The Drax Power (Generating Stations) Order

Land at, and in the vicinity of, Drax Power Station, near Selby, North Yorkshire

Supplemental Environmental Information - Bat Activity Survey
(Submitted for Deadline 2)

The Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

Drax Power Limited

Drax Repower Project

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Glossary

Term	Definition
Above Ground Installation (AGI)	The Minimum Offtake Connection (MOC) which will be operated by National Grid Gas and the PIG Trap Launching station (PTF-L) which will be operated by Drax. The AGI is described as Work No. 6 in Schedule 1 of the draft DCO (Examination Library Reference AS-012).
Baseline	A reference level of existing environmental conditions against which a project is measured and controlled.
Biodiversity	Abbreviated form of 'biological diversity' referring to variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part.
Biodiversity Action Plan (BAP)	Plans which set specific, measurable, achievable, realistic and time bound conservation targets for species and habitats. The UK BAP is the UK Government's response to the Convention on Biological Diversity (CBD) signed in 1992. More information is available at www.ukbap.org.uk.
Chartered Institute of Ecology and Environmental Management (CIEEM)	The professional membership body representing and supporting Ecologists and Environmental professionals in the UK, Ireland and abroad. Previously known as Institute of Ecology and Environmental Management (IEEM).
DCO Application	The application for a DCO in respect of the Proposed Scheme.
Development Consent Order (DCO)	A Development Consent Order (DCO) is made by the Secretary of State (SoS) pursuant to the Planning Act 2008 (PA 2008) to authorise a Nationally Significant Infrastructure Project (NSIP).
Drax Power Station	The existing biomass and coal fired power generation facility at the Existing Drax Power Station Complex
Ecological Impact Assessment (EcIA)	A recommended procedure for the ecological component of Environmental Impact Assessment.
Effect	The consequence of an impact on the environment.
Environmental Statement	A statement that includes the information that is reasonably required to assess the environmental effects of a development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but that includes at least the information required in the EIA Regulations 2017 and which is prepared in accordance with the latest Scoping Opinion adopted by the Secretary of State (where relevant).
European Protected Species (EPS)	European Protected Species are animals and plants that receive protection under the Conservation of Habitats and Species Regulations 2017, in addition to the Wildlife and Countryside Act 1981 (as amended).

Term	Definition
Existing Drax Power Station Complex	The facilities comprising the existing Drax Power Station, and the land upon which it is situated.
Gas Pipeline	The approximately 3 km underground pipeline which connects the Gas Receiving Facility to the National Transmission System. The Gas Pipeline is described as Work No. 7 in Schedule 1 of the draft DCO (Examination Library Reference AS-012).
Gas Receiving Facility (GRF)	This is required to receive the natural gas from the Gas Pipeline. The GRF is described as Work No. 5 in Schedule 1 of the draft DCO (Examination Library Reference AS-012).
Gas turbine	Gas turbines produce electricity. Air is drawn into the compressor of the gas turbine and is compressed. The fuel is then injected into the combustion chamber. The mixture of fuel and compressed air is ignited, producing gases at high temperatures. As the gas expands, it rotates the turbine to produce electricity. The gas turbines form part of Work No. 1A (which includes up to two gas turbines in connection with Unit X) and Work No. 2A (which includes up to two gas turbines in connection with Unit Y) in Schedule 1 of the draft DCO (Examination Library Reference AS-012).
Generating station equipment	Equipment comprising electricity generating stations, battery storage facilities and gas insulated switchgear buildings. The Generating station equipment is described as Work Nos. 1, 2, 3 and 4 in Schedule 1 of the draft DCO submitted with the DCO Application.
Habitat	The environment in which populations or individual species live or grow.
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017, which implement the Habitats Directive.
Heat Recovering Steam Generators (HRSG)	HRSGs recover the hot flue gases from the Gas Turbines. The heat is used to produce steam that will drive the existing steam turbines. HRSGs are required where the generating station is operating in CCGT mode.
Impact	A physical or measurable change to the environment attributable to the Proposed Scheme.
Indirect Effects	Effects that result indirectly from the proposed project, in this case the Proposed Scheme, as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Landscape	An area, as perceived by people, the character of which is a result of the action and interaction of natural and/or human factors.
Local Biodiversity Action Plan (LBAP)	A strategy and set of objectives aimed at conserving, monitoring and raising awareness of the fauna, flora and habitats- collectively referred to as biodiversity- usually along local authority boundary lines.

Term	Definition
Mitigation Measures	Actions proposed to avoid, reduce and where possible offset likely significant adverse effects arising from the whole or specific elements of a development.
National Planning Policy Framework (NPPF)	A document that sets out government's planning policies for England and how these are expected to be applied.
National Policy Statements (NPS)	Overarching policy designated under the Planning Act 2008 concerning the planning and consenting of NSIPs in the UK.
Nationally Significant Infrastructure Project (NSIP)	A project meeting the criteria for a “nationally significant infrastructure project” set out in section 14 of the Planning Act 2008, and therefore requiring authorisation under the PA 2008 by way of a DCO. The Proposed Scheme constitutes a Nationally Significant Infrastructure Project (NSIP) by virtue of s.14(1)(a) and s.15 of the PA 2008 as it is an onshore generating station in England of 50 MW capacity or more.
Open Cycle Gas Turbine	An open cycle gas turbine converts heat into mechanical energy. Combustion of a fuel within a gas turbine produces hot gases that expand over a complex series of blades that cause the turbine to rotate which in turn drives an electrical generator.
Preliminary Ecological Appraisal (PEA)	Preliminary ecological surveys have a range of purposes; one key use is to gather data on existing conditions, often with the intention of conducting a preliminary assessment of likely impacts of development schemes or establishing the baseline for future monitoring. As a precursor to a proposed project, some evaluation is usually made within these appraisals of the ecological features present, as well as scoping for notable species or habitats, identification of potential constraints to proposed development schemes and recommendations for mitigation.
Potential Roost Features (PRF)	Any feature within a building or tree that has a potential for a bat to roost in.
Preliminary Ground Level Roost Assessment for trees (PGLRA)	A detailed inspection of the exterior of the tree from ground level to look for features that bats could use for roosting (PRFs). The aim of this survey is to determine the actual or potential presence of bats and the need for further survey and/or mitigation.
Proposed Scheme	Drax Power Limited is proposing to repower up to two existing coal-powered generating units (Units 5 and 6) at the Existing Drax Power Station Complex with new gas turbines that can operate in both combined cycle and open cycle modes. The term "repower" is used as existing infrastructure, such as the steam turbine and cooling towers, that are currently used for the coal fired units would be reutilised for the new gas fired generating units/stations.

Term	Definition
	The repowered units (which each constitute a new gas fired generating station) would have a new combined capacity of up to 3,600 MW in combined cycle mode (1,800 MW each), replacing existing units with a combined capacity to generate up to 1,320 MW (660 MW each). This is explained further below: Each gas generating station would have up to two gas turbines, with each gas turbine powering a dedicated generator of up to 600 MW in capacity. The gas turbines in each generating station (or unit), therefore, would have a combined capacity of up to 1,200 MW. The gas turbines in each generating station (or unit), in combined cycle mode, would provide steam to the existing steam turbine (through Heat Recovery Steam Generators (HRSGs)) which would generate up to 600 MW per unit. Each unit would have up to two HRSGs. This results in a capacity for each generating station of up to 1,800 MW and, should both units be repowered, a combined capacity of up to 3,600 MW. The new gas turbine generating units have been designated the terms "Unit X" and "Unit Y". In OCGT mode, the combined capacity would be up to 2,400MW (as in OCGT mode, there would be no HRSG capacity). Each unit would have (subject to technology and commercial considerations) a battery energy storage facility with a capacity. The battery units may be stored within a single structure. The total combined capacity of the two gas fired generating stations and two battery storage facilities (i.e. the total combined capacity of the Proposed Scheme) is therefore 3,800 MW. Drax is seeking consent for the flexibility to either: • Repower one unit (either Unit 5 or 6) and construct Unit X as a gas fired generating station; or • Repower both Units 5 and 6 and construct Unit X and Unit Y as two gas fired generating stations. In the single unit scenario, up to two gas turbines and up to two HRSGs and (subject to technology and commercial considerations) a battery energy storage facility would be constructed. The maximum size of the battery storage cells and any structure built to protect them would not change, as the battery storage cells for one Unit could be one larger battery which would allow the output associated with one Unit to be sustained for a longer duration. However, the fuel gas station and gas insulated switchgear would be smaller. In the event that two units are repowered and two new generating stations are constructed, then construction works would be undertaken consecutively rather than concurrently. In order to repower to gas, a new Gas Pipeline would be constructed from the Existing Drax Power Station Complex to the National Transmission System

Term	Definition
	(NTS) operated by National Grid. Pipeline infrastructure would be the same for both one and two unit scenarios. A gas receiving facility (GRF) comprising Pipeline Inspection Gauge (PIG) Trap Facility (PTF), Pressure Reduction and Metering Station (PRMS) and compressor station is proposed south of woodland to the east of New Road. At the connection to the NTS there will be an AGI comprising - a Pig Trap Launching station (PTF-L) which will be operated by Drax, and a Minimum Offtake Connection (MOC), which will be operated by National Grid. The Proposed Scheme also includes the electrical connection. Drax's Proposed Scheme is described in more detail in Chapter 3 (Site and Project Description) of the ES Volume 1 (Examination Library Reference APP-071). Schedule 1 of the Order (Examination Library Reference AS-012) lists out the elements comprised within the Proposed Scheme.
Repower	Decommissioning of existing coal-fired units and replacement with newly constructed gas-fired units utilising some of the existing infrastructure.
Selby District Core Strategy Local Plan 2013 (CS)	The first part of the replacement for the Selby District Local Plan 2005. This sets out the high level strategic policies for the District for the period 2012 - 2028. The policies in the Core Strategy replace much of the SDLP policies.
Selby District Local Plan 2005 (SDLP)	A suite of local plan policies that was implemented in 2005. Some policies have been saved for joint consideration with the Selby District Core Strategy Local Plan 2013. Others have been deleted and replaced with new policies in the Core Strategy.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Site	The Site refers to the Power Station Site, the Carbon capture readiness reserve space (which is also the location of temporary construction laydown described as Work No. 9B in Schedule 1 to the draft DCO submitted with the DCO Application) and the Pipeline Area.
Site Boundary	The Site Boundary refers to the outer perimeter of the Site.
Species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies or populations.
Unit X	The construction of a gas fired generating station capable of operating in CCGT and OCGT modes and which would have a generating capacity of up to 1,800 MW. Unit X would be connected to a battery storage facility. Unit X is described in Work No. 1 of Schedule 1 to the draft DCO (Examination Library Reference AS-012).
Unit Y	The construction of a gas fired generating station capable of operating in CCGT and OCGT modes and which would have a generating capacity of up

Term	Definition
	to 1,800 MW. Unit Y would be connected to a battery storage facility. Unit Y is described in Work No. 2 of Schedule 1 to the draft DCO (Examination Library Reference AS-012).
Waterbody	A discrete body of water forming a physical feature.
White Rose Carbon Capture Project	A proposed project to construct and operate a new 448 MW power station (super critical coal-fired with oxygen combustion technology) adjacent to the Existing Drax Power Station Complex.
Wildlife and Countryside Act 1981	The principal piece of UK legislation relating to the protection of wildlife.

Abbreviations

Abbreviation	Description
Application	The DCO Application
BAP	Biodiversity Action Plan
BEIS	Business, Energy and Industrial Strategy
CIEEM	Chartered Institute of Ecology and Environmental Management
CCGT	Combined Cycle Gas Turbine
DCO	Development Consent Order
EcIA	Ecological Impact Assessment
NSIP	Nationally Significant Infrastructure Project
EN-1	Overarching NPS for Energy
EN-2	NPS for Fossil Fuel Electricity Generating Infrastructure
EN-4	NPS for Gas Supply Infrastructure and Gas Oil Pipelines
ES	Environmental Statement
GRF	Gas Receiving Facility
JNCC	Joint Nature Conservation Committee
Khz	Kilohertz
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Areas
m	Metres
MW	Megawatts
NE	Natural England
NERC	Natural Environment and Rural Communities
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	National Significant Infrastructure Project
OCGT	Open Cycle Gas Turbine
PEA	Preliminary Ecological Appraisal
PRF	Potential Roost Feature
PGLRA	Preliminary Ground Level Roost Assessment for trees
SDC	Selby District Council
SDLP	Selby District Local Plan
SoS	Secretary of State
WRCCS	White Rose Carbon Capture and Storage Project

Abbreviation	Description
WCA	Wildlife and Countryside Act

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EXECUTIVE SUMMARY

Drax Power Limited have now submitted a Development Consent Order (DCO) application to the Secretary of State (SoS) for Business Energy and Industrial Strategy (BEIS). The application for the Proposed Scheme includes the repowering of up to two existing coal-fired units with gas at the Existing Drax Power Station Complex, along with the construction of a battery storage facility and Gas Pipeline.

Records of bats within 5 km of the Site were identified during a desk study, which formed part of a Preliminary Ecological Appraisal (PEA) undertaken by WSP in 2017. Suitable habitat for commuting, foraging and roosting bats was identified during the extended Phase 1 habitat survey element of the PEA. Consequently, WSP completed a series of Preliminary Ground Level Roost Assessments (PGLRA) of all trees with roosting suitability during 2017 and a programme of further bat surveys including emergence/re-entry and activity surveys between 2017 and 2018. Results of the completed baseline assessments and surveys alongside ongoing surveys were used to predict the impacts of the Proposed Scheme on bats in the Environmental Statement (ES).

The surrounding landscape was assessed as being moderate suitability habitat for bats. Therefore, following good practice guidelines, one transect survey per month was undertaken between April and September 2018 and static detectors were deployed in two locations on the transect route each month. The surveys were undertaken by two WSP ecologists. The ecologists walked a pre-designed transect route through suitable foraging and commuting habitat within the Site Boundary to record bat activity. The survey methodology included using devices that recorded bat echolocation in combination with making records from visual sightings of bat activity picked up along the transect route. Where possible, bat activity was recorded up to 10 metres either side of the transect route. All echolocation heard and bat activity observed was recorded.

Alongside the transect surveys, two static detectors were deployed in suitable habitat in separate locations along the transect route. The static detectors were left in-situ for a period of at least five nights, recording echolocation emitted by bats to provide information on the level of bat activity in both areas.

Bat activity was recorded during all transect and static detector surveys throughout April to September. A total of four bat species and three bat groups, two of which were identified to genus level were recorded within the Site during the bat activity surveys, these were:

- Common pipistrelle (*Pipistrellus pipistrellus*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Brown long-eared bat (*Plecotus auritus*);
- Noctule (*Nyctalus noctula*);
- *Pipistrellus* species;
- *Myotis* species; and
- Serotine/Leisler's (*Eptesicus serotinus*/*Nyctalus leislerii*)

Overall, the bat activity on Site was considered relatively low and dominated by common pipistrelles. This confirms that the findings and conclusions set out in the Environmental Statement are accurate and that mitigation measures proposed remain appropriate.

1 INTRODUCTION

1.1 Project Background

1.1.1 Drax is proposing to repower up to two existing coal-fired units (known as Unit 5 and Unit 6) with gas – this means the existing coal-fired units would be decommissioned and replaced with newly constructed gas-fired units utilising some of the existing infrastructure. Each unit, which is a new gas fired generating station in its own right, would comprise combined cycle gas turbine (“CCGT”) and open cycle gas turbine (“OCGT”) technology. Each new gas generating unit would also use existing infrastructure, including the cooling system and steam turbines, and would each have a capacity of up to 1,800 MW, replacing existing units each with a capacity of up to 660 MW. Each unit would have a battery storage capability (subject to technology and commercial considerations). Should both units be repowered, the new gas-fired units / generating stations would have a total combined capacity of up to 3,800 MW.

1.1.2 Drax is seeking consent for the flexibility to construct a single generating station with an 1,800 MW generating capacity or to construct two generating stations each with a 1,800 MW generating capacity. The construction of each new gas fired generating station would repower either one or both of Unit 5 and Unit 6. The decision as to whether Drax constructs one or two gas fired generating stations and when, is a commercial decision that can only be taken post any consent being granted.

1.1.3 In order to repower to gas, a new Gas Pipeline needs to be constructed from Drax Power Station to the National Gas Transmission System (“NTS”). In addition, an Above Ground Installation (“AGI”), and Gas Receiving Facility (“GRF”) are required. A connection to the electrical network would be made via the existing National Grid Substation within the Existing Drax Power Station Complex. Other development includes construction laydown areas, a passing place to enable the construction of the Gas Pipeline and a temporary footbridge during construction.

1.1.4 The development being applied for is called the "Proposed Scheme" and is more fully described in Schedule 1 of the draft Development Consent Order (where it is termed the "Authorised Development") (Examination Library Reference AS-012).

1.1.5 The Proposed Scheme includes the construction of a generating station with a capacity of more than 50 MW and accordingly meets the criteria given in the Planning Act 2008 (as amended) ("PA 2008") for being a Nationally Significant Infrastructure Project ("NSIP").

1.1.6 As a NSIP, the Proposed Scheme therefore requires a Development Consent Order ("DCO") from the SoS for Business, Energy and Industrial Strategy.

1.1.7 This report was prepared to accompany Chapter 9 (Biodiversity) of the Environmental Statement (ES) (Ref 1) (Examination Library Reference APP-077) and should be read in conjunction with it.

1.2 Ecological Background

1.2.1 WSP conducted a Preliminary Ecological Appraisal (PEA) (Ref 2) between August and September 2017 of land within, and adjacent to, Drax Power Station, including the land required to install a Gas Pipeline.

1.2.2 The PEA identified suitable habitats for foraging and commuting bats and buildings and trees suitable for roosting bats within the Site. The desk study element of the PEA identified records of six species of bat in proximity to the Site Boundary. Due to the variety of habitats within the Site Boundary and desk study records, the surrounding landscape was assessed as having moderate suitability for foraging and commuting bats as per good practice guidelines (Ref 3).

1.2.3 A Preliminary Ground Level Roost Assessment (PGLRA) was carried out within the Site Boundary during 2017 to ascertain which trees were suitable for roosting bats. Additionally, a series of dusk emergence and dawn re-entry surveys were also carried out in 2017 on all buildings within the Site Boundary that were identified during the PEA as having suitability for roosting bats. Due to the assessment of the surrounding landscape as having moderate suitability for foraging and commuting bats as per best practice guidelines, a series of bat activity surveys were carried out. The purpose of the bat activity surveys was to provide an assessment of the volume of bat activity within the Site, the species present and their usage of the habitats within the Site Boundary.

1.2.4 Data recorded during the PEA, PGLRA and further bat surveys were used to inform an assessment of the impacts on foraging, commuting and roosting bats within the Environmental Statement (ES) prior to the submission of the Application.

1.2.5 A series of bat surveys were also carried out in 2013 and 2014 as part of the White Rose Carbon Capture and Storage (WRCCS) DCO project (Ref 4), a Nationally Significant Infrastructure Project (NSIP) proposed immediately north of Drax Power Station. Part of the survey area for the project's 2014 surveys was located within the Site Boundary of the Drax Repower Project, to the north.

1.2.6 The WRCCS surveys included PGLRAs of 20 trees with subsequent dusk emergence and dawn re-entry surveys. Six bat activity surveys were carried out in combination with deployed automated static detectors. No tree roosts were identified and six bat species were recorded in total, namely brown-long eared *(Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's (*Myotis daubentonii*), a *Myotis* species, noctule (*Nyctalus noctula*) and serotine (*Eptesicus serotinus*). Relatively low levels of bat activity were recorded during the walked transects and an incidental pipistrelle roost was identified at Drax Abbey Farm.

1.3 Brief and Objectives

1.3.1 The brief was to provide updated baseline data on how bats are using the Site's habitats. To meet this objective, WSP UK Ltd was commissioned by Drax Power Ltd in February 2018 to survey suitable foraging and commuting habitat within the Site, produce an appropriate survey transect that considered potentially important flight lines and foraging grounds and make an assessment of the nature and volume of bat activity across the Site.

1.3.2 Recommendations as to how the Proposed Scheme will account for foraging and commuting bats in relation to legislation, planning and biodiversity policy are outlined in Chapter 9 (Biodiversity) of the ES (Ref 1) (Examination Library Reference APP-077). This report is submitted as an addendum to the ES.

Legislation and Planning Policy Context

1.3.3 All UK bat species are fully protected under the Conservation of Habitats and Species Regulations 2017 (Ref 5) and Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 6). The afforded protection makes it an offence to intentionally kill, injure or take bat species; damage, destroy or obstruct roosts; and deliberately disturb them (whether in a roost or not). Additionally, it is illegal to possess, transport, sell, barter or exchange any part of a bat.

1.3.4 Various bat species are also identified as Species of Principal Importance (SPI) via the provisions of Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 7). Under Section 41 of the NERC Act 2006 public bodies have a duty to have regard to the conservation of SPI when carrying out their functions, including determining planning applications.

1.3.5 The United Kingdom Biodiversity Action Plan (UKBAP) (Ref 8) was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The priority species generally correlate with those listed in accordance with Section 41 of the NERC Act. The UKBAP has now been replaced by the UK Post-2010 Biodiversity Framework (Ref 9). The UKBAP does however contain useful information on how to characterise important species assemblages and habitats, which is still relevant.

1.3.6 The UK BAP was supplemented by Local Biodiversity Action Plans (LBAP), which are still in existence and are used to identify habitats and species of ecological value or concern at the local level. Various bat species are listed on the Selby LBAP (Ref 10).

1.3.7 The overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 11), specifically section 5.3, details the approach a project must take in regard to biodiversity. It states that the Applicant should clearly set out any effects of the development on internationally, nationally and locally designated sites of nature conservation importance, on protected species and habitats and other species identified as being of principal importance for the conservation of biodiversity. The Applicant should also demonstrate how the development has taken measures to conserve and enhance biodiversity.

1.3.8 The NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref 12), specifically section 2.21, refers to biodiversity, landscape and visual impacts from the construction of a pipeline. This policy statement provides additional considerations to the general principles outlined in EN-1. These considerations comprise the effect on components valuable to biodiversity typically grasslands, hedgerows/hedgebanks, trees, woodlands, waterbodies and watercourses that are located within and/or adjacent to the pipeline route. These components are important for roosting, foraging and commuting bats.

1.3.9 EN-4 relates primarily to the Pipeline Area and provides a set of assessment and mitigation measures to combat pipeline construction related impacts on biodiversity.

1.3.10 At the national level, the National Planning Policy Framework (NPPF) (2018) (Ref 13) forms the basis for planning development decisions with respect to conserving and enhancing the natural environment, including bats. The NPPF sets out, amongst other points how at an overview level the planning system should contribute to and enhance the natural and local environment by:

- *"Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures…"*

1.3.11 The NPPF also sets out how planning policies should minimise impacts on biodiversity by the*:*

- *"- [promotion of] the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity …"*

1.3.12 The ODPM Biodiversity and geological conservation circular 06/05 (Ref 14) should be read in conjunction with the NPPF and provides supplementary guidance, including confirmation that:

- *"The presence of a protected species is a material consideration when a planning authority is considering a development proposal."*

1.3.13 At a local level, the Selby District Local Plan (2005) (Ref 15) states that:

- *"Development and other land use changes which may harm badgers and other species protected by Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981, as amended, or the EC Habitats and Species Directive will not be permitted."*

1.3.14 The Selby District Core Strategy Local Plan (2013) (Ref 16) adds to this by:

- *"Ensuring developments retain, protect and enhance features of biological and geological interest and provide appropriate management of these features and that unavoidable impacts are appropriately mitigated and compensated for, on or off-site…"*

2 METHODS

2.1 Manual Transect Survey

2.1.1 Six manual transect surveys were undertaken at the Site between April and September 2018 inclusive. Each month a pre-designed walked transect survey was completed at dusk as per the Bat Conservation Trust's Good Practice Guidelines (Ref 3). The transect was walked by two competent surveyors to record levels of bat activity across the Site. Eighteen stopping points were included per survey, where the ecologists stood in one place for five minutes to record bat activity. The direction and starting point was varied between months to avoid temporal bias in the results. For the purposes of consistency, stopping point numbers (1 – 18) remained the same throughout the survey period regardless of the transect route direction. The transect route measured approximately 3.3 km.

2.1.2 Each walked transect began 15 minutes before sunset and continued for approximately 120 minutes afterwards.

2.1.3 During each transect the surveyors noted the bat species heard and seen, including the time, location, and, where possible behaviour type and direction of flight. Surveyors were equipped with bat detector devices that were able to record bat echolocation which enabled them to listen to and record bat activity. Calls registered by the bat detectors were recorded for later analysis using specialist computer software, details of which are summarised below.

2.1.4 A plan showing the transect route walked during the survey and the stopping points, including bat activity recorded is provided in Figures 2a-f. Dates, times and weather conditions of each of the transect survey visits are provided in Table 1 below.

2.2 Automated Detector Survey

2.2.1 In combination with the walked transect surveys, additional bat activity data was gathered using automated bat detectors deployed statically in suitable habitat along the transect route. Automated bat detectors were installed in pre-determined locations based on a judgemental sampling method within the Site Boundary during each of the survey months (April to September). The location of the automated detectors is shown on Figures 2a-f.

2.2.2 A total of two detectors were deployed in each month in accordance with the current good practice guidance (Ref 3) for a minimum of five consecutive nights per month. The automated detectors were set to commence recording 30 minutes before sunset and cease recording 30 minutes after sunrise.

2.2.3 Calls registered by the static bat detectors were recorded for later analysis using specialist computer software, details of which are provided below.

2.3 Data Analysis

2.3.1 The recordings of bat echolocation calls collected during the surveys were analysed using specialist computer software that presented bat call data in the form of sonograms. The analysis enabled confirmation of species or species groups based on call parameters, and the relative activity of different species of bats recorded. Once triggered by ultrasound, the detectors record sound files, which may contain a number of individual bat calls (or passes), or discrete groups of ultrasound 'pulses'. The assessment of relative bat activity between species is based on the relative abundance of recorded calls of each species within each survey period (i.e. each walked transect survey or period of static monitoring per month) and across the combined study period.

2.3.2 It should be recognised that a series of separate sound files may represent a series of different bats commuting within the range of an automated detector, or a smaller number of bats repeatedly triggering the detector (e.g. bats making repeated foraging passes within the range of a detector).

2.3.3 Where possible, bat calls are identified to species level. However, species of the genus *Myotis* are grouped together in most cases as their calls are similar in structure and have overlapping call parameters, making species identification problematic (Russ, J. (2013) British Bat Calls a Guide to Species Identification (Ref 17)). For *Pipistrellus* species the following criteria based on measurements of peak frequency are used to classify calls:

Common pipistrelle ≥ 42 and <49 KHz;
Soprano pipistrelle ≥ 51 KHz;
Nathusius pipistrelle<39 KHz;
Common/soprano pipistrelle ≥49 and <51 KHz; and
Common/Nathusius pipistrelle ≥39 and <42 KHz.

2.3.4 In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups:

Myotis/Plecotus sp.;
Nyctalus sp. (either Leisler's bat or noctule);
Serotine/Leisler's; and
Serotine/Plecotus sp.

2.4 Dates of Field Survey and Metadata

2.4.1 Dates of surveys and weather conditions are given in Table 1 below.

Table 1 - Dates of Bat Activity Surveys and Weather Conditions for Transect Surveys

Month	Dates of Automated Survey	Date of Transect Survey	Temperature (°C)		Cloud Cover (Oktas)		Wind Speed (Beaufort Scale)		Rainfall	
			Start	End	Start	End	Start	End	Start	End
April	18/04/2018-23/04/2018	17/04/2018	15	14	6	6	2	1	0	0
May	17/05/2018-25/05/2018	17/05/2018	9	6	4	2	1	1	0	0
June	20/06/2018-27/06/2018	18/06/2018	19	17	4	4	3	1	0	0
July	19/07/2018-24/07/2018	19/07/2018	18	16	7	4	1	1	0	0
August	15/08/2018-20/08/2018	15/08/2018	21	20	8	7	5	3	Light	0
September	13/09/2018-17/09/2018	12/09/2018	13	11	0	0	3	1	0	0

2.5 Notes and Limitations

2.5.1 One of the static detectors malfunctioned and only recorded data over two nights during the April and May surveys. However, it is considered that sufficient data was collected throughout the whole survey period and as a result will not affect the outcome of the surveys.

2.5.2 The static detectors were deployed for a different number of days each month. However, numbers of sound files recorded were averaged to account for these differences.

3 RESULTS AND EVALUATION

3.1 Overview

3.1.1 The activity surveys recorded four confirmed species of bat commuting and/or foraging over the Site; common pipistrelle, soprano pipistrelle, noctule, serotine/Leisler's, brown long-eared. Bat calls recorded as part of the activity surveys that could not be identified to species level were categorised into three groups: *Pipistrellus* species, *Myotis* species, and serotine/Leisler's. Overall activity was relatively low, and dominated by common pipistrelles, which accounted for 91 % of recordings collected during the automated detector survey and 70 % of recordings collected during the manual transect surveys.

3.1.2 Results of the bat activity surveys are shown in Tables 2 and 3 below and displayed in Figures 2a-f and 3.

3.2 Manual Transect Survey Results

3.2.1 At least four bat species were recorded within the Site during the manual transect surveys, with three groups of species (two of which are identified to genus level). The confirmed species are:

- Common pipistrelle;
- Soprano pipistrelle;
- Noctule;
- Brown long-eared;

The confirmed groups of species are:

- *Pipistrellus* species; and
- *Myotis* species

3.2.2 The calls recorded during the transect surveys each month are summarised in Table 2 below. Locations of bats encountered during the transect surveys are shown on Figure 2. Relative levels of bat activity are shown on Figure 3.

Table 2 - Bat Species Recorded (and number of times encountered) during one Walked Transect per Month

Month	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle Species (≥49 and <51 KHz)	Noctule	Myotis Species	Brown Long-eared	Grand Total
April	3	0	0	0	1	1	5
May	5	0	1	0	1	0	7
June	1	2	0	1	0	0	4
July	6	0	1	0	0	0	7
August	3	0	0	0	0	1	4

Month	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle Species (≥49 and <51 KHz)	Noctule	Myotis Species	Brown Long-eared	Grand Total
September	6	0	1	0	0	0	7
Total	24	2	3	1	2	2	34
% Total	70 %	6 %	9 %	3 %	6 %	6 %	

3.3 Automated Detector Survey Results

3.3.1 At least four bat species and three groups of species (two of which are identified to genus level) were recorded within the Site during the automated detector survey component of the activity surveys. The confirmed species include:

- Common pipistrelle;
- Soprano pipistrelle;
- Noctule; and
- Brown long-eared

The confirmed groups include:

- *Pipistrellus* species;
- *Myotis* species and
- Serotine/Leisler's

3.3.2 The bat data recorded during the static monitoring periods each month are summarised in Table 3 below and the locations of the static detectors are shown on Figure 2a-f.

Table 3 - Summary of Bat Species Recorded (total and average number of soundfiles per month) during Automated Detector Surveys

		Species								
Month	**Detector Location**	**Common Pipistrelle**	**Soprano Pipistrelle**	**Pipistrelle Species (≥49 and <51KHz)**	**Noctule**	**Serotine/ Leisler's**	**Myotis Species**	**Brown Long-eared**	**Grand Total**	**Average no. sound files recorded per night**
April	A	206 / 6 nights = 34	1 / 6 nights = 0.2	1 / 6 nights = 0.2	1 / 6 nights = 0.2	0	0	0	209	35
	B (Failed after 2 nights)	237 / 2 nights = 119	4 / 2 nights = 2	0	0	1 / 2 nights = 0.5	23 / 2 nights = 12	0	265	133
May	A (Failed)	-	-	-	-	-	-	-	-	-
	B	764 / 9 nights = 85	0	3 / 6 nights = 0.5	1 / 9 nights = 0.1	1 / 9 nights = 0.1	15 / 9 nights = 2	27 / 9 nights = 3	811	90
June	A	80 / 8 nights = 10	4 / 8 nights = 0.5	5 / 8 nights = 0.6	2/ 8 nights = 0.3	0	10 / 8 nights = 1	0	101	13
	B	33 / 8 nights = 4	0	0	7 / 8 nights = 0.9	2 / 8 nights = 0.3	45 / 8 nights = 6	0	87	11

		Species								
Month	Detector Location	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle Species (≥49 and <51KHz)	Noctule	Serotine/ Leisler's	Myotis Species	Brown Long-eared	Grand Total	Average no. sound files recorded per night
July	A	24 / 6 nights = 4	4 / 6 nights = 0.7	0	0	0	7 / 6 nights = 1	0	35	6
	B	61 / 6 nights = 10	0	0	0	0	24 / 6 nights = 4	0	85	14
August	A	57 / 6 nights = 10	5 / 6 nights = 0.8	1 / 6 nights = 0.2	0	0	10 / 6 nights = 2	0	73	12
	B	383 / 6 nights = 64	5 / 6 nights = 0.8	4 / 6 nights = 0.7	0	0	0	0	392	65
September	A	786 / 5 nights = 157	0	0	1 / 5 nights = 0.2	0	5 / 5 nights = 1	0	792	158
	B	45 / 5 nights = 9	0	0	5 / 5 nights = 1	0	24 / 5 nights = 5	0	74	15

		Species								
Month	**Detector Location**	**Common Pipistrelle**	**Soprano Pipistrelle**	**Pipistrelle Species (≥49 and <51KHz)**	**Noctule**	**Serotine/ Leisler's**	**Myotis Species**	**Brown Long-eared**	**Grand Total**	**Average no. sound files recorded per night**
Total		2676 / 40 nights = 67	23 / 40 nights = 0.6	14 / 40 nights = 0.3	17 / 40 nights = 0.4	4 / 40 nights = 0.1	163 / 40 nights = 4	27 / 40 nights = 0.7	2924	73
% Total		91 %	0.8 %	0.5 %	0.6 %	0.1 %	6 %	1 %		

4 INTERPRETATION OF RESULTS

4.1.1 A total of four bat species (common pipistrelle, soprano pipistrelle, brown long-eared bat and noctule) and three groups of species (*Pipistrelle* species, *Myotis* species and serotine/Leisler's) were recorded within the Site during the bat activity surveys.

4.1.2 Bat activity was recorded during every manual transect survey and automated detector survey from April to September 2018 inclusive, confirming that the Site is used by various bat species throughout the year, at least for foraging and commuting purposes.

4.1.3 The highest levels of bat activity during the manual transect surveys were a total of seven bats recorded in May, July and September. The highest level of activity during the automated detector surveys was an average of 173 bats recorded per night in September.

4.1.4 Overall, bat activity levels were relatively similar across the two static detector locations and both recorded similar numbers of species and calls.

4.1.5 During the manual transect surveys, certain areas were recorded as having relatively high levels of activity (if bats were recorded on four-six of the six transect surveys), moderate activity (if bats were recorded on two-three surveys) or low if bats were only recorded on one of the transect surveys. These areas are shown on Figure 3. The areas with the highest levels of activity were generally wooded habitats and bats were often seen flying along the edges of woodlands/hedgerows (see Figure 2a-f).

4.1.6 All species of bats are afforded strict protection under the Conservation of Habitats and Species Regulations 2017 and WCA 1981. Noctule, soprano pipistrelle and brown long-eared bat are also recognised as species of principal importance via the provisions of Section 41 of the NERC Act 2006. Additionally, all bats are listed on the Selby LBAP.

4.1.7 Site clearance is required to facilitate the Proposed Scheme. This will remove a mosaic of scrub, scattered trees, hedgerows arable farmland, waterbodies and grassland habitats. These habitats provide suitable areas for bats to forage and commute and therefore these activities may be affected by the Proposed Scheme.

5 CONCLUSION

5.1.1 In summary, the Site contains habitats such as hedgerows, woodland, grassland and waterbodies that are suitable for supporting foraging and commuting bats.

5.1.2 Bat activity surveys confirmed that the majority of suitable habitats within the Site are used in some capacity by bats for foraging and commuting purposes. A total of four bat species and three species groups were recorded during the survey period. No roosts were recorded as a result of the activity surveys.

5.1.3 Disturbance from Site clearance during the construction stage may affect the flight lines of foraging and commuting bats. A precautionary approach to the assessment of significant impacts and effects on bats was taken in the ES; this assessment remains accurate.

5.1.4 This report should be read in conjunction with Chapter 9 (Biodiversity) of the ES (Ref 1) (Examination Library Reference: APP-077) which details both direct and indirect effects of the Proposed Scheme on bat populations within the Site. Mitigation, avoidance and compensation measures for bats (where appropriate) are detailed in the ES. These measures are considered to remain appropriate in light of the results of the bat activity surveys and the interpretation made in the ES.

6 REFERENCES

- Ref 1: WSP (2018), Drax Repower Project. Environmental Statement, Chapter 9 – Biodiversity. Document Ref. 6.1.9. Examination Library Reference: APP-077.
- Ref 2: WSP (2017). Drax Repower Project Preliminary Ecological Appraisal. Document Ref. 6.2.9.3 Environmental Statement – Volume 2 – Appendix 9.3.
- Ref 3: Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
- Ref 4: EMC (2014). White Rose Carbon Capture and Storage Project.
- Ref 5: Her Majesty's Stationary Office (HMSO) (2017). Conservation of Habitats and Species Regulations.
- Ref 6: HMSO (1981). Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000).
- Ref 7: HMSO (2006). Natural Environment and Rural Communities (NERC) Act.
- Ref 8: The UK Biodiversity Action Plan; available online at: http://jncc.defra.gov.uk/page-5155. [Accessed: 02/10/2018].
- Ref 9: The UK Post-2010 Biodiversity Framework; available online at: http://jncc.defra.gov.uk/page-6189. [Accessed: 02/10/2018].
- Ref 10: Selby Local Biodiversity Action Plan (2004).
- Ref 11: Department for Energy and Climate Change (DECC), 2011, National Policy Statement for Energy EN-.1, HMSO.
- Ref 12: Department for Energy and Climate Change (DECC), 2011b, National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4), HMSO.
- Ref 13: Department for Communities and Local Government (2018), National Planning Policy Framework. Department for Communities and Local Government, London.
- Ref 14: Office of the Deputy Prime Minister (ODPM) (2005) Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System.
- Ref 15: Selby District Local Plan (SDLP) (2005).
- Ref 16: The Selby District Core Strategy Local Plan (2013).
- Ref 17: Russ, J. (2013). British Bat Calls a Guide to Species Identification. Pelagic Publishing.

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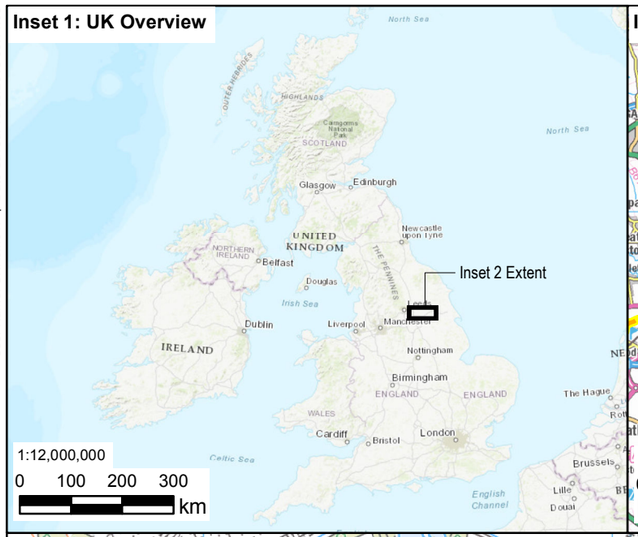

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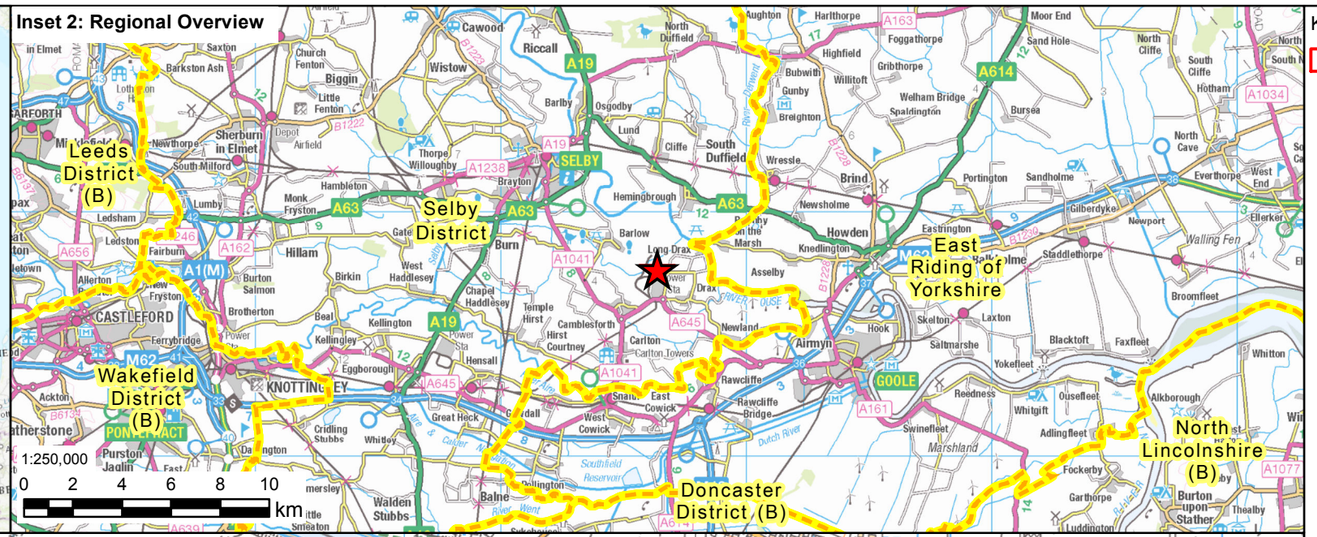

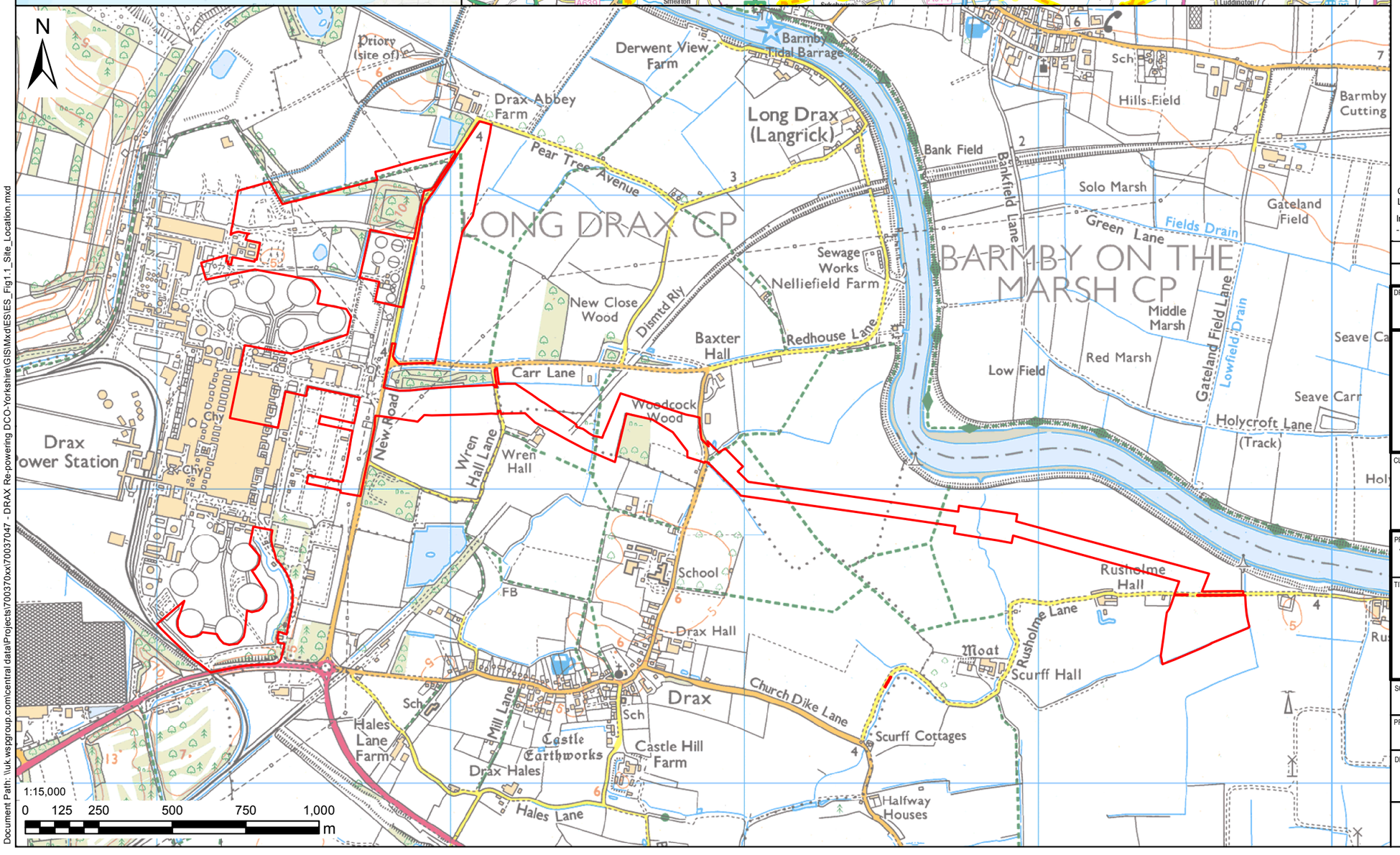

Key

Site Boundary

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PROJECT: The Drax Power (Generating Stations) Order

TITLE: Figure 1
Site Location

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See map @ A3	CS	CT

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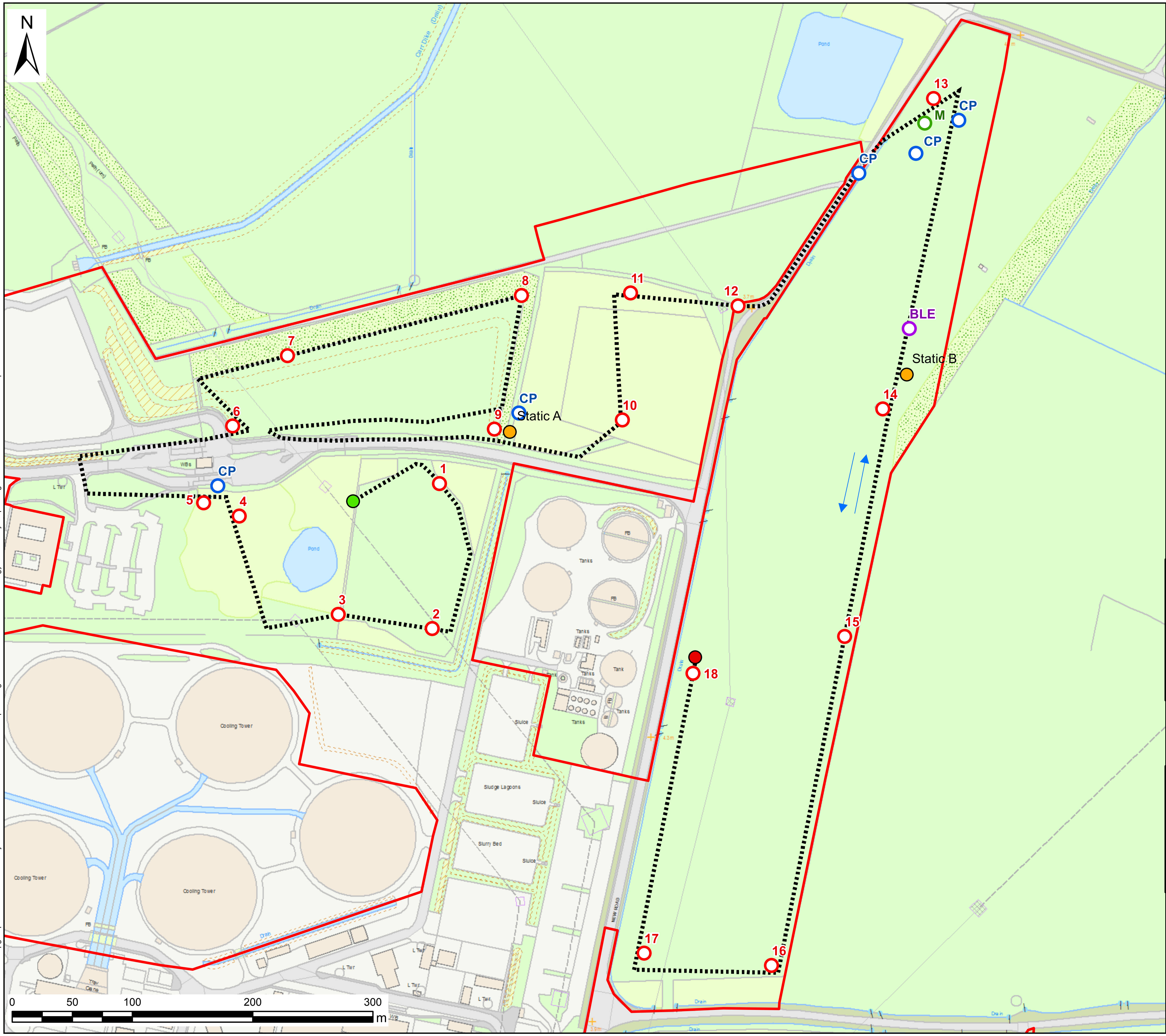

Key
- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed
- Myotis sp. (M)
- Common pipsitrelle (CP)

Location of bat activity observed during transect
- Brown long-eared (BLE)
- Flight Path

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Figure 2a
Transect Survey Results
April

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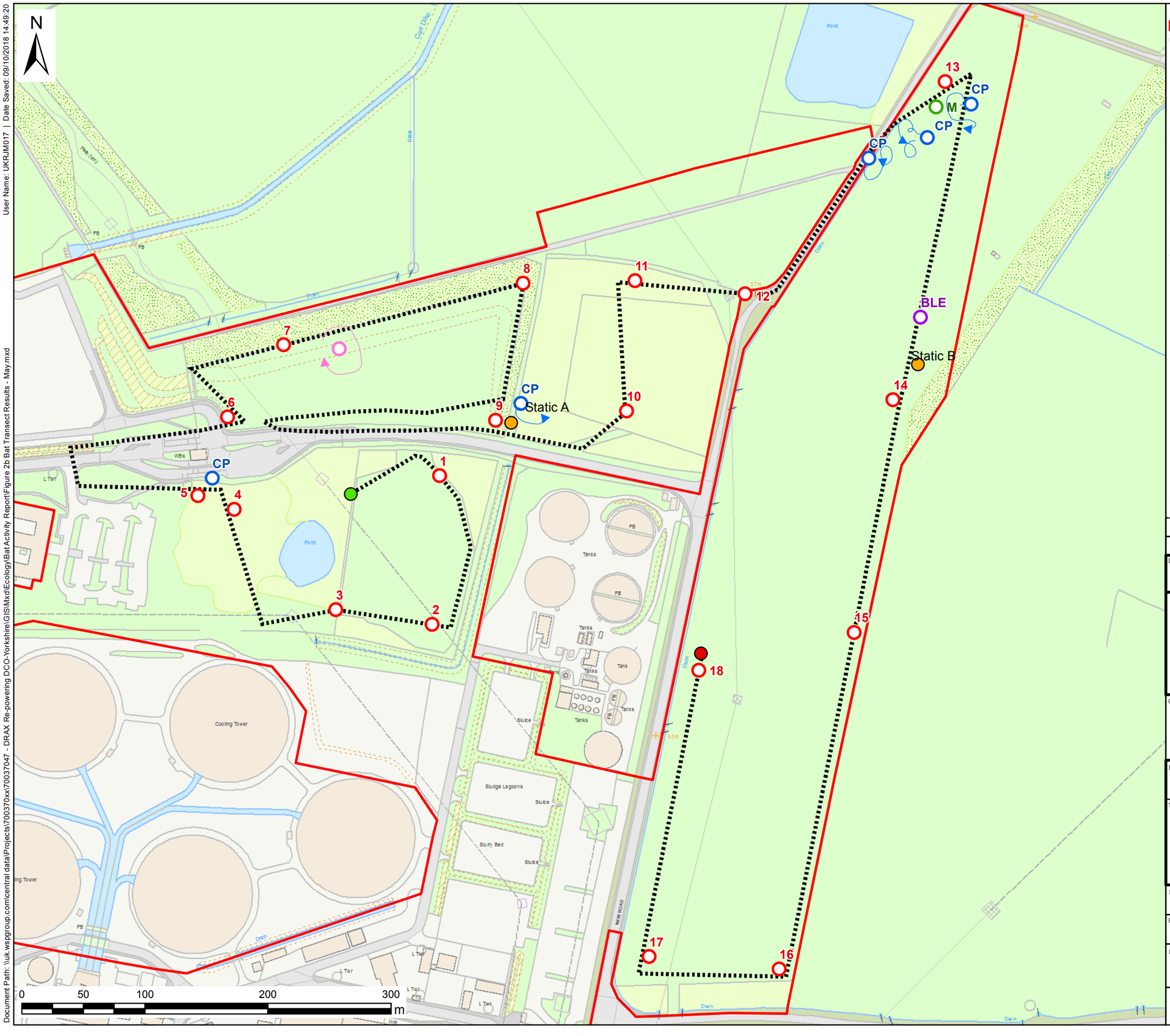

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed

- Pipistrelle Species (PS)
- Myotis sp. (M)
- Common pipistrelle (CP)

Location of bat activity observed during transect

- Brown long-eared (BLE)
- Flight Path

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PROJECT: The Drax Power (Generating Stations) Order

TITLE: Figure 2b
Transect Survey Results
May

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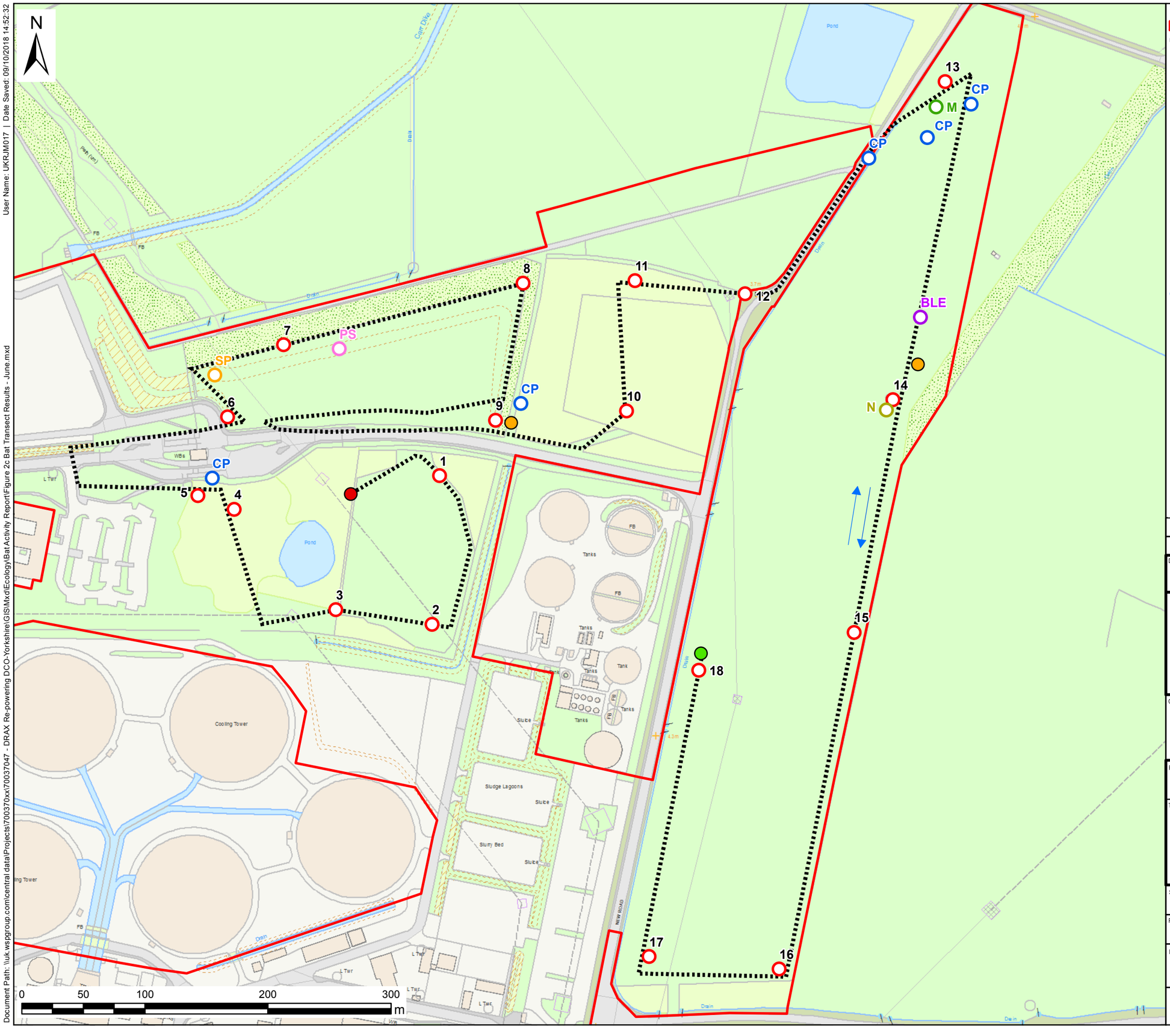

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed

- Pipistrelle Species (PS)
- Noctule (N)
- Soprano pipistrelle (SP)
- Myotis sp. (M)
- Common pipistrelle (CP)

Location of bat activity observed during transect

- Brown long-eared (BLE)
- Flight Path

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TITLE: Figure 2c
Transect Survey Results
June

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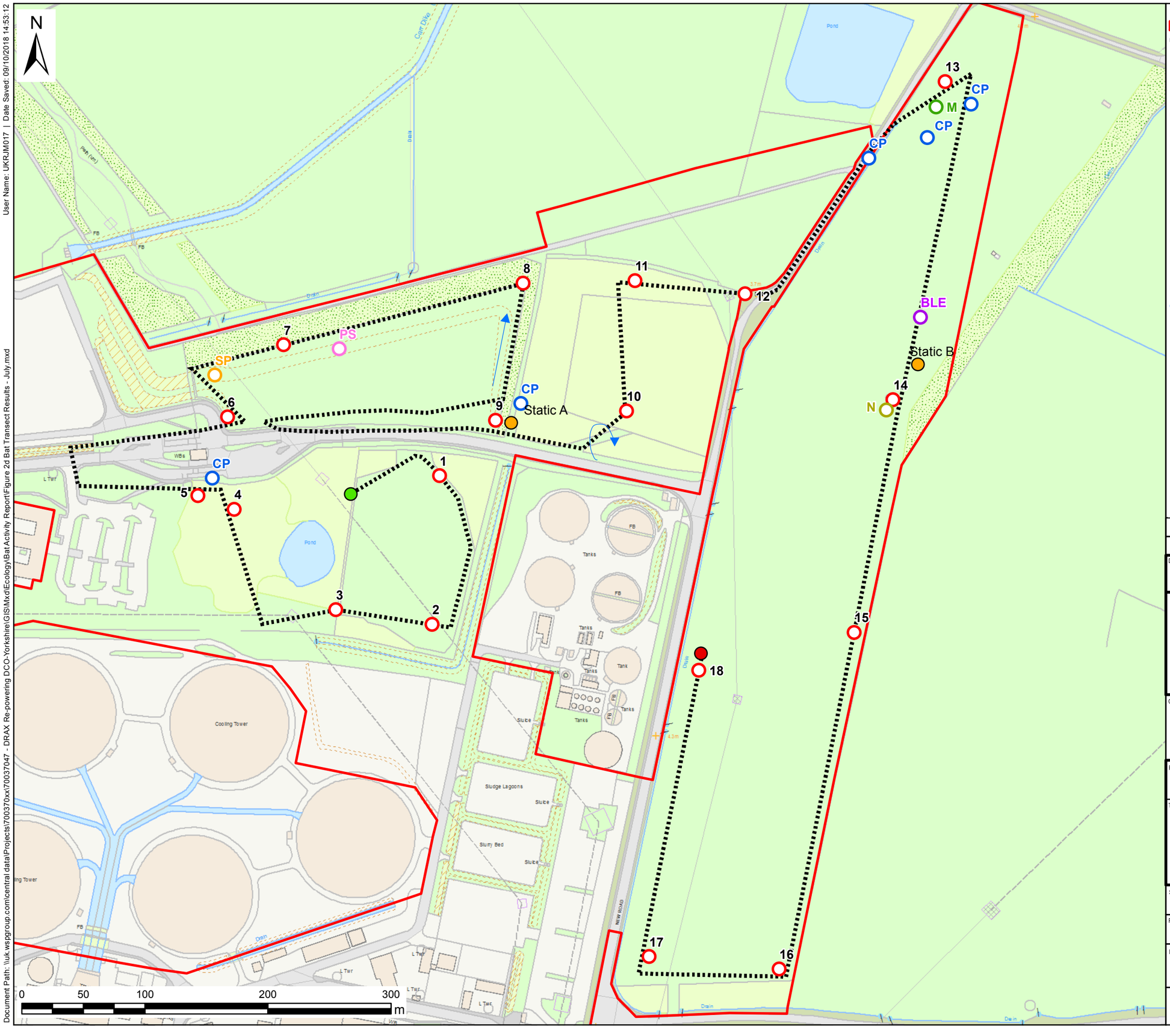

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed

- Pipistrelle Species (PS)
- Noctule (N)
- Soprano pipistrelle (SP)
- Myotis sp. (M)
- Common pipistrelle (CP)

Location of bat activity observed during transect

- Brown long-eared (BLE)
- Flight Path

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TITLE: Figure 2d
Transect Survey Results
July

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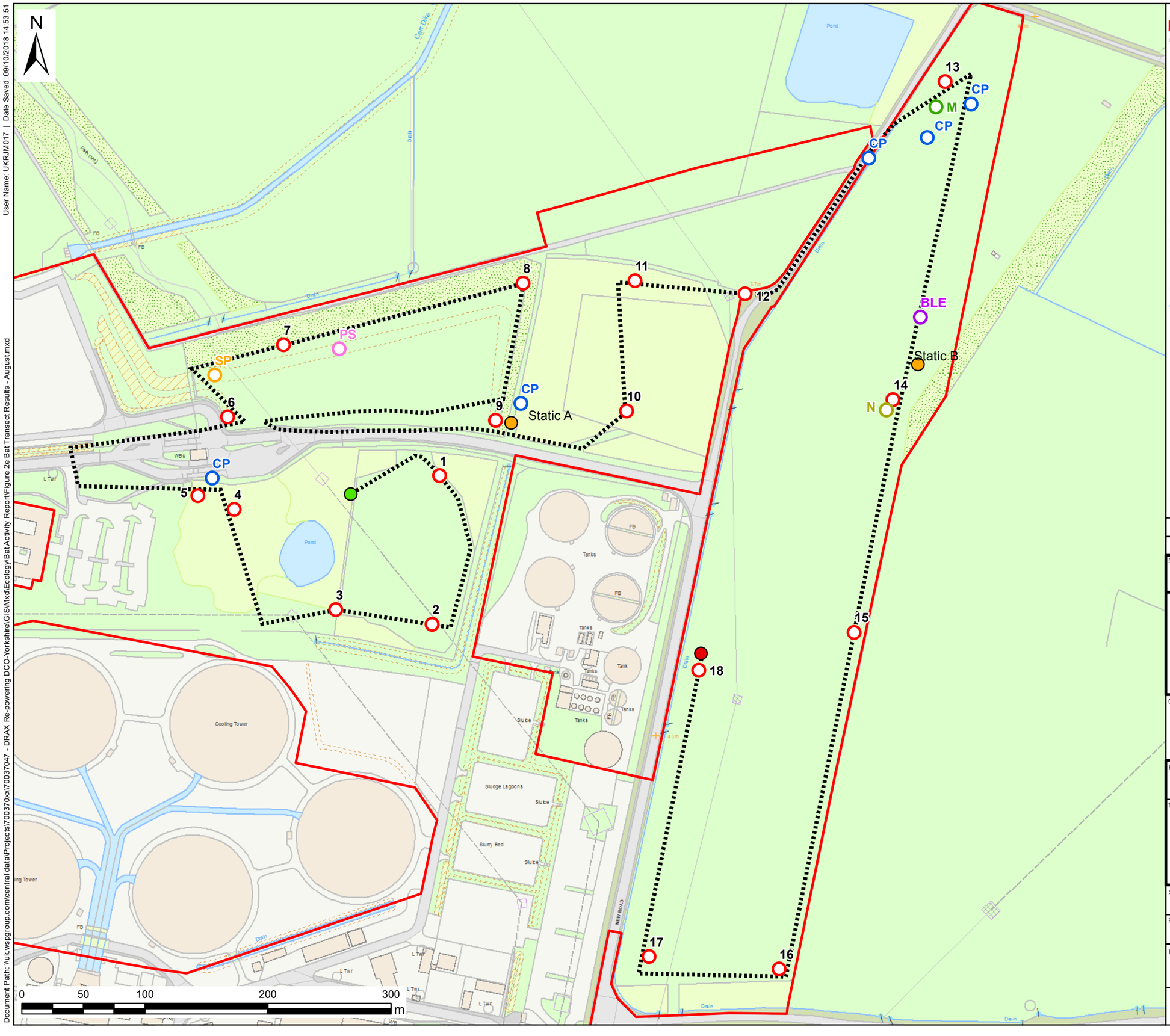

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed

- Pipistrelle Species (PS)
- Noctule (N)
- Soprano pipistrelle (SP)
- Myotis sp. (M)
- Common pipistrelle (CP)

Location of bat activity observed during transect

- Brown long-eared (BLE)
- Flight Path

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PROJECT: The Drax Power (Generating Stations) Order

TITLE: Figure 2e
Transect Survey Results
August

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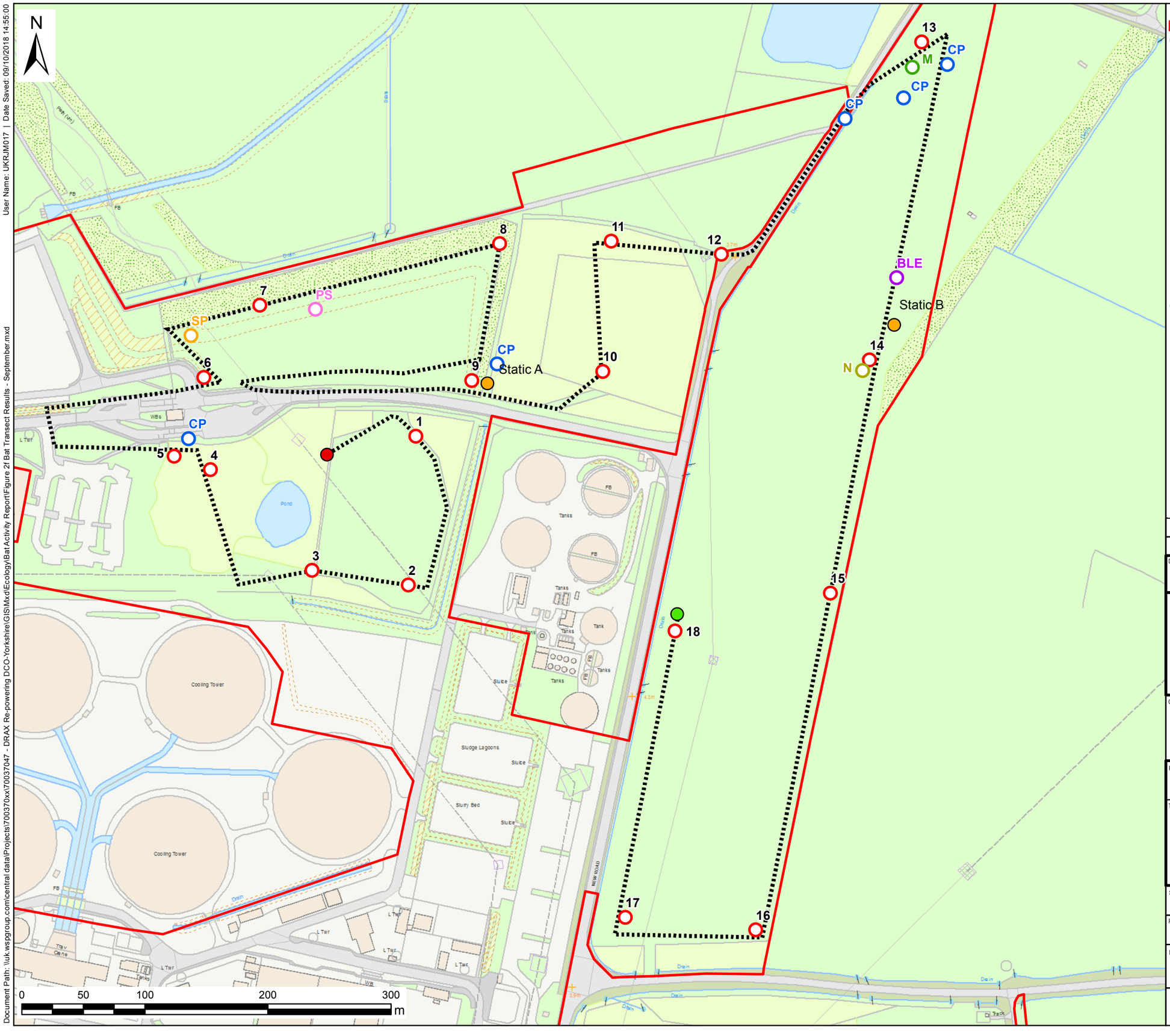

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Location of bat calls heard during transect but not observed

- Pipistrelle Species (PS)
- Noctule (N)
- Soprano pipistrelle (SP)
- Myotis sp. (M)
- Common pipsitrelle (CP)

Location of bat activity observed during transect

- Brown long-eared (BLE)
- Flight Path

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TITLE: Figure 2f
Transect Survey Results
September

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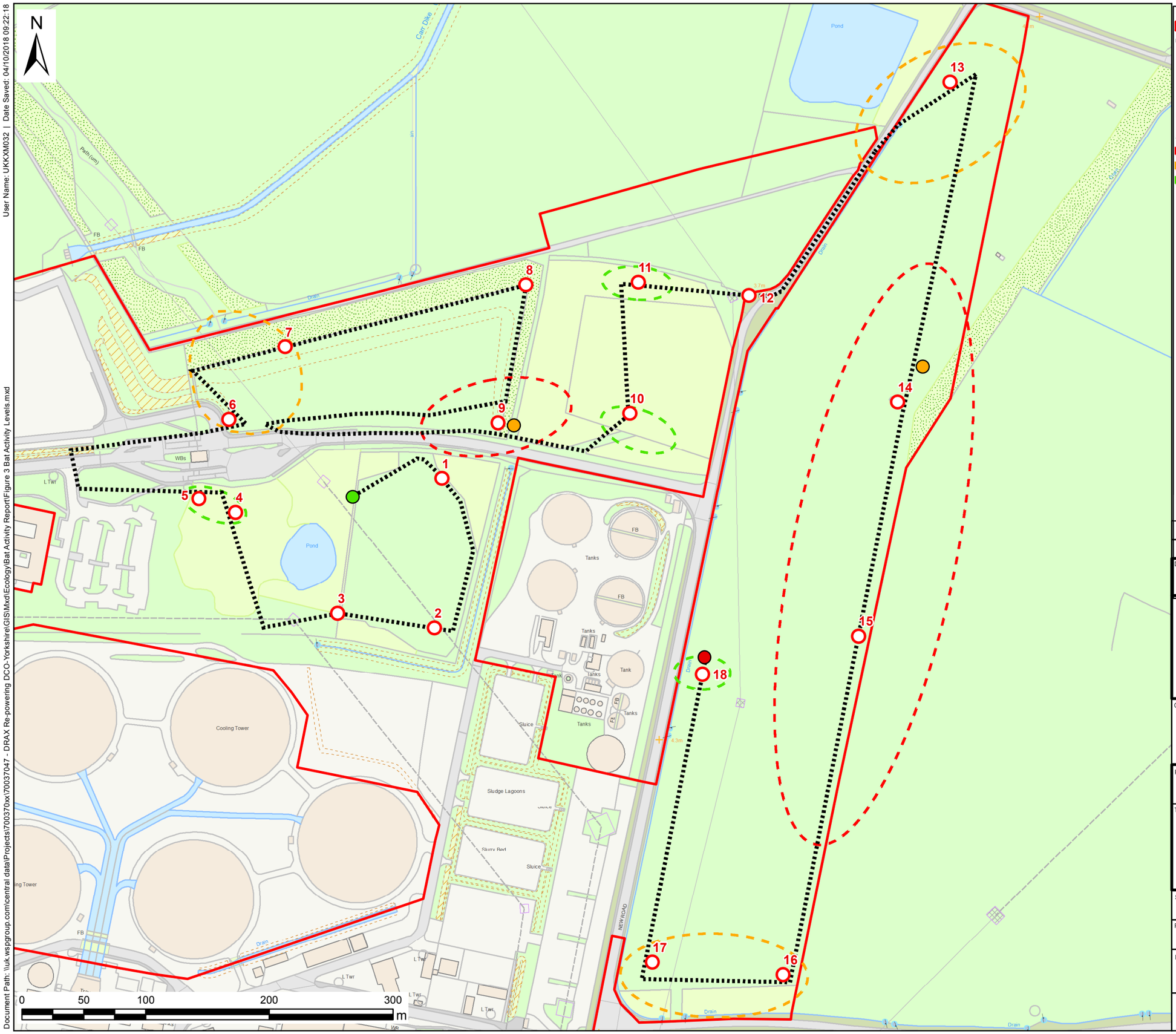

Key

- Site Boundary
- Bat Transect Route
- Transect Start
- Transect End
- Static Detector Location
- Spot Count Location

Activity_Level

- High actvity (bats recorded on 4-6 transects)
- Moderate activity (bats recorded on 2-3 transects)
- Low activity (bats recorded on 1 transect)

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Transect Activity Levels

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