A-station and just north of the coal field. The bats heard were again common and soprano pipistrelles. Within the wider RWE ownership boundary, bat activity was slightly higher over the ashfields than it had been in on previous visits. Bats heard were common and soprano pipistrelles. The automatic detectors showed activity was again high over the water body in the south-west of the ashfields.

Limitations

The bat activity surveys were evenly spaced within the optimal survey period (Bat Conservation Trust 2012). This meant that seasonal changes in the use of the site could be detected during the survey period.

The majority of the site is accessible, although where there are many ditches, e.g. in the north-west of the RWE-owned land the routes had to deviate around these. Bats tend to prefer habitats near water bodies, therefore with the routes following water bodies to an extent, a representative sample of the bat activity on the site should have been detected.

Emergence / Re-entry Survey

Weather

Table 4.4 Weather conditions during bat emergence/return surveys at Tilbury A, Owl House, and Tilbury Office Complex

Tilbury A								
Date	Wind (Beaufort)		Temperature (°C)		Precipitation		Cloud (Otkas)	
	Start	End	Start	End	Start	End	Start	End
26/05/15 (dusk)	1	2	18	17	none	none	3	3
27/05/15	0	2	11	10	none	none	1	0

Tilbury A								
Date	Wind (Beaufort)		Temperature (°C)		Precipitation		Cloud (Otkas)	
	Start	End	Start	End	Start	End	Start	End
(dawn)								
22/06/15 (dusk)	1	2	12	12	none	short shower during survey	7	3
23/06/15 (dawn)	2	1	12	11	none	none	8	7
29/07/15 (dusk)	1	2	17	17	none	none	6	8
Owl House								
Date	Wind (Beaufort)		Temperature (°C)		Precipitation		Cloud (Otkas)	
	Start	End	Start	End	Start	End	Start	End
21/07/15 (dusk)	2	1	22	20	none	none	1	5
22/07/15 (dawn)	2	1	15	14	none	none	2	8
11/08/15 (dusk)	0	0	19	18	short shower during survey	none	8	8
Tilbury Office Complex								
Date	Wind (Beaufort)		Temperature (°C)		Precipitation		Cloud (Otkas)	
	Start	End	Start	End	Start	End	Start	End
17/08/15	1	0	18	17	0	0	7	7
18/08/15	0	1	15	16	none	none	8	8

Results

No bat roosts were identified during any of the surveys. A summary of each of these surveys is described below.

A-Station

A-Station Visit 1 - 26 May 2015 Dusk Survey

Start: 20:41

Finish: 22:30

Sunset: 20:58

- **Location A1** - two species of bat were recorded during the survey period, common pipistrelle and Daubenton's, with all but one of the calls being from common pipistrelle. The Daubenton's bat was recorded at 22:22, 84 minutes after sunset, which was briefly heard (but not seen) for less than 5 seconds. All but one of the records were from commuting bats, which were briefly heard but not seen for periods of less than 5 seconds. One foraging common pipistrelle was recorded foraging for 2 minutes at 21:50. The time the bats were recorded was from 21:36 until 22:27, which was shortly before the survey finished.

  Summary: low level bat activity from commuting common pipistrelles. No bats were observed emerging from the building.

- **Location A2** - one species of bat, common pipistrelle, was recorded throughout the survey period. The first call was heard at 21:36, 38 minutes after sunset, after which bats were heard at regular intervals until the survey ended at 22:30. Most of the records were from single bats which were heard and not seen, although at 22:03 two common pipistrelles were seen flying together across the access road, during which one feeding buzz was heard.

  Summary: moderate level of bat activity from common pipistrelles, with occasional feeding buzzes. No bats were observed emerging from the building.

- **Location A3** - there was one record of the social call of a commuting soprano pipistrelle, at 22:07, which was heard and not seen.

  Summary: very low level bat activity of a single soprano pipistrelle. No bats were observed emerging from the building.

A-Station Visit 1 - 27 May 2015 Dawn Survey

Start: 03:20
Finish: 04:51
Sunrise: 04:51

- **Location A1** - there were two records of commuting common pipistrelles, one at 03:38, and one at 03:46, both (heard but not seen) for less than 5 seconds for each record.

  Summary: very low level bat activity from two common pipistrelles. No bats were observed entering the building.

- **Location A2** - three brief calls were heard but not seen, one at 03:24, one at 04:01 (both soprano pipistrelles), and one at 04:04 (common pipistrelle).

Summary: very low level bat activity from two soprano pipistrelles and one common pipistrelle. No bats were observed entering the building.

- **Location A3** - there was one record of a common pipistrelle, at 03:59, which was briefly observed commuting from north to south, passing close to the surveyor.

  Summary: very low level bat activity of a single common pipistrelle. No bats were observed entering the building.

A-Station Visit 2 - 22 June 2015 Dusk Survey

Start: 21:00
Finish: 22:48
Sunset: 21:18

- **Location A1** - the first bat recorded was at 21:51, 37 minutes after sunset. Bat activity was low during the survey period, with five records of commuting common pipistrelle bats recorded. Three records comprised one pass only, one record had three passes, and the final record had two passes. No feeding buzzes were heard. All records were from bats heard but not seen.

  Summary: low level bat activity from occasional common pipistrelles. No bats were observed emerging from the building.

- **Location A2** - all the bats recorded were common pipistrelles. The first bat was recorded at 21:57, 39 minutes after sunset, which was seen commuting north to south around the face of the A-Station. The next bat recorded was at 22:01, which was seen commuting in a north westerly direction, over the A-Station. The remaining bats recorded were heard but not seen. The next commuting bat was at 22:03, which was briefly heard but not seen. At 22:19, a common pipistrelle was recorded foraging for 3 minutes, but not seen. At 22:22, a second foraging pipistrelle was recorded feeding at the same time. At 22:24, a foraging bat was recorded emitting five feeding buzzes and 10 passes. At 22:28, a foraging bat was recorded emitting five buzzes and eight passes. At 22:34, a commuting bat was recorded commuting (one pass) and 22:45 was recorded commuting (two passes).

  Summary: Moderate commuting and foraging activity from common pipistrelle bats. No bats were observed emerging from the building.

- **Location A3** - no bats were recorded at Location 3 during this survey.

A Station Visit 2 - 23 June 2015 Dawn Survey

Start: 03:11
Finish: 04:41
Sunrise: 04:41

- **Location A2** - there were four records of commuting common pipistrelle bats, and one record of a foraging common pipistrelle bat. The commuting bats were briefly heard but not seen, for less than five seconds each, with the first bat recorded at 04:39 and the last record at 04:15. The foraging bat was recorded for approximately 4 minutes, between 04:06 and 04:10.

  Summary: low level bat activity from occasional common pipistrelles. No bats were observed entering the building.

- **Location A2** - one common pipistrelle was recorded commuting at 03:45.

  Summary: very low level bat activity, from a commuting common pipistrelle. No bats were observed entering the building.

- **Location A3** - a single common pipistrelle was recorded at 03:44, flying north-west just above head height.

  Summary: very low bat activity from a commuting common pipistrelle. No bats were observed entering the building.

A Station Visit 3 - 29 July 2015 Dusk Survey

Start: 20:38
Finish: 22:23
Sunset: 20:53

- **Location A1** -all the bats recorded were of commuting common pipistrelles, which were heard and not seen for brief periods lasting less than 10 seconds. The first bat recorded was at 21:05, 12 minutes after sunset. There were a further five brief records of commuting bats, the last being recorded at 22:19.

  Summary: low bat activity from commuting common pipistrelles. No bats were observed emerging from the building.

- **Location A2** - all the bats recorded were common pipistrelles, with the exception of a Nathusius' pipistrelle, which was recorded at 22:03. All the bats recorded were heard and not seen. The first bat recorded was a common pipistrelle at 21:32 which was briefly heard

commuting. Bats were heard intermittently foraging and commuting throughout the remainder of the survey period.

Summary: low bat activity from commuting common pipistrelle and Nathusius' pipistrelle. No bats were observed emerging from the building.

- **Location A3** - the first bat recorded was a soprano pipistrelle at 21:46, which was heard but not seen. The next bat recorded was a soprano pipistrelle at 22:04 which was very faintly heard. A commuting common pipistrelle was recorded at 22:10, and a further commuting pipistrelle was recorded at 22:19, for which one feeding buzz and two passes were recorded.

  Summary: low bat activity from two commuting common pipistrelles and two commuting soprano pipistrelles. No bats were observed entering the building.

Owl House

Owl House Visit 1 - 21 July 2015 Dusk Survey

Start: 20:47
Finish: 22:35
Sunset: 21:02

- **Location OH1** - all the bats recorded were common pipistrelles, with two exceptions, a soprano pipistrelle at 22:20 and serotine at 22:25. The first bat recorded was at 21:31, 29 minutes after sunset. It circled about 4m above ground level in the vicinity of the surveyor, before flying south along the side of the Owl House. The next bat was recorded at 21:40, which flew south along the side of the building, then circled back around the surveyor. Between 21:45 and 22:03, a bat foraged in the vicinity of the surveyor, at a height of approximately 3 to 5m above ground level. At 22:03, it commuted north around the side of the building, and continued north over the hedge surrounding the site. At 22:07, a bat was recorded foraging in a circle in the vicinity of the surveyor. A commuting foraging pipistrelle was recorded at 22:16, and a commuting soprano pipistrelle was recorded at 22:20, both for less than 10 seconds. The last bat recorded during this survey period was a serotine at 22:25, which was heard commuting for approximately 10 seconds (not seen).

  Summary: low bat activity, with common pipistrelle, soprano pipistrelle and serotine bats recorded. No bats were observed emerging from the building.

- **Location OH2** - all the bats recorded were common pipistrelles, with the exception of a Myotis bat, recorded at 22:04. The first bat recorded was a common pipistrelle, at 21:36,

which was heard and not seen over two brief passes. At 21:50, a common pipistrelle was recorded foraging over the dry waterbody adjacent to the Owl House over two passes. A common pipistrelle was recorded over three passes (not seen) at 22:01. A Myotis bat was recorded at 22:04 for one pass. At 22:07, a common pipistrelle was recorded (not seen). At 22:14, a common pipistrelle was observed flying east from the direction of the Owl House (but was not seen to emerge from the building). A further three commuting common pipistrelles were recorded between 22:17 and 22:32.

Summary: low bat activity, with common pipistrelle and a Myotis bat. No bats were observed emerging from the building.

Owl House Visit 1 - 22 July 2015 Dawn Survey

Start: 03:35
Finish: 05:08
Sunset: 05:08

- **Location OH1** - five passes for commuting common pipistrelles were recorded, all of which were briefly heard and not seen, for periods of less than 10 seconds. One noctule was recorded at 04:05, for less than 10 seconds. No bats were seen entering the Owl House.

  Summary: low bat activity, with common pipistrelle and noctule bats. No bats were observed emerging from the building.

- **Location OH2** - three bat species were recorded: common pipistrelle, soprano pipistrelle and serotine. The first bat recorded was a common pipistrelle at 03:39, which was recorded over two passes (not seen). A common pipistrelle was recorded at 03:42 flying eastwards. At 04:03, a common pipistrelle was recorded commuting (not seen). At 04:04, a single feeding buzz of a serotine was recorded (not seen), and at 04:09, a soprano pipistrelle was recorded commuting (not seen). Between 04:09 and 04:24, a common pipistrelle was observed foraging at a height of 2 to 3m above ground level over the old water body. A second bat joined the first after 3 minutes to forage over this water body. A total of 50 passes were counted during this foraging period.

  Summary: common pipistrelle, soprano pipistrelle and serotine bats recorded, with moderate bat activity. No bats were observed emerging from the building.

Owl House Visit 2 - 11 August 2015 Dusk Survey

Start: 20:14
Finish: 22:00
Sunset: 20:29

- **Location OH1** - all the bats recorded were common pipistrelles. The first bat recorded was a common pipistrelle at 21:18, which was briefly heard commuting (not seen) for less than 10 seconds. Between 21:28 and 21:52, a total of six common pipistrelles were briefly heard commuting, for periods of up to 10 seconds (not seen).

  Summary: low bat activity from commuting common pipistrelles. No bats were seen emerging from the building.

- **Location OH2** - a total of two common pipistrelles were recorded commuting (not seen), each for a period of less than 10 seconds. The first bat was recorded at 21:33, and the second at 21:32.

  Summary: very low bat activity from commuting common pipistrelles. No bats were seen emerging from the building.

Tilbury Office Complex

Tilbury Office Complex Visit 1 - 17 August 2015 Dusk Survey

Start: 19:58
Finish: 21:47
Sunset: 20:17

- **Location T1** - a commuting common pipistrelle was recorded for less than 5 seconds (not seen) at 21:00, and a second commuting common pipistrelle was recorded at 21:13, also for less than 5 seconds.

  Summary: very low bat activity from commuting common pipistrelles. No bats were seen emerging from the building.

- **Location T2** - a common commuting pipistrelle was recorded at 21:33 (not seen). Not further bat activity was recorded.

  Summary: very low bat activity from commuting common pipistrelles. No bats were seen emerging from the building.

- **Location T3** - no bats were recorded throughout the survey.

Tilbury Office Complex Visit 1 - 18 August 2015 Dawn Survey

Start: 04:16
Finish: 05:49
Sunrise: 05:49

- **Location T1** - no bats were recorded throughout the survey.

  Summary: no bat activity at this location.

- **Location T2** - a commuting common pipistrelle was recorded flying eastward, parallel to the northern aspect of the Tilbury Office Complex. No further bats were recorded.

  Summary: very low bat activity from a single commuting common pipistrelle. No bats were seen emerging from the building.

- **Location T3** - one commuting common pipistrelle was recorded at 05:12 during the survey, 37 minutes before sunrise.

  Summary: very low bat activity from a single commuting common pipistrelle. No bats were seen emerging from the building.

Limitations

The surveys of the A Station required the surveyors to stand several metres back from the building to visually encompass its full extent, which meant that when it became fully dark, it was difficult to fully see the A Station's wall. However the level of survey effort at the A Station, and the two dawn surveys mean that the conclusions of this survey are reliable.

4.4 Discussion

Emergence / Re-entry

No bats were recorded emerging from the A-Station, Tilbury Office Complex or the Owl House during the 2015 surveys and, as a consequence, no impacts are expected on bat roosts as a result of the proposed demolition works. However, a total of six bat species were recorded foraging and commuting over the site during the emergence/re-entry surveys:

- Common pipistrelle
- Soprano pipistrelle

- Nathusius' pipistrelle
- Noctule
- Serotine
- Myotis sp.

Activity was very low activity at the Tilbury Office Complex with moderate activity at the Owl House and the A-Station. Common pipistrelles were the bat species most frequently recorded during the surveys.

Activity

The survey has established the use of the habitats within the demolition boundary and within the wider RWE ownership boundary by foraging and commuting bats, albeit at a relatively low level. It is anticipated that any demolition impacts will be temporary as the habitats which support commuting and foraging bat will not be directly affected by the demolition.

Direct impacts during and after demolition could occur due to changes in the landscape through loss of the buildings. As well as removing features which may be used by bats for navigation, the buildings were likely to create sheltered pockets where the bats' invertebrate prey could gather. The increased exposure to the wind and presence of fewer sheltered areas could lead to invertebrates moving away from the site, resulting in a decrease in its value to foraging bats.

Bats tend to use linear features to navigate along. Generally, these are semi-natural such as hedgerows or tree lines; however, the size of the structures at Tilbury power station could act as navigational aids, and their loss could affect bats' movement around the landscape.

During demolition, there may be periods where lighting is required either for illuminating working areas or security of equipment overnight. Lighting may deter some species of bats away from an area although those species most commonly recorded (pipistrelle bats) are known to forage around street lighting; lighting could also increase predation from birds of prey which are known to occur in the area. Impacts will be most significant from April to October when bats are most likely to be active. The demolition area does have some lighting already, and extra security lighting is not considered likely to significantly affect bats in these areas.

In the absence of mitigation, the demolition activities are likely to have a minor, permanent and adverse impact on the foraging and commuting activity of populations of bats in the local area due to habitat changes. Given the low levels of activity and predicted insignificant impact, no mitigation is required to comply with EU and UK legislation.

5.0 Great Crested Newt

5.1 Legislation

The great crested newt is afforded protection under the *Conservation of Habitats & Species Regulations 2010* (as amended), which applies to all of its life stages. The great crested newt is also listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). These two pieces of legislation make it an offence to:

- Deliberately, intentionally or recklessly kill, injure or take a great crested newt;
- Deliberately, intentionally or recklessly takes or destroys the eggs;
- Posses or control any live or dead specimen or anything derived from a great crested newt;
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt; and
- Deliberately, intentionally or recklessly disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

This species is also protected by the Protection of Animals Act 1911, which prohibits any acts of cruelty or mistreatment.

5.2 Summary of Information to Date

5.2.1 Biological Records

In 2009, the National Biodiversity Network (NBN) Gateway and Essex Amphibian and Reptile Group were consulted for records of amphibians within approximately 5km of the previously proposed CCGT development boundary (which included the current demolition site). Amphibians present included great crested newt (GCN), smooth newt and palmate newt, although most records were from the opposite bank of the Thames (including all records of great crested newt). There were no records of amphibians from within the previously proposed CCGT (or current demolition) boundary itself; distances below are approximate.

- Great crested newt *Triturus cristatus*.

    1. Railway street, Northfleet (TQ624741; 3.0km), 1984;

2. Bamber Pit, Swanscombe (TQ607746; 3.5km), 1985;

3. Shorne Marshes (TQ6974; 4.2km), 1979

- Smooth (common) newt *Lissotriton vulgaris.*

1. Shorne Marshes (TQ6974; 4.2km), 1980;

2. Tilbury (TQ6376; 1.5km), 1965;

3. Northfleet (TQ624741; 3.0km), 1984.

- Palmate newt *Lissotriton helvetica.*

1. Northfleet (TQ624741; 3.0km), 1984.

5.2.2 Surveys to support previous planning applications

A review of existing reports has been included to provide context to the results from the 2015 surveys:

- Reptile and great crested newt survey (Tilbury power station site). Ecological Sustainability Ltd, May 2007.
- Great crested newt survey (Water bodies near Lytag Brownfield/Tilbury Centre). WYG Environment, August 2008.
- Great Crested Newt Survey (Tilbury power station site). WYG Environment, February 2009.
- Great Crested Newt Survey (Potential Construction Laydown Areas). WYG Environment, June 2009.
- Great Crested Newt Survey (Gas Pipeline Study Area). WYG Environment, July 2010.

A survey of all waterbodies within 500m of Tilbury B power station, carried out by Ecological Sustainability Ltd in 2007, identified a single waterbody (Waterbody 12A; a ditch adjacent to the Gatehouse Pond) with a small population of great crested newts (one male, one female and an egg were identified during the survey). Three-spined and ten-spined sticklebacks were noted in many of the waterbodies.

Given that the previous survey only discovered one waterbody containing great crested newts, the 2008 WYG survey focused on the area surrounding this ditch; the survey area covered 24.5ha, of which most was site roads, mown grass and drainage ditches. One female great crested newt was identified.

No great crested newts were found during the 2009 survey of areas to the east of the previously proposed CCGT development area (outside the RWE ownership boundary), including Goshem's Farm WS. The poor quality waterbodies and patchy habitat between the surveyed area and known great crested newt population within Waterbody 12A may have limited dispersal into these areas. There were also very few or no trees close to the waterbodies studied during 2009, unlike within the 2008 study area; trees or taller plants generally provide a cooler and damper habitat for amphibians during their terrestrial phase. It should also be noted that very few smooth newts were recorded during these surveys indicating that habitats were generally less suitable for amphibians than the previously surveyed areas within the RWE ownership boundary. Smooth newts were found in relatively large numbers during the 2008 survey to the north-east of the study area and it was concluded that the 2009 study area was of limited value to amphibians.

During the 2010 survey of waterbodies within the gas pipeline study area (outside and to the east of the RWE ownership boundary), the peak number of adult great crested newts found on any one occasion was 27 individuals in the area to the north-east; this area is over 500m from the current RWE ownership boundary. In accordance with the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001), this indicated that a medium great crested newt population was present within the study area. The nine waterbodies where great crested newts were found were located within the same area of the site; eight of the waterbodies were located very close together and linked by suitable scrub and grassland habitat. One waterbody with confirmed great crested newt presence (Waterbody 128) was located 400m from the next nearest waterbody containing great crested newts (Waterbody 130) but was linked by a wet ditch surrounded by scrub vegetation. Therefore, it was considered that newt migration between all nine ponds would be sufficient to classify them as a single medium-sized metapopulation of newts.

5.2.3 2013 Pre-Commencement Survey

An update great crested newt presence/absence survey was completed prior to commencement of works in relation to the previously proposed CCGT conversion and has been summarised below.

Fourteen waterbodies within 500m of the construction footprint (including the current demolition boundary) were subject to a presence/absence survey (four visits) between April and May 2013 in line with English Nature's *Great Crested Newt Mitigation Guidelines* (2001).

No great crested newts were recorded at any of the surveyed waterbodies during any of the visits. A peak count of 13 smooth newt (adults) were recorded on any one visit using one survey method; this was at Waterbody 12A, to the immediate east of the gatehouse pond, which was found to support a small population of great crested newts in 2007. It was considered that the pond either no longer supported great crested newts or that numbers were so low, they were undetectable during surveys.

5.3 Update Survey 2015

5.3.1 Scope

The objective of the 2015 update survey was to determine whether great crested newts were likely to be present within 500m of the current demolition boundary with a view to developing an appropriate mitigation strategy for their protection in accordance with GCN legislation, primarily the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended).

5.3.2 Methods

Waterbodies within 500m of the demolition boundary were assessed for their suitability to support great crested newts using criteria outlined in the *Great Crested Newt Conservation Handbook* (Langton, 2003) and based on the surveyors knowledge of the site and newt ecology (all surveyors were Natural England great crested newt licence holders).

Ecologists surveyed each suitable waterbody within 500m of and with habitat connectivity to the demolition boundary in accordance with English Nature's *Great Crested Newt Mitigation Guidelines* (2001) by bottle trapping (where newts are caught and identified), torching (where newts are visually identified in a 1 million candle power torch beam), netting (catching newts in net sweeps) and egg searching. Visits were completed within the optimal period of mid-March to mid-June under suitable weather conditions. Waterbody locations are shown on Figure 5.1.

On the first survey of the waterbodies to the north of the site (24 March 2015), it was noted that a foul water sewage pipe had broken close to where waterbodies 32 and 31b pass beneath the railway line (at NGR: TQ 66089 76923), and was discharging raw sewage into the waterbody system to the north of the railway line. The polluted waterbodies within 500m of the site boundary to the north of the railway line were, therefore, not included in this survey as they would not be capable of supporting great crested newts – these are highlighted on Figure 5.1. This decision was also supported by the results of the first survey of the north of the site (24 March 2015), when ten newt trapping bottles were placed in Waterbody 10. Although these traps were 780m from the source of the pollution, Waterbody 10 was still found to be polluted (noted by the smell), and no newts were recorded either by torching or trapping. No further surveys were carried out in this waterbody.

Waterbody 44 lay along the eastern site boundary (Figure 5.1) and was inspected by night torching on 13 April 2015. No newts were recorded in this waterbody. Substantial active earthworks (at least 350m wide) lay immediately to the east of Waterbody 44, which were considered to minimise the

possibility of newts migrating into the RWE boundary from any waterbodies further to the east of Waterbody 44.

A Sewage Treatment Works lies outside the western RWE ownership boundary, which comprises works infrastructure and hard standing, and creates a significant barrier to newts migrating onto the RWE site from waterbodies to the west. Therefore, no waterbodies within 500m of the western site boundary are included in this survey.

5.3.3 Results

Weather

Weather conditions during all surveys were optimal and in line with guidance from English Nature (2001).

Table 5.1 Weather conditions during GCN survey visits at Tilbury March to April 2015 (grid reference TQ 66166 75630).

Visit	Date	Survey type	WBs* surveyed	Time start	Time end	Temp °C	Wind Beaufort	Rain	Cloud (Oktas)
1.1a	17 March 2015	Torch	South of site	19:50	22:00	5	0	0	8
1.2a	18 March 2015	Bottle trap collecting	South of site	09:00	11:15	5	1	0	8
1.1b	24 March 2015	Torch	North of site	20:35	22:25	5	0	0	7
1.2b	25 March 2015	Bottle trap collecting	North of site	21:30	12:45	6	1	0	4
2.1	25 March 2015	Torch	Entire site	20:20	23:00	5	0	0	1
2.2	26 March 2015	Bottle trap collecting	Entire site	09:45	12:15	6	2	0	8
3.1	07 April 2015	Torch	Entire site	91:15	23:15	10	1	0	5
3.2	08 April 2015	Bottle trap collecting	Entire site	09:00	11:50	9	1	0	6
4.1	27 April 2015	Torch	Entire site	21:10	23:00	8	2	0	6
4.2	28 April 2015	Bottle trap collecting	Entire site	07:15	08:30	5	1	0	1

Results

No great crested newts were recorded on any of the four visits for the presence/likely absence survey indicating that great crested newts are not present within the surveyed waterbodies or the terrestrial habitats surrounding them.

A peak count of 100 smooth newts was recorded on 7th April 2015 during the torching survey. The majority of smooth newts were recorded in Waterbody 18 which is located within the north-west corner of the demolition area. The eastern extent of Waterbody 18 supported very few smooth newts.

Egg searches took place wherever possible (see Section 5.2.4 limitations). No newt eggs were found during any of these searches.

Table 5.2 GCN presence / likely absence survey results March to April 2015 conditions. Zeros indicate that surveys took place on the dates indicated, but there were no newts recorded.

♀- female ♂- male Smooth – smooth newt

Waterbody	17 and 18 March 2015 (half of site) and 24 and 25 March (half of site)		25 and 26 March 2015		07 and 08 April 2015		27 and 28 April 2015	
	Torch	Bottle	Torch	Bottle	Torch	Bottle	Torch	Bottle
6	0	0	0	0	0	0	0	0
12				0	1♂ 3♀ smooth	Too shallow to trap	dry	dry
13	1 ♀ smooth	2 ♀ smooth	1 ♂ smooth	0	3♂ 1♀ smooth	2 ♂ smooth	1♂ 2♀ smooth	1 ♀ smooth
14	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0
16	none	1 ♂ smooth	2♂ 1♀ smooth	1♂ 1♀ smooth	1♂ 1♀ smooth	1 ♂ smooth	2♂ 3♀ smooth	1 ♀ smooth
18	7♀ 2♂ smooth	2 ♀ smooth	6♂ 5♀ smooth	12♂ 1♀ smooth	36♂ 42♀ smooth	6♂ 4♀ smooth	7♂ 6♀ smooth	2♂ 1♀ smooth
24	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
25	1 ♀ smooth; 1 ♂ smooth	0	0	0	3 ♂ smooth	1 ♀ smooth; 2 ♂ smooth	1 ♀ smooth; 1 ♂ smooth	0
25A	7 ♀ smooth	0	4 ♀ smooth; 3 ♂ smooth	0	7 ♀ smooth; 2 ♂ smooth	1 ♂ smooth	2 ♀ smooth; 1 ♂ smooth	0
26	0	0	0	1 ♀ smooth	0	0	ditch almost dry	2 ♀ smooth; 4 ♂ smooth
31	0	0	0	0	0	0	0	0
32	0	0	0	0	0	1 ♂	0	0

Waterbody	17 and 18 March 2015 (half of site) and 24 and 25 March (half of site)		25 and 26 March 2015		07 and 08 April 2015		27 and 28 April 2015	
	Torch	Bottle	Torch	Bottle	Torch	Bottle	Torch	Bottle
						smooth		
33	0	0	0	0	0	0	0	0
35 & 36	6♀ 2♂ smooth	none	1♂ 1♀ smooth	0	0	0	0	Too shallow to trap
37	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0
Peak Count - smooth	**27**	**5**	**24**	**16**	**100**	**36**	**26**	**11**

5.3.4 Limitations

Given the presence of a broken foul water sewage pipe which was discharging raw sewage into the waterbody system close to where Waterbodies 31b and 32 pass beneath the railway line, the waterbodies to the north were not included in the survey as they were no longer considered suitable to support great crested newts. However, it is unknown if these waterbodies supported great crested newts prior to the pollution incident.

The suitability of waterbodies for breeding amphibians can change throughout the year and from year to year depending on whether rainfall patterns permit standing water to persist for long enough into the breeding season to allow courtship, egg-laying, and the growth and metamorphosis of larvae to the juvenile life-stage. Waterbodies assessed as unsuitable due to lack of water in one season may be suitable in subsequent years – these waterbodies have been recorded on Figure 5.1 to allow future surveys at the site to capture them.

All three survey methods were used wherever possible; however, the consistency of their use was variable due to the specific conditions of individual waterbodies e.g. where water was too turbid or densely vegetated for a useful torch survey, where banks were too steep or densely vegetated to allow the access to the entire waterbody, or where water was too shallow for trapping with bottles to be possible. Details of limitations at each pond are discussed in Section 5.2.2 and survey methods used are shown in Table 5.2. Where all three survey methods could not be used, this has been considered when determining impacts (Section 5.3) and mitigation (Section 13.0)

Despite the limitations highlighted above, the effort applied is considered sufficient to meet the aims of the survey and is in accordance with the aforementioned guidelines.

5.4 Discussion

A very small great crested newt population has been recorded within the RWE ownership boundary during previous years with no great crested newts recorded since 2008. It is possible that great crested newts are now absent from the site or present in such low numbers they are undetectable using standard methodology. As such, the demolition activities are considered unlikely to impact great crested newts or their habitats and are unlikely to contravene the Conservation of Habitats and Species Regulations 2010 (as amended) and Wildlife and Countryside Act 1981 (as amended). No mitigation is considered necessary for the demolition phase of works.

6.0 Reptiles

6.1 Legislation

All six species of reptiles native to the UK are protected under the Wildlife and Countryside Act 1981 (as amended) and benefit from various levels of protection. The adder (*Vipera berus*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*) receive partial or full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to:

- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

The smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) are listed in Annex IVa of the EC Habitat and Species Directive and in Annex II of the Bern Convention. They are also listed in Schedule 5 of Section 9 of the Wildlife and Countryside Act 1981 (as amended) and in Schedule 2 of the Conservation Regulations 2010. As a result it is an offence to:

- Intentionally or recklessly kill or injure these animals;
- Deliberately disturb these animals;
- Take or destroy their eggs;
- Damage, destroy or disturb or impede access to breeding or shelter sites used by these species; and
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

6.2 Summary of information to date

6.2.1 Biological Records

In 2009, the NBN Gateway and Essex Amphibian and Reptile Group were consulted for records of reptiles within approximately 5km of the previously proposed CCGT boundary (which included the current demolition site). Reptiles present included slow worm, grass snake, common lizard and adder. There were no records of reptiles from within the previously proposed CCGT boundary (or the demolition boundary) itself. Distances below are approximate.

- Slow-worm *Anguis fragilis*
    1. Tilbury (TQ6376; 1.5km), 1960;
    2. Tilbury dock (TQ67; 1.8km), 1965;
    3. Gravesend (TQ6473; 2.9km), 1970;
    4. Tilbury dock (TQ6376; 1.8km), 1964.
- Grass snake *Natrix natrix*
    1. Northfleet (TQ624741; 3.0km), 1984;
    2. Cliffe, Shorne (TQ6974; 4.2km), 1987;
    3. Shorne Marshes (TQ6974; 4.2km), 1978;
    4. Gravesend (TQ6473; 2.9km) 1970.
- Common lizard *Lacerta vivipara*
    1. Tilbury (TQ6376; 1.5km), 1950;
    2. Coalhouse fort (TQ690770; 2.9km), 1985;
    3. Tilbury (TQ67; 1.5km), 1959;
    4. Coalhouse fort (TQ690770; 2.9km), 1985.
- Adder *Vipera berus*
    1. Tilbury dock (TQ6376; 1.8km), 1960;
    2. Tilbury dock (TQ67; 1.8km), 1964;
    3. Tilbury (TQ67; 1.5km), 1950.

6.2.2 Surveys to support previous planning applications

A review of existing reports has been included to provide context to the results from the 2015 surveys:

- Reptile and great crested newt survey (Tilbury power station site). Ecological Sustainability Ltd, May 2007.
- Reptile survey (Tilbury B Ash disposal areas only). Ecological Sustainability Ltd, September 2007.
- Reptile survey (Potential receptor sites). WYG Environment, August 2008.
- Reptile survey (Potential Construction Laydown Areas). WYG Environment, June 2009.
- Reptile Survey (Gas Pipeline Study Area). WYG Environment, September 2010.

During surveys in 2007, 2008 and 2009, four species of reptile were confirmed within the study area which, at the time, included the RWE ownership boundary (including construction laydown areas) and the route of the previously proposed gas pipeline. The Lytag Brownfield WS, TEEC WS and Tilbury Riverside Project Community Meadow were identified as being especially important to populations of these animals. Goshem's Farm WS, outside and to the south-east of the RWE ownership boundary was also found to be important for reptiles.

The 2010 survey of the gas pipeline study area confirmed the presence of four reptile species throughout. Reptiles were predominately recorded along field margins.

A potential mitigation area to the north of the Station Approach Road (referred to as Reptile Receptor Area A in previous planning documents – within the SEESA compound marked on Figure 1.2) was also used by reptiles with slow worm the most dominant species followed by common lizard, and adder and grass snake only sporadically encountered.

All surveys recorded the same population size classes for each of the four recorded species:

- Adder – low population
- Common lizard – low population
- Slow worm – good population
- Grass snake – low population

6.2.3 2013 Pre-Commencement Survey

An update reptile population size survey was completed prior to commencement of works in relation to the previously proposed CCGT conversion and has been summarised below. Twenty reptile survey visits were completed between 17th April 2013 and 12th June 2013 in accordance with Froglife's

Advice Sheet 10: Reptile Survey (1999), focussing on the area that was previously proposed for biomass conversion but which now falls within the demolition boundary.

The survey site was divided into eight areas to provide an indication of the key areas for reptiles (refer to Figure 6.1 for areas). 431 artificial refugia were laid across the survey site with the refugia spread across the eight areas depending on the extent of suitable reptile habitat present. The average number of refugia per hectare totalled approximately 152 which was taken into account when interpreting actual reptile counts into approximate population size classes.

Table 6.1 Summary of reptile survey results for study site 2013

	Total captures over 20 visits	Peak count on any one of 20 visits*	Estimate of population size class**
Adder	110	6	Low
Common lizard	349	30	Low
Slow worm	1802	125	Good
Grass snake	1	1	Low
TOTAL	**2262**		

* adults only
** factored to allow for refugia densities

The four common reptile species were found across the site with slow worm being recorded in all eight areas. Common lizard was recorded in seven areas and adder in six areas. Grass snake was only recorded in one area.

Table 6.2 Peak counts for each species by area (Figure 6.1)

	A	B	C	D	E	F	G	H
Adder	2	2	0	5	6	1	3	0
Common lizard	0	2	2	12	9	10	7	7
Slow worm	6	19	17	40	45	34	37	13
Grass snake	0	1	0	0	0	0	0	0

Areas E and D (the Tilbury Riverside Project Community Meadow – Figure 1.2) yielded the highest total reptile captures over the 20 survey visits (617 and 492 individuals respectively). Numbers captured for each species in each of the eight areas (when factored to allow for differences in the density of refugia) indicated that Area B (between the western demolition boundary and the sewage treatment works) was one of the more valuable areas for all four reptile species with the only grass snake being recorded here.

6.3 Update Survey 2015

6.3.1 Scope

The objective of the 2015 update survey was to estimate the population size class of each species of reptile within the demolition boundary and wider RWE ownership boundary with a view to developing an appropriate mitigation strategy for their protection in accordance with the Wildlife and Countryside Act 1981 (as amended). The Tilbury Pond WS was included in the survey to determine its suitability to support translocated reptiles (if required).

6.3.2 Methods

In line with previous surveys, the methodology for the 2015 reptile survey was based on the Herpetofauna Workers' Manual (Joint Nature Conservation Committee - JNCC, 2003) and Advice Sheet 10 – Reptile Survey (Froglife, 1999).

Four hundred and twenty-nine artificial refugia (1m x 0.5m sections of roofing felt) were placed across the site in areas considered to be suitable for reptiles (Figure 6.2). Typically, these areas were found at the field margins, adjacent to ditches, hedges and scrub vegetation. The area of suitable habitat where reptile mats were laid covered approximately 53ha, so the density of refugia was approximately 8.1 refugia per hectare, which lies within the best practice refugia density of between five and ten refuges per hectare.

The reptile surveys took place over 20 occasions from April to September 2015, avoiding August when temperatures were too high and reptiles would be difficult to find. On each occasion, each refuge was checked for basking reptiles from a distance before being slowly approached and searched beneath for sheltering reptiles. Any reptiles observed not in association with the refugia were also recorded. As a guideline, it is recommended that the optimal time to survey reptiles is between 8:30 to 11:00 and between 16:00 and 18:30 and when air temperature is between 9ºC and 18ºC. Strong rain and wind are deemed unsuitable (Froglife, 1999). Although surveys were not all undertaken during these optimal conditions, the numbers of reptiles recorded on these occasions demonstrated that the weather conditions were not a constraint. There were no limitations to the survey caused by access difficulties, but some refugia that had become lost due to high wind across the site were replaced. Full details of the weather conditions during each survey are contained within Section 6.2.3.

In order to inform a mitigation strategy, it is necessary to make an estimate of the population size class of each reptile species within the site. Size classes are based on the maximum count of each reptile species recorded during any single survey visit. The population size class estimates were made

according to published guidelines along with a consideration of the survey area and the survey effort undertaken.

6.3.3 Results

Weather

The weather recorded during each of the 20 visits is shown in Table 6.3.

Table 6.3 showing weather during the 20 reptile population monitoring visits in 2015.

Survey visit	Date	Time	Air Temperature (ºC)	Rain	Wind Speed (Beaufort)	Cloud Cover (Otkas)
1	08/04/2015	13:30	14	0	2	5
2	16/04/2015	09:15	12	0	2	2
3	24/04/2015	09:55	15	0	2	6
4	28/04/2015	11:30	12	0	1	7
5	07/05/2015	11:30	11	0	2	8
6	13/05/2015	09:30	16	0	1	1
7	26/05/2015	09:00	16	0	1	3
8	09/06/2015	09:30	13	0	2	7
9 (half of site)	18/06/2015	11:30	18	0	2	2
9 (half of site)	19/06/2015	09:55	14	0	2	7
10	23/06/2015	09:30	16	0	2	5
11	06/07/2015	08:35	15	0	1	4
12	09/07/2015	08:30	14	0	1	2
13	14/07/2015	05:00	17	0	2	7
14	01/09/2015	09:45	15	Slight rain for 15mins, otherwise dry.	1	6
15	03/09/2015	09:40	13	0	0	3
16 (half of site)	07/09/2015	10:00	12	0	0	0
16 (half of site)	08/09/2015	09:00	12	0	0	0
17	10/09/2015	09:10	16	0	2	2

18	14/09/2015	09:45	16	Moderate rain for 20 mins, otherwise dry.		
19	18/09/2015	10:30	14	0	2	4
20	23/09/205	09:30	12	0	2	0

Results

Table 6.4 Peak counts for each species by area, 2015 (Figure 6.2)

	A Station	Comm. Meadow	Ashfield	Coalfield	TEEC WS	Owl House	Northern Natural Area	Tilbury Pond WS	Substati on
Adder	3	4	4	1	1	2	5	0	1
Common Lizard	7	14	12	1	2	1	6	2	2
Slow Worm	20	35	37	1	9	3	22	0	8
Grass snake	0	1	1	5	2	0	0	0	0

Table 6.5 Summary of reptile totals for RWE ownership boundary 2015

	Total captures over 20 visits
Adder	118
Common lizard	558
Slow worm	1668
Grass snake	25
TOTAL	**2369**

Table 6.6 Summary of reptile survey results for RWE ownership boundary 2015

	A-Station	Community Meadow	Ash-field	Coal-field	TEEC	Owl House	Northern Natural Area	Tilbury Pond WS	Sub station
Adder									
Peak number*	3.00	4.00	4.00	1.00	1.00	2.00	5.00	0.00	1.00
Population size**	**low**	**low**	**low**	**low**	**low**	**low**	**low**	**0**	**low**
Common lizard									
Peak number*	7	14	12	1	2	1	6	2	2

	A-Station	Community Meadow	Ash-field	Coal-field	TEEC	Owl House	Northern Natural Area	Tilbury Pond WS	Sub station
Population size**	**good**	**low**	**low**	**low**	**low**	**low**	**low**	**low**	**good**
Grass snake									
Peak number*	0	1	1	5	2	0	0	0	0
Population size**	**low**	**low**	**low**	**low**	**low**	**low**	**low**	**low**	**low**
Slow worms									
Peak numbers*	20	35	37	1	9	3	22	0	8
Population size**	**exceptional**	**low**	**low**	**low**	**low**	**low**	**exceptional**	**0**	**exceptional**

* adults only
** factored to allow for refugia densities

The four common reptile species were found across the site with slow worm and common lizards being recorded in all nine areas. Adders were recorded in seven areas and grass snakes were recorded in five areas.

6.3.4 Limitations

The reptile survey took place within good survey conditions and refugia which become lost were replaced. There are not considered to be any limitation to the findings of this survey.

6.4 Discussion

All four species of reptiles have consistently been found in suitable habitat across the site.

As demonstrated on Appendix A – Figure 1.4, the majority of the habitats within the demolition boundary comprise buildings, hardstanding and the disused coalfield, which are unsuitable to support reptiles. However, an exceptional population of slow worms and a good population of common lizards were present in suitable habitat around the margins of the A-station

Outside the demolition boundary, the majority of suitable reptile habitat supports low populations of the four species. An exceptional population of slow worms was present in the Northern Area and in the Sub Station. A good population of common lizards was present in the Sub Station.

Due to the unsuitability of the majority of the habitats for reptiles within the demolition boundary, and the temporary nature of the demolition, the majority of the demolition works can proceed

without risk of killing or injuring reptiles. As suitable reptile habitat is present around the periphery of the A station and the coalfield, precautionary measures will be implemented to protect those areas and to minimise the risk of killing or injuring reptiles during the demolition work (Reptile Mitigation Chapter 13).

7.0 Dormouse

7.1 Legislation

The hazel dormouse is afforded protection under the *Conservation of Habitats & Species Regulations 2010* (as amended), which applies to all of its life stages. The dormouse is also listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). These two pieces of legislation make it an offence to:

- Deliberately, intentionally or recklessly kill, injure or take hazel dormice;
- Deliberately, intentionally or recklessly takes or destroys a dormouse resting place or breeding site;
- Posses or control any live or dead specimen or anything derived from a hazel dormouse;
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a hazel dormouse; and
- Deliberately, intentionally or recklessly disturb a hazel dormouse while it is occupying a structure or place which it uses for that purpose.

7.2 Summary of information to date

7.2.1 Biological Records

During consultations associated with previous planning applications, no dormouse records were returned for the area within 2km of the RWE ownership boundary. A review of datasets held on the NBN Gateway (September 2015) indicated that the closest dormouse records are for sites south of the River Thames with the closest record on the northern side of the river being over 5km from the site.

7.2.2 Surveys to support previous planning applications

Dormouse surveys have not previously been undertaken within the RWE ownership boundary although evidence of their presence was recorded in 2009 in the form of a dormouse nest near the National Grid substation and field signs within the TEEC WS (Figure 1.2). Following consultation with Natural England, further survey work was not considered necessary (pers. comm., May 2009) as presence had been confirmed.

WYG's 2010 habitat survey recorded limited dormouse habitat within the gas pipeline study area (outside and to the east of the RWE ownership boundary) and that which was available was considered to be suboptimal and limited to around Poultry Farm, approximately 1.6km to the north-east of the north-eastern corner of the demolition boundary.

7.3 Update Survey

7.3.1 Scope

WYG's previous habitat surveys within the RWE ownership boundary identified areas of dense scrub and secondary woodland with the potential to provide dormouse nesting, feeding and sheltering opportunities. A total of 198 dormouse tubes were installed in this habitat across the site in April 2015 in accordance with *The Dormouse Conservation Handbook* (English Nature, 2006) to determine the presence or likely absence of dormice (Figure 7.1).

The 2015 dormouse survey covered the RWE ownership boundary, focusing on the most suitable habitats; these were predominately located to the west of the site with small areas of habitat along the eastern demolition boundary, heading north to Walton Common.

7.3.2 Methods

To achieve the recommended survey effort based on the index of probability scoring system described in *The Dormouse Conservation Handbook* (English Nature, 2006), one visit was made each month (May to September 2015) to inspect the nest tubes for signs of dormouse. The visits were scheduled in order to maximise the number of "points" received by each visit to achieve the 20 points required under the guidelines. The monthly points vary throughout the year as nest tubes are most likely to be occupied during May, August and September.

Table 7.1 Index of probability of finding dormice present in nest tubes in any one month between April and October.

Month	Index of probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2

The dormouse survey was set up on 13th, 14th and 23 April 2015 with the dates of the survey visits as follows:

Table 7.2 Dormouse Survey Dates

Visit	Date	Points	Cumulative
1	13th May 2015	4	4
2	8th June 2015	2	6
3	23th July 2015	2	8
4	17th August 2015	5	13
5	08th September 2015	7	20

7.3.3 Results

The weather during the dormouse surveys is shown in Table 7.3.

Table 7.3 Weather during dormouse surveys

Survey visit	Date	Time	Air Temperature (ºC)	Rain	Wind Speed (Beaufort)	Cloud Cover (Otkas)
1	13/05/2015	09:30	16	0	1	1
2	09/06/2015	09:30	13	0	2	7
3	23/07/2015	10:00	22	0	1	1
4	17/08/2015	10:00	20	0	2	2
5	08/09/2015	10:30	14	0	2	4

Results

Dormouse presence within the RWE ownership boundary was confirmed during the 2015 surveys. A dormouse nest was confirmed on 8th September 2015 (visit 5) in Tube 68 on the edge of an area of scrub in the Northern Area (Photographs 7.1 and 7.2 below; shown in red on Figure 7.1). Within the nearby scrub, Tubes 62 and 64 showed signs of what appeared to be the start of a dormouse nest or small mammal nest (shown in amber on Figure 7.2). However, as there was no structure to the nests on the date of survey, these could not be confirmed as dormouse nests.

Photographs 7.1 and 7.2 Dormouse nest in tube 68

During the 13th May 2015 survey (visit 1), Tube 8 (immediately to the north of the demolition boundary within the TEEC WS) appeared to show signs of the beginning of a dormouse nest and Tube 166 (near the electricity sub-station to the north of the Station Approach Road in the SEESA compound) showed signs of small mammal presence – both are shown in amber on Figure 7.1. However, the boxes were later checked on all subsequent surveys and no further development of these nest were recorded.

Table 7.4 Summary of results of 2015 dormouse survey

Date	Habitat/ location	Tube	Results
13th May 2015	Scrub	15	Birds nest
	Scrub	08	Appears to be the start of a dormouse nest but not fully developed enough to confirm presence. Stripped bark and fresh leaves but no structure.
8th June 2015	-	-	Nothing recorded
23th July 2015	Woodland	166	Evidence of small mammal – fresh leaves
17th August 2015	-	-	Nothing recorded
8th September 2015	Scrub	62	Appears to be the start of a dormouse nest but not fully developed enough to confirm presence. Stripped bark and fresh leaves but no structure.
	Scrub	64	Appears to be the start of a dormouse nest but not fully developed to confirm presence. Stripped bark and fresh leaves but no structure.
	Scrub	68	**Dormouse nest found**

7.3.4 Limitations

Dormouse surveys were completed according to best practice guidelines. All areas of the site with the potential to support dormouse were accessible. There are considered to be no limitations to the conclusions of this survey. However, the survey only provides a snapshot of data across the survey period for the dates the survey visits were undertaken rather than complete information on population numbers for everyday throughout the survey period.

The results of this report remain valid for two years (i.e. until September 2017). If works have not commenced by this time, an update survey should be considered.

7.4 Discussion

The habitats within the demolition boundary offer limited or no potential to support dormice and no dormice were confirmed within it during the 2015 surveys. A possible and partially constructed nest was identified in Tube 8 immediately north of the demolition boundary (within the TEEC WS) but this was not progressed to a complete nest and is not considered to be evidence of presence given the uncertainty over which species may have constructed it. However, as it is possible dormice *may* have been present in the habitat immediately surrounding the demolition boundary and as these areas

could be impacted through damage and disturbance from heavy machinery, vehicular activity and impacts from noise, debris and dust (Tube 8 is approximately 100m from the exclusion zone shown on Drawing Number MAP/TILB/062/A), the mitigation strategy outlined in Section 15.0 will take a precautionary approach to this species.

The habitats surrounding the confirmed nest (Tube 68) are sufficient distance from the proposed demolition work that they are considered unlikely to be impacted (approximately 500m away from the northern demolition boundary) and, as a consequence, mitigation for this area or licensing from Natural England is not considered necessary.

8.0 Birds

8.1 Legislation

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act (as amended) receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young, or to disturb dependent young of such a bird (HMSO 1981 & 2000).

In addition, Annex 1 of the EU 'Birds' Directive (1979) lists 194 species that are subject to special conservation measures concerning their habitat in order to ensure their survival and reproduction. Member States are required to designate Special Protection Areas (SPAs) for the Annex 1 and all migratory species. SPAs are scientifically identified areas critical to the survival of the targeted species. The SPAs form part of the Natura 2000 EU network of protected nature sites. The designation of an area as an SPA gives it a high level of protection from potentially damaging developments (European Commission (EC) 2004).

Forty-nine bird species are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 which considers species of principal importance for the conservation of biological diversity in England, in accordance with the 1992 UN Convention on Biological Diversity. This list is derived from birds on the UK BAP list of priority species.

The conservation status of all regularly occurring British birds has been analysed in co-operation with the leading governmental and non-governmental conservation organisations, including the Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and Birdlife International Birds of Conservation Concern (BoCC) (Eaton *et* al., 2009). The basis of species ongoing population trends are assigned to one of three lists of Conservation Concern. These are the UK Red, Amber and Green list. Although the lists confer no legal status in themselves, they are useful in evaluating the conservation significance of bird assemblages, and for assessing the potential significance of impacts and informing appropriate levels of mitigation with respect to bird populations.

8.2 Summary of information to date

8.2.1 Biological Records

This report augments the four previous breeding bird surveys (2007, 2009, 2010, 2013) and 2008 mitigation plan. Very few bird records were returned from the 2007 desk study completed by RPS and

it was considered that a repeat desk study would not have produced further data than that provided by historic surveys within the RWE ownership boundary and immediately surrounding area. RPS also undertook a wintering bird assessment of the intertidal areas along the shoreline during the winter of 2007. The survey looked specifically at the shoreline adjacent to the ownership boundary and further downstream towards the SPA and Ramsar sites.

There are two statutory designated sites located within 2km of the RWE ownership boundary (detailed below in Table 8.1); both sites are designated for having internationally important numbers of overwintering birds including 21.7% of the UK's population of avocets *Recurvirostra avosetta* and 0.9% of the UK's population of hen harrier *Circus cyaneus*, as well as regularly supporting over 20,000 waders and waterfowl thus making it a wetland of international importance.

Table 8.1: Statutory sites within 2km of the site

Site Name	Distance from Site (km)	Summary Details
South Thames Estuary and Marshes (Ramsar SPA, SSSI)	1.75 km East	The site consists of an extensive mosaic of grazing marsh, salt marsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000.
Mucking Flats and Marshes SSSI	1.7 km South East	Mucking Flats and Marshes comprise an extensive stretch of Thames mudflats and salt marsh, together with sea wall grassland. It forms part of the Thames Estuary and marshes SPA. Wintering wildfowl and waders reach both nationally and internationally important numbers on the mudflats, roosting and feeding on adjacent salt marsh and disused silt lagoons.

SPA= Special Protected Area.
SSSI= Special Site of Scientific Interest.
Ramsar= Wetlands of international importance designated under the Ramsar Convention.

8.2.2 Surveys to support previous planning applications

Breeding Birds

RPS completed a breeding bird survey between 3rd April and 26th June 2007 using standard methodology. The survey area included the RWE ownership boundary (as per the 2015 survey). In summary:

- A total of 61 bird species were recorded, of which 46 were considered to be breeding on the site, including 20 species of conservation concern.
- Four of these were Schedule 1 species: peregrine falcon *Falco peregrinus*, barn owl *Tyto alba*, black redstart *Phoenicurus ochruros* and Cetti's warbler *Cettia cetti*.
- The remaining notable species comprised an assemblage considered typical of arable habitats. They are listed under Section 41 of the NERC Act 2006 and/or on the BoCC Red and Amber lists of species of high and medium conservation concern.

The 2008 breeding bird mitigation plan highlighted which species from the 2007 RPS report were likely to be affected by the works proposed at the time and those additional species that had been recorded within the surrounding area as noted in the data search.

The 2009 survey was undertaken by WYG during the later stages of the breeding season, with visits conducted between 29th May and 24th June. This survey covered land outside the RWE ownership boundary, to the east of the B-station, as well as areas to the north of the ownership boundary in vicinity of the SEESA compound, ashfields and National Grid substation. In summary:

- A total of 38 bird species were recorded, of which 24 were considered to be breeding.
- The breeding bird assemblage included a pair of quail *Coturnix coturnix* and two other Schedule 1 species, Mediterranean gull *Larus melanocephalus* and barn owl *Tyto alba*; the latter was recorded as a road casualty on Cooper Shaw Road outside the ownership boundary but within 1 km of the site.
- The breeding bird assemblage in the local area was assessed as of at least District significance due to the high density of corn buntings *Emberiza calandra*, skylarks *Alauda arvensis* and other birds of Red and Amber list conservation concern; however, the areas of most importance were located outside the RWE ownership boundary to the east and have since been destroyed by unrelated works adjacent to the site.

The 2010 survey was undertaken by WYG with visits conducted between the 16th April and 22nd June 2010. The survey covered land outside and to the east of the RWE ownership boundary with only parts of the ashfield included. In summary:

- A total of 64 bird species were recorded of which 38 were considered to be breeding. The survey recorded an additional two Schedule 1 species, whimbrel *Numenius phaeopus* and Mediterranean gull, but stated that both were unlikely to breed on or within vicinity of the site as the habitat was not considered suitable for these species.
- In addition to these, ten Red and nine Amber list species were recorded breeding. Of these, only corn bunting *Emberiza calandra*, linnet *Carduelis cannabina*, skylark *Alauda arvensis* and whitethroat *Sylvia communis* were recorded within the current site boundary.

Wintering Birds

The wintering bird surveys were undertaken by RPS and consisted of a comprehensive wintering bird and wader survey covering one and a half winter periods, one autumn passage and one spring passage period between January 2007 and May 2008. The survey area focused on the intertidal mudflats adjacent to the RWE ownership boundary as well as 0.5 km upstream (west) and 3 km downstream (east) and used standard WEBS count methodology. The surveys found that no high tide roosts were present across the RWE ownership boundary, with the habitat being of negligible value to terrestrial water-birds. The only species recorded was lapwing which was present in small numbers. In addition, the intertidal zone adjacent to the RWE ownership boundary and around the jetty supported the lowest populations of overwintering wildfowl and waders with numbers increasing closer towards the Thames Estuary and Marshes SPA/Ramsar and Mucking Flats and Marshes SSSI, both of which are approximately 1.31 km north west away from the demolition boundary.

The 2007-2008 wintering bird report was comprehensive and covered multiple seasonal uses of the intertidal areas along the shoreline of the power station. An inspection of historical aerial photographs between 2007-2015 shows minimal change to the intertidal region immediately outside the southern demolition boundary. Therefore, although the data from the inter-tidal zone is at least seven years old and the power station has not been operational since August 2013, the existing wintering bird data is considered to still provide a good indication of the species and numbers of birds that overwinter in this area, and no further winter bird surveys have been required for the demolition. The temporary and short term nature of the demolition works make in unlikely that there will be a significant impact on overwintering birds.

8.2.3 2013 Pre-Commencement Survey

An additional survey to update the results of previous surveys undertaken as part of the consenting process for the previously proposed CCGT conversion was undertaken shortly before commencement of works with the aim of amending the mitigation strategy if required. The pre-commencement survey has been summarised below.

- The survey was carried out by WYG between 21st May and 20th June 2013 and covered the area within the demolition boundary including an approximate buffer of 10-20m where possible. The Northern Area and ashfields were not included.
- A total of 35 bird species was recorded, of which 28 were considered to be breeding.
- The breeding bird assemblage included a pair of barn owls, four Cetti's warbler territories and one pair of black redstarts *Phoenicurus ochruros.* These all receive legal protection through being listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

- Three red list species were also recorded: starling *Sturnus vulgaris*, house sparrow *Passer domesticus* and song thrush *Turdus philomelos*.
- Five Amber list species were recorded: kestrel *Falco tinnunculus*, oystercatcher *Haematopus ostralegus*, dunnock *Prunella modularis*, green woodpecker *Picus viridis* and mallard *Anas platyrhynchos*.

8.3 Update Survey 2015

8.3.1 Scope

The objective of the 2015 update survey was to determine whether breeding birds were likely to be present across the ownership boundary and if any that were present had potential to be impacted by the proposed demolition works with a view to developing an appropriate mitigation strategy for their protection in accordance with wildlife related legislation, primarily the Wildlife and Countryside Act 1981 (as amended).

8.3.2 Methods

The survey methodology involved standard territory (registration) mapping techniques as detailed in Bibby *et al*. (2007). This method is based on the observation that many species during the breeding season are territorial. This is found particularly amongst passerines (song birds), where territories are often marked by conspicuous song, display and periodic disputes with neighbouring individuals. Registrations of birds, using standard British Trust for Ornithology (BTO) two letter species codes and activity codes (Gilbert *et al*., 2002), were placed onto an appropriate field map..

For recording passerines, specific symbols were used for singing, calling, movements of the same bird between different areas, flying, carrying food, nest building, aggressive encounters and other notable behaviour. The expected outcome of this technique is that mapped registrations fall into clusters, approximately coinciding with territories. Where a species has closely packed territories (e.g. reed warbler *Acrocephalus scirpaceus*), the mapping of simultaneously singing birds becomes essential. Where species are recorded simultaneously singing, territory boundaries are taken to be between such birds.

All of the breeding birds recorded during the survey were compared against their respective entries in *The Birds of Essex* (Wood *et. al*., 2009) to provide an assessment of the species' status and distribution within the county.

8.3.3 Results

Weather

The weather conditions for the eight surveys are provided in Table 8.2 below:

Table 8.2: Dates and weather conditions

Date	Start Time	Sunrise Time	Cloud cover (Okra)	Wind Speed Buford	Temp °C	Precipitation	Visibility
19th March 2015	5:35	6:03	8	1 W	4	Na	Moderate
20th March 2015	5:36	6:01	8	1W	6	Na	Good
9th April 2015	6:00	6:17	8	1W	8	Early mist	Good
10th April 2015	6:00	6:15	8	0	8	Thick Fog	Moderate
14th May 2015	4:30	5:10	6	1NW	8	Na	Good
18th May 2015	4:20	5:01	8	1-3W	8	Na	Good
3rd June 2015	4:15	4:47	7	2N	10	Na	Good
4th June 2015	4:10	4:48	0	1N	10	Na	Good

Results

A combined total of sixty six bird species was recorded during the 2015 breeding bird surveys. Of these, fifty two were considered to be breeding.

Schedule 1 Species

Three Schedule 1 species were recorded within the RWE ownership boundary during the surveys with a further two recorded on reptile and bat surveys (refer to Table 8.3 below and Figure 8.1 for territory locations and flight routes). Only two of these were considered to be breeding.

Table 8.3 Schedule 1 species recorded breeding within the study area

Schedule 1 Breeding Species					
Common Name (BTO Code)	**Scientific Name**	**Territories**	**Nests found**	**Aggressive Encounters observed**	**Status**
Cetti's Warbler (CW)	*Cettia cetti*	11	0	0	Scarce but increasing resident
Peregrine (PG)	*Falco peregrinus*	1	0	5*	Rare breeder possibly increasing

* *These aggressive encounters were not observed during the breeding bird survey itself but were recorded during reptile surveys when a pair of peregrines had aggressive encounters with a pair of kestrels which were breeding on the A-station".*

Other Notable Species

The notable bird species recorded during the surveys are listed in Table 8.4 and 8.5 below (refer to Figures 8.2 and 8.3 for territory locations). The standard BTO codes are shown in brackets after the common name. A total of ten Red list and twenty Amber list species were recorded from within the RWE ownership boundary, of which nine Red list and thirteen Amber list species were considered to be breeding. Please note, the surveyor did not access areas outside the ownership boundary but recorded species observed flying outside it.

Table 8.4 BoCC Red and Section 41 NERC Act species recorded on site.

BoCC Red List / Section 41 NERC Act Species					
Common Name (BTO Code)	**Scientific Name**	**Territories**	**Nests found**	**Aggressive Encounters observed**	**Status**
Corn bunting (CB)	*Emberiza calandra*	1			Much declining resident, BoCC Red, NERC S.41
Cuckoo (CK)	*Cuculus canorus*	13			Summer resident possible declining, BoCC Red, NERC S.41
House sparrow (HS)	*Passer domesticus*	11			Abundant but declining resident, BoCC Red, NERC S.41
Lapwing (L.)	*Vanellus vanellus*	1		1*	Uncommon resident, BoCC Red, NERC S.41
Linnet (LI)	*Carduelis cannabina*	4	1		Common resident , NERC S.41
Skylark (S.)	*Alauda arvensis*	17		2	Common but declining resident, BoCC Red, NERC S.41
Starling (SG)	*Sturnus vulgaris*	21	17		Abundant but declining, BoCC Red, NERC S.41
Song thrush (ST)	*Turdus philomelos*	8			Common resident, BoCC Red, NERC S.41
Yellowhammer (YH)	*Emberiza citrinella*	3			Common but declining resident, BoCC Red, NERC S.41

* Lapwing pair attacked a buzzard which entered their nesting area.

Table 8.5 BoCC Amber and Section 41 NERC Act species recorded on site

BoCC Amber list / Section 41 NERC Act Species					
Common Name (BTO Code)	**Scientific Name**	**Territories**	**Nests found**	**Aggressive Encounters observed**	**Status**
Bullfinch (BU)	*Pyrrhula pyrrhula*	2	0	0	Fairly common but decreasing resident, BoCC Amber, NERC S.41
Dunnock (D.)	*Prunella modularis*	30	0	0	Abundant resident, BoCC Amber, NERC S.41
Grey wagtail (GL)	*Motacilla cinerea*	2	0	0	Local resident, BoCC Amber
Green woodpecker (GW)	*Picus viridis*	3	1	0	Fairly common resident, BoCC Amber
Kestrel (K.)	*Falco tinnunculus*	1	1	5*	Common resident, BoCC Amber
Little grebe (LG)	*Tachybaptus ruficollis*	3	1**	0	Locally common resident, BoCC Amber
Mallard (MA)	*Anas platyrhynchos*	6	1**	0	Common resident, BoCC Amber
Meadow pipit (MP)	*Anthus pratensis*	7	0	0	Common resident, BoCC Amber
Mistle thrush (MT)	*Turdus viscivorus*	3	0	0	Common resident, BoCC Amber
Oyster catcher (OC)	*Haematopus ostralegus*	3	1	1	Common resident, BoCC Amber
Reed bunting (RB)	*Emberiza schoeniclus*	6	0	0	Common but declining resident BoCC Amber, NERC S.41
Shelduck (SU)	*Tadorna tadorna*	7	0	1	Locally common resident, BoCC Amber
Whitethroat (WT)	*Sylvia communis*	56	0	1	Common summer resident, BoCC Amber

* During other survey, kestrels were observed on five occasions engaging with peregrines on site.
** Nests were not found for these species; however, family groups of parents and juveniles were observed indicating successful nesting within the area

Common and Widespread Species

All British breeding bird species not qualifying for either Red or Amber list status are Green listed as they have populations which are either stable or increasing. Table 8.6 below and Figure 8.4 demonstrate species and territory locations for common and widespread birds.

Table 8.6 Common and widespread breeding bird species (BoCC Green List)

Common Breeding Species				
Common Name (BTO Code)	**Scientific Name**	**Territories**	**Nests found**	**Aggressive Encounters observed**
Blackbird (B.)	*Turdus merula*	56		1
Blackcap (BC)	*Sylvia atricapilla*	5		
Blue tit (BT)	*Cyanistes caeruleus*	29	1	1
Carrion crow (C.)	*Corvus corone*	5	1	
Chiffchaff (CC)	*Phylloscopus collybita*	16		
Collared dove (CD)	*Streptopelia decaocto*	23		
Canada goose (CG)	*Branta canadensis*	2	1*	
Chaffinch (CH)	*Fringilla coelebs*	34		
Coot (CO)	*Fulica atra*	4	1*	
Feral pigeon (FP)	*Columba livia domestica*	31		
Greenfinch (GF)	*Carduelis chloris*	59		
Goldfinch (GO)	*Carduelis carduelis*	52	2*	1
Great spotted woodpecker (GS)	*Dendrocopos major*	4		
Great tit (GT)	*Parus major*	40		
Jay (J.)	*Garrulus glandarius*	1		
Long-tailed tit (LT)	*Aegithalos caudatus*	21	1*	
Lesser whitethroat (LW)	*Sylvia curruca*	6		1
Magpie (MG)	*Pica pica*	9	2*	
Moorhen (MH)	*Gallinula chloropus*	3	1	
Pheasant (PH)	*Phasianus colchicus*	1		
Pied wagtail (PW)	*Motacilla alba*	17	2*	
Robin (R.)	*Erithacus rubecula*	97		1
Red legged partridge (RL)	*Alectoris rufa*	1		
Reed warbler (RW)	*Acrocephalus scirpaceus*	58		
Stonechat (SC)	*Saxicola torquata*	3		
Sedge warbler (SW)	*Acrocephalus schoenobaenus*	2		
Wood pigeon (WP)	*Columba palumbus*	82		
Wren (WR)	*Troglodytes troglodytes*	177		

* Nests were not found; however, family groups of parents and juveniles were observed indicating successful nesting within the area

Non-Breeding Species

Of the 66 bird species recorded from within the RWE ownership boundary, 52 were considered to be breeding. The remainder were exhibiting no breeding behaviour and were only foraging or passing through. Non-breeding bird records are given in Table 8.7 below.

Table 8.7 Non-breeding Birds within the Study Area

Non Breeding Species			
Common Name	**Scientific Name**	**Comments**	**Status**
Black headed gull (BH)	*Chroicocephalus ridibundus*	Large groups of these birds were recorded over the sewage treatment works to the west of the site - a peak count of 60 was made on 19th March. Smaller groups often crossed the site travelling up and down the tidal banks by the jetty.	BoCC Amber
Buzzard (BZ)	*Buteo buteo*	A single individual was observed hunting over land adjacent to the site on 14th March. It was engaged by the pair of lapwings nesting in this area who chased it away. The individual was likely foraging.	BoCC Green
Greenshank (GK)	*Tringa nebularia*	A group of six birds were observed foraging around the edge of the waterbody in the ashfields during a reptile survey on 10th September.	W&CA Schedule 1
Grey heron (GH)	*Ardea cinerea*	Two grey herons were flushed from the margins of the gatehouse pond on 4th June where they were most likely foraging.	BoCC Green
Herring gull (HG)	*Larus argentatus*	Single birds were often recorded moving over the site, and flying along to the south around the jetty.	BoCC Red
Kingfisher (KF)	*Alcedo atthis*	A single individual was recorded flying and calling in the A-station area; it flew into the sewage treatment plant adjacent to the site.	W&CA Schedule 1
Little egret (LE)	*Egretta garzetta*	A single little egret was flushed from the pond at the TEEC WS during one of the April surveys; it was most likely foraging.	BoCC Amber
Redshank (RK)	*Tringa totanus*	A pair was recorded foraging occasionally along the mudflats which run along the southern boundary.	BoCC Amber
Redwing (RE)	*Turdus iliacus*	A group with a peak count of 10 birds was recorded exclusively during the	W&CA Schedule 1

Non Breeding Species			
Common Name	**Scientific Name**	**Comments**	**Status**
		20th March survey. Redwings are a winter visitor; it is therefore likely these birds were preparing to migrate north to the continent where they breed.	
Snipe (SN)	*Gallinago gallinago*	A single bird was recorded on two occasions, once during the breeding bird survey in April and the other during a reptile survey in April; on both occasions the bird was flushed.	BoCC Amber
Sparrow hawk (SH)	*Accipiter nisus*	A single individual was recorded hunting along the redundant train tracks diving into the adjacent woodland in the northern part of the site.	BoCC Green
Swallow (SL)	*Hirundo rustica*	Lone individuals were recorded flying over the site to feed throughout the later April and May surveys.	BoCC Amber
Swift (SI)	*Apus apus*	Large groups of up to 31 individuals were recorded feeding over the site in the June surveys.	BoCC Amber
Tufted Duck (TU)	*Aythya fuligula*	A single male was recorded on 19th March in a waterbody to the south east of the site on the old ashfields.	BoCC Amber

8.3.4 Limitations

All eight survey visits to the site were undertaken in good weather conditions with the surveys starting between 0.5 and 1 hour before dawn to ensure any nocturnal or crepuscular species were recorded; this is in accordance with survey guidelines and therefore, there are considered to be no limitations as a result of survey timing.

Although surveys were completed within the optimal survey period, the winter weather this year has been very mild with the Met Office recording the average temperatures in East Anglia (East Anglia is the most relevant region for which the Metrological Office supplies data) as 4.6°C (daytime) and 0.8°C (night-time) during the winter period with a high of 7.7°C and a low of 0.5°C (Met office, 2015). In addition, winter 2015 was the sunniest since 1929 with these conditions continuing into spring. It is possible that some species might have started breeding earlier than usual and before the March survey; therefore, it is possible that any very early signs of breeding will have been missed although this is considered to be a minor limitation as it is considered likely that the March survey would still have picked up early breeding behaviour.

8.4 Discussion

As demolition plans have yet to be finalised, the exact extent of habitats to be removed is unknown. For the purposes of this report, it has been assumed that the boundary vegetation will be retained, with only habitat within the centre of the site and buildings to be removed, including the demolition of all buildings and pylons as shown on RWE Drawing number MAP/TILB/044/A (Appendix B) i.e. worst-case scenario. The recommendations below are based upon the species that would be directly and indirectly affected by the proposals. Additional recommendations and mitigation may be required once the final, detailed proposals have been reviewed.

8.4.1 Schedule 1 Birds (see Figure 8.1)

Two Schedule 1 species were recorded breeding during the 2015 surveys, a further three were recorded in previous surveys and an additional two were recorded during 2015 reptile surveys.

Peregrine (PE)

The single territory was associated with the power station (refer to Figure 8.1). The pair was seen on numerous occasions throughout the various surveys undertaken at the power station throughout 2015 but were only recorded twice during the actual breeding bird surveys; they were most often seen during the many reptile surveys . Most of the behaviour recorded was of the birds engaging in territorial disputes with a pair of kestrels that were nesting on the derelict A-station. Displays often consisted of calling, swooping and diving at the birds. No chicks or young were seen at the site during any of the surveys or following reptile visits.

The birds have previously been recorded during the WYG surveys in 2013, 2010 and the RPS 2007 survey. There have also been reports from site staff that a pair successfully bred on the structures on the jetty; however, this has not been confirmed. In addition, the Birds of Essex (Wood, *et al.* 2009) detailed a successful breeding in 2004 when a pair raised one chick.

The proposed demolition work will remove the power station structures on which the peregrines have previously nested. It is also likely that feral pigeons (on which peregrine feed) will move to more natural nest sites situated within the trees/shrubs around the site but, along with wood pigeon which were seen to be present in large numbers (200+) to the north of the demolition boundary, it is considered the area immediately surrounding the demolition boundary will continue to offer a food resource for peregrines.

Cetti's warbler (CW)

Ten territories were recorded within the ownership boundary, eight of which were located in the Northern Area; this area is unlikely to be affected by the proposed demolition works as there are no buildings within this area it to be removed. The two remaining territories were located around the ditch network and wildlife pond at the TEEC WS. It is understood that the proposed demolition works will remove the TEEC; however, as Cetti's warblers nest in the dense bramble scrub alongside water courses and assuming bramble scrub will be retained during the demolition process, it is unlikely they will be affected by the loss of the nesting sites. It is considered unlikely that these birds will be significantly disturbed by demolition works as they are likely to be habituated to a high degree of disturbance. The TEEC WS is adjacent to the main access road for lorries and vehicles to the ashfields and the TEEC car park is used for storing grass cutting machines; therefore these birds will be habituated to a high degree of disturbance.

Kingfisher (KF)

A single individual was recorded during a reptile survey on 10th September. The bird was observed flying and calling over scrub to the north of the A-station before heading into the Sewage Treatment Works. During late July and September, juvenile birds are usually chased out of their parent birds' territories in preparation for winter; it is therefore considered likely that this individual was a juvenile which was raised in the area and was passing through as it was recorded flying in habitat unsuitable for this species. Kingfishers were not recorded during the breeding bird survey; however, the site has the potential to support them with the waterbodies and ditch networks providing foraging capacity, and the banks of ash which are adjacent to some of the ditches providing an easy tunnelling substrate for these birds to nest in.

This species was not recorded breeding on site, although the presence of juveniles moving across the site indicates that they do breed within the wider area. Therefore it is unlikely that demolition activities will affect this species.

Greenshank (GK)

A group of six birds were observed during a reptile survey on the 10th of September. The birds were observed foraging around the edge of the waterbody on the ashfields; three birds were also recorded during another reptile survey on the 14th of September within the same area. Given the time of year, it is considered likely that these birds are passage migrants, making their way south to Africa where this species overwinters.

As this species is not breeding on site and its use of the site is limited, it is unlikely the demolition works will affect this species. If demolition works take place during the September / October period

when these birds might be present on site, it is considered unlikely they will be disturbed by the works as the waterbody they are using on site is over 500m to the west the proposed demolition boundary. Also, the waterbody these birds were using is directly adjacent to the access track to the ashfields where there is considerable heavy machinery operating and numerous lorries passing by indicating that they are habituated to a higher degree of disturbance.

Black Redstarts (BX) Historic

Although no black redstarts were recorded at the site during the 2015 surveys, black redstarts have historically been recorded on site during the WYG 2013 survey and the RPS 2007 survey; on both occasions, there was a single pair holding a territory around the A-station. Black redstarts are site faithful and usually return to the area every year. As they were not recorded during the 2015 surveys, their nesting site may have become unsuitable, the birds may have found a more suitable territory elsewhere, or the birds may have suffered predation and/or disease and died. The demolition site offers potentially suitable nesting habitat for black redstarts which will nest on ledges on building or holes and crevices in walls; they tend to favour brick buildings but will frequently use open piping tubes, cracks and crevices. However, the foraging habitat within the demolition boundary (and wider RWE site ownership boundary) is generally of low value for this species with some areas in the north offering moderate potential. Black redstarts require both invertebrates which form the bulk of the diet and plant material which forms at least 25% of the diet during the breeding season. The plant material this species favours is sparse pioneer vegetation (Meadows, 1969). This species is often associated with derelict sites where this combination of habitats is available. The Tilbury site currently has very little pioneer vegetation; as the power station is no longer operational (work ceased in 2013), activities which would have usually controlled scrub encroachment have ceased and the site is reverting to a less favourable grass and scrub mix. There are still some areas which offer moderate foraging potential e.g. the Lytag site within the Northern Area has pioneer species. However, these are slowly becoming encroached with buddleia and brambles. Furthermore, during the 2015 surveys, 97 robin territories were scattered within the RWE ownership boundary with ten located where the 2007 and 2013 black redstart territories were identified. The presence of ten robin territories in the location of the original black redstart territories is an increase of 210% on both the 2013 and 2007 number of territories. Robins are far greater adapted to exploit commensally habitats, urban scrub and shrub than black redstarts and are fiercely territorial because of this; it is commonly accepted that robins are able to exclude black redstarts. Consequently, land developing a shrub layer, whether through natural succession or traditional landscaping, is likely to benefit robins at the expense of black redstarts (Moor, D. 2012) and could explain the significant increase in robin numbers and the loss of the black redstart territory recorded during the 2015 survey.

The proposed demolition works have the potential to remove potential black redstart nesting habitat. Although not found on site during the 2015 surveys, they were previously recorded using the A-station and the western parts of the power station.

Barn owl (BO) Historic

A single barn owl territory was identified in the 2007 RPS report and in the 2008 WYG report which identified the pair using a box near the TEEC WS. Barn owls were not recorded in the 2010, 2013 or 2015 surveys nor were they seen or heard during the 2015 bat roost and activity surveys. The land within the RWE ownership boundary offers good foraging potential for barn owls with plenty of rank grassland and meadow areas for hunting. There are also a number of barn owl boxes which originally would have provided plenty of nesting habitat; however, over time, these have become dilapidated, most are missing boards and have woodpecker holes rendering them unsuitable for nesting barn owls. The Owl House, located on the Northern Degreasing Shed (No 2 on Drawing Number MAP/TILB/044/A, Appendix B) is the only building within the RWE ownership boundary which provides permanent provision for barn owls; a check of the building on the 21st May 2015 found eight barn owl pellets on the floor, dating between 1-8 months of age. The nesting ledge could not be inspected but it is considered likely that the building is a roosting site.

Although *roosting* sites are afforded no protection, disturbing a *nesting* site occupied by a barn owl constitutes an offence under the Wildlife and Countryside Act 1981 (as amended), and thus the Owl House can only be demolished when not in use by barn owls for breeding.

Quail (Q.) Historic

The 2009 breeding bird report identified a pair of quail on the eastern boundary of the ashfields. No evidence of quail was found during the 2010 survey or the 2015 survey (note the 2013 survey did not cover the ashfields). Since the 2009 report was undertaken, substantial works have been undertaken on the land outside the RWE ownership boundary to the west, removing the rough grassland, arable land and large areas of tall ruderal vegetation which would have provided a diverse breeding and foraging habitat for quail. Currently, this land is bare earth which is constantly being levelled by heavy machinery as more material is deposited from the jetty; it is understood that this is related to the Thames tidal tunnel with the material from the excavations being deposited on land outside but adjacent to the RWE ownership boundary. It is unlikely that quail are present on site given the decline in the value of surrounding habitats. If quail are present, it is likely they would have been identified in one of the breeding bird surveys, or in the bat activity transects or reptile surveys which also cover this area at dusk.

8.4.2 BoCC Red List Species (see Figure 8.2)

Corn bunting (CB)

A single corn bunting territory was located in the ashfields to the north east of the site. The tall grassland and buffer strip adjacent to the cereals crops offer ideal nesting and foraging opportunities for this species. The proposed demolition of the power station will not directly affect this area and no mitigation is necessary;

Cuckoo (CK)

Cuckoos were recorded across the site, with thirteen territories identified. Being a brood parasitism specialist, they are able to exploit a number of different species and habitats, from skylarks and meadow pipits in the grassland of the ashfields to reed and sedge warblers in the reed beds around the site to dunnocks and robins in the scrub.

House sparrow (HS)

Eleven territories were identified across the eight visits to the site. All house sparrow territories were located in the north west of the site, closest to residential buildings; none were found within the demolition boundary. The house sparrows were often recorded using the paddocks to collect nesting materials and to forage. This area is unlikely to be affected by the demolition works and no further mitigation is required.

Lapwing (L.)

A single territory was identified, located outside the RWE ownership boundary to the south west, where a lapwing pair was observed attacking a buzzard which entered their territory during the April survey. It is likely that the breeding attempt in this area failed as the birds moved onto the ashfield in the May survey, located to the south of the site, east from their original area. Here they continued to display and alarm when surveyors passed the area for reptile visits. Providing the ashfields are retained post demolition and are not used as a lay down or storage area for any materials from the site then it is unlikely that lapwing will be affected by the demolition works. It is likely the birds are habituated to the loud noises and heavy machinery used both on site and in the areas directly east of their original territory; it is, therefore, considered unlikely they will be affected by the demolition works.

As the demolition of the chimneys is a one-off, short duration event, and the habitat used by the single lapwing territory is not impacted by the demolition, the demolition impact on lapwing is likely to be not significant and its duration temporary and minor.

Linnet (LI)

Four territories were identified across the site, with a single nest and three chicks located during the May visit (Photograph 8.1 below), near the substation (Figure 8.2). Two territories were located near the river wall and the remaining territory located in the Northern Area. Towards the end of the breeding season family groups were recorded, often between 4-6 birds foraging along the scrub and tall grasses on site.

Linnets favour areas of patchy scrub adjacent to farmland or coastal areas, as they feed their chicks exclusively on seeds; areas of rough grassland which are often found along arable field margins and coastal sites provide an abundance of seeds. The demolition of the buildings is unlikely to affect the linnets using the site, as the habitats present in the demolition boundary are not suitable for use by linnets.

Photograph 8.1: Linnet nest on site with three chicks.

Skylark (S.)

Seventeen territories were identified for this species, of which two were located in the arable field off-site to the north. The remaining fifteen territories were located on the ashfields and the surrounding off-site arable land. There were also two records of aggressive encounters where skylarks were observed chasing each other out of territories.

The ashfields will be retained during demolition and neither they nor the other sites where skylark territories were identified are expected to be directly affected by the demolition.

Starling (SG)

Twenty one territories and seventeen nests were identified for this species. Starlings are naturally cavity nesters and are able to exploit the industrial buildings and structures of the power station which provide numerous artificial cavities and enclosed areas to nest. A much smaller number were also present on the paddocks in the far north-west corner of the RWE ownership boundary (within the Northern Area to the immediate north of the Station Approach Road. The starlings observed on the paddocks are likely to nest in cavities in off-site residential buildings to the north of the RWE ownership boundary. All starling nests observed on site were around the B-station, with the highest number of nests located on the conveyor belt from the jetty; starlings used the ledges and corners created by supporting struts under the conveyor belt. Nests were identified on the jetty itself where young birds could be heard calling from inside the jetty machinery and starlings were also observed entering holes in the corrugated sheeting protecting the heavy fuel storage tanks, with chicks being heard calling from inside the walls later in the year.

Song thrush (ST)

There were eight territories identified during the breeding bird surveys, of which only five are within the RWE ownership boundary with none of the territories located near or around any of the buildings or built structures that will be demolished. Four of the territories are located close by or adjacent to the existing road network and are frequently passed by lorries and heavy machinery; it is, therefore, considered that these song thrushes are habituated to a moderate amount of disturbance. The song thrush in the territory located in the north of the Northern Area is unlikely to be habituated to disturbance as little works are undertaken within this area; however, its territory is screened by a large woodland block and numerous patches of dense scrub that will absorb noise and decrease the visual impact significantly.

Yellowhammer (YH)

There were three territories identified by the surveys, all of which are located on the RWE ownership boundary. There are two in the northern periphery of the Northern Area and the remaining territory is located to the far west on the ashfields. All territories are over 0.8km from the demolition boundary; in addition, the territories are sufficiently screened by woodland, scrub and the buildings, including the National Grid substation.

8.4.3 BoCC Amber List Species (see Figure 8.3)

Bullfinch (BU)

There were two bullfinch territories identified during the surveys; the first was located to the north-west of the Northern Area in the wooded scrub area adjacent to the paddocks and the second was in a collection of scrub on the ashfields directly east of the B-station. Both territories are outside the demolition boundary. The bullfinch located within the paddocks to the north will be sufficiently shielded from the demolition works by the dense scrub and shrubs that will screen the works. In addition and as with the bullfinch in the ashfields, both territories are located near main access roads to the site or ashfields and are, therefore, passed by lorries and heavy machinery frequently.

Dunnock (D.)

There were a total of thirty dunnock territories across the site, with the majority in the dense and wooded scrub of the Northern Area. Eight territories have the potential to be affected by the demolition works with three of the eight located within and around the TEEC WS. The first territory is located 137m north of the TEEC; however, it is adjacent to the road access to the TEEC and heavy machinery used to undertake the demolition work is likely to have to pass this area. Two territories are located in the scrub adjacent to the TEEC parking areas, and two are located in the dense scrub adjacent to the TEEC itself.

There are an additional three territories located around the B-station; of these, two have the potential to be affected by the demolition works. The first is located in the onsite gardens that are close to the old office complex, adjacent to the National Grid Compound at the south-east and is within the RWE retained land area. There is a single territory located in an outcrop of scrub near the A-station which is likely to be cleared as there are a number of discarded items strewn throughout this area. The third territory is located within the National Grid compound in the south-east of the B-station; it is understood this area will be retained post-demolition so it is unlikely that the territory will be directly affected.

Grey wagtail (GL)

There were two territories identified during the bird survey. The first was located by the drained Gatehouse Pond where a pair of wagtails was recorded feeding on invertebrates around the remaining puddles and on the damp mud. The second territory was located on the "A station", where a pair was frequently recorded entering a buddleia bush on the 3rd floor. The bush was located at the point where two of the building's walls meet and most likely create ideal nesting ledges. They were

also seen flying from the Sewage Treatment Works adjacent to the site over to the A-station; this is most likely where the birds were foraging.

Green woodpecker (G.)

A total of three territories were identified with a single nest located along the road to the current site offices. Parent birds and two young were recorded during subsequent reptile surveys feeding on the adjacent grassland. All territories are outside the demolition boundary and it is considered that with such close proximity to the road, the birds on site are already habituated to heavy machinery and vehicles; it is, therefore, considered that they are unlikely to be affected by the works on site.

Kestrel (K.)

There was a single territory identified during the March visits near the "A station", as kestrels were recorded on five occasions having aggressive encounters with peregrines. The nest was later observed on a metal ledge on the "A station" during the May survey. Three young were counted in the nest during the June survey; all young successfully fledged and were recorded together as a family group during the July reptile surveys.

The loss of the "A station" will result in the loss of nesting habitat for kestrels. With the demolition of all buildings on site, all potential nesting habitat will be lost - existing trees on site are not mature enough to offer large enough ledges or platforms for kestrels to nest.

Little grebe (LG)

Three territories were recorded during the breeding bird surveys. The first territory was located in the Tilbury Pond WS in the Northern Area, to the north of the site. The second territory was located within a saline ditch marking the boundary of the ashfields; this pair successfully raised three chicks which were recorded during the July visit. The final territory was recorded in the waterbody on the ashfields; here, a peak count of six birds were recorded during the May visit alongside mallard, tufted and shelduck.

Mallard (MA)

Six territories were identified spread out within the RWE ownership boundary; during the March survey, a peak count of over twenty birds was recorded off site to the west within an outflow from a smaller tributary; these were unlikely to be breeding as no signs or territorial displays were noted

Meadow pipit (MP)

Seven territories were identified for this species, all of which were located on the ashfields.

Mistle thrush (M.)

A total of three territories were identified, the first located in a small patch of dense scrub and tree on the ashfields, the second within the wooded area around the TEEC and the final territory in the wooded scrub alongside the National Grid substation.

Oystercatcher (OC)

A single territory was identified along the shoreline, adjacent to the jetty, during the March visits to the site; the nest was later found during the April visits where the birds were noted using a mooring dolphin connected to the jetty. Aggressive behaviour was also recorded as both birds chased off a carrion crow from the area. The jetty offers ideal nesting habitat for oystercatchers since the power station ceased operation in 2013 when there has been little to no activity on the jetty with sparse vegetation slowly re-growing in some places.

Reed bunting (RB)

A total of six territories were identified for this species, in the eastern side of the site in the ashfields and the Northern Area; both of these areas are unlikely to be affected by the demolition. In addition, only four territories are within 200m of the demolition boundary and these are within close proximity to the main access road to the ashfields. As this road is frequently used by heavy machinery and lorries, it is considered likely that these birds have become habituated to a moderate level of disturbance.

In the event that habitat known to support reed bunting requires removal, it should be replaced on a like for like basis, with the size of the suitable habitat removed indicating the amount that will require creating.

Shelduck (SU)

Shelduck were recorded exclusively on the waterbody in the ashfield. A peak count of seven individuals was made during the May survey, two males and five females. During this time, aggressive territorial behaviour was observed as a male shelduck defended his territory from another male. The male held the territory throughout the season; however, no chicks were recorded on the site. This is not unusual as males will hold territories away from the nest to maintain a feeding area and to prevent drawing attention to where the female is nesting. The nest is usually within a hole with the birds frequently using rabbit holes and other cavities in trees or the ground. The nest site

could have been located in adjacent land to the north, outside the RWE ownership boundary where there are additional waterbodies.

Whitethroat (WT)

A total of 56 territories were identified across the RWE ownership site, with a single aggressive encounter within the Northern Area and an adult bird carrying food on the ashfields. Whitethroats favour areas of patchy scrub and nettle which can be found widely across the site and which are frequently recorded. This, however, means that the proposed demolition works have the potential to impact the whitethroats nesting within and adjacent to the TEEC WS and around the perimeter fence of main power compound; this could result in the potential loss of five territories. If the dense scrub is to be removed during the nesting season, this could disturb the nesting species.

8.4.4 Common and Widespread Bird Species (see Figure 8.4)

The demolition works are unlikely to affect the majority of common and widespread species as they do not use the developed areas of the site, which will be demolished. Exceptions to this are given below.

Pigeons and Doves

Feral pigeons, collared doves and woodpigeons have all been recorded using the buildings within the demolition boundary for roosting, and it is considered highly likely that feral pigeons and collared doves are breeding within the A-station and B-station complex.

8.4.5 Non-breeding Birds

All of the non-breeding birds recorded during the 2015 surveys were considered likely to have bred within a few kilometres of the site, with the exception of those migratory species such as redwing and greenshank. It is considered that the main reason these birds were recorded on site was for foraging purposes only.

The proposed demolition will require the removal of habitats which offer only minimal foraging habitat for these birds and will not affect the abundant foraging habitats in the Northern Area or to the east (ashfields). Neither will the demolition affect the habitats within the wider area. In addition, none of the non-breeding bird species are likely to be solely dependent on the habitats within the site and whilst some degree of disturbance would be inevitable during the demolition works, this is not considered to be a significant impact on the conservation status of the species concerned as they are likely to be habituated to the loud noises and heavy machinery used both on site, in the adjacent sewage works and around the Tilbury docks.

8.4.6 Wintering Birds

Results from the 2007-2008 wintering and wader bird surveys by RPS (RPS, 2008) have shown that a significant proportion of Thames Estuary and Marshes SPA populations of black-tailed godwit (*Limosa limosa*), shelduck and common ringed plover (*Charadrius hiaticula*) use the mudflats 0.5 km upstream and 3 km downstream of the RWE ownership boundary. Intertidal water bird usage of the shoreline adjacent to the ownership boundary and jetty itself was low with only very small numbers of lapwing found to be occasionally present. Assumptions have been made below in relation to potential impacts on wintering birds as a result of the demolition proposals, based on the previous survey data.

9.0 Mitigation, Monitoring and Management

The key objective of mitigation outlined in this report is to address the impacts on the ecological receptors within the demolition boundary and zone of influence to allow work to continue in accordance with wildlife legislation.

The following principles and hierarchy have been used when determining mitigation measures for the demolition works:

- Avoidance – to avoid adverse effects as far as possible by designing out or using preventative measures during the construction process thus resulting in an environmental effect of neutral significance.
- Reduction – to minimise adverse effects as far as possible.

The proposed demolition will result in the loss of buildings and minimal habitat from the centre of the site. The other vegetation inside the demolition boundary but at its periphery is being retained. Compensation, enhancement and ecological management for habitat lost as a result of the site's redevelopment are not considered here, but will be considered as future redevelopment plans are drawn up.

9.1 General Mitigation

There are a number of generic actions which are proposed to mitigate the ecological effects of the power station's demolition. Please note that these actions and specific actions relating to individual species will be subject to confirmation of working methods once the demolition contractor has been appointed:

- Certain works affecting biodiversity matters will be overseen by suitably qualified and experienced ecologists with the aim of undertaking works in accordance with these mitigation measures and within the constraints of wildlife related legislation. For example, where bird nests are identified within working areas, an ecologist will assess them for signs of activity. If chicks are found, the ecologist will attempt to age them and estimate the time until fledging to allow work to be programmed accordingly.
- Most reptile and water vole habitat is being retained, including the ditches around the demolition boundary. These will be protected using 'prevention at source' methods (e.g. minimising demolition footprint) and, if required, they will be watered down following demolition to minimise dust impacts.

- Appropriate measures which will be put in place to protect retained habitats before any demolition works begin e.g. temporary plastic barrier mesh fencing will be used to cordon off ditches in the coalfield to prevent contractors entering areas that will be retained.
- A Natural England *General Licence* will be applied for as this may be necessary to control feral pigeons and collared doves nesting in the A and B-Stations prior to demolition.
- All demolition personnel involved in the proposed works will be briefed through the provision of toolbox talks and advice notes on the ecological mitigation strategy and relevant wildlife legislation and will be made aware of the ecological value of the power station site.
- Protocols will be set up to minimise demolition phase impacts on retained semi-natural habitats and species including;
    1. The storage of materials, fuels, plant and other machinery in designated 'safe areas';
    2. Restricting security lighting to those areas where it is absolutely necessary. Hoods will be used to direct light away from retained habitats and ecological features as appropriate; and
    3. Establishing vehicular access and parking to ensure a predictable and minimum-impact routine.

9.2 Designated Sites Mitigation

Given the temporary nature of the proposed demolition works, impacts on the SPA and Ramsar site are considered to be 'not significant'. As a precaution and to mitigate for possible impacts which are below the significance threshold, the measures outlined in Section 16.2.5 and 16.2.6 will be implemented to minimise impacts on bird species that may be present adjacent to the demolition boundary and which contribute to the SPA populations.

10.0 Habitat and Vegetation Mitigation

The proposed demolition will result in the loss of only buildings and minimal habitat from the centre of the site. The other vegetation inside the demolition boundary but at its periphery is being retained. Habitat mitigation will include:

- Temporary plastic barrier mesh fencing to demarcate habitats of value from workers, vehicles and traffic routes encroaching these habitats e.g. the habitat around the periphery of the coalfield and the protected species it contains (i.e. water voles and reptiles). Fencing will be installed prior to the commencement of demolition.
- Dust will be mitigated at source with residual dust and debris sprayed with water from vegetation and areas of value to biodiversity.

Assuming contractors and the proposed demolition activities do not directly impact habitats within the demarcated areas, significant impacts are not expected and mitigation is not considered necessary.

11.0 Water Vole Mitigation

11.1 Pre-commencement Surveys

The 2013 pre-commencement survey showed that ditches 24 and 18aN around the border of the coalfield were used by water voles when Tilbury was still generating power, indicating that the coalfield was not a deterrent to water voles using these ditches.

11.2 Water Vole Mitigation

The 2015 water vole survey found that ditches containing water voles are present only at the extremities of the demolition boundary and immediately adjacent to them i.e. Ditches 18, 18aN, 24 and 36. The demolition activities will not result in the loss of these ditches, and the crushing and screening areas are located approximately 30m from the ditches around the periphery of the coalfield, so will have no direct impact. Therefore, it is unlikely that water voles will be directly or significantly impacted by demolition activities, which are short term in nature (e.g. explosive demolition of the chimneys).

The following precautionary measures are recommended at **Ditches 18, 18aN, and 36**:

- Install temporary plastic barrier mesh fencing to demarcate these ditches so contractors know they are being retained and should not to be impacted during the demolition works.
- Where dust settles on ditches and associated vegetation, spray these with clean water during demolition activities as necessary to prevent dust accumulating and being transferred to the fur of water voles, from where it could be ingested as water voles clean themselves.

Ditch 24 lies approximately 50m to the east of the B-station, and is separated from it by a tarmac road. It lies just inside the boundary of the exclusion zone. The following precautionary measures are recommended:

- Where dust settles on ditches and associated vegetation, spray these with clean water during demolition activities as necessary to prevent dust accumulating and being transferred to the fur of water voles, from where it could be ingested as water voles clean themselves.

Above ground, water voles activity is largely confined to vegetation within 2-5m of the water's edge. Provided the above precautionary measures are followed, they are unlikely to be significantly affected by demolition activities.

12.0 Bat Mitigation

12.1 Pre-commencement Surveys

As no potential bat roosts will be impacted by the demolition works, no pre-commencement surveys are necessary. However, the site has potential to support bats and update surveys will be required if demotion work has not started within two years of the first 2015 bat survey i.e. by June 2017.

12.2 Roosting Bat Mitigation

As no roosting bats were recorded within the demolition boundary, no mitigation is necessary to allow works to accord with the relevant legislation. However, given that bats are highly mobile and that the buildings and built structures do have some potential to support them, precautionary measures to further minimise the impacts on any bats that are present will be adopted. This will include:

- A section on bats will be provided within the site induction pack for the demolition team. This should include a brief guide to evidence of bats' presence and what to do if such evidence is found during the demolition activities. The contact details of an ecologist will be supplied to the demolition contractor to provide advice should any incidents of possible roosting be identified;
- If any roosting bats are found, work which may impact them and their habitats will cease until a licence from Natural England is obtained.

12.3 Foraging and Commuting Bat Mitigation

As bat activity across the site was low and given that no bat foraging or commuting habitats will be lost or damaged as a result of the demolition, mitigation for foraging and commuting bats is not necessary. However, the following precaution will be taken:

- Where possible, the tree lines and hedgerows will be maintained;
- Although works are temporary in nature, to minimise the impacts of lighting on foraging and commuting bats, lighting will be restricted to those areas where it is necessary for Health, Safety and Security reasons, especially adjacent to the wildlife sites and around the demolition boundary. Low pressure sodium bulbs or lamps with UV filters will be used as these reduce the attraction of lights to insects and, therefore, do not attract bats from nearby foraging areas. In addition, measures will be taken to ensure light is directed to the areas it is required through the use of hoods and by reducing the angle between the lamp and the support.

13.0 Reptile Mitigation

The majority of habitat within the demolition boundary comprises buildings and hard standing and is unsuitable to support reptiles. Within the demolition boundary, the 2015 reptile survey found them in the semi-natural vegetation around the margins of the coalfield and the margins of the A-station. Low reptile numbers were also present in a hardstanding area that is becoming re-vegetated, immediately to the north of the A-station.

Reptile mitigation required within demolition boundary includes:

- Retain periphery habitat around the A-station and coalfield, and demarcate it using temporary plastic barrier fencing mesh so contractors are aware of which areas are of ecological value and to remain undisturbed.
- Vegetation supporting reptiles in the central parts of the demolition boundary (i.e. the vegetation beneath the coal conveyor in the coalfield, and the area immediately to the north of the 'A-station') should be strimmed short (to a height of less than 5cm) to make it unfavourable to support reptiles. This vegetation strimming will be carried out under the supervision of a suitably experienced person capable of identifying habitats most likely to support reptiles and who has experience of identifying and handling reptiles during this type of work. Any potential reptile refugia (e.g. rubble and log piles) in these areas will be inspected, and any reptiles found will be moved to a position of safety.
- Where dust settles on vegetation that will be retained and which has potential to support reptiles, these areas will be sprayed with clean water during and/or after demolition activities as necessary to prevent dust accumulating and being transferred to the skin or ingested.
- Retain demolition of the A-station within this building's footprint as the habitat adjoining the southern boundary recorded an exceptional population of slow worms.

14.0 Bird Mitigation

14.1 Pre-commencement Surveys

Where vegetation clearance will take place during the bird breeding season (March to September inclusive), a survey for nests will be undertaken immediately prior to the commencement of works.

14.2 Bird Mitigation

The following general approach to bird mitigation has been adopted in this section to allow compliance with wildlife legislation:

- Clear potential bird nesting habitat outside the bird breeding season (the bird nesting season is taken as March to September inclusive, weather dependant);
- Where vegetation clearance is necessary during the bird nesting season, carry out checks for nesting birds prior to clearance and, depending on species, wait until all young have fledged before continuing;
- Install bird nesting deterrents and bird scaring devices where possible;
- Apply for a Natural England *General Licence* for the lethal removal of feral pigeons and collared doves.

The presence of birds nesting within areas to be impacted by the proposed demolition activities may impact the programme of works as the young of most species must be given time to fledge to accord with the Wildlife and Countryside Act 1981 (as amended).

Where possible, site activities will be reconfigured and reprogrammed to allow work to continue to plan as far as is practicable without contravening legislation. Where deterrents do not work and a General Licence is not available (i.e. for species other than feral pigeon or collared dove), it will be necessary to set up a buffer zone around any nest until all young have fledged. The buffer zone will be determined based on the characteristics of the species present. Works can proceed outside the buffer zone.

14.2.1 Schedule 1 Birds

Peregrine (PE)

As peregrine are a Schedule 1 species, it is an offence to disturb them while they are nesting, building a nest, in or near a nest that contains their young. The following measures should be put in place over winter to minimise the risk of peregrines nesting on power station structures:

- Removal of the most suitable parts of structure where possible;
- Install bird nesting deterrents from scaffolding/over ledges (e.g. flicker tape, flags);
- Increase noise and site personnel as far as is practicable so disturbance dissuades nesting birds.

The installation of devices that would attempt to dissuade them from nesting should therefore take place over the winter as this would not constitute disturbance under WCA S1 as they had made the choice to nest.

If, despite of the installation of deterrents, peregrines are still observed carrying out these behaviours during demolition of Tilbury B, it can be assumed they are habituated to a degree of disturbance. However, the advice of a suitably qualified ecologist should be obtained as soon as possible, who will make recommendations on further precautions needed to allow works to proceed. These could include setting up a buffer zone around the nest site, and not working within the line of sight or above the nest of the peregrines. These measures will be required while the chicks are dependent on the parents, a process which can take up to 77 days (British Trust for Ornithology web page).

Barn Owl (BO)

Barn owls are known to breed throughout the year, including winter; therefore, before the ledge can be removed and the hole sealed, a survey of the building by an ornithologist holding a Schedule 1 species survey licence will be essential. All efforts should be made to avoid close inspection of a potentially occupied nest during the months of March, April, and May. If the ledge is occupied by a breeding pair of barn owls, then its removal must be timed to minimise the risk of owls breeding i.e. when any chicks have fledged and cease to return to the nest.

14.2.2 BoCC Red List Species

Skylark (S)

The proposed demolition works are unlikely to directly affect the ashfields where skylarks are present, as they are being retained. Skylarks nest on the ground, in vegetation that is 20–50 cm high. If works are proposed on or around the ashfields, in the vicinity of Ditch 24, it is recommended that they take place outside the breeding bird season (March to September inclusive) to avoid disturbing nesting skylarks. If works are likely to be required on the ashfields, then the vegetation in such areas should be cut short (less than 10cm) outside the nesting season to make it unfavourable for skylarks. It should be kept short during the nesting season, so that is continues to be unfavourable for them.

Starling (SG)

Starlings are likely to be significantly affected by the proposed demolition works as, based on the 2015 survey results, the loss of the power station would directly result in the loss of 17 nests and 18 territories, shown in Figure 8.2 (although this number could be different in 2016). Measures will be put in place which dissuade starlings from nesting in these areas, which could include:

- Installation of netting over vulnerable areas where appropriate;
- Fix wire, plastic or other devices to deter birds from landing on ledges or other structures.
- Bird scaring devices (e.g. flicker taper, flags, playing recorded distress calls of starling, scarecrows; firing air pistol).
- Where deterrents do not work, it will be necessary to set up a buffer zone and around the nesting bird, based on advice of a suitably qualified ecologist, and wait until young have fledges. Works can proceed outside the buffer zone.

Grey wagtail (GW)

The demolition of the A-station will result in the loss of a nesting territory for this species as one territory was located on the 'A station' where a pair was frequently recorded entering a buddleia bush growing on the outside of the building on the third floor. Grey wagtail should be dissuaded from nesting on the 'A station' by removing the buddleia bush on the 3rd floor and installing bird scaring devices and nesting deterrents on the ledges in its vicinity. The buddleia bush should also be removed outside the breeding bird season (March to September inclusive) to dissuade grey wagtail from nesting. It is recommended that this area is checked for grey wagtail prior to demolition by a suitably qualified ecologist before this area. If the grey wag tail is found to be nesting, it will be necessary to establish a buffer zone around its nest and wait until young have fledged before demolishing inside the buffer zone.

Mistle thrush (M)

Of the three mistle thrush territories identified during the 2015 surveys, only the TEEC territory has the potential to be affected by the demolition works. However, providing the dense scrub and woodland surrounding the centre is retained, this territory is unlikely to be affected. If its removal is necessary, this should take place outside the bird breeding season.

14.2.3 BoCC Amber List Birds

Dunnock (D)

It is recommended that the scrub around the TEEC is retained to maintain both foraging and nesting cover for this species; as the TEEC is located near the access road that the lorries and heavy machinery use and the TEEC car park is used to store grass cutting machinery, it is considered likely that the dunnocks within this area are habituated to a moderate degree of disturbance.

It is recommended that the demolition teams use the existing hard standing car park area around the TEEC as a lay down area and do not remove any of the surrounding dense scrub or hedgerow.

There are three dunnock territories located around the B-station; of these, two have the potential to be affected by the demolition works. The first is located in the onsite gardens that are close to the old office complex, adjacent to the National Grid Compound at the south-east and is within the RWE retained land area. It is recommended that any vegetation clearance required in this area takes place outside the bird nesting period. There is a single territory located in an outcrop of scrub near the A-station which is likely to be cleared as there are a number of discarded items strewn throughout this area. It is recommended that clearance of the scrub takes place outside the bird breeding season (March-September inclusive) and that scrub along the site's boundary and to the north of the "A station" is retained as alternative dunnock habitat. It if cannot be cleared outside the bird breeding season, then this area should be checked by a suitably qualified ecologist for nesting birds. If they are found to be nesting, it will be necessary to set up a buffer zone around the nest site and wait until the young have fledged before clearance. The third territory is located within the National Grid compound in the south-east of the B-station; it is understood this area will be retained post-demolition so it is unlikely that the territory will be directly affected.

Kestrel (K)

Kestrels are not a Schedule 1 bird but, like any other wild bird, it is an offence to take, damage or destroy a wild bird's nest while it is being used or built. A kestrel nest was observed on a metal ledge of the 'A station'. It is recommended that bird nesting deterrents are installed on the ledge where the kestrel was observed nesting during the winter. Bird scaring methods should also be used to attempt to prevent them from nesting.

If these fail to work and kestrels are still observed carrying out nesting, the advice of a suitably qualified ecologist should be obtained as soon as possible, who will make recommendations on precautions needed to allow works to proceed. It is likely that these would include setting up a buffer zone around the nest site, and not working within the line of sight or above the nest of the kestrels. These measures will be required while the chicks are dependent on the parents, a process which can take up to 71 days from hatching (British Trust for Ornithology web page).

Oystercatcher (OC)

A single oyster catcher was observed nesting on a mooring dolphin connected to the east of the jetty. It is understood that this mooring dolphin is being retained, in which case no mitigation if required for them. If it becomes necessary to remove the mooring dolphin, it is recommended that bird nesting deterrents and scaring techniques are used to minimise their suitability for nesting oyster catchers.

Whitethroat (WT)

Three white throat territories are located near the perimeter fence of the B-station. It is understood that the vegetation around this fence boundary and ditches around the coalfield will be retained, in which case the proposed demolition works are unlikely to affect whitethroat territories. In areas that require clearance as part of demolition, vegetation clearance should be completed outside the bird breeding season (March-September inclusive). Providing the scrub clearance is kept to a minimum, and take place over winter, the site should continue to have the capacity to support some displaced territories in areas of scrub and nettles which have and will be developing within the RWE ownership boundary.

It is recommended that the dense scrub and hedge around the TEEC WS are retained to maintain the two territories of the whitethroats which breed here. Any required scrub removal around the TEEC WS should take place outside the nesting season.

14.2.4 Common and Widespread Birds

Pigeons and Doves

Feral pigeons, collared doves and woodpigeons can breed all year round; however, breeding activity peaks over late spring, summer and early autumn months and declines over the winter period. Their nests are protected by the Wildlife and Countryside Act 1981 (as amended).

<u>A-Station</u>

To minimise the risk of these birds nesting on the A-station, bird deterrent measures (bird scaring and landing deterrents) should be put in place, as described under 'Starlings', above. Before works can take place to the A-station, a person with suitable experience in identifying pigeon and dove nesting behaviour should inspect the A-station to check for nesting pigeons; the check should be done over the winter period where they are less likely to be nesting. If nesting pigeons are found, works within that area should cease until the young have fledged (also refer to General Licence section below). Works may continue elsewhere within the building after consulting with a suitably

experienced person. Once demolition works are underway, it is likely that disturbance these works cause will deter birds from attempting to breed within these areas.

B-Station

The B-station complex offers more opportunities for pigeons to nest, with missing windows, holes and crevices allowing the birds to enter the buildings.

It is recommended that the corrugated sheeting that surrounds the B-station is stripped off overwinter to render the areas underneath unsuitable for nesting birds. Wherever possible, bird nesting deterrents (e.g. flags, flicker tape) should be placed on the building at suitable locations to reduce the risk of pigeons and doves nesting in the building. Once building dismantling activities have begun, it is likely that the demolition teams will generate a sufficient degree of disturbance that, when combined with the stripping of corrugated sheeting, will discourage pigeons and doves from nesting within the B-station. It is also recommended that immediately prior to explosive demolition activities, the use of bird scarers (rockets or bangers) should be used to scare all the birds off the remaining parts of the power station before detonation of the building to be demolished by explosives (e.g. chimneys) to minimise the risk of birds being caught up in the explosion.

General Licence

The Wildlife and Countryside Act 1981 recognises that a number of bird species, including feral pigeons and collared doves, may frequently cause problems. Natural England (2013) issues a number of general licences which allow authorised persons (e.g. an owner or occupier) to kill or take these 'pest' species using certain specified methods (e.g. shooting or cage trapping). Such birds, which include pigeons, can only be killed if they represent a demonstrable risk to public health and safety. The licences also allow the removal or destruction of these species' eggs (e.g. using egg oiling) or nests. Nests not being built or not in use are not protected under the 1981 Act and may be removed or destroyed at any time.

Lethal control is only permitted under a general licence if the person contemplating such action is satisfied that appropriate non-lethal methods of control are either ineffective or impracticable; therefore, the removal of features outside the usual bird breeding season and the use of bird nesting deterrents and scarers are required prior to undertaking works under the licence.

Given that the pigeons and doves at Tilbury power station have deposited large quantities of droppings, and pigeon droppings are known to cause disease to humans, it is recommended that RWE applies for a General Licences to control pigeons and collared doves, to be used in the event that scaring and deterrent activities do not work.

Summary of Recommendations to Minimise Impact on Nesting Birds

In summary, recommendations to minimise impacts on nesting birds during demolition include:

- Before work can begin on the A-station, a person with suitable experience in identifying nesting behaviour should inspect the building for nesting birds. If an active nest is found, works within this area should cease. However, they may continue elsewhere under guidance from the suitably experienced person. Bird nesting deterrents and bird scaring devices should be used over the winter months to minimise the chance of birds starting to nest.
- Subject to agreement with the contractor and where the programme allows, corrugated sheeting surrounding the B-station should be stripped off over winter to render the areas underneath unsuitable for nesting birds. Prior to this, a suitably experienced person capable of identifying bird nesting behaviour should inspect the affected areas where possible; should an active nest be found, this area will be left until the young are no longer dependent on the parents and have fledged.
- Where appropriate measures have been adopted but pigeons or doves continue to nest in the buildings to be demolished, work may continue under a general licence from Natural England. However, this licence does not apply to other species that must remain undisturbed whilst nesting.

14.2.5 Wintering Birds - Noise Disturbance

The 2007-2008 report by RPS found that birds utilising the intertidal flats during the day were already exposed to moderate levels of disturbance from the existing Tilbury power station, works at the Sewage Treatment Plant, from the existing Tilbury Docks activities and from people using the footpath which runs along the shorefront. However, surveys undertaken at night showed the birds had a far wider distribution along the shoreline compared with the diurnal surveys, using areas closer to the power station.

In general, birds appear to quickly habituate to continual noises as long as there is no large amplitude 'startling' component (Hill *et al.*, 1997). As such, it is likely that birds will quickly habituate to most of the demolition noises which, although having the potential to be loud, will generally be relatively constant, and take place at locations which already have a moderate level of background noise.

The main area of concern in relation to potential noise disturbance will be during the explosion for the demolition of the two existing chimneys; despite their habituation to disturbance, it is likely that some birds will be disturbed by the loud and sudden sound of explosion and subsequent collapse of the chimneys. This includes species which use the SPA and Ramsar site and which have been recorded within 500m of the demolition boundary during previous overwintering bird surveys. Although the

demolition of the chimneys will be of short duration and limited to a single day event, temporary disturbance does have the potential to have adverse impacts on any bird species present, especially during the winter periods where weak or sick individuals are more likely to be affected. As overwintering birds adjacent to the site contribute to the SPA and Ramsar sites' status (based on previous survey data), impacts on these species should be avoided to minimise impacts on the European designated site. Avoiding detonation during August to November will minimise impacts on black tailed godwits as this was the period of time during previous overwintering bird surveys when a significant proportion (37.2%) of the SPA population of this species was present within 500 m of the demolition boundary (they used the site for migration as well as overwintering). Alternatively, as overwintering birds cannot use the mudflats adjacent to the site at high tide, the timing of the detonation should coincide with Mean High Water levels during August-November inclusive. To avoid impacts on other nesting birds and the SPA species, it is preferable that detonation works takes place between December and February/early March inclusive.

14.2.6 Wintering Birds - Visual Disturbance

It is considered likely that due to the amount of plant and machinery that is currently in use along the shoreline adjacent to the site, within the site itself and in the adjacent Sewage Treatment Works, that birds are habituated to the presence of plant and other vehicles along the shore line. Visual disturbance during the demolition period will most likely result from activities where workers on the ground or working at height will be visible to the birds. Given that the existing seawall and dense scrub should screen ground level disturbance, the most potentially disturbing activities are considered likely to include any demolition works that will be affecting the jetty, or any works along the southern wall of the B-station.

It is recommended that any works to demolish the external southern sections of the B-station either avoid August to November or coincide with High Water levels; however, works can be undertaken from inside the building as this will reduce the visual impact. As birds are likely to be habituated to activity over the jetty and as this structure will remain largely in place, no mitigation is considered necessary here.

15.0 Badger Mitigation

15.1 Pre-commencement Surveys

WYG's protected species surveys within RWE's ownership's boundary carried out since 2008 have not recorded badger setts within the ownership boundary, although badger signs (e.g. droppings and footprints) have been recorded here. It is likely that badgers forage in suitable habitat within the ownership boundary, before returning to their off-site setts (the location of these setts is know from previous surveys, but not provided here, to protect the animal).

The majority of habitat within the demolition boundary comprised buildings and hardstanding, which is completely unsuitable for foraging or commuting badgers, or for badgers to construct their sett. A hard standing tarmac road runs around a large part of the demolition boundary, which buffers it from the wider site.

In addition, the majority of semi-natural habitat within the demolition boundary is present adjacent to water-filled or damp ditches, and are surrounded by flat land, which are features unsuitable for badger setts.

Due to these factors, it is unlikely that badgers will be present within the demolition boundary, and no badger pre-commencement badger surveys are necessary.

15.2 Recommendations

Demolition contractors should be aware that badgers are present on the site, although there are no known setts within the demolition boundary or the wider RWE ownership boundary. If contactors find mammal burrows which they consider have the potential to be badger burrows, then a suitably experienced ecologist should be contacted to visit the site, and inspect the burrow to establish which mammal constructed it. Note that there are many rabbits on the site, and due to the friable nature of the substrate from its use for coal and ash storage, rabbit holes can be larger (i.e. more badger-like) than they normally are in stable habitat.

In the unlikely event that an active sett is found, no work will be undertaken within 30m - 50m of it (depending on the activity) until an appropriate mitigation strategy has been agreed with the local authority and Natural England. Depending on the location and nature of the sett, it is possible that it will be temporarily / permanently closed or disturbed, for which a Natural England licence must be granted.

16.0 Conclusions

This report describes the precautionary and mitigation measures which will be implemented to reduce or offset impacts on ecological receptors and to allow the demolition to comply with wildlife legislation. Only buildings and minimal habitat from the centre of the site are being lost. Other vegetation which lies at the periphery of the demolition boundary is being retained. This document does not address the site's future re-development, as this is currently unknown but ecological mitigation measures have borne this in mind so as not to restrict options for the site's redevelopment going forward. Ecological enhancement for the species contained in this report has not been included here, but will be considered as future redevelopment plans are drawn up.

Based on current information, mitigation measures will include:

- Timing works to avoid impacts on nesting and passage birds – the most suitable time to undertaken works will be between December and February inclusive. Where work must be completed outside this period, bird nesting deterrents and scaring devices will be used to minimise the risk of bird's nesting in affected areas with checks completed by suitably experienced personnel to check for nests. Where active nests are confirmed, a suitable buffer will be identified which must remain undisturbed until young have fledged with the exception of feral pigeon, wood pigeon and collared dove which may be subject to a Natural England General Licence to aid removal.

- Temporary barrier mesh fencing which will demarcate habitats to be retained and to avoid accidental disturbance or damage;

- Spraying down retained vegetation and ditches with water as required during and after demolition to prevent the deposition of dust and debris.

- Restricted use of lighting around the periphery of the site used by foraging or commuting bats;

- Supervision of some parts of the works that may impact protected species e.g. birds and reptiles, by a person with suitable experience.

Although the demolition of the A- and B-stations and associated infrastructure has the potential to create significant negative impacts on ecology in the absence of mitigation, the avoidance and protection of features of ecological importance and the implementation of ecological mitigation make it probable that there will be no permanent impacts on the overall biodiversity within and adjacent to the site.

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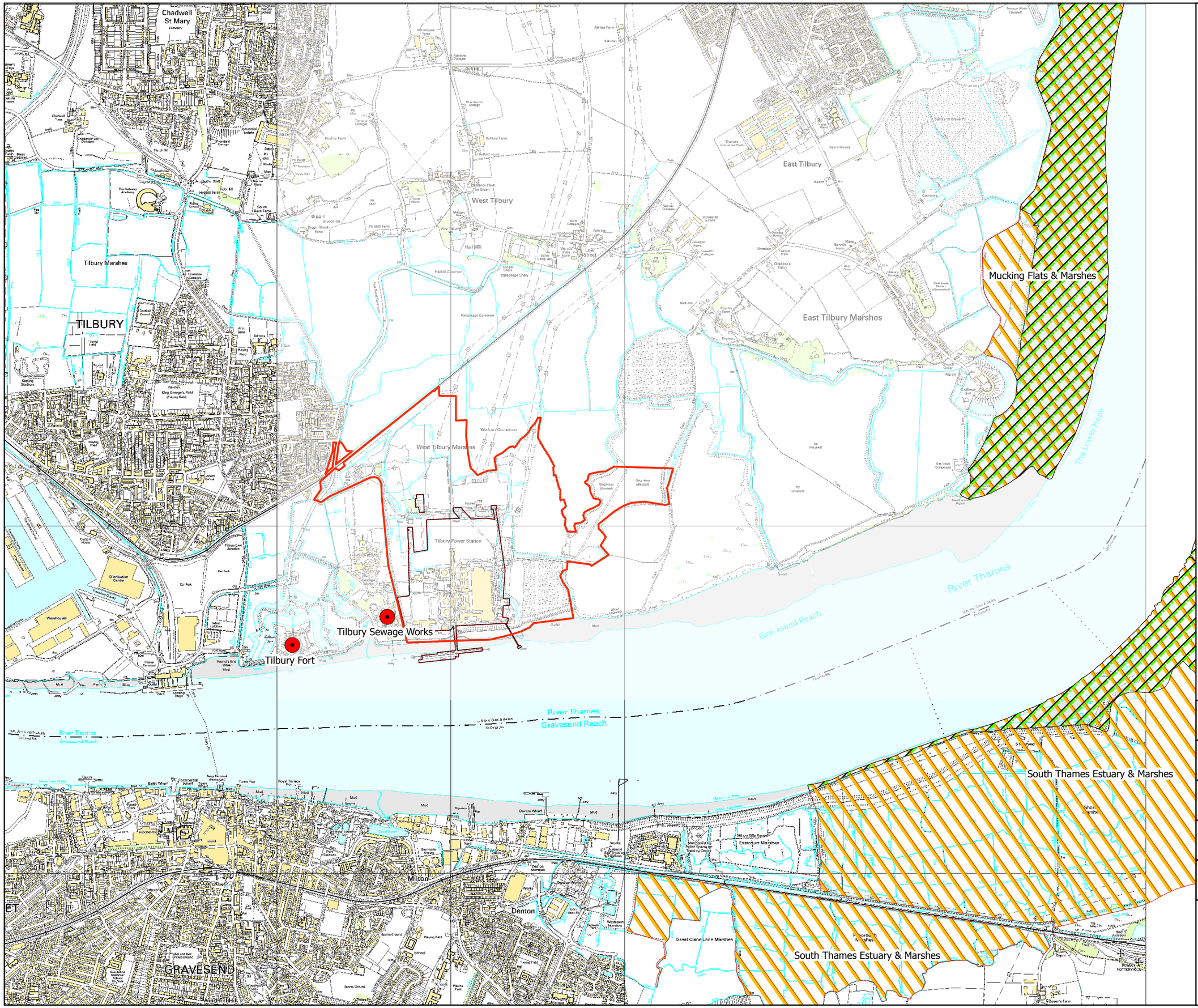
APPENDIX A: WYG FIGURES



N

Legend

- Key Locations
- RWE Ownership Boundary
- Demolition Boundary
- Special Protection Areas (SPA)
- Site of Special Scientific Interest (SSSI)

0 0.15 0.3 0.6 Miles

Drawing title:
Tilbury Site and Local Statutory Sites

Project:
A088550 Tilbury Powerstation

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:20,000	JS 11/11/15	DS 11/11/15	CW 11/11/15

Office:	Drawing number:	Revision:
4594	Figure 1.1	Rev.01

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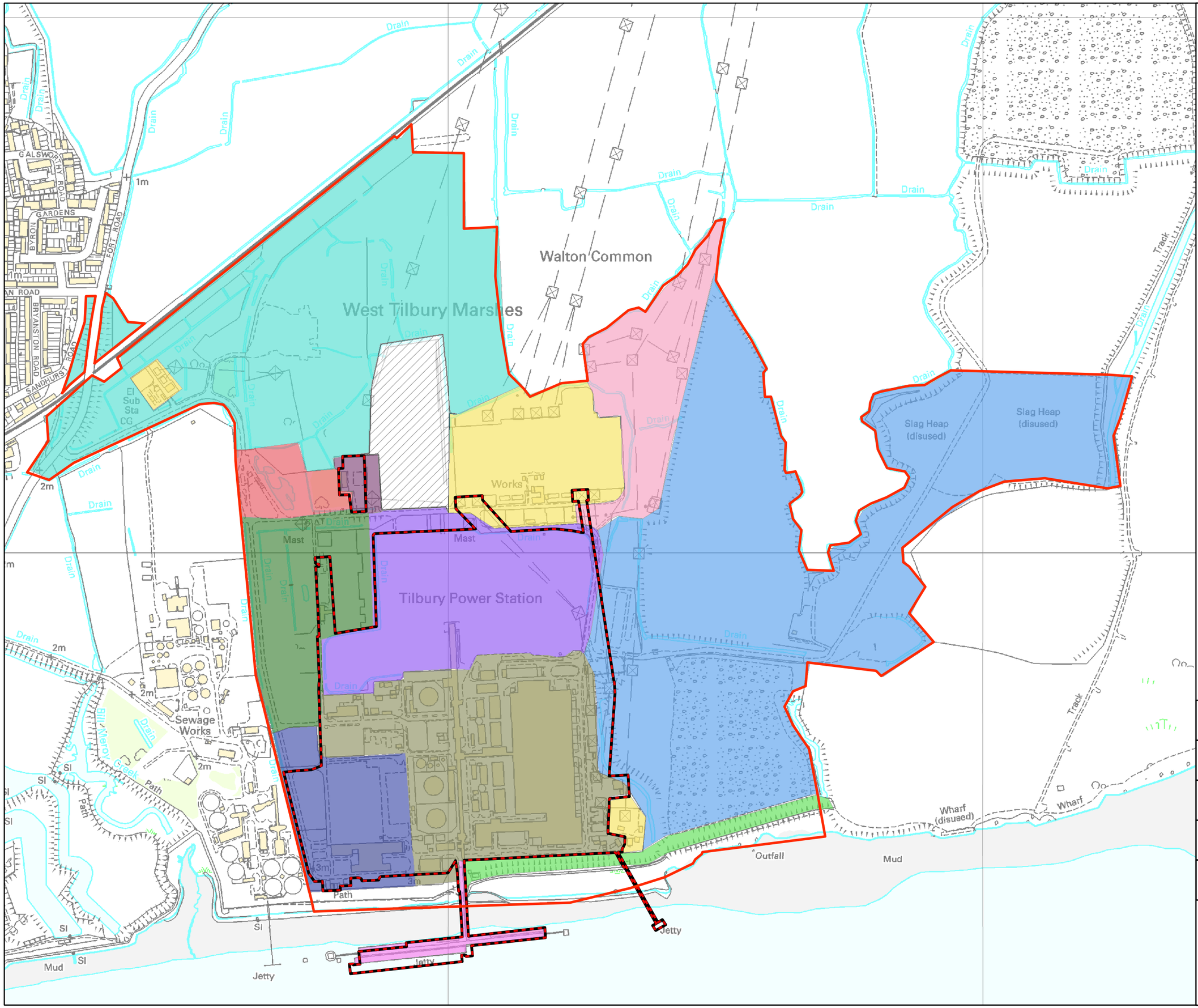

N

Legend

- RWE Ownership Boundary
- Demolition Boundary
- A-Station
- Tilbury Energy and Environment Centre (TEEC) Wildlife Site
- Coal Fields
- Tilbury Riverside Project Community Meadow
- Ashfields
- Northern Area
- Owl House
- National Grid compounds
- Sub Station
- Jetty
- B-Station
- Gatehouse
- SEESA Compound

0 50 100 200 300 M

Drawing title:
Tilbuy Site Areas

Project:
A088550 Tilbury Powerstation

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JS 11/11/15	DS 11/11/15	CW 11/11/15

Office:	Drawing number:	Revision:
4594	Figure 1.2	Rev.01

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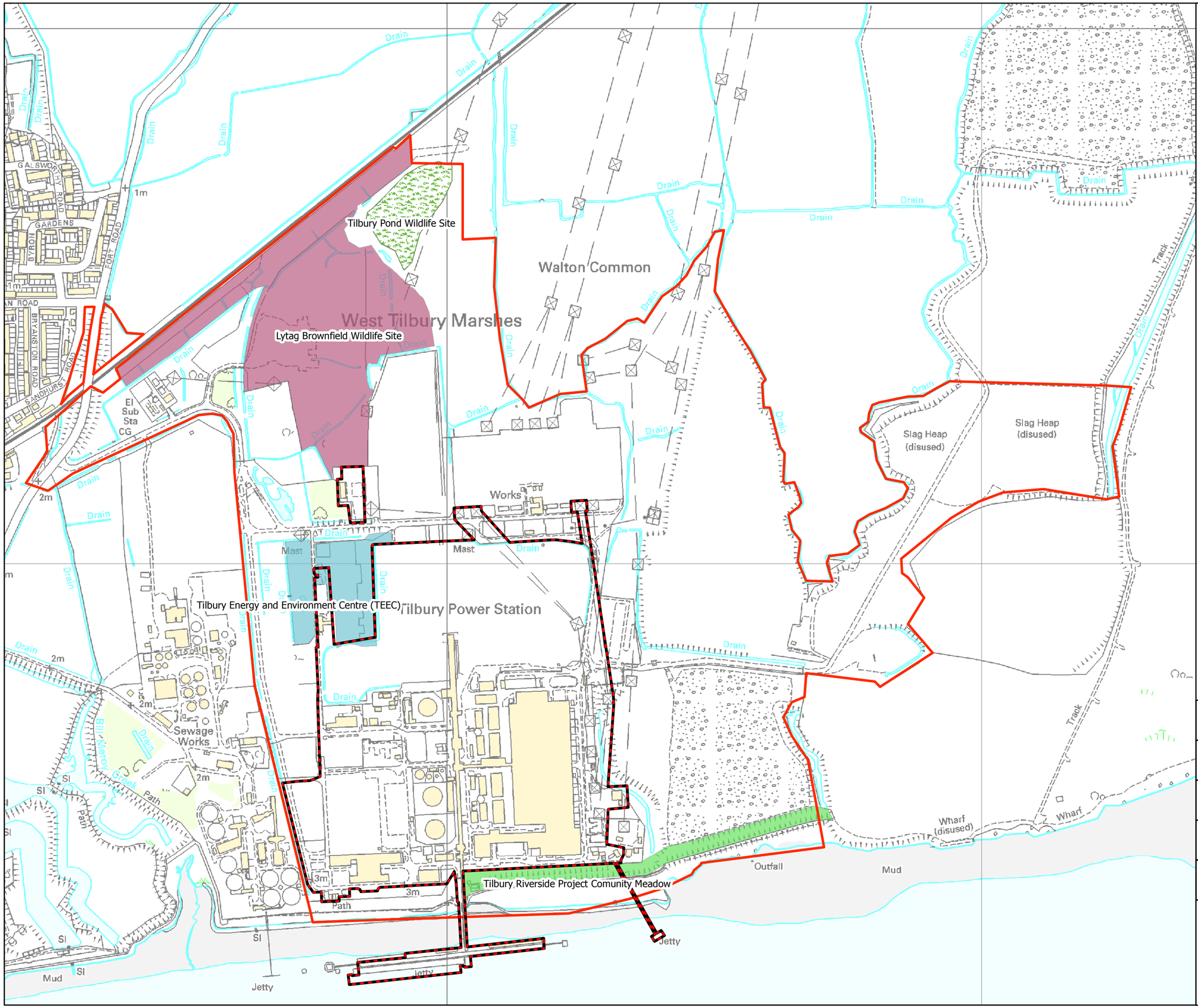

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Legend

- RWE Ownership Boundary
- Demolition Boundary
- Tilbury Pond Wildlife Site
- Lytag Brownfield Wildlife Site
- Tilbury Energy and Environment Centre (TEEC) Wildlife Site
- Tilbury Riverside Project Community Meadow

0 50 100 200 300 M

Drawing title:
Tilbury Wildlife Areas

Project:
A088550 Tilbury Powerstation

Client:
RWE nPower

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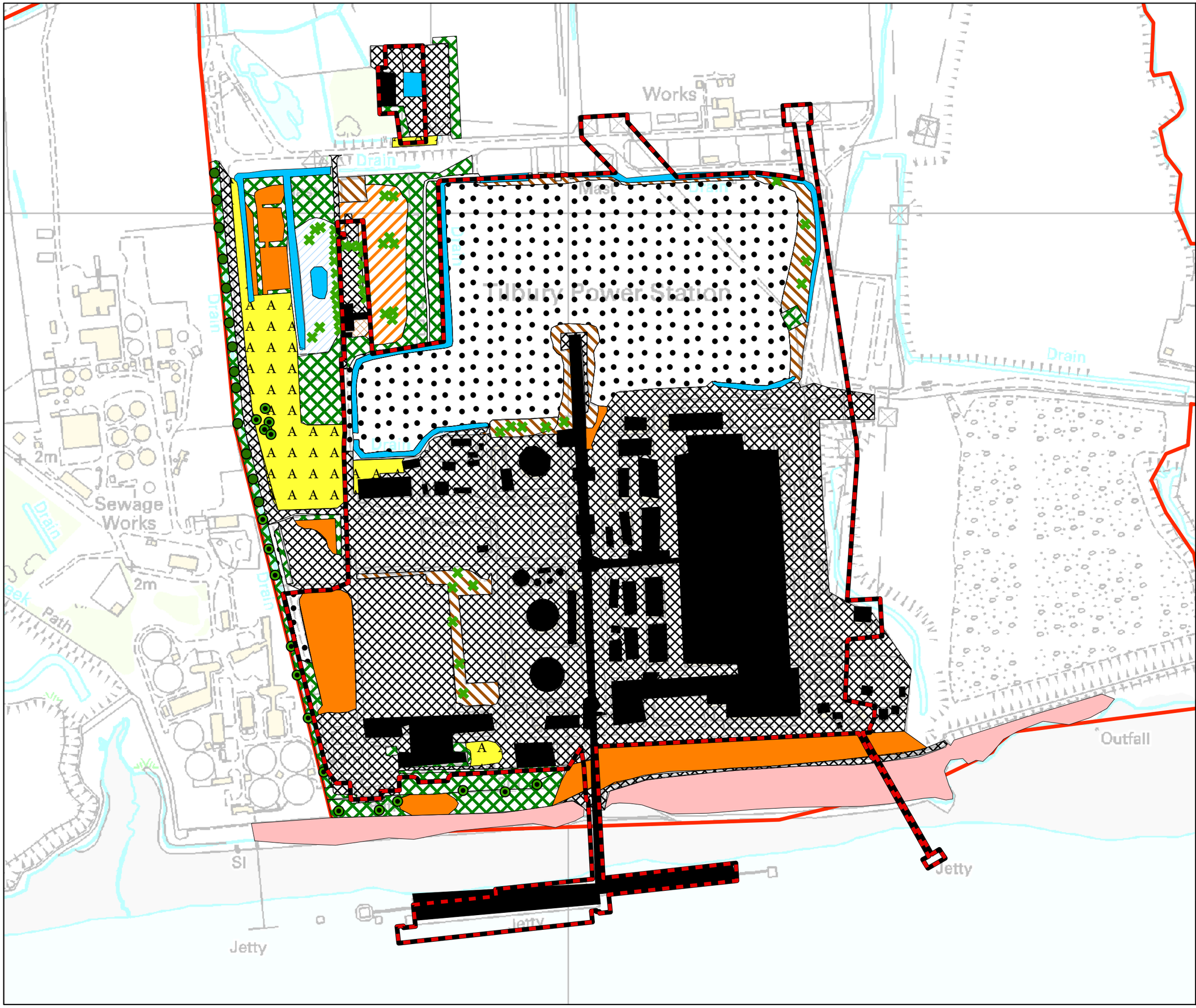

N

Legend

- RWE Ownership Boundary
- Demolition Boundary
- Scattered broadleaved trees
- Scattered coniferous trees
- Scattered scrub
- Dense scrub
- Unimproved acid grassland
- Neutral grassland
- Tall ruderal vegetation
- Inundation vegetation
- Standing water
- Dense saltmarsh
- Amenity grassland
- Introduced shrub
- Hard standing
- Buildings
- Bare ground

0 30 60 120 180 M

Drawing title:
Phase 1 Habitat map

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:3,750	JAS 03/12/2015	CW 03/12/2015	-- --/--/--

Office:	Drawing number:	Revision:
4594	Figure 1.4	Rev.01

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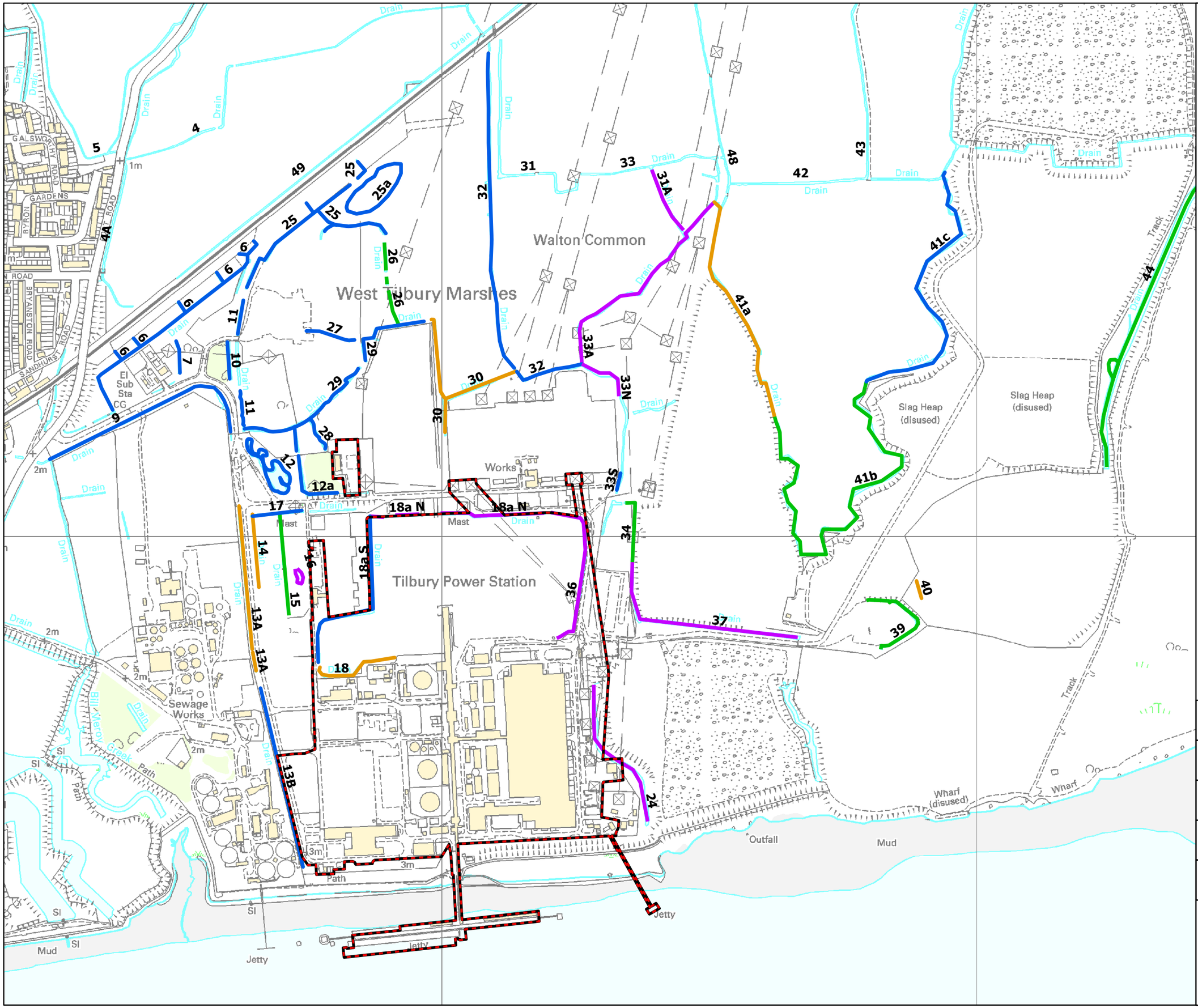

Legend

- Demolition Boundary
- High Populations
- Moderate Populations
- Low Populations
- None
- Water bodies

0 50 100 200 300 m

Drawing title:
Water vole survey map

Project:
A088550 Tilbury Powerstation

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
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Office:	Drawing number:	Revision:
4594	Figure 3.1	Rev.01

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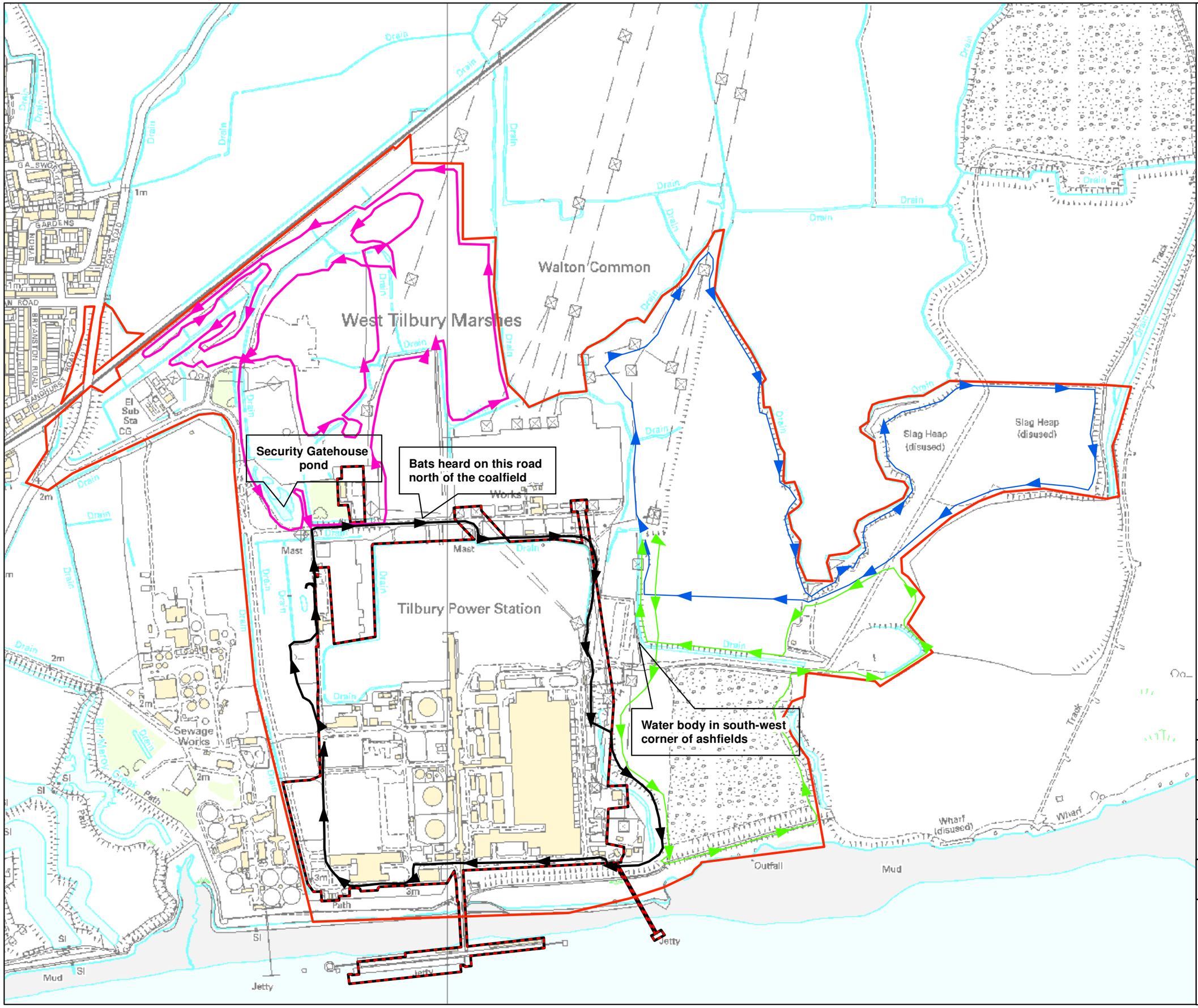

Legend

- RWE Ownership Boundary
- Demolition Boundary
- Transect 1
- Transect 2
- Transect 3
- Transect 4

0 50 100 200 300 m

Drawing title: Bat Transects			
Project: A088550 Tilbury Power Station			
Client: RWE nPower			
Scale (A3): 1:6,500	Created by: TB 11/11/15	Reviewed by: JS 11/11/15	Verified by: CW 11/11/15
Office: 4594	Drawing number: Figure 4.1		Revision: Rev.01

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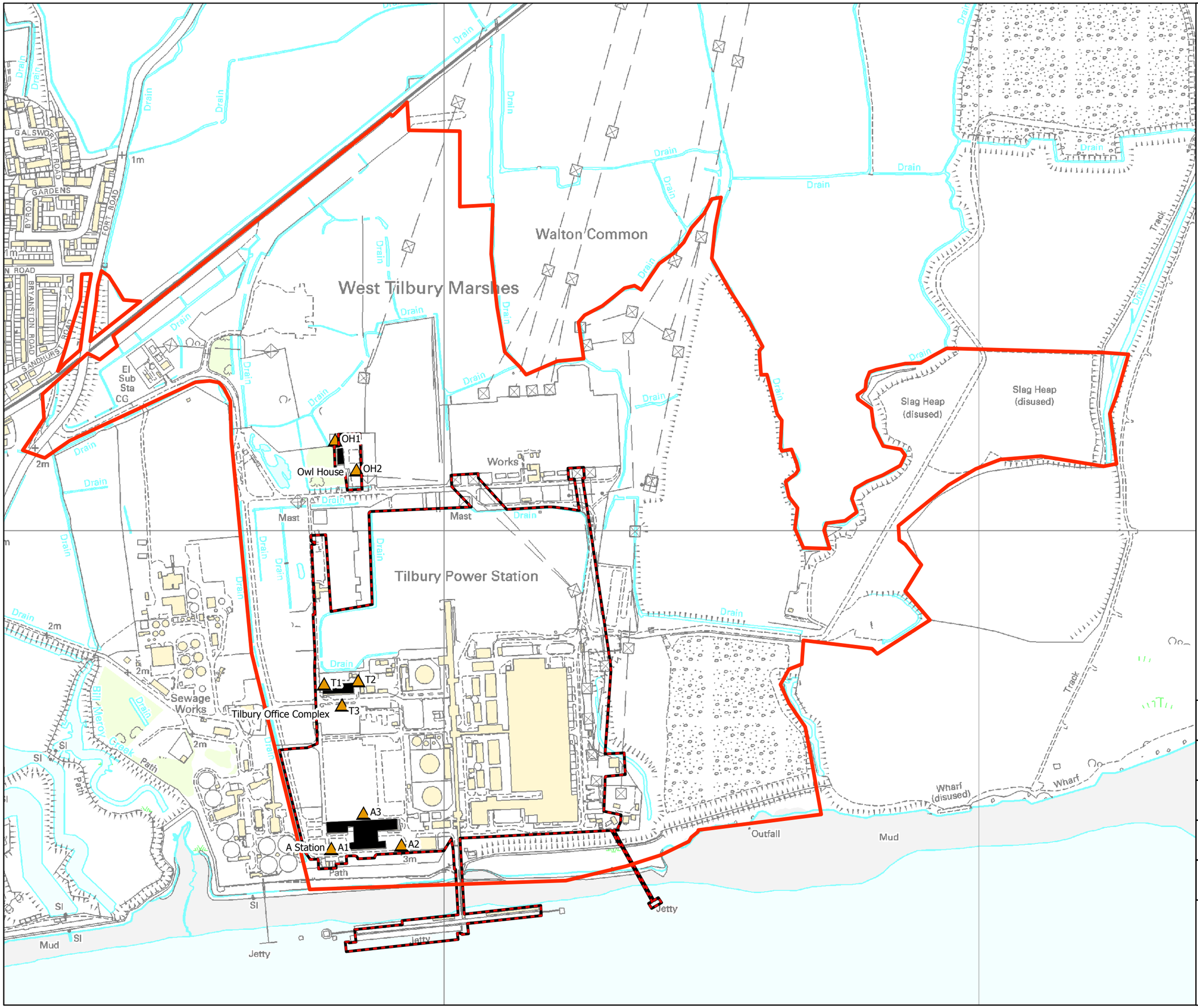
Email: ecology@wyg.com



Legend

- RWE Ownership Boundary
- Demolition Boundary
- Surveyor Locations
- Buildings

0 50 100 200 300 m

Drawing title:
Surveyor Locations For Bat Emergence

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JAS 09/11/2015	DS 09/11/2015	CW 09/11/2015

Office:	Drawing number:	Revision:
4594	Figure 4.2	Rev.01

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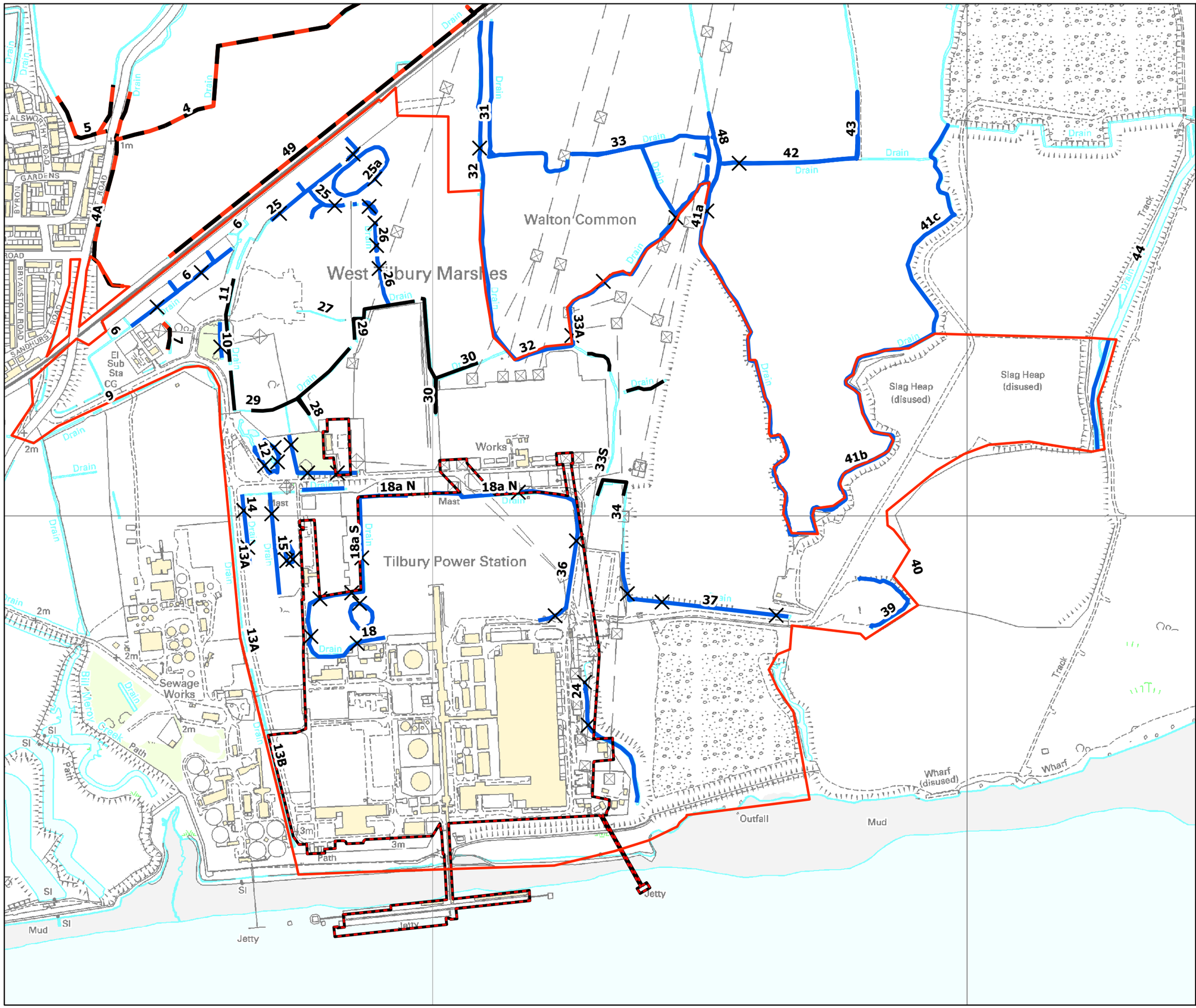

N

Legend

- RWE Ownership Boundary
- Demolition Boundary
- Bottle Locations
- Dry
- Waterbodies Surveyed
- Polluted

0 50 100 200 300 m

Drawing title:
Waterbodies surveyed for GCN's

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JAS 11/11/15	DS 11/11/15	CW 11/11/15

Office:	Drawing number:	Revision:
4594	Figure 5.1	Rev.01

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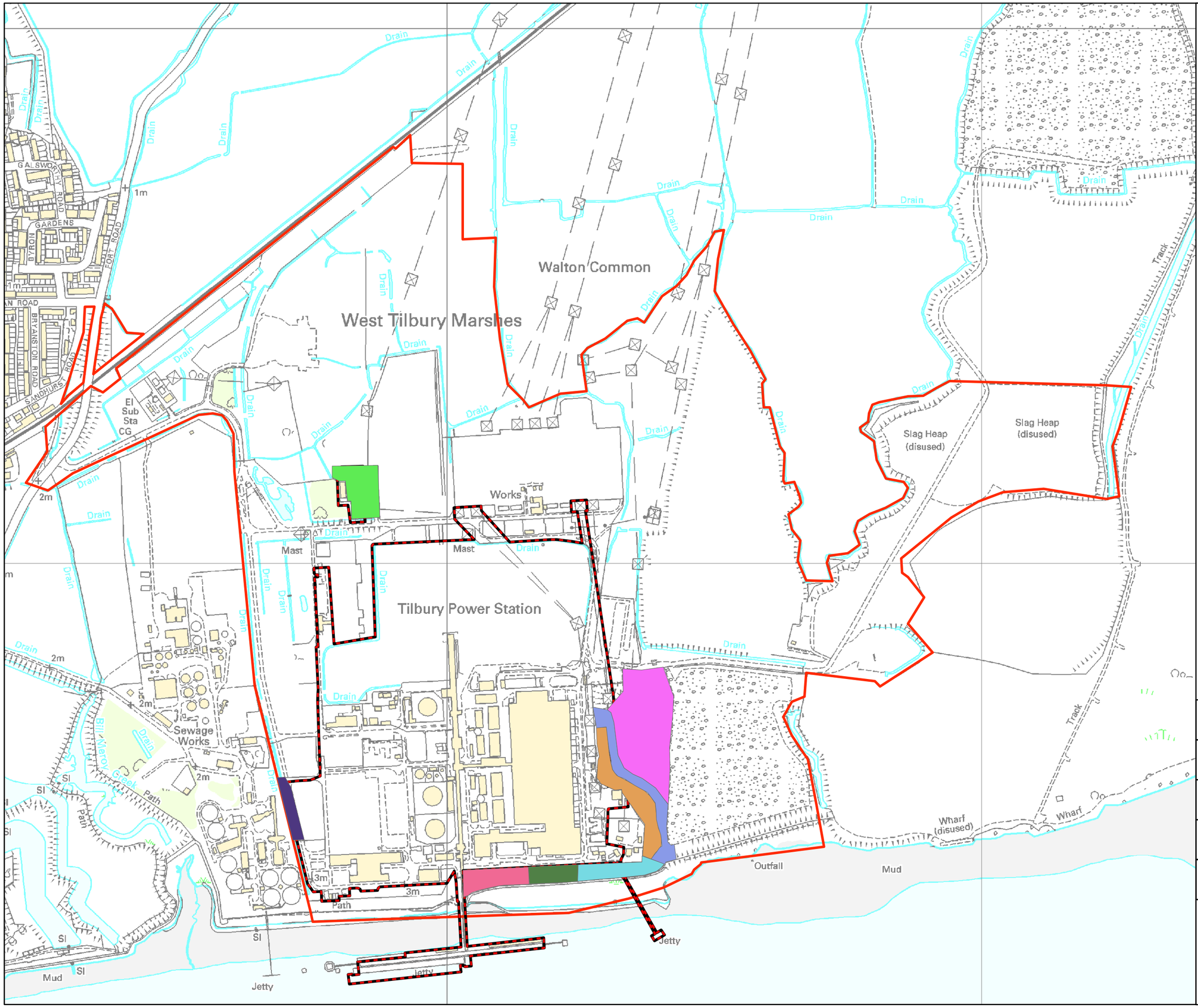

Drawing title:
2013 Pre-commencement Reptile Areas

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JS 11/11/15	DS 11/11/15	CW 11/11/15

Office:	Drawing number:	Revision:
4594	Figure 6.1	Rev.01

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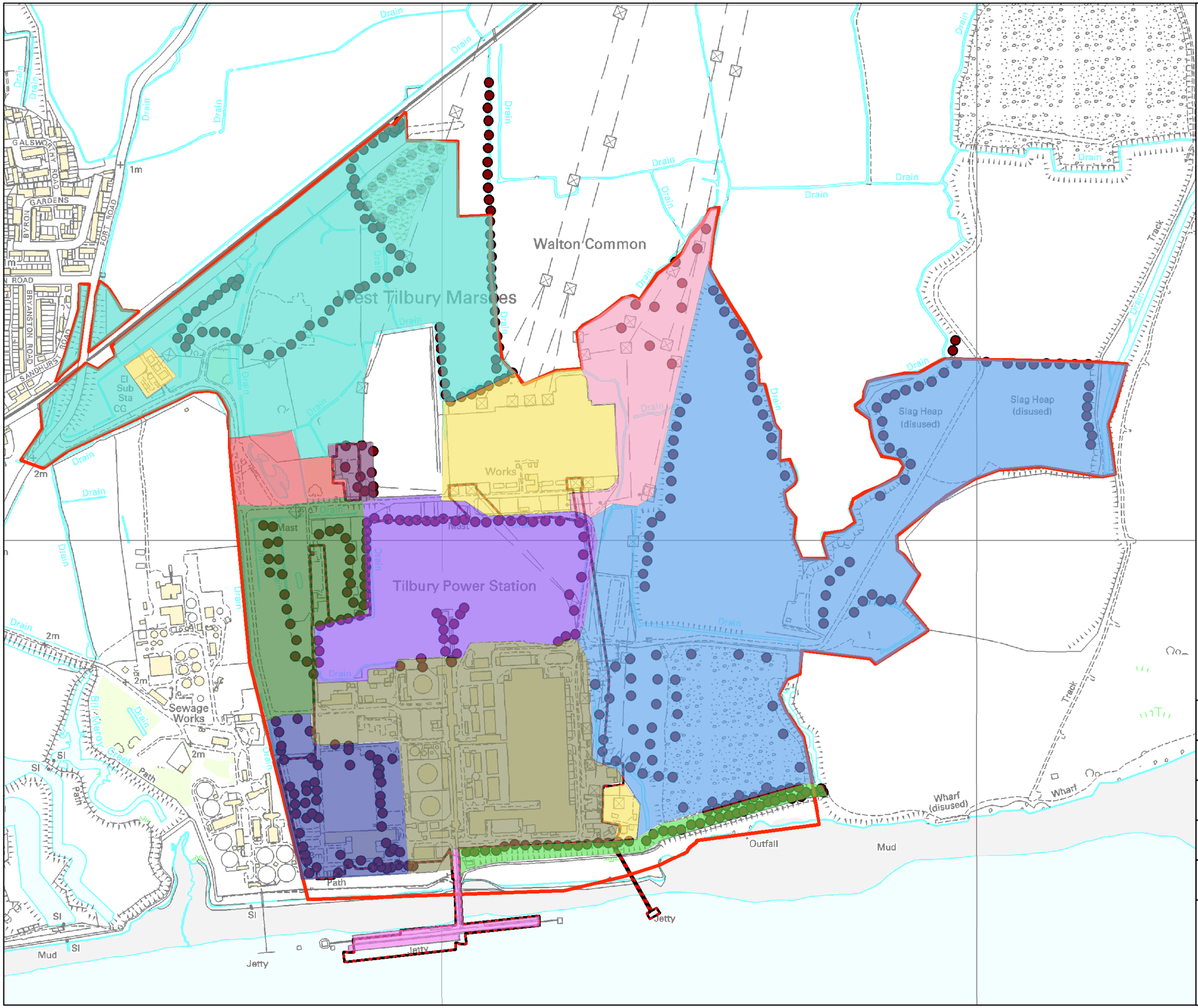

N

Legend

- RWE Ownership Boundary
- Demolition Boundary
- Reptile Matt Location
- A-Station
- Tilbury Energy and Environment Centre (TEEC) Wildlife Site
- Coal Fields
- Tilbury Riverside Project Community Meadow
- Ashfields
- Northern Area
- Owl House
- National Grid compounds
- Sub Station
- Jetty
- B-Station
- Gatehouse
- Tilbury Pond Wildlife Site

0 50 100 200 300 M

Drawing title:
Reptile Matt Locations and Areas

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JAS 11/11/2015	DS 11/11/2015	CW 11/11/2015

Office:	Drawing number:	Revision:
4594	Figure 6.2	Rev.01

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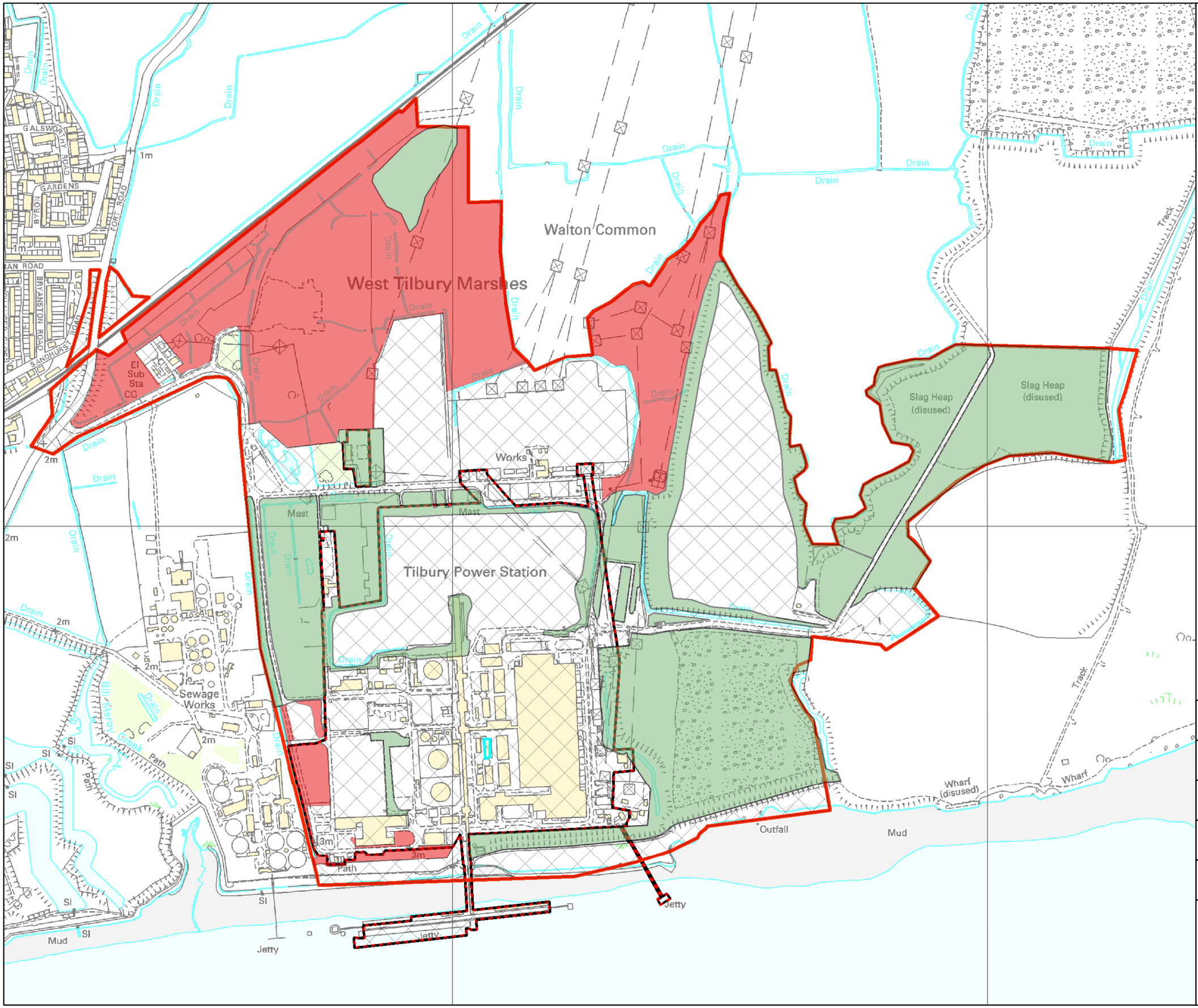

N

Legend

RWE Ownership Boundary

Demolition Boundary

Population Sizes

Exceptional

Low

Unsuitable habitat

0 50 100 200 300 M

Drawing title:
Reptile Population Size Class Map

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JAS 10/11/2015	DS 10/11/2015	CW 10/11/2015

Office:	Drawing number:	Revision:
4594	Figure 6.3	Rev.01

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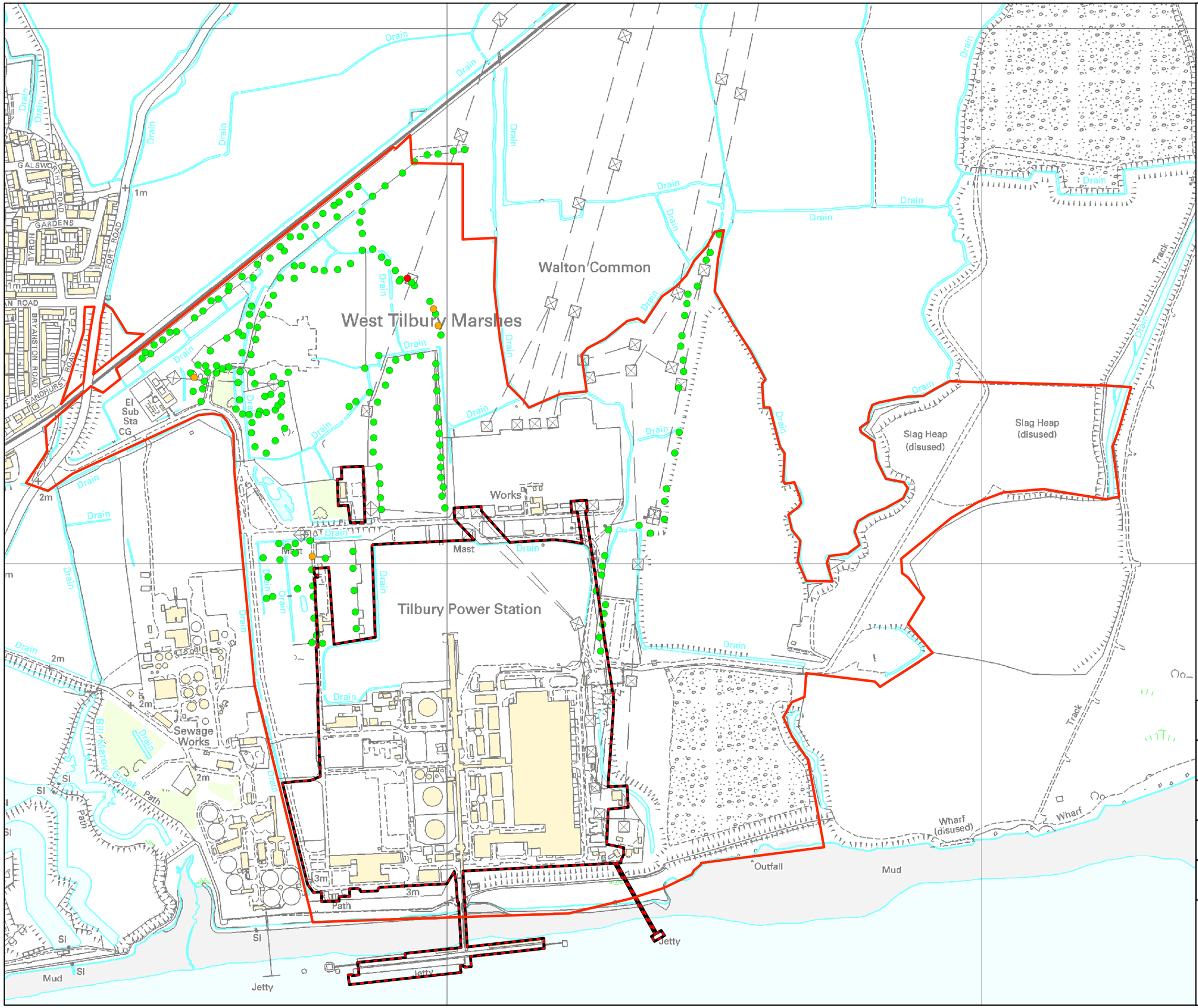

N

Legend

- RWE Ownership Boundary
- Demolition Boundary
- Dormouse Tube Locations
- Dormouse Signs
- Dormouse Nest

0 50 100 200 300 M

Drawing title: Dormouse Tube Locations			
Project: A088550 Tilbury Power Station			
Client: RWE nPower			
Scale (A3): 1:6,500	Created by: JS 11/11/2015	Reviewed by: DS 11/11/2015	Verified by: CW 11/11/2015
Office: 4594	Drawing number: Figure 7.1		Revision: Rev.01

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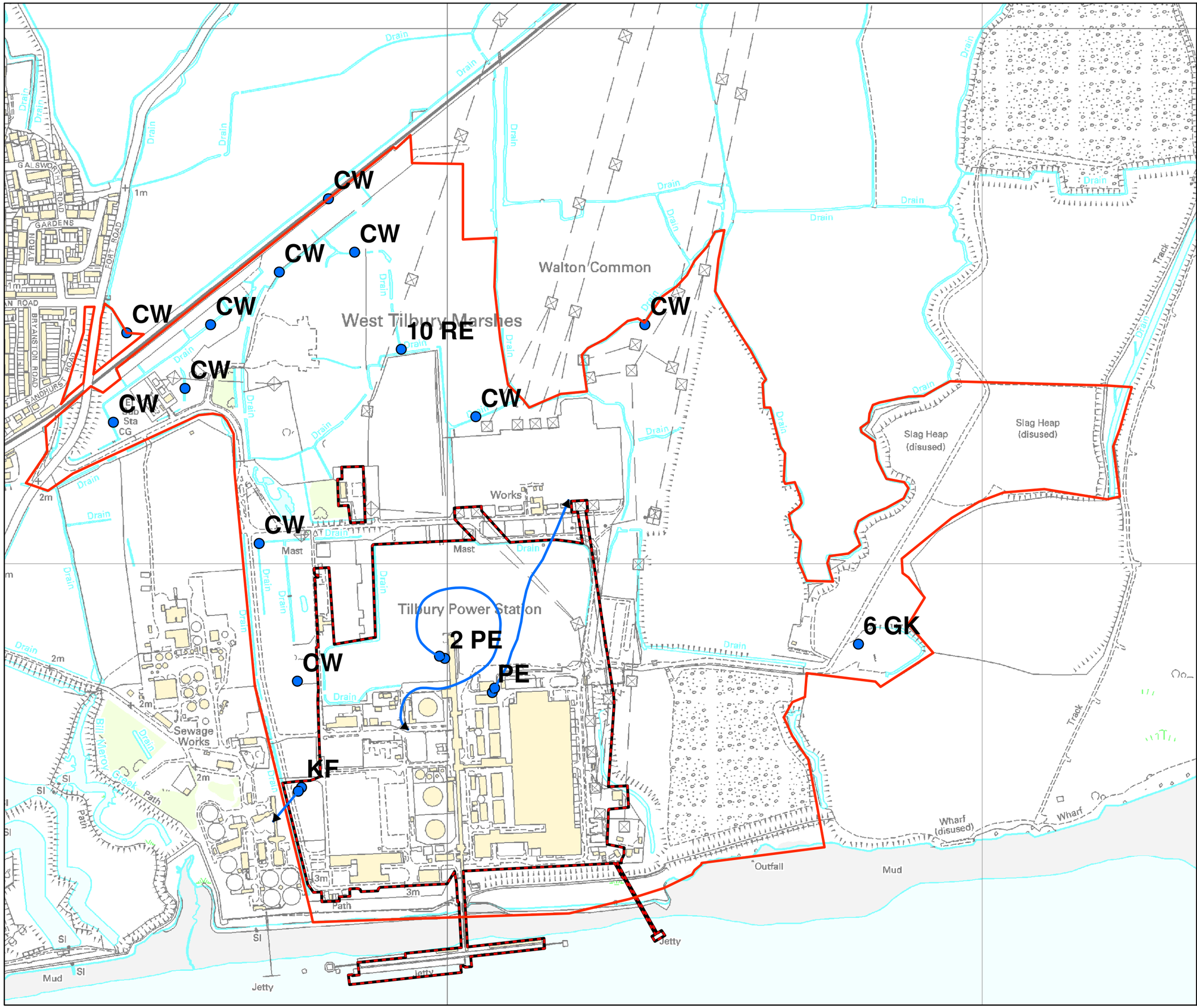

N

Legend

RWE Ownership Boundary

Demolition Boundary

Territory locations

- CW Cettis warbler
- GK Greenshank
- KF Kingfisher
- PE Peregrine
- RE Redwing

Flight lines of Schedule 1 Species

0 50 100 200 300 M

Drawing title:
Breeding Bird Schedule 1 Species

Project:
A088550 Tilbury Power Station

Client:
RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JS 11/11/15	DS 11/11/2015	CW 11/11/2015

Office:	Drawing number:	Revision:
4594	Figure 8.1	Rev.01

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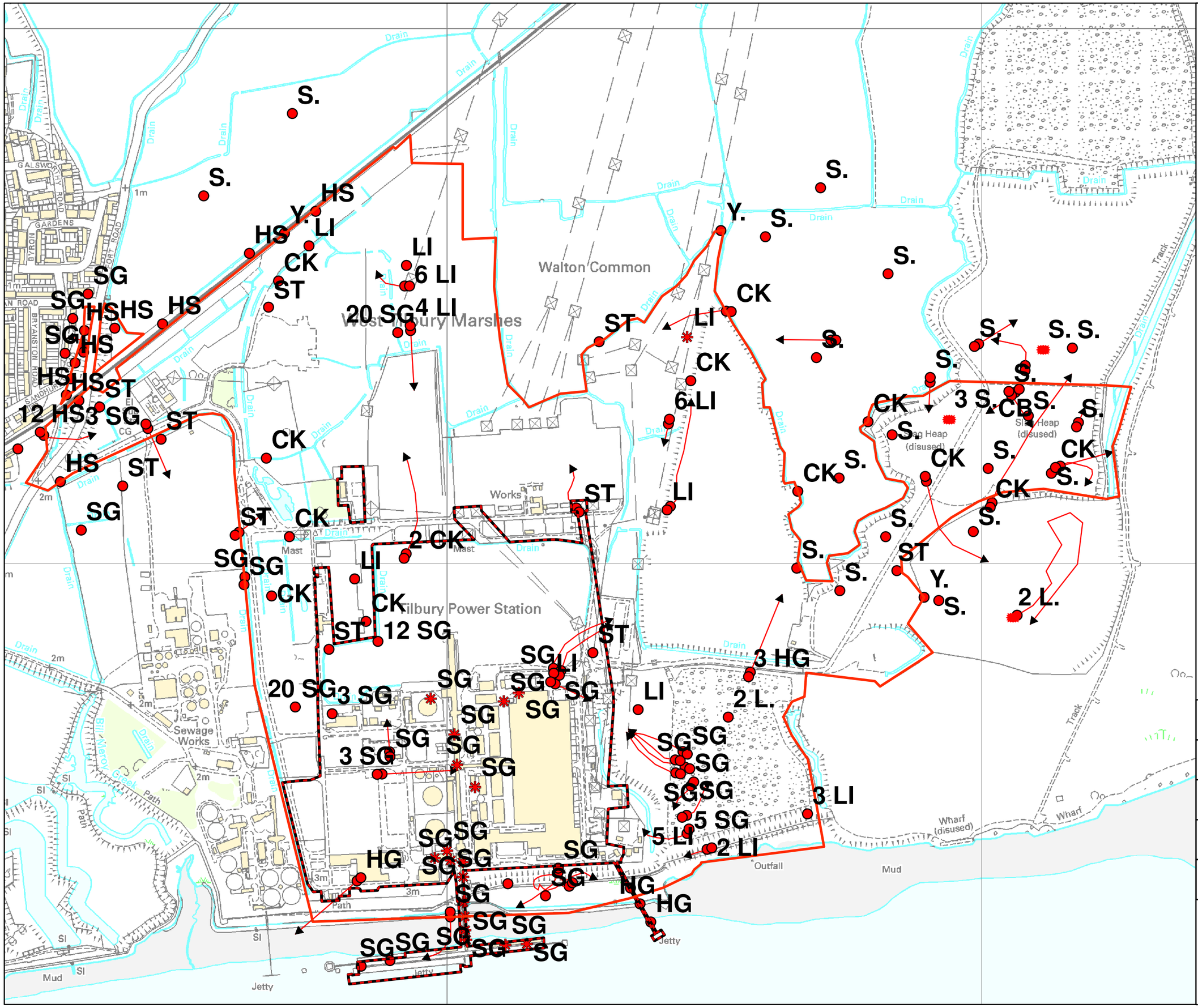

N

Legend

- RWE Ownership Boundary
- Demolition Boundary

Territory locations

- CB Corn bunting
- Y. Yellowhammer
- CK Cuckoo
- HG Herring Gull
- HS House Sparrow
- L. Lapwing
- LI Linnet
- S. Skylark
- SG Starling
- ST Song thrush
- Aggressive Encounter
- Nest
- Flight Lines BoCC Red Species

0 50 100 200 300 M

Drawing title: Breeding Bird Survey Birds of Conservation Concern Red			
Project: A088550 Tilbury Power Station			
Client: RWE nPower			
Scale (A3): 1:6,500	Created by: JS 11/11/15	Reviewed by: DS 11/11/2015	Verified by: CW 11/11/2015
Office: 4594	Drawing number: Figure 8.2		Revision: Rev.01

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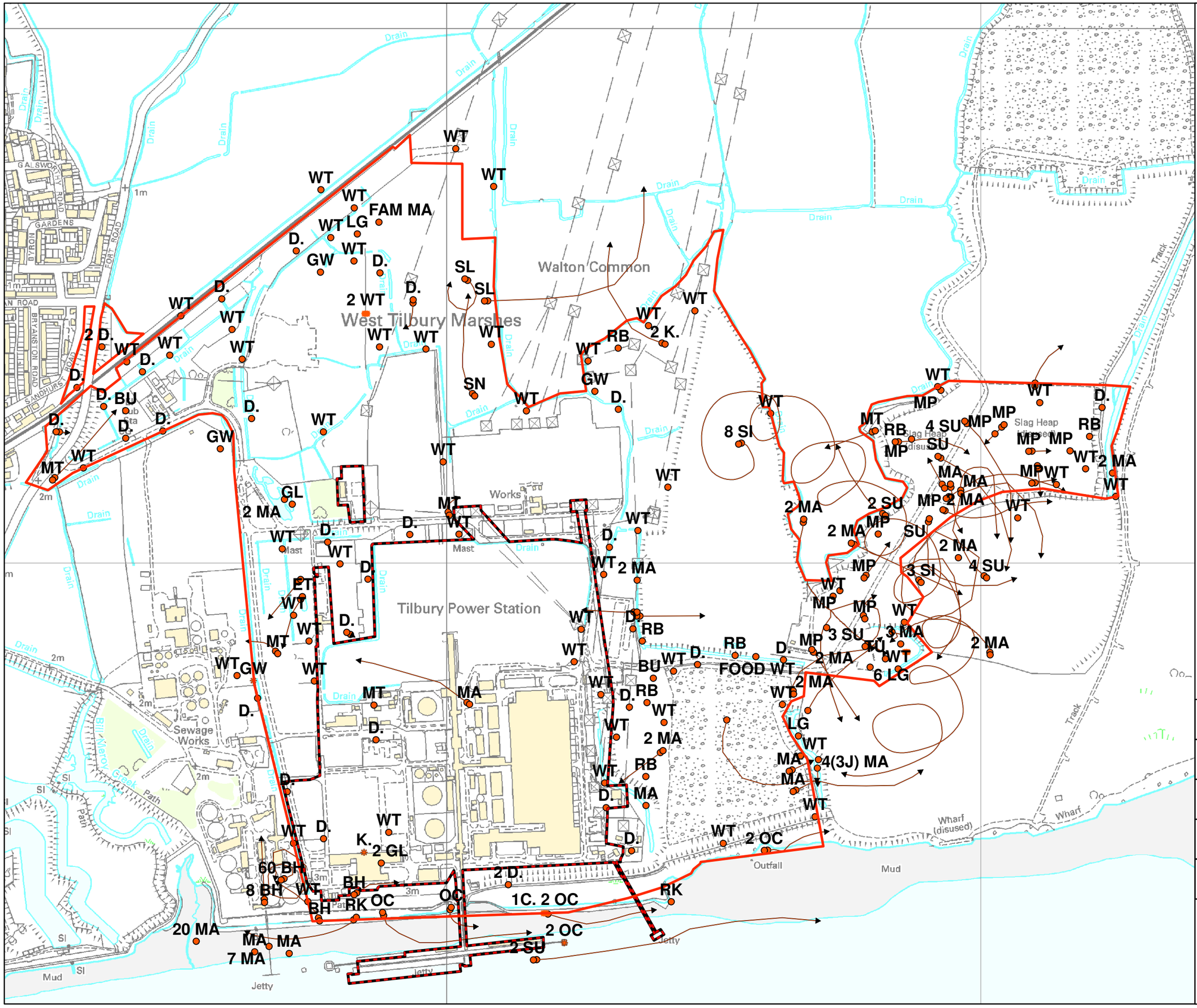

Legend

N

- RWE Ownership Boundary
- Demolition Boundary

Territory locations

- BH Black-headed gull
- BF Bullfinch
- D. Dunnock
- GL Grey wagtail
- GW Green woodpecker
- K. Kestrel
- ET Little egret
- LG Little grebe
- MA Mallard
- MP Meadow pipit
- MT Mistle thrush
- OC Oystercatcher
- RB Reed bunting
- RK Redshank
- SI Swift
- SL Swallow
- SN Snipe
- SU Shellduck
- TU Tufted duck
- WT Whitethroat
- Aggressive encounter
- Nest
- Flight lines BoCC Amber Species

0 50 100 200 300 M

Drawing title: Breeding Bird Survey Birds of Conservation Concern Amber

Project: A088550 Tilbury Power Station

Client: RWE nPower

Scale (A3):	Created by:	Reviewed by:	Verified by:
1:6,500	JS 11/11/15	DS 11/11/2015	CW 11/11/2015

Office:	Drawing number:	Revision:
4594	Figure 8.3	Rev.01

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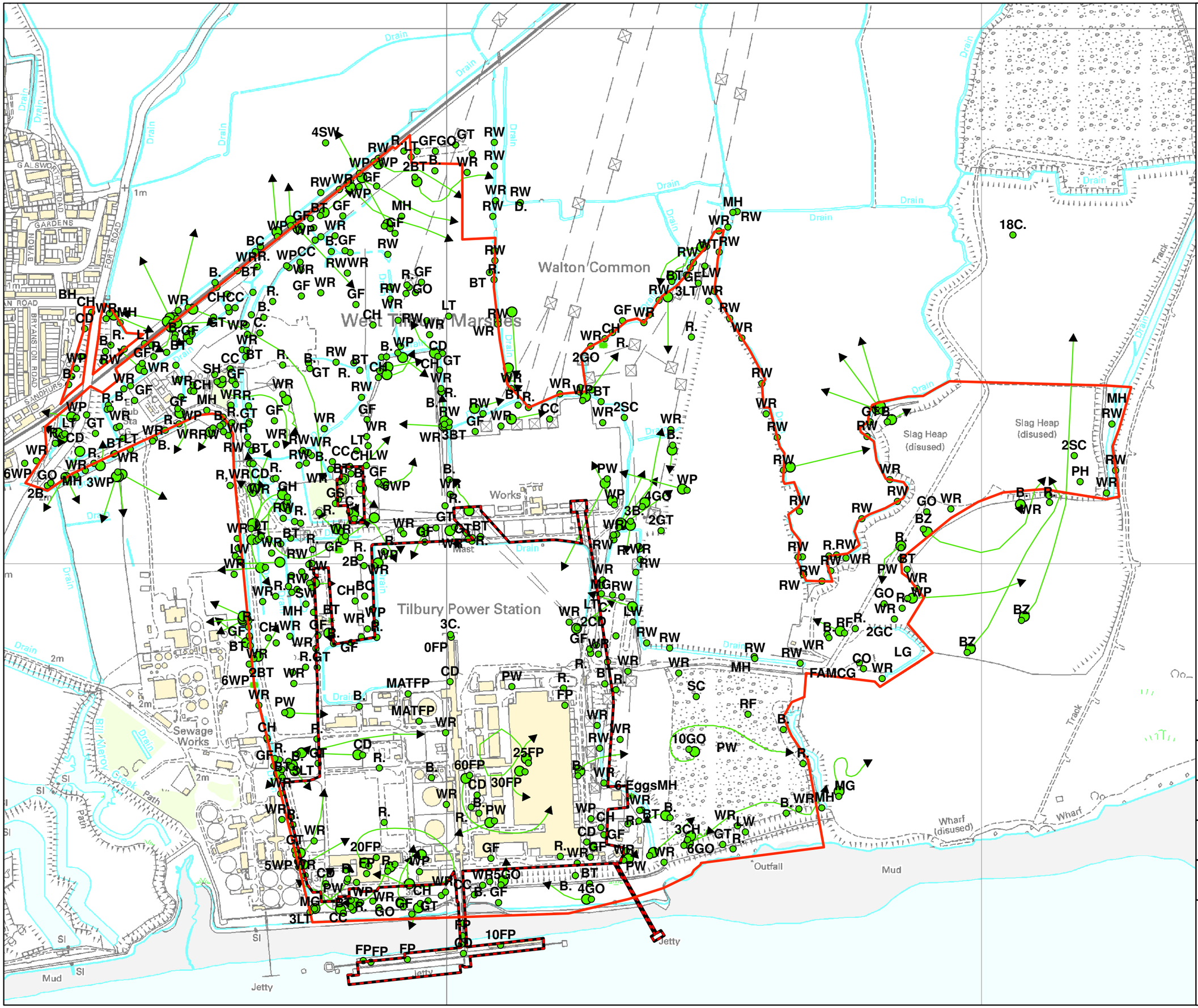

N

Legend

- RWE Ownership Boundary
- Demolition Boundary

Territory locations

- B. Blackbird
- BC Black cap
- BT Blue tit
- BZ Buzzard
- C. Carrion crow
- CC Chiffchaff
- CD Collared dove
- CG Canada goose
- CH Chaffinch
- CO Coot
- FP Feral pigeon
- GF Greenfinch
- GH Grey heron
- GO Goldfinch
- GS Great spotted woodpecker
- GT Great tit
- J. Jay
- LT Long-tailed tit
- LW Lesser whitethroat
- MG Magpie
- MH Moorhen
- PH Pheasant
- PW Pied wagtail
- R. Robin
- RL Red-legged partridge
- RW Reed warbler
- SC Stonechat
- SH Sparrowhawk
- SW Sedge warbler
- WP Wood pigeon
- WR Wren
- Aggressive encounter
- Nest
- Flight lines BoCC Green Species

0 50 100 200 300 M

Drawing title: Breeding Bird Survey Birds of Conservation Concern Green			
Project: A088550 Tilbury Power Station			
Client: RWE nPower			
Scale (A3): 1:6,500	Created by: JS 11/11/15	Reviewed by: DS 11/11/2015	Verified by: CW 11/11/2015
Office: 4594	Drawing number: Figure 8.4		Revision: Rev.01

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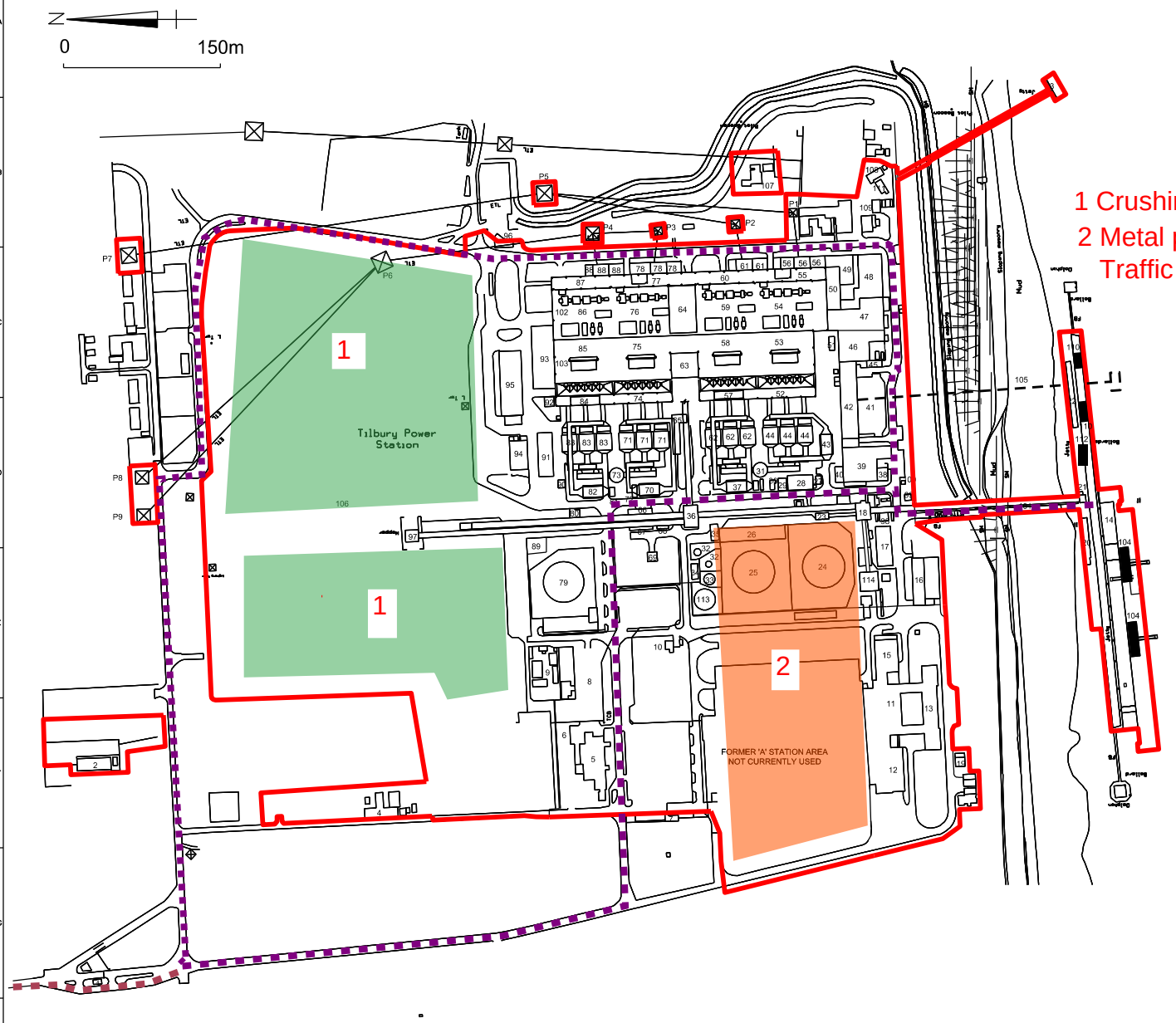
APPENDIX B: RWE FIGURES



108 & 111 Nos CORRECTED, 114 ADDED				B
JS	TL	17-OCT-14	TL	
EW	CM	03.07.14	CM	A
Drawn	Checked	Date	Approved	Rev.

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I www.RWEnpower.com

Size of original	Scale of original
A3	1:4000

Site

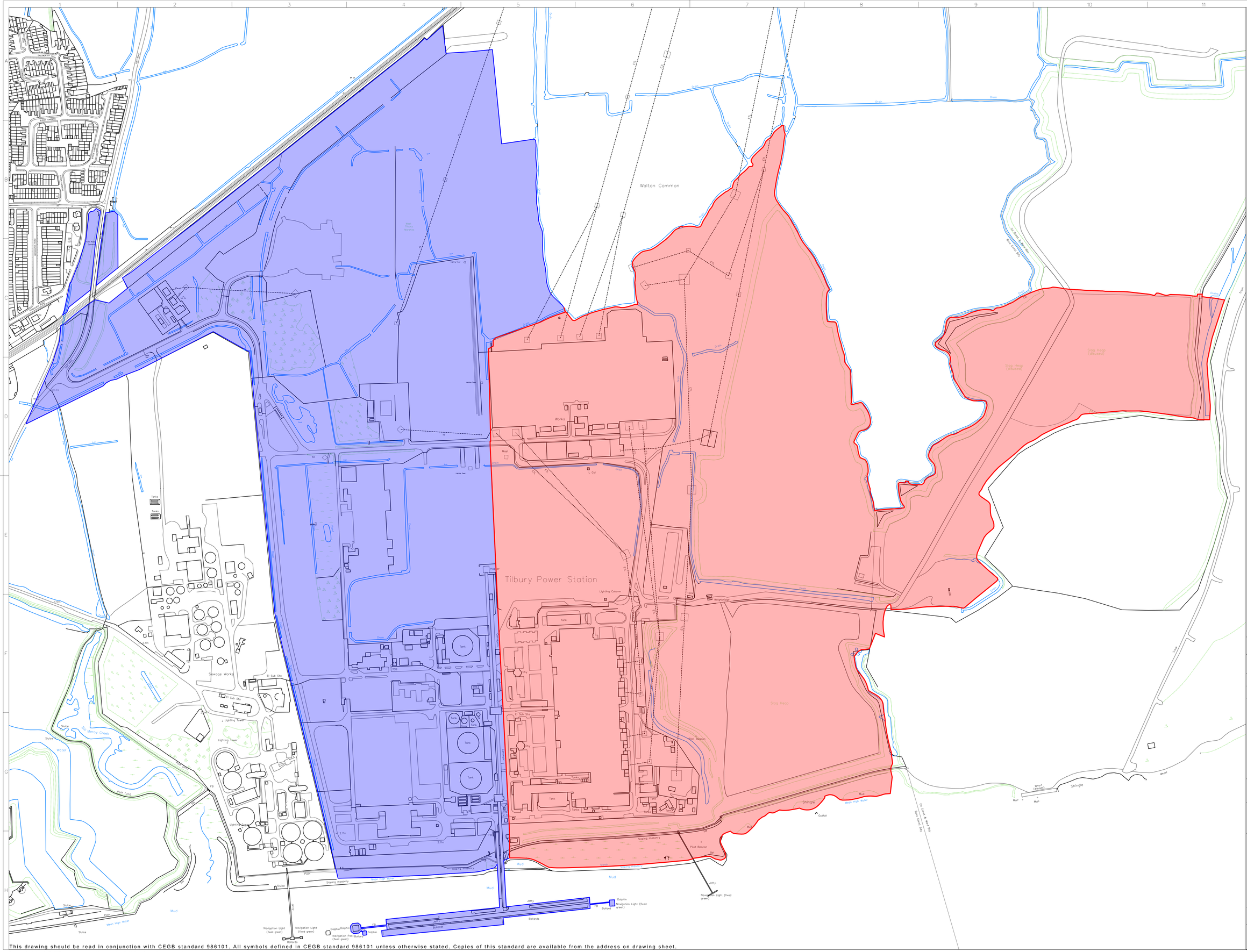
TILBURY

Proposed Lay Down Areas and Traffic Routes

Drawing number

MAP/TILB/044/B

This drawing should be read in conjunction with CEGB standard 986101. All symbols defined in CEGB standard 986101 unless otherwise stated. Copies of this standard are available from the address on drawing sheet.



N

0 20 40 60 80 Metres

LEGEND:

🟥 RETAINED LAND

🟦 SURPLUS LAND

SJP	**	24/06/2015	**	A
Drawn	Checked	Date	Approved	Rev.

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Size of original
A0

Scale of original
1:2000

Site
TILBURY

Title
RETAINED LAND & SURPLUS LAND PLAN

Status
DRAFT

Drawing number
MAP/TILB/053/AP5

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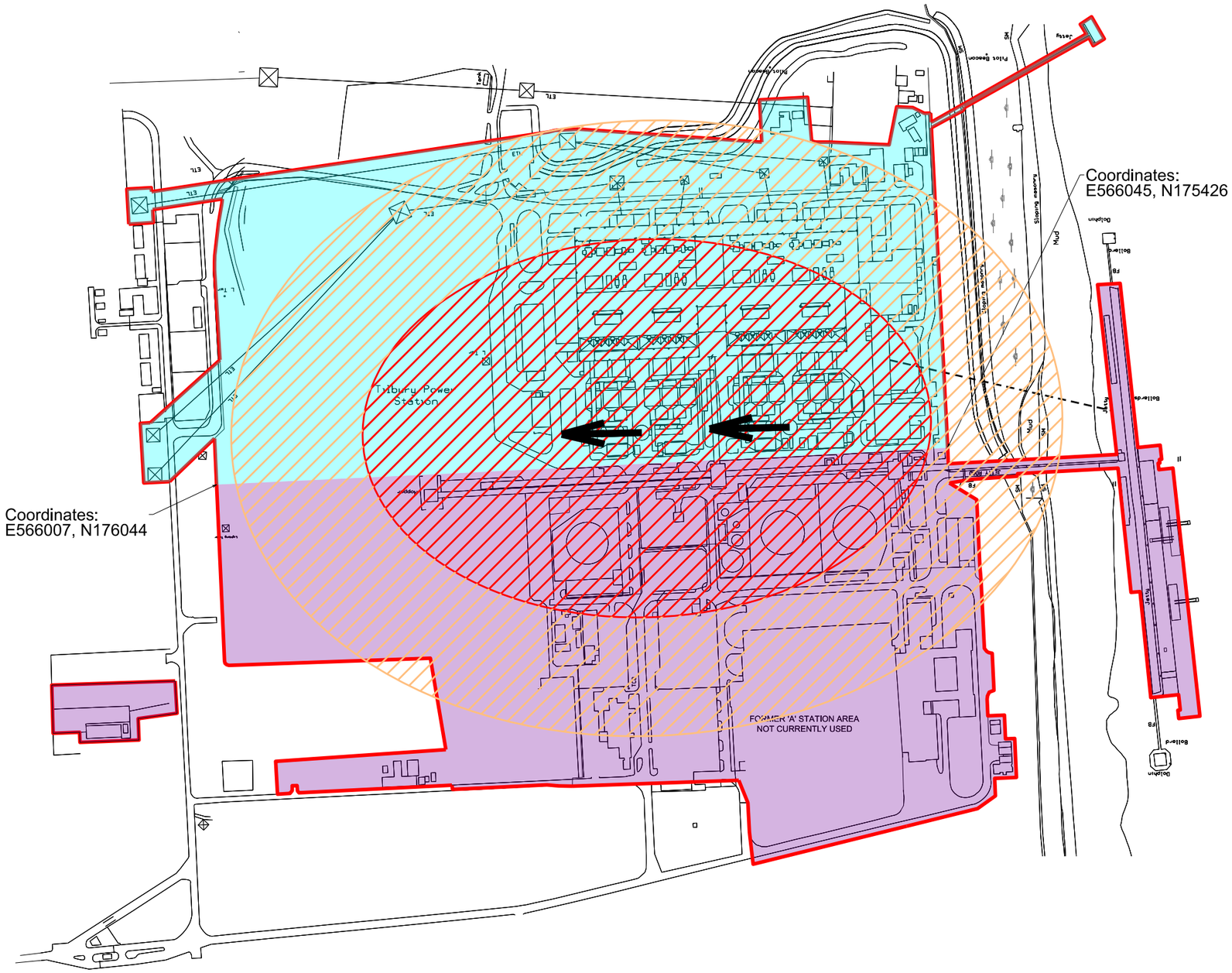

LEGEND

🟥	DEMOLITION BOUNDARY
🟪	SECTION 1
🟦	SECTION 2
←	DIRECTION OF FALL
▨	DEBRIS ZONE
▨	EXCLUSION ZONE

Drawn	Checked	Date	Approved	Rev.
SJP	**	04.08.15	TL	A

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Size of original
A3

Scale of original
1:4000

Site
TILBURY
DEMOLITION

Title
EXPLOSIVE DEMOLITION
EXCLUSION ZONE FOR
CHIMNEYS

Status
APPROVED

Drawing number
MAP/TILB/062/A

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