



P e l l F r i s c h m a n n

Hoo Station GRIP 3 – Reopening of the Grain Branch Line for Passenger Services

Breeding Bird Survey Report

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1 Introduction

Pell Frischmann were commissioned by Medway Council to undertake wintering bird surveys to determine the importance of the site for breeding birds for the reopening of the Grain Branch Line for passenger services.

These surveys were undertaken to fulfil the protected species survey requirements identified in the Preliminary Ecological Appraisal (PEA) (report ref Pell Frischmann 103223-PEL-G3-H01-REP-EVV-0001).

The Hoo Peninsula is currently accessed via a single main highway route which links to other roads in the Chatham and Strood area. There is a proposal to increase housing on the peninsula by 12,100 homes, all of which would need to be served by this highway. The resulting significant increase in traffic would exceed the road network's capacity, even with the planned highway upgrades so a shift to rail usage is being sought.

The existing Network Rail lines in the area are the London to Higham / Strood main line and the Grain Line (also known as the Hoo branch line) a freight line to the Isle of Grain. An investigation is underway as to the viability of running a passenger service on the Grain Line.

The GRIP 2 study investigated the feasibility of the scenarios raised by the GRIP 1 report. This focused on providing a passenger service to Sharnal Street (Phase 1), and also considers the passive provision for doubling of the line by Network Rail (Phase 2) to provide for future expansion of passenger and freight services.

This GRIP 3 Study now considers the options in more detail with a view to recommending options to be taken forward This report forms part of that analysis.

The GRIP 3 study has been divided into the following main elements -

- the enabling works to the existing line including any environmental mitigation and structural upgrades to the existing infrastructure;
- permanent way modifications including the creation of passing places;
- the creation of a new route south to Higham, Strood and the Medway Towns;
- civils works for the replacement of existing at-grade crossings; and
- the creation of a new station at Sharnal Street and associated infrastructure.

1.1 Survey Scope

The key objective of the breeding bird surveys was to establish the breeding bird assemblages within the Site. This is vital in informing and determining the design and scale of any mitigation measures that might be proposed and enabling an accurate assessment of the impacts of the proposals on breeding birds.

The aims and objectives of the survey were therefore to:

- Record and categorise calling birds, singing birds, perched or stationary birds and birds in flight;
- Record species using distance bands - dividing the site into 10 sections and recording 0-100 meters either side of the transect line; and

- Provide sufficient data to enable a robust assessment of the effects of the proposals to be made within this report.

This information was used to identify the following (where appropriate):

- The need for further survey work required to fully assess the impacts associated with development proposals;
- The need for mitigation and/or compensation measures which should be incorporated into the design of the proposed development; and
- Recommendations for enhancement measures above and beyond the need to mitigate adverse effects in order to encourage breeding birds onto the site post-development.

1.2 Study Area

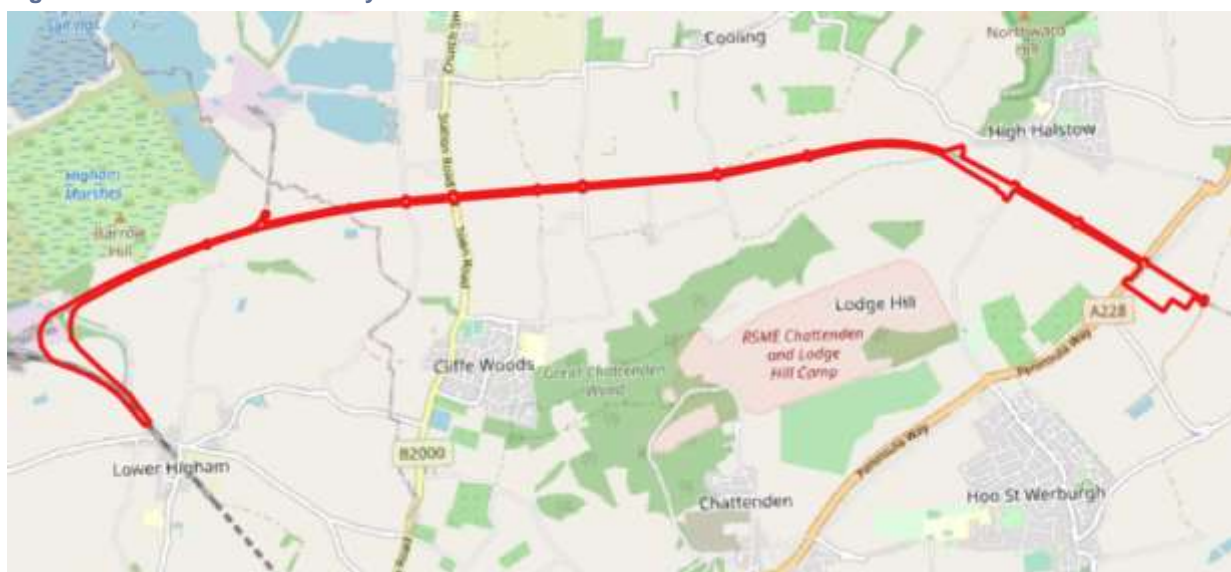
The Site comprised the existing railway known as the Grain Branch and runs from National grid Reference TQ 70493 73859 (the western end of the scheme) at Canal Street to TQ 79295 73975 to the south of Sharnal Street (the eastern end).

As described above, the Hoo branch line is a single-track line which historically served as a passenger line with a number of stations; of which none remain. There is also evidence that the track was doubled in some locations but only a single line remained. The branch now serves purely as a freight line. The Site also included the land to the south of the existing Grain Branch at Canal Street which included a mix of arable and marshy grassland. The Site location is shown below in Figure 1.

1.2.1 Determining the Transect Route

The Study Area for the breeding bird surveys included the Site as described above and was walked along the route of the existing railway where the majority of suitable breeding bird habitat was located. The Study Area included the immediate Site and also the adjacent habitats up to 100m where visibility and access allowed.

Figure 1 Site Red Line Boundary



Map Data Contains © OpenStreetMap Contributors

2 Legislation

The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built; and
- Take or destroy the egg of any wild bird.

Species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) are specially protected to avoid disturbance of an active nest.

In addition to statutory protection, some bird species are classified according to their conservation status, such as their inclusion on the Red and Amber lists of Birds of Conservation Concern 4 (BoCC) in the UK (Eaton *et al* 2015):

- Red list (high conservation concern) species are those that are globally threatened according to IUCN (International Union for Conservation of Nature) criteria; those whose population has declined rapidly (50% or more) in recent years; and those that have declined historically and not shown a substantial recent recovery.
- Amber list (medium conservation concern) species are those with an unfavourable conservation status in Europe; whose population or range has declined moderately (between 25% and 49%) in recent years; whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.
- Green list (low conservation concern) species fulfil none of the above criteria.

Certain species have also been identified as species of principal importance listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The 'UK Post-2010 Biodiversity Framework' (JNCC & DEFRA, 2012), published in July 2012, also sets out a framework of priorities for UK-level work for the Convention on Biological Diversity, to which the UK is a signatory. Covering the period 2011-2020, this framework replaces the original UK Biodiversity Action Plan (UK BAP, 2004) system and now the work is focussed on the separate countries (England, Scotland, Northern Ireland and Wales). The overall aim remains to protect a number of rare species and habitats and reverse the declines of more widespread but declining species and habitats, and so currently many of the species and habitats in the UK BAP still form the basis of the biodiversity work carried out in the devolved countries. Furthermore, the Local Biodiversity Action Plans (LBAP) are still in place under this framework.

3 Assessment Methodology

3.1 Desktop Study

To accurately assess the potential ecological impacts of the scheme, a desktop study was undertaken to identify the presence of sensitive ecological receptors at the site and within the surrounding area.

The Kent and Medway Biological Records Centre (KMBRC) were commissioned to undertake a data search for protected and notable species and sites of conservation importance within a 2km radius of the central point of the site.

In addition, the National Biodiversity Network (NBN) database was searched for local records for notable and protected species from 2km of the site boundary within the last 20 years.

Full details of the desktop study (including relevant legal and policy issues) can be found within the Preliminary Ecological Appraisal (PEA) report (103223-PEL-G3-H01-REP-EVV-0001) and have been summarised in Section 4.1 of this report.

3.2 Field Survey

The survey methodology deployed was based on the Breeding Bird Survey (BBS) which uses a set transect which is walked on three occasions. Birds are recorded along the line and at 25m and 100m distances to either side of the transect route where topography allows.

Standard two-letter species codes and symbols for bird activities are used to identify birds and denote activity. Birds that were considered to be not using the Site for breeding were categorised as 'non-breeders' (e.g. flying over the site, migrant or habitat not suitable).

Observations of bird species (by sight or sound) within the Site and adjacent habitats were noted on the survey (field) map using standard species and activity recording codes (see Appendix A for details). Records were also made of any bird species observed on land adjacent to the survey area or flying over the Site. Birds in this category would not be included in the assessment, unless it was obvious that they were moving between different parts of the survey area.

The transect route was established during a pre-commencement visit and this same route was followed for all three breeding bird surveys. Due to the length of the Site and the access arrangements for the railway tracks, the transect was split per 2 days per visit.

Three breeding bird surveys were undertaken during May, June and early July 2020. These surveys were undertaken in line with the BBS methodology of at least two survey visits, made four weeks apart, ensuring that any early or late arriving migrants are recorded. Surveys were carried out to avoid peak activity around dawn with a start no later than 9am. Bird surveys were not undertaken in unfavourable conditions such as heavy rain or strong winds where possible, which may have negatively affected the results, though the final survey was completed during heavy rain due to the logistics of railway access preventing the survey from being rescheduled. The dates and weather conditions during these survey visits are detailed in Table 1.

Table 1 Breeding Bird Survey Dates and Weather Conditions

Date	Cloud Cover	Rain	Wind	Visibility
12 th May 2020	0%	None	Calm	Excellent
13 th May 2020	50%	None	Light breeze	Excellent
16 th June 2020	20%	None	Light air	Excellent
17 th June 2020	20%	None	Light air	Excellent
7 th July 2020	30%	None	Light breeze	Excellent
8 th July 2020	100%	Heavy rain	Light breeze	Poor

The conservation value of bird populations has been assessed using two separate approaches: nature conservation value and conservation status. The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance on ecological impact assessment assesses nature conservation value within a geographical context (CIEEM, 2018). To attain each level of value, an ornithological resource or one of the features (species population or assemblage of species) should meet the criteria set out in Table 2 below. In some cases, professional judgement may be required to increase or decrease the allocation of specific value, based upon local knowledge.

Table 2 Definition of Terms Relating to Nature Conservation Value

Nature Conservation Value	Examples of Selection Criteria
International	A species which is part of the cited interest of a Special Protected Area (SPA) and which regularly occurs in internationally or nationally important numbers. A species present in internationally important numbers (>1% of international population).
National	A species which is part of the cited interest of a Site of Special Scientific Interest (SSSI) and which regularly occurs in nationally or regionally important numbers. A nationally important assemblage of breeding or overwintering species. A species present in nationally important numbers (>1% UK population). A rare breeding species (<300 breeding pairs in the UK).
Regional	Species listed as priority species in the UK BAP, which are not covered above, and which regularly occurs in regionally important numbers. Sustainable populations of species that are rare or scarce within a region. Species on the Birds of Conservation Concern (BoCC) Red List and which regularly occurs in regionally important numbers.
County	Species listed as priority species in the UK BAP, which are not covered above, and which regularly occurs in county important numbers. Species present in county important numbers (>0.5% of national population). Sustainable populations of species that are rare or scarce within a county, or listed in a county BAP. A site designated for its county important assemblage of birds. Species on the BoCC Red List and which regularly occur in county important numbers.

Nature Conservation Value	Examples of Selection Criteria
District	<p>Species listed as priority in the UK BAP, which are not covered above, and are rare in the locality or in the relevant Natural Area profile.</p> <p>Species present in numbers just short of county importance.</p> <p>Sustainable populations of species which are rare or scarce within the locality.</p> <p>A site whose designation falls just short for inclusion for its county important assemblage of birds.</p> <p>Other species on the BoCC Red List and which are considered to regularly occur in district important numbers.</p>
Local	<p>Other species of conservation interest (e.g. all other species on the BoCC Red and Amber List and UK BAP which are not covered above) regularly occurring in locally sustainable populations.</p>
Site	<p>All other BoCC Green-listed common and widespread species.</p>

3.3 Surveyors

The surveys were led by S.Pagett from Heaton Planning Ltd on behalf of Pell Frischmann who has extensive experience of carrying out bird surveys using BBS methodology and holds licences from Natural England (NE) and the British Trust for Ornithology (BTO) for Barn owls and other Schedule 1 bird species that allow detailed survey work that might be considered disturbance for less experienced/qualified surveyors.

3.4 Survey Constraints and Limitations

The surveys covered an extensive area and consequently it was possible to double-count a bird that flew from one area to another. Birds that were seen to move between different parts of the survey area were only mapped in the location where they were most frequently observed. It should be noted that breeding birds tend to be fairly mobile, but many species will commute along linear features such that they are likely to be detected only once within the duration of a survey.

A survey was completed at the beginning of July as rail access constraints and initial travel restrictions due to Covid-19 meant that no surveys could be completed during April. As surveys were completed during each other month during the survey season, it is not considered that any notable species would have missed with the exclusion of April surveys.

The final survey was completed during heavy rain, however due to the logistics of railway access could not be rescheduled. As the survey results were generally consistent with those of the previous surveys, it is not considered that any additional species of note were missed and therefore the survey data is considered a robust assessment of the breeding bird assemblage present within the Site.

4 Breeding Bird Results

4.1 Desk Study

Species records

A total of 73,415 bird records from 366 species have been returned within a 2km search area of the Site. Based on the close proximity to the River Thames and River Medway and estuaries, this search includes a high number of water birds. Of the species recorded, 74 are listed on Schedule 1 of the Wildlife and Countryside Act (WCA) 1981 as amended; 58 on the Birds of Conservation Concern (BoCC) Red List; and 46 on the UK Biodiversity Action Plan (BAP).

A search using NBN also identified the presence of bird species listed on Schedule 1, Part 1 of the WCA.

Sites Designated for Bird Species

The Site search area overlaps with the Thames Estuary and Marshes, which is designated as a Ramsar site and Special Protection Area (SPA) and immediately adjacent to the railway corridor along the western section of the Site.

The Thames Estuary and Marshes comprises a complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat along the River Thames between Gravesend and Sheerness in Essex and Kent which support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh habitats are of international importance for their diverse assemblages of wetland plants and invertebrates.

4.2 Field Survey

This section details the bird observations during the 2020 breeding bird surveys conducted along the Grain Branch Railway corridor. Table 3 presents the species recorded within the boundary of the Study Area and includes the abundance of each species measured as the maximum number of individuals detected on any one survey visit.

The number of 'notable' recorded species is also given, i.e. species either appearing on the BoCC Red or Amber Lists; or listed as UK BAP and/or the Kent Biodiversity Action Plan (KBAP). For specific locations see the specific bird drawings detailed in Appendix B.

The breeding status of the birds recorded on the site is given below in Table 3, these are classified into four different categories as detailed below:

- **Confirmed breeding** – occupied nest found with eggs or young chicks present or observations of recently fledged or downy young. Adults observed entering or leaving active nest site, conducting behaviour indicating occupied nest or adult observed sitting on active nest. In addition, if any adult bird is observed carrying food into suitable nesting habitat or carrying faecal sacs from suitable nesting habitat.
- **Probable breeding** – pairs observed within suitable nesting habitat during the nesting bird season. If permanent territory is observed through birdsong, bird calling or any form of territorial behaviour carried out within the same location during at least two different surveys. Also, if species is observed carrying out agitated behaviour or anxiety calls from adults, building nests or excavating potential nest holes.

- **Possible breeding** – species recorded during the breeding season within possible nesting habitat, this includes singing males or calling birds.
- **Not breeding** – species recorded using the site for foraging or commuting purposes, clearly observed within unsuitable breeding habitat.

Note – birds have only been considered as breeding/possible or probable breeding if they are likely to be breeding within (i) the Site red line boundary (as shown in Figure 1) or (ii) within 100m of the Site red line boundary and therefore could be impacted during the construction or operational phases of the scheme through disturbance.

4.2.1 Species Recorded

Table 3 presents the species recorded within the boundary of the Site, the conservation status of the recorded birds and the abundance of each species measured as the maximum number of individuals detected on any one survey visit.

In total 54 bird species were observed during the surveys, 3 were confirmed as breeding, 25 were probably breeding, 12 were possible breeding and 14 were not breeding as shown in Table 3.

In addition, 21 of the species recorded are considered 'notable species which refers to those that appear on the Birds of Conservation Concern (BoCC) Red or Amber List or are listed within the Wildlife and Countryside Act Schedule 1 Part 1 or the UK's or Kent Biodiversity Action Plan (BAP). These are detailed within Table 3 and highlighted in darker blue for quick identification.

The majority of common and notable species were recorded using the scrub and hedgerow habitat within the Site, or the woodland and arable fields adjacent to the Site. Some wetland species were observed foraging closer to the Site; however, these have been assessed as 'not breeding' due to their nesting habitat requirements being further from the Site within the wetland habitats.

Table 3 Bird Species, Conservation Status and Abundance recorded during the Breeding Bird Surveys

Species	Conservation Status	Breeding Status	Peak Abundance
Blackbird <i>Turdus merula</i>	BoCC Green	Probable – recorded singing and calling along the entire route	48
Blackcap <i>Sylvia atricapilla</i>	BoCC Green	Probable - recorded singing and calling along the entire route. Also seen carrying food in May	48
Blue tit <i>Cyanistes caeruleus</i>	BoCC Green	Confirmed - recorded singing and calling along the entire route. Also seen carrying food in May	35
Buzzard <i>Buteo buteo</i>	BoCC Green	Not breeding – only seen flying adjacent to the site	3
Canada goose <i>Branta canadensis</i>	BoCC Introduced	Not breeding – singing and calling but outside of the Site within the Ramsar area	3
Carrion crow <i>Corvus corone</i>	BoCC Green	Probable – calling within woodland areas adjacent to the western and eastern section of the Site	24

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Species	Conservation Status	Breeding Status	Peak Abundance
Cetti's warbler <i>Cettia cetti</i>	BoCC Green, W&CA Sch 1 Part 1	Probable – singing within the western section of the Site where the route runs along the Ramsar site	8
Chaffinch <i>Fringilla coelebs</i>	BoCC Green	Probable - recorded singing and calling along the entire route	37
Chiffchaff <i>Phylloscopus collybita</i>	BoCC Green	Probable - recorded singing and calling mostly within the western and eastern sections of the Site where woodland is present	11
Collared dove <i>Streptopelia decaocto</i>	BoCC Green	Probable – singing and calling within the section by Wybournes Lane	8
Coal tit <i>Periparus ater</i>	BoCC Green	Possible – one singing within the central section of the Site	1
Coot <i>Fulica atra</i>	BoCC Green	Probable – but outside of the site	7
Cuckoo <i>Cuculus canorus</i>	BoCC Red, UK BAP	Possible – heard singing adjacent to the Site by the curve and also by the reservoirs at Buckland	2
Dunnock <i>Prunella modularis</i>	BoCC Amber, UK BAP	Confirmed - recorded singing and calling along the entire route during each survey. One individual was also identified carrying food during the May survey.	26
Garden warbler <i>Sylvia borin</i>	BoCC Green	Possible – recorded singing at Dux Court	1
Goldfinch <i>Carduelis carduelis</i>	BoCC Green	Probable – recorded calling along the entire route	47
Goldcrest <i>Regulus regulus</i>	BoCC Green	Possible – one individual singing off-site	1
Great spotted woodpecker <i>Dendrocopos major</i>	BoCC Green	Possible – recorded calling along the Cooling area	4
Great tit <i>Parus major</i>	BoCC Green	Probable - recorded singing and calling along the entire route	26
Green Woodpecker <i>Picus viridis</i>	BoCC Green	Confirmed – calling within the woodland sections of the curve but only seen flying elsewhere. Two juveniles also observed	11
Greenfinch <i>Carduelis chloris</i>	BoCC Green	Probable - recorded singing and calling along various sections of the route	4
Grey heron <i>Ardea cinerea</i>	BoCC Green	Not breeding – seen within the Ramsar section only so off-site	3
Grasshopper warbler <i>Locustella naevia</i>	BoCC Red, UK BAP	Possible – recorded singing within the adjacent Ramsar site and also south of this	3

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Species	Conservation Status	Breeding Status	Peak Abundance
Greylag goose <i>Anser anser</i>	BoCC Amber	Not breeding – seen within the Ramsar section only so off-site. One recorded calling	6
House sparrow <i>Passer domesticus</i>	BoCC Red, UK BAP	Probable - recorded singing and calling along various sections of the route. One individual seen carrying food in May	23
Jackdaw <i>Corvus monedula</i>	BoCC Green	Probable - recorded singing and calling along various sections of the route	22
Kestrel <i>Falco tinnunculus</i>	BoCC Amber	Not breeding – one individual seen by Sharnal Street	1
Lapwing <i>Vanellus vanellus</i>	BoCC Red, UK BAP	Not breeding – one individual singing by Dux Court but favour wetland habitats to breed	3
Linnet <i>Linaria cannabina</i>	BoCC Red, UK BAP	Probable - recorded singing along various sections of the route	6
Long-tailed tit <i>Aegithalos caudatus</i>	BoCC Green	Probable - recorded singing and calling along various sections of the route	7
Magpie <i>Pica pica</i>	BoCC Green	Probable – recorded calling along various sections of the route	38
Mallard <i>Anas platyrhynchos</i>	BoCC Amber	Not breeding – recorded off site calling within wetland areas	18
Marsh tit <i>Poecile palustris</i>	BoCC Red, UK BAP	Not breeding – only seen within curve wetland habitats adjacent to the location of the proposed new curve.	3
Mistle thrush <i>Turdus viscivorus</i>	BoCC Red	Possible – one individual recorded calling south of the site by Oakleigh	2
Moorhen <i>Gallinula chloropus</i>	BoCC Green	Probable – recorded off site calling within wetland areas however suitable habitat within the Canal	1
Mute swan <i>Cygnus olor</i>	BoCC Amber	Possible – recorded off site calling within the Thames and Medway Canal.	2
Nightingale <i>Luscinia megarhynchos</i>	BoCC Red, Kent BAP	Probable – recorded off site singing between Canal street and Church street within scrub woodland habitat	2
Pheasant <i>Phasianus colchicus</i>	BoCC Introduced	Not breeding – recorded off site calling along the entire route	15
Pied wagtail <i>Motacilla alba</i>	BoCC Green	Probable – recorded calling within the eastern section of the site	5
Red-legged Partridge, <i>Alectoris rufa</i>	BoCC Introduced	Not breeding – only seen	3

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Species	Conservation Status	Breeding Status	Peak Abundance
Reed bunting <i>Emberiza schoeniclus</i>	BoCC Amber, UK BAP	Possible – one individual singing within wetland areas immediately adjacent to the Site	1
Reed Warbler <i>Acrocephalus scirpaceus</i>	BoCC Green	Probable – singing within wetland areas immediately adjacent to the Site	6
Robin <i>Erithacus rubecula</i>	BoCC Green	Probable - recorded singing and calling along the entire route	40
Sedge Warbler <i>Acrocephalus schoenobaenus</i>	BoCC Green	Possible – singing within Ramsar areas however suitable breeding habitat within the Site	3
Skylark <i>Alauda arvensis</i>	BoCC Red, UK BAP	Not breeding – recorded singing along most of the route within adjacent arable fields but favours open ground areas for nesting	28
Song thrush <i>Turdus philomelos</i>	BoCC Red, UK BAP	Probable – recorded singing and calling along various sections of the route	9
Stock dove <i>Columba oenas</i>	BoCC Amber	Not breeding – only one seen	1
Swallow <i>Hirundo rustica</i>	BoCC Green	Not breeding – seen foraging within the Site corridor and one singing by Sharnal street	17
Tree sparrow <i>Passer montanus</i>	BoCC Red, UK BAP	Possible – recorded calling by Cooling Street	1
Whitethroat <i>Sylvia communis</i>	BoCC Green	Probable – recorded singing along most of the route	38
Woodpigeon <i>Columba palumbus</i>	BoCC Green	Probable – recorded singing along most of the route	60
Wren <i>Troglodytes troglodytes</i>	BoCC Green	Probable – recorded singing along most of the route	105
Yellow wagtail <i>Motacilla flava</i>	BoCC Red, UK BAP	Not breeding – heard calling calling adjacent to the tracks in the arable fields to the west of Cooling Street and one singing but more likely to be in open arable fields for breeding	1
Yellowhammer <i>Emberiza citrinella</i>	BoCC Red, UK BAP	Possible – heard calling and one singing	3

4.2.2 Species Recorded Solely Flying Over the Site

In order to exclude what is considered superfluous information, species solely flying over the site have been omitted from the map and main tables, but for completeness are included in Table 4. Six additional bird species were observed solely flying over the site.

Table 4 Species recorded solely flying over the site

Species	Conservation Status	Abundance
Black-headed gull <i>Chroicocephalus ridibundus</i>	BoCC Amber	58
Herring gull <i>Larus argentatus</i>	BoCC Red, UK BAP	2
House martin <i>Delichon urbicum</i>	BoCC Amber	1
Rook <i>Corvus frugilegus</i>	BoCC Green	1
Starling <i>Sturnus vulgaris</i>	BoCC Red, UK BAP	30
Swift <i>Apus apus</i>	BoCC Amber	2

5 Likely Impacts and Key Constraints

At the time of writing the scheme designs are currently provisional and therefore their ecological impacts must be reassessed following receipt of the final scheme design plans. Therefore, the following mitigation measures are provisional and set out to inform the design to minimise the potential ecological impacts during construction and redevelopment of the Site.

It is understood that impacts from the scheme will include –

- increased train movements (permanent) – the number of train movements will be increased to enable passenger services to run along the existing train line. These movements have not yet been finalised, however could be up to one train every 30 minutes in both directions.
- habitat removal (temporary) – habitats including scattered scrub and tall ruderal vegetation, scattered trees and woodland will be removed during the construction phase of the scheme.
- Construction disturbance (temporary) – construction will be centred on (i) the creation of the new curve at Higham and the dualling of the line between Canal Road and Cliffe Junction, (ii) the dualling of the line at Cooling Street, and (iii) the creation of the new station at Sharnal Street.

5.1 Evaluation

The conservation value of bird populations has been assessed using two separate approaches: nature conservation value and conservation status (overall breeding bird assemblage). The CIEEM guidance on ecological impact assessment assesses nature conservation within a geographical context (CIEEM 2018). To attain each level of value, an ornithological resource or one of the features (species, population or assemblage of species) should meet the criteria set out in Table 2 above. In some cases, professional judgement may be required to increase or decrease the allocation of specific value, based upon local knowledge.

Based on the criteria in Table 2, the Site supports species listed as priority in the UK BAP and on the Red and Amber List that regularly occur in county sustainable populations, county important numbers and are particularly scarce within the locality. Therefore, the nature conservation value of the breeding bird population is assessed as being of county value.

To assess the overall breeding bird assemblage, Fuller (1980) describes a method for assessing ornithological interest of sites, whereby the importance is defined by the number of species present as shown in the centre column of Table 5 below.

For the purposes of this assessment, Fuller's geographical levels have been adapted so that Fuller's 'Local importance' is assumed to correspond to District importance as described in the CIEEM Guidelines (CIEEM, 2018). An assemblage comprising fewer than 25 species is therefore considered to be of local importance or less. Since the publication of the criteria in 1980, declines have occurred in many farmland bird populations; it is therefore deemed appropriate to recalibrate the categories slightly downwards in this way.

The combined total of confirmed, probable and possible breeding species is used to assess the importance category which is taken from the breeding bird surveys. The combined total of confirmed, probable and possible species recorded within the Site is 40. Therefore, the site is evaluated as having a 'District' level of importance for breeding birds.

Table 5 Assessment using the number of bird species

Level of Importance	Number of Bird Species	
	Fuller (1980)	Adapted Criteria
Local	25 – 49	<25
District	-	25 – 49
County	50 – 69	50 – 69
Regional	70 – 84	70 – 84
National	85+	85+

5.2 Potential Impacts

The Site contains suitable habitat for a variety of breeding bird species. The habitats present within the Site and immediately adjacent include broad-leaved woodland, dense scrub, arable fields, grassland, hedgerows, and ruderal vegetation. Standing water in the form of ditches and ponds are present also.

Habitats used by breeding birds within the Site and also immediately adjacent will be impacted during construction through removal of vegetation and disturbance by noise and vibration. During the operational phase of the scheme, additional train movements will likely impact on these areas through additional disturbance.

There is also the potential for an increased number of collisions with the increased number of trains during the operational phase of the scheme.

5.3 Impact on individual species

The impacts on 'notable' species observed within the Site during the surveys are largely dependent on the extent of the works and vegetation removal of works along the existing corridor.

The impacts for the notable species present within the site are as follows:

- **Low** – Cetti's warbler, grasshopper warbler, greylag goose, house sparrow, kestrel, lapwing, linnet, mallard, marsh tit, mistle thrush, mute swan, reed bunting, skylark, and stock dove
- **Moderate** – Yellowhammer, yellow wagtail, dunnoek, tree sparrow, song thrush, and cuckoo
- **High** – Nightingale

5.3.1 Low Impacted Species

It is considered that the scheme will have a low impact on the above-mentioned species as the majority of habitats which these species are present within are to be retained during the extent of the works. In addition, many of these species were assessed as using the site for foraging purposes only and extensive areas of foraging habitat will be retained during the extent of the works.

5.3.2 Moderately Impacted Species

It is considered that the above-mentioned species are likely to be moderately impacted by the proposed works due to a combination of habitat loss and increased disturbance along the existing railway corridor. For song thrush and dunnock, the removal of scrub habitat along the corridor will reduce nesting opportunities for this species. This will subsequently reduce the number of host species nesting opportunities for cuckoo within the site boundary. For yellowhammer, yellow wagtail and tree sparrow it is assessed that the increased disturbance may reduce the nesting opportunities within arable farmland immediately adjacent to the railway corridor.

5.3.3 High Impacted Species

It is considered that the scheme will have a high impact on nightingale. Nationally, nightingale have declined by 90% in the last 50 years, leaving Medway as one of the remaining strongholds for this species. A peak count of two nightingales were recorded within the surveys, one of which was located within the scrub woodland to the west of Church Street. It is likely that part of this habitat immediately adjacent to the existing railway tracks will be removed as part of the proposed dualling works and therefore areas of suitable habitat for this species will be lost.

6 Recommendations and Mitigation Measures

The ecological impact hierarchy requires that all steps are taken to avoid adverse impacts to habitats and species. Only where impacts cannot be avoided, steps should be taken to mitigate for any losses within the scheme boundary. In cases where all options for on-site mitigation have been exhausted, offsite compensation measures can be considered.

The following mitigation measures are recommended to provide sheltering habitat, food sources and commuting opportunities for these breeding species.

The scheme designs are currently provisional and therefore their ecological impacts must be reassessed following receipt of the final scheme design plans. A full impact assessment will be included within the Ecological Impact Assessment (EclA). Therefore, the following mitigation measures are provisional and set out to inform the design to minimise the potential ecological impacts during construction and redevelopment of the Site.

6.1 Reduction in Train Speeds

It is recommended that a speed limit is put in place on the line, in particular when traveling adjacent to the Ramsar, SPA and SSSI designated sites. Greater speeds are largely associated with a greater risk of wildlife mortality and therefore putting a speed limit in place would allow for the protection of many bird species migrating and commuting through this area. This speed restriction should be put in place all year due to a number of species identified during the breeding bird surveys are residents that also occurred during the wintering bird surveys (see the stand alone Wintering Bird Survey report for further details of wintering bird species 103223-PEL-G3-H01-REP-EVV-0004-A).

6.2 Vegetation Removal

Where required, the removal of any vegetation should occur outside of the nesting bird season which usually takes place from late February to late August. In the event that this is not possible then all vegetation removal works should be preceded by a survey conducted by a suitably qualified ecologist to check for nesting birds and to advise accordingly on the most appropriate way to proceed. Furthermore, should any active nests (from when the nest is in the process of being built, until all the nestlings have fledged) be discovered during the works, then works to the area around the nest must stop immediately and a suitably qualified ecologist called in to check the nest and advise on the most appropriate way to proceed.

6.3 Habitat Retention and Hedgerow Translocation

It is recommended that the scheme retain areas of woodland, hedgerow, grassland and scrub where possible.

Where access points are required it is recommended that existing gaps in vegetation are used or widened in preference to removal of continuous section of vegetation. Any removal should be minimised.

In the location of the new station, it is unlikely that the hawthorn (*Crataegus monogyna*) hedgerow will be retained. Where retention is not possible, it is recommended that this hedgerow is translocated where possible, and not removed entirely. This will ensure only a

temporary loss to breeding bird habitat. This should take place at the end of September/early October to allow sufficient settling in time before the following spring. Hedges of this type can be readily translocated following the techniques detailed in 'CIRIA C600: Habitat Translocation a best practice guide'. The hedges are relatively young and on level ground where they can be easily accessed by a swing shovel. They will only require moving a few metres to a suitably prepared receptor trench.

Ongoing monitoring will be required for translocated hedges in order to assess the health of the hedgerow. Translocated hedges establish themselves much more quickly than newly planted hedges and retain an already suitable habitat for nesting birds. They also preserve the flora, invertebrates and other organisms that make up the existing hedgerow habitat.

Where translocation is not possible and hedgerows are scheduled for removal, they are to be cut to a height of 300mm over the winter season. This will prevent any birds establishing new nests the following spring and enable works to continue throughout the summer.

Replacement hedgerows should be replanted along the edge of the highway demise using native broadleaf transplants. Hedgerows should contain a range of native species including hawthorn and hazel with small quantities of holly (*Ilex sp*), guelder rose (*Viburnum opulus*), dog rose (*Rosa canina*) and dogwood (*Cornus sanguinea*).

6.3.1 Nightingale

Ideally, identified scrub habitat areas occupied by nightingale will be retained during the extent of the works.

Further habitat creation should also be incorporated within the design proposals. Any habitat creation needs to consider nightingale nesting preferences accounting for the fact the species:

- (i) nests on or close to the ground within dense vegetation;
- (ii) forages for insects on bare ground beneath scrub canopy, or in grassy margins and woodland rides; and
- (iii) males tend to return to the same small area of habitat each year, so habitat creation or management close to existing territories is most likely to be beneficial.

Areas of scrub creation should be included within the proposals. Scrub creation should include the planting of blackthorn (*Prunus spinosa*), rose species (*Rosa sp.*), bramble (*Rubus fruticosus*) and willow species (*Salix sp.*). Created areas of scrubland should aim to be at least 0.5 hectares in size in order to provide optimal habitat for nightingales.

Management of scrub should be cut at intervals, typically in the range of 10–15 years, though this will depend on the shrub species and local conditions. The management plan needs to ensure that continuity of suitable thicket structures is maintained through appropriate rotational cutting. It is better to maintain a coarse-grained mosaic containing reasonable-sized blocks of woody growth of similar age rather than many small patches of different growth ages. This is best achieved by cutting adjacent patches of scrub in two or three consecutive years rather than widely dispersed patches.

6.4 Landscape Planting and Nesting Provision

Mitigation for the loss of breeding bird habitat should include the planting of native tree and shrub species at a series of locations across the Site. These should cover a similar area to the areas of habitat which will be lost and will be detailed in the project landscape plan. Wherever possible planting will be continuous with existing trees and hedgerows.

Due to the time taken for trees and shrubs to reach maturity, it will also be necessary to provide temporary nest sites for breeding birds. It is recommended that a selection of bark boxes (<https://www.barkboxes.co.uk/>) are installed within areas of retained woodland and mature trees (see Figure 2 and Figure 3). These nest boxes will provide suitable nesting habitat for smaller scrub nesting species such as wren and also for hole dwelling species such as great tit and house sparrow.

It is also considered likely that bird species will be using the woodland and scrub alongside the railway line for winter sheltering. It is recommended that a series of roosting pockets are installed within retained vegetation present within the Site. Those shown in Figure 4 or similar would provide suitable winter shelter for many species and will also provide nesting habitat for species such as wren and goldcrest.

Additional planting should include the creation of hedgerows where possible at the Site and field boundaries. This would provide a network of suitable habitat for declining farmland species (yellowhammer). The hedgerow creation should include planting of native species with a variety of thorny species and berry and seed-bearing shrubs.

Areas of scrub and ruderal vegetation present within the Site will also be removed during the proposed works. This will remove habitat for linnets, dunnocks and song thrush as well as many common and opportunistic species. It is recommended that the mitigation proposals include further creation for scrub which should include species such as bramble, blackthorn, gorse, (*Ulex europaeus*) and broom, (*Cytisus scoparius*).

Figure 2 Bird box suitable for great tit/ house sparrow



Figure 3 Bird box suitable for scrub nesting species such as wren



Figure 4 Bird Roosting Pockets, suitable for winter sheltering and nesting for smaller birds such as wren and dunnock



7 Summary

A total 54 bird species were observed during the surveys, 3 were confirmed as breeding, 25 were probably breeding, 12 were possible breeding and 14 were not breeding. In addition, 21 of the species recorded are considered 'notable species' which refers to those that appear on the Birds of Conservation Concern (BoCC) Red or Amber List or are listed within the Wildlife and Countryside Act Schedule 1 Part 1 or the UK's or Kent Biodiversity Action Plan (BAP).

The combined total of confirmed, probable and possible breeding species is used to assess the importance category which is taken from the breeding bird surveys. The combined total of confirmed, probable and possible species recorded within the Site is 40 and therefore, the site is evaluated as having a 'District' level of importance for breeding birds.

It is considered that the scheme will have a low impact on the following notable species: Cetti's warbler, grasshopper warbler, greylag goose, house sparrow, kestrel, lapwing, linnet, mallard, marsh tit, mistle thrush, mute swan, reed bunting, skylark, and stock dove as the majority of habitats which these species are present within are to be retained during the extent of the works.

It is considered that notable species yellowhammer, yellow wagtail, dunnoek, tree sparrow, song thrush, and cuckoo are likely to be moderately impacted by the proposed works due to a combination of habitat loss and increased disturbance along the existing railway corridor.

It is considered that the scheme will have a high impact on nightingale as part of their habitat immediately adjacent to the existing railway tracks will be removed as part of the proposed dualling works and therefore areas of suitable habitat for this species will be lost.

Mitigation measures have been outlined to prevent increases in bird collision including reduction in train speed, habitat retention and landscape planting along the Network Rail boundary.

The scheme designs are currently provisional and therefore their ecological impacts must be reassessed following receipt of the final scheme design plans. Therefore, the mitigation measures set out within this report are provisional and should be used to inform the design to minimise the potential ecological impacts during construction and redevelopment of the Site.

8 Breeding Bird Survey Report Limitations

The information reported herein is based only on the interpretation of data collected during the protected species survey visits. This work pertains specifically to the identification of protected species on the proposed site. Information provided to Pell Frischmann has been accepted as being accurate and valid.

This report has been prepared by Pell Frischmann with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client.

The evaluation and conclusions do not preclude the existence of other protected species, which could not reasonably have been revealed by the comprehensive desk studies, site visit and protected species surveys. Hence, this report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site habitats.

In addition, this report details only the conditions on site, at the time of reporting. The dynamic nature of the natural environment will result in changes to the surrounding environment as seasons change. No responsibility is taken by Pell Frischmann to the existence of additional species identified on this site at a later date.

This report has been prepared solely for the use of Medway Council and may not be relied upon by other parties without written consent from Pell Frischmann. In addition, it must be understood that this report does not constitute legal advice.

Pell Frischmann disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

9 References

British Trust for Ornithology. Online www.bto.org

Eaton, M., Aebischer, N., Brown, B., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D., and Gregory, R. (2015) *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds 108 pg 708-746.

Fuller, (1980) *A method for assessing the ornithological importance of sites for nature conservation*. Biological Conservation 17:229-239.

Gilbet, G., Gibbons, D., and Evans, J. (2008) *Bird Monitoring Methods: A manual of techniques for key UK species*. The Royal Society for the Protection of Birds (RSPB).

Institute of Ecology and Environmental Management, (2016). *Guidelines for Ecological Impact Assessment in the United Kingdom*.

Chartered Institute of Ecology and Environmental Management, (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal*

JNCC, (2007). *UK Biodiversity Action Plan (UKBAP) priority bird species*. Online jncc.defra.gov.uk/page-5163

JNCC, (2010). *Wildlife and Countryside Act (WCA) 1981 (amended)*. Online jncc.defra.gov.uk/page-1377

Multi Agency Geographic Information for the Countryside (MAGIC). Online magic.defra.gov.uk

National Biodiversity Network (NBN) database. Online www.nbn.org.uk

Natural England. Online <http://publications.naturalengland.org.uk/publication/3227002>

Ramsar Sites Information Service. Online <https://rsis.ramsar.org/ris/1025>

Royal Society for the Protection of Birds Document Library. Online www.rspb.org.uk, accessed on 09/04/2019.

Appendix A

Bird Species Codes

Hoo Station GRIP 3 Reopening of the Grain Branch Line for Passenger Services
103223-PEL-G3-H01-REP-EVV-0003 Breeding Bird Survey Report

Species	BTO Code
Blackbird <i>Turdus merula</i>	B.
Blackcap <i>Sylvia atricapilla</i>	BC
Black-headed gull <i>Chroicocephalus ridibundus</i>	BH
Blue tit <i>Cyanistes caeruleus</i>	BT
Buzzard <i>Buteo buteo</i>	BZ
Carrion crow <i>Corvus corone</i>	C.
Canada goose <i>Branta canadensis</i>	CG
Cetti's warbler <i>Cettia cetti</i>	CW
Chaffinch <i>Fringilla coelebs</i>	CH
Chiffchaff <i>Phylloscopus collybita</i>	CC
Coal tit <i>Periparus ater</i>	CT
Collared dove <i>Streptopelia decaocto</i>	CD
Coot <i>Fulica atra</i>	CO
Cuckoo <i>Cuculus canorus</i>	CU
Dunnock <i>Prunella modularis</i>	D.
Garden warbler <i>Sylvia borin</i>	GW
Goldcrest <i>Regulus regulus</i>	GC
Goldfinch <i>Carduelis carduelis</i>	GO
Great spotted woodpecker <i>Dendrocopos major</i>	GS
Great tit <i>Parus major</i>	GT
Green Woodpecker <i>Picus viridis</i>	G.
Greenfinch <i>Carduelis chloris</i>	GR
Grey heron <i>Ardea cinerea</i>	H.
Grasshopper warbler <i>Locustella naevia</i>	GH
Greylag goose <i>Anser anser</i>	GJ
Herring gull <i>Larus argentatus</i>	HG
House sparrow <i>Passer domesticus</i>	HS
House martin <i>Delichon urbicum</i>	HM
Jackdaw <i>Corvus monedula</i>	JD
Kestrel <i>Falco tinnunculus</i>	K.
Lapwing <i>Vanellus vanellus</i>	L.
Linnet <i>Linaria cannabina</i>	LI
Long-tailed tit <i>Aegithalos caudatus</i>	LT
Magpie <i>Pica pica</i>	MG
Mallard <i>Anas platyrhynchos</i>	MA

Hoo Station GRIP 3 Reopening of the Grain Branch Line for Passenger Services
103223-PEL-G3-H01-REP-EVV-0003 Breeding Bird Survey Report

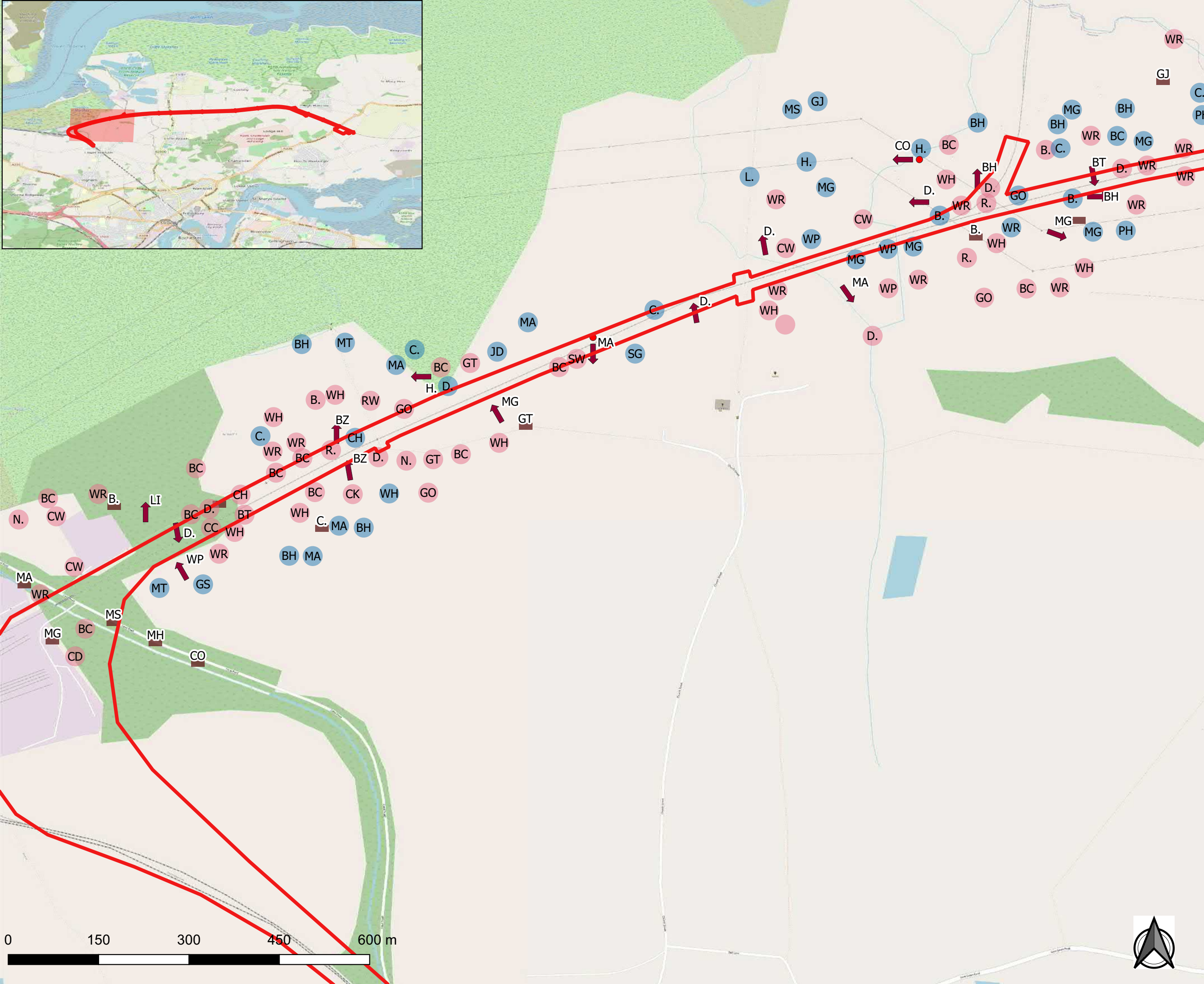
Species	BTO Code
Marsh tit <i>Poecile palustris</i>	
Mistle thrush <i>Turdus viscivorus</i>	M.
Moorhen <i>Gallinula chloropus</i>	MH
Mute swan <i>Cygnus olor</i>	MS
Nightingale <i>Luscinia megarhynchos</i>	N.
Pheasant <i>Phasianus colchicus</i>	PH
Pied wagtail <i>Motacilla alba</i>	PW
Red-legged Partridge, <i>Alectoris rufa</i>	RL
Reed bunting <i>Emberiza schoeniclus</i>	RB
Reed Warbler <i>Acrocephalus scirpaceus</i>	RW
Robin <i>Erithacus rubecula</i>	R.
Rook <i>Corvus frugilegus</i>	RO
Sedge Warbler <i>Acrocephalus schoenobaenus</i>	SW
Skylark <i>Alauda arvensis</i>	S.
Song thrush <i>Turdus philomelos</i>	ST
Starling <i>Sturnus vulgaris</i>	SG
Stock dove <i>Columba oenas</i>	SD
Swallow <i>Hirundo rustica</i>	SL
Swift <i>Apus apus</i>	SI
Tree sparrow <i>Passer montanus</i>	TS
Whitethroat <i>Sylvia communis</i>	WH
Woodpigeon <i>Columba palumbus</i>	WP
Wren <i>Troglodytes troglodytes</i>	WR
Yellow wagtail <i>Motacilla flava</i>	YW
Yellowhammer <i>Emberiza citrinella</i>	Y.

Appendix B

Breeding Bird Survey Maps

Legend

-  Site Red Line Boundary
-  Bird Singing
-  Bird Calling
-  Bird Flight Direction
-  Bird Flight Direction & Taking Off
-  Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 1 of 5)

May 2020

Legend

Site Red Line Boundary

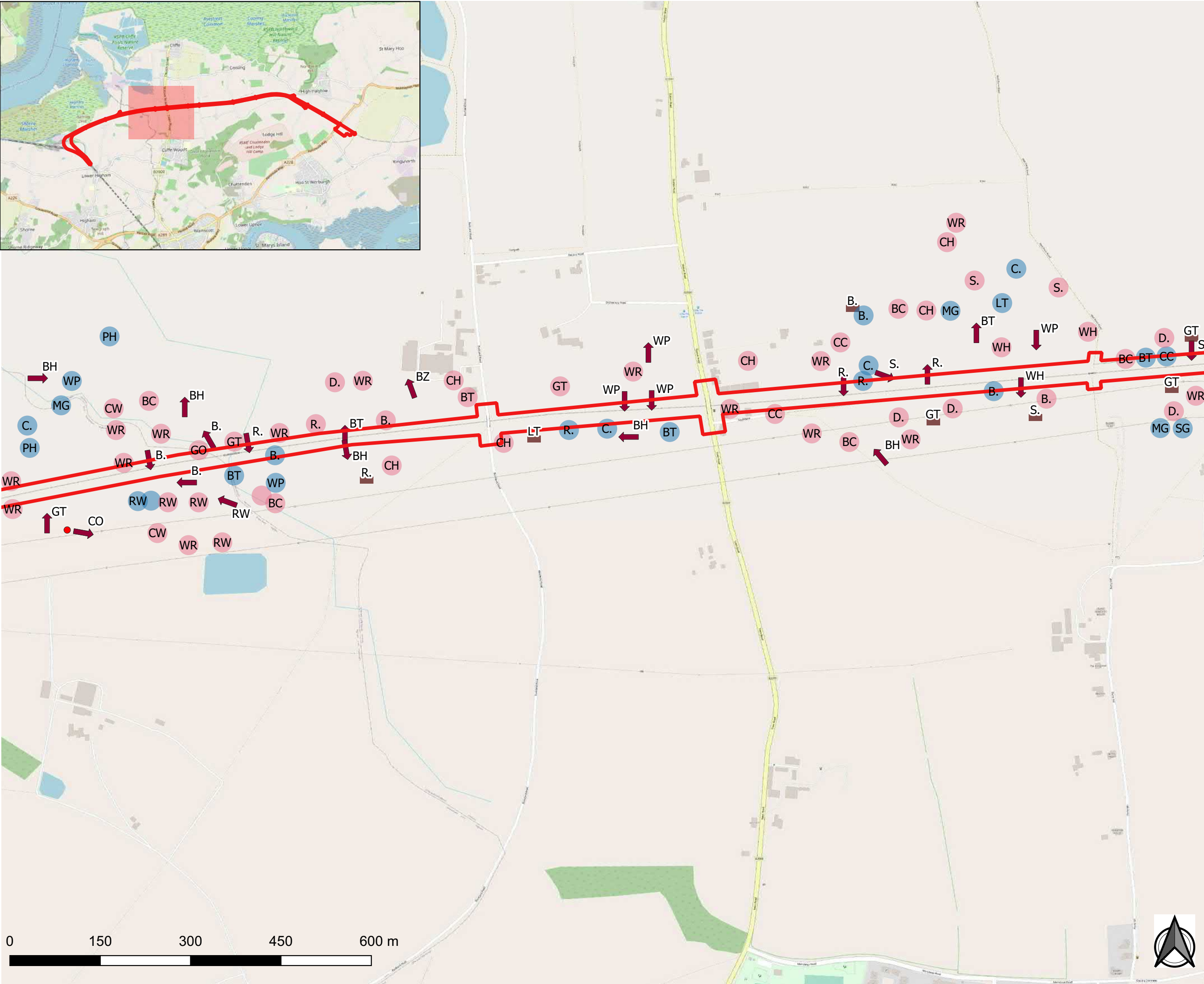
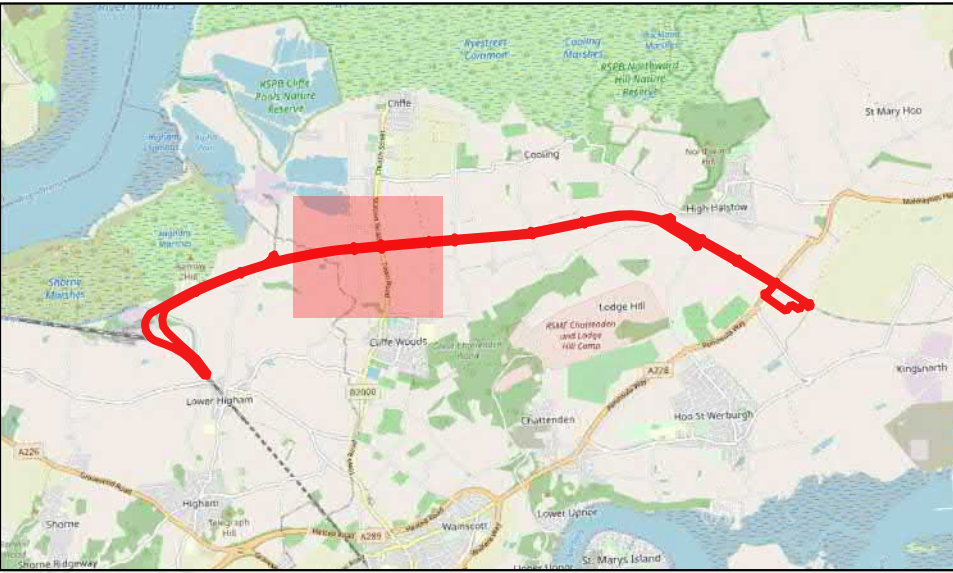
Bird Singing

Bird Calling

Bird Flight Direction

Bird Flight Direction & Taking Off

Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 2 of 5)

May 2020

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Legend

Site Red Line Boundary

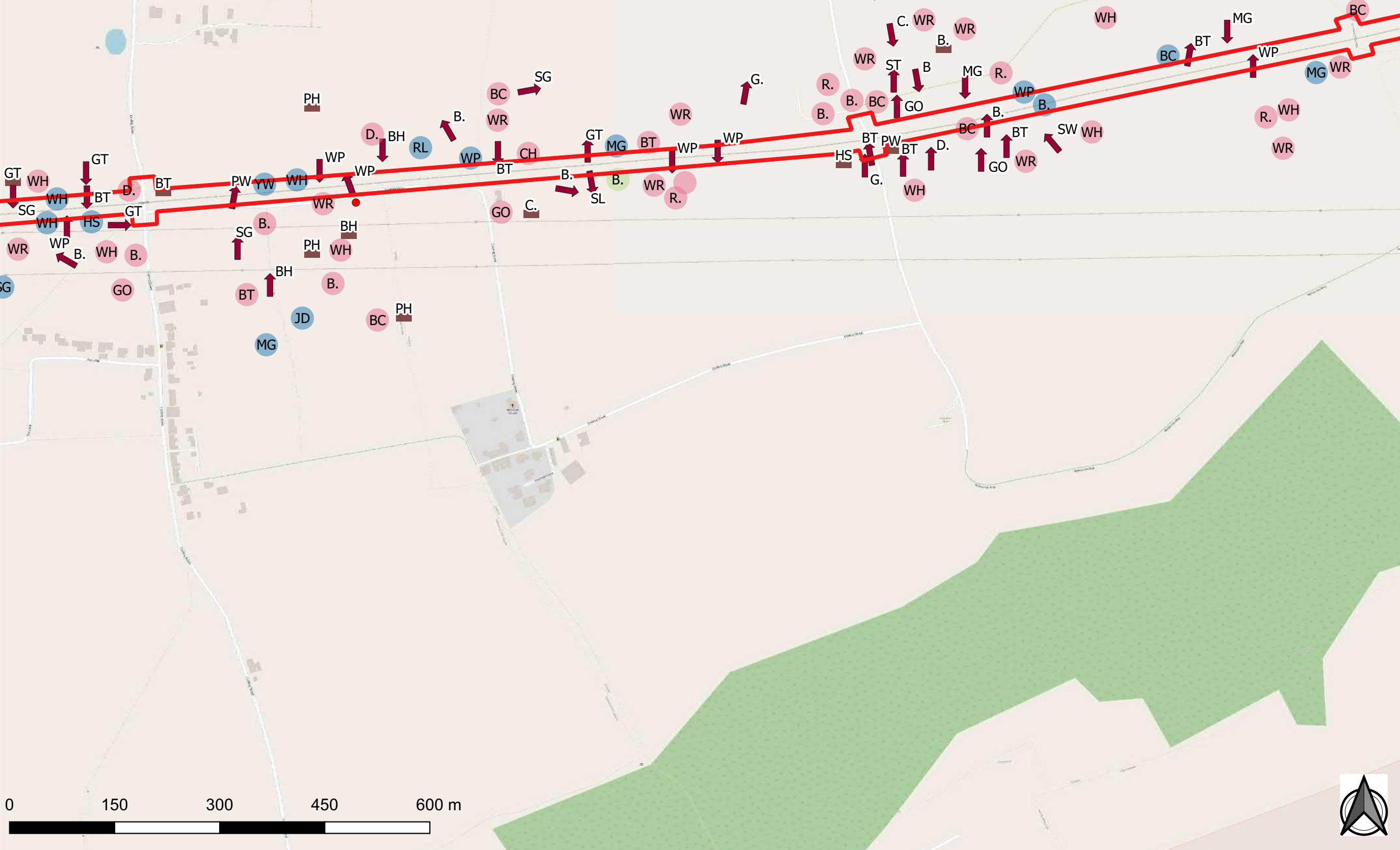
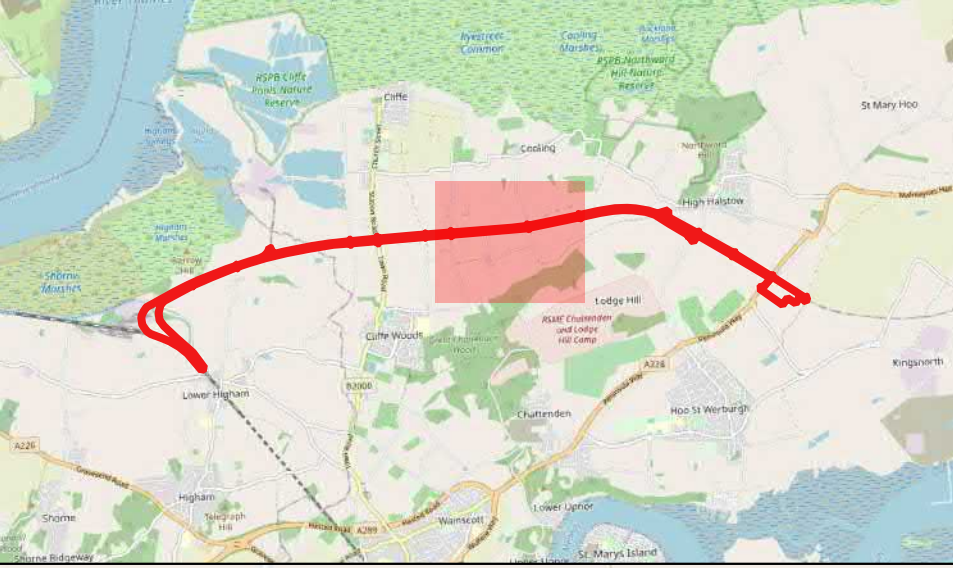
Bird Singing

Bird Calling

Bird Flight Direction

Bird Flight Direction & Taking Off

Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 3 of 5)

May 2020

Legend

-  Site Red Line Boundary
-  Bird Singing
-  Bird Calling
-  Bird Flight Direction
-  Bird Flight Direction & Taking Off
-  Bird Seen Only



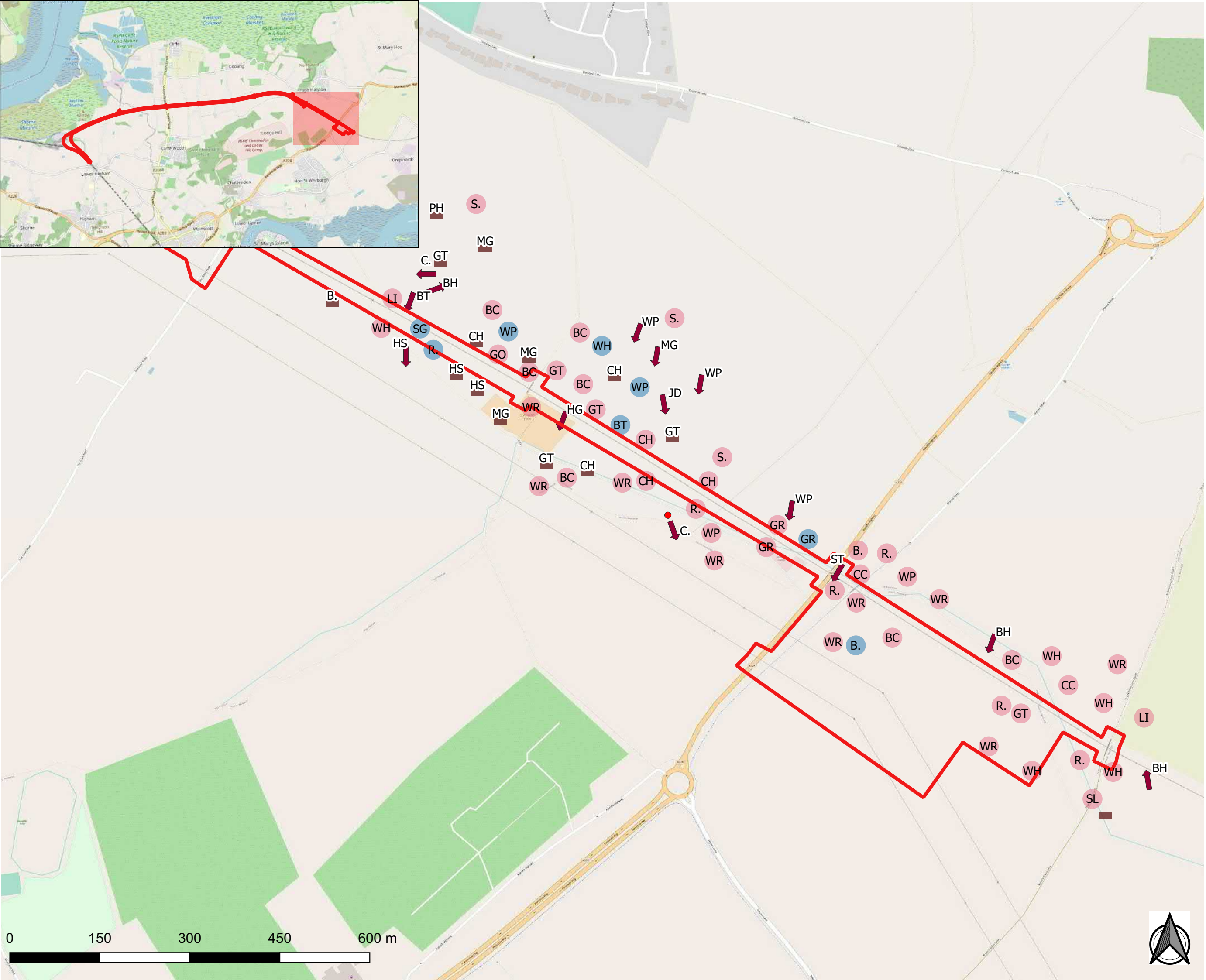
Hoo Station GRIP 3 - Reopening of the Grain Branch Line for Passenger Services

Breeding Bird Survey Map - (Sheet 4 of 5)

May 2020



- Legend**
- Site Red Line Boundary
 - Bird Singing
 - Bird Calling
 - Bird Flight Direction
 - Bird Flight Direction & Taking Off
 - Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 5 of 5)

May 2020

Legend

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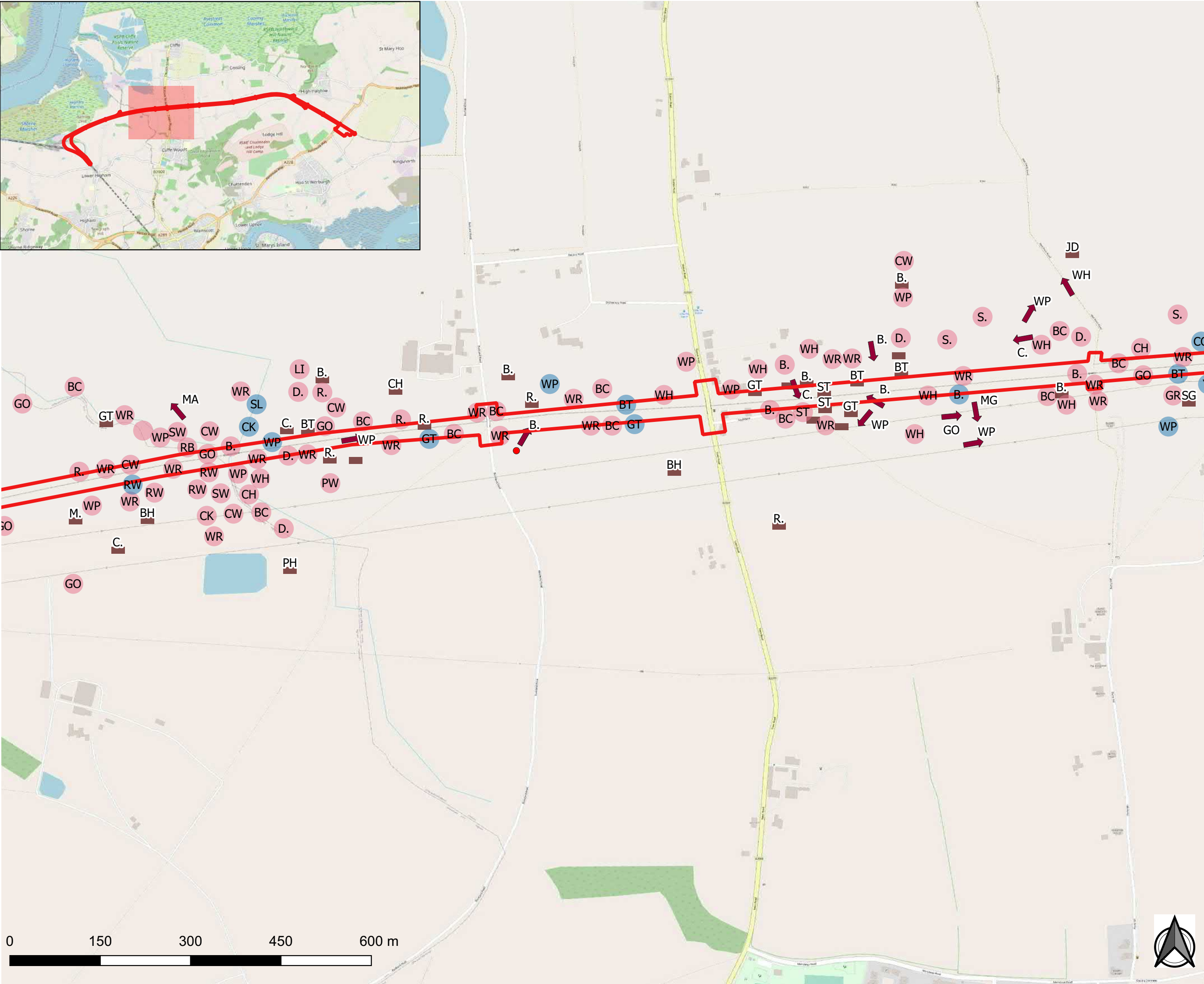
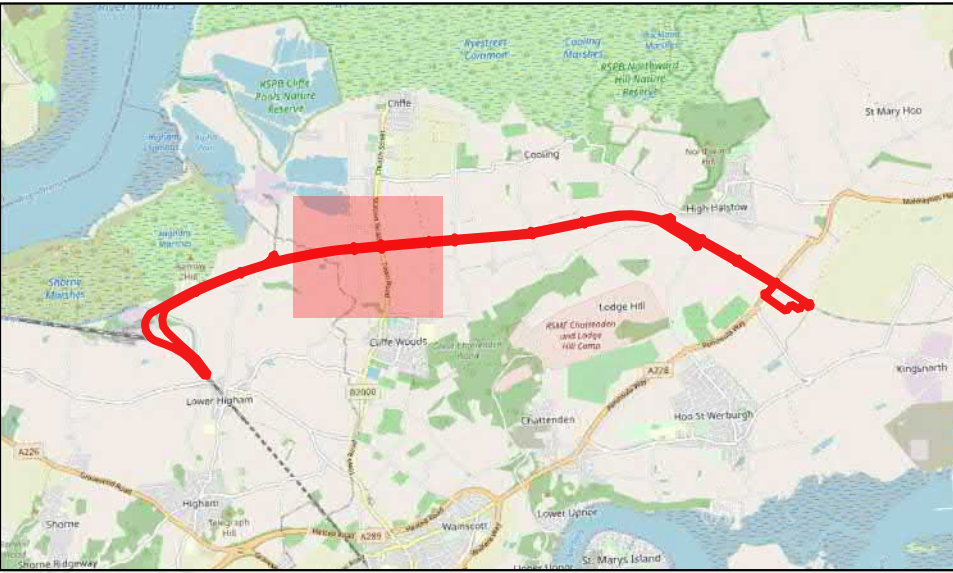
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Bird Flight Direction & Taking Off

Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 2 of 5)

June 2020

Legend

Site Red Line Boundary

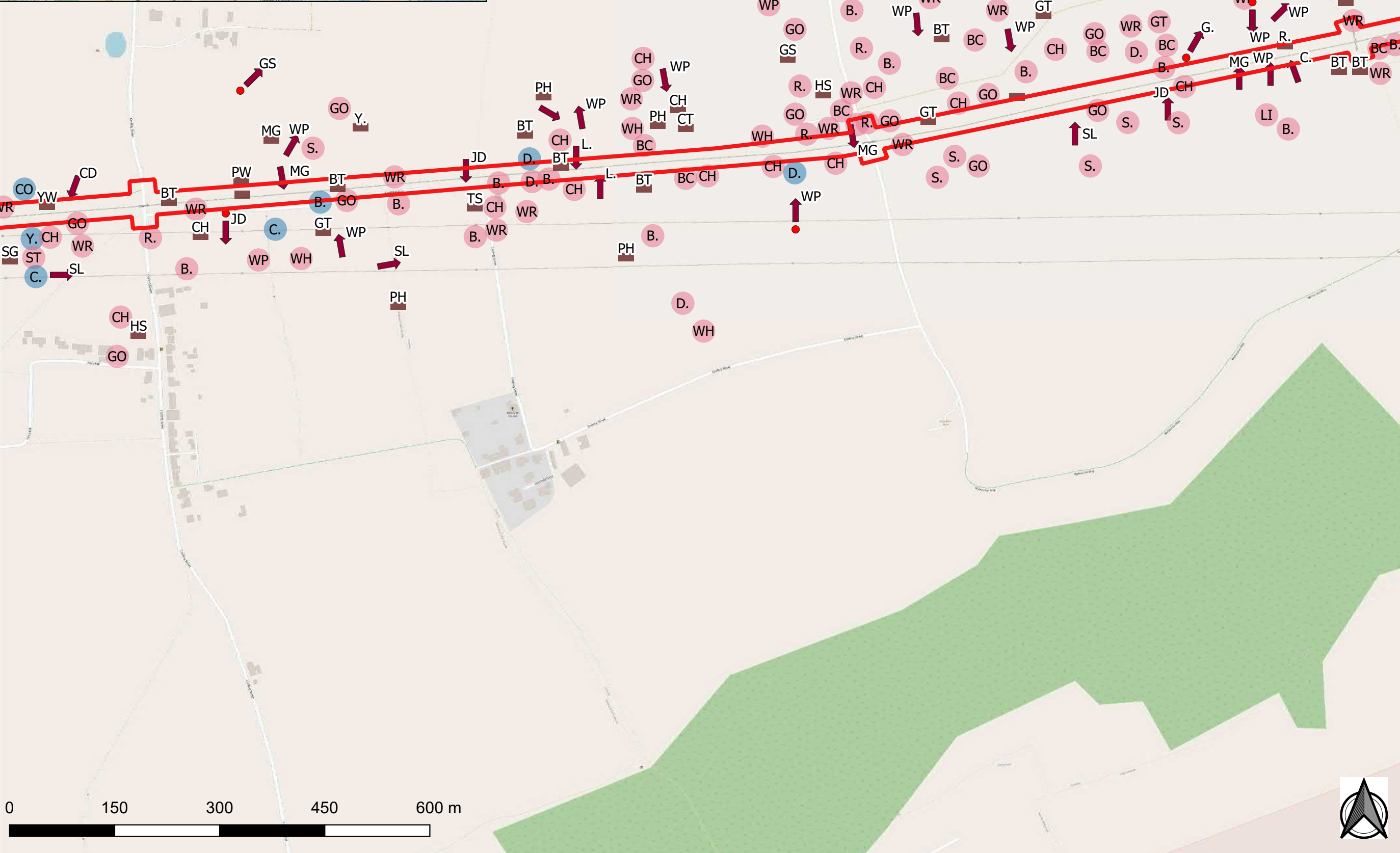
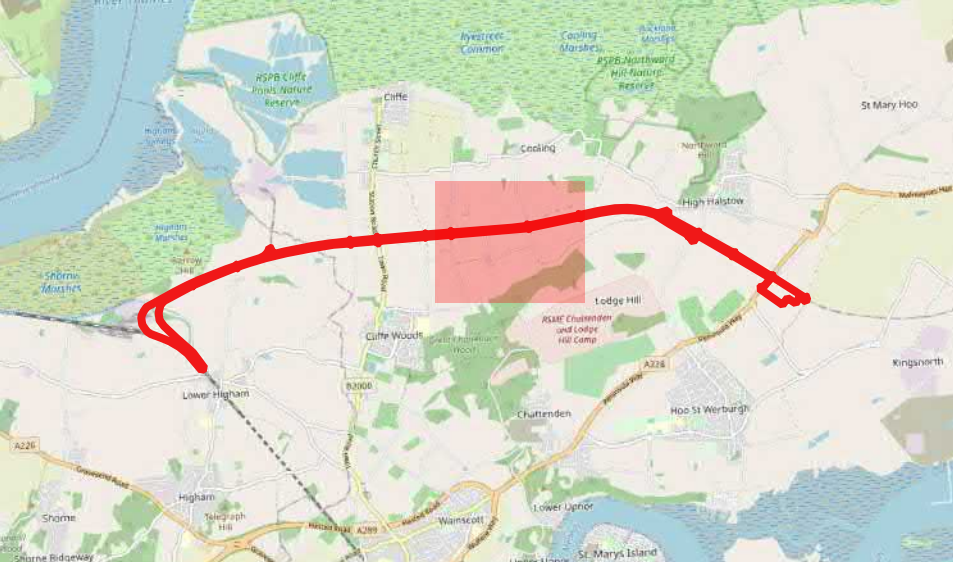
Bird Singing

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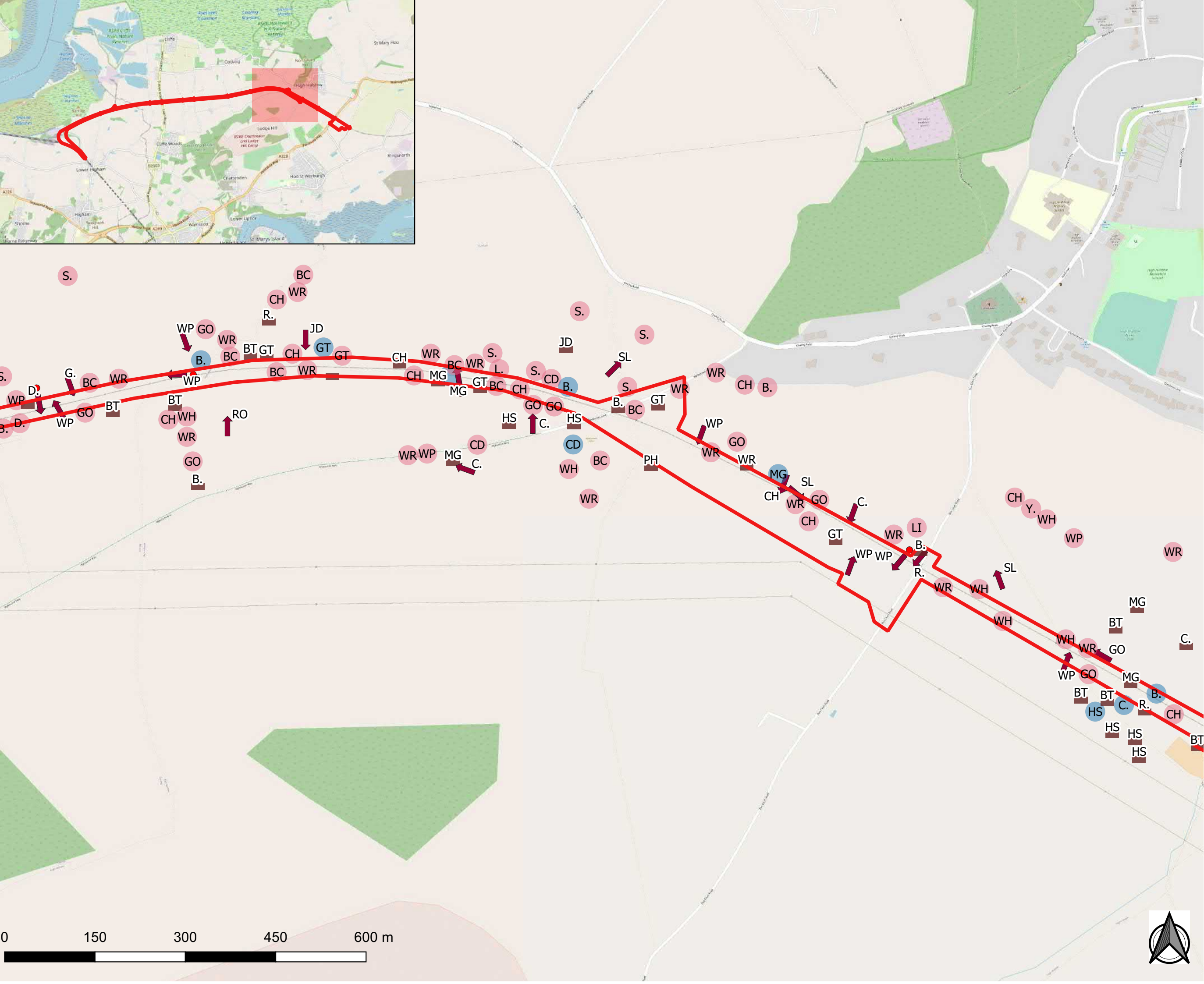
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June 2020



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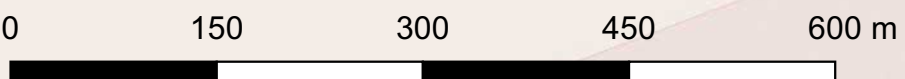
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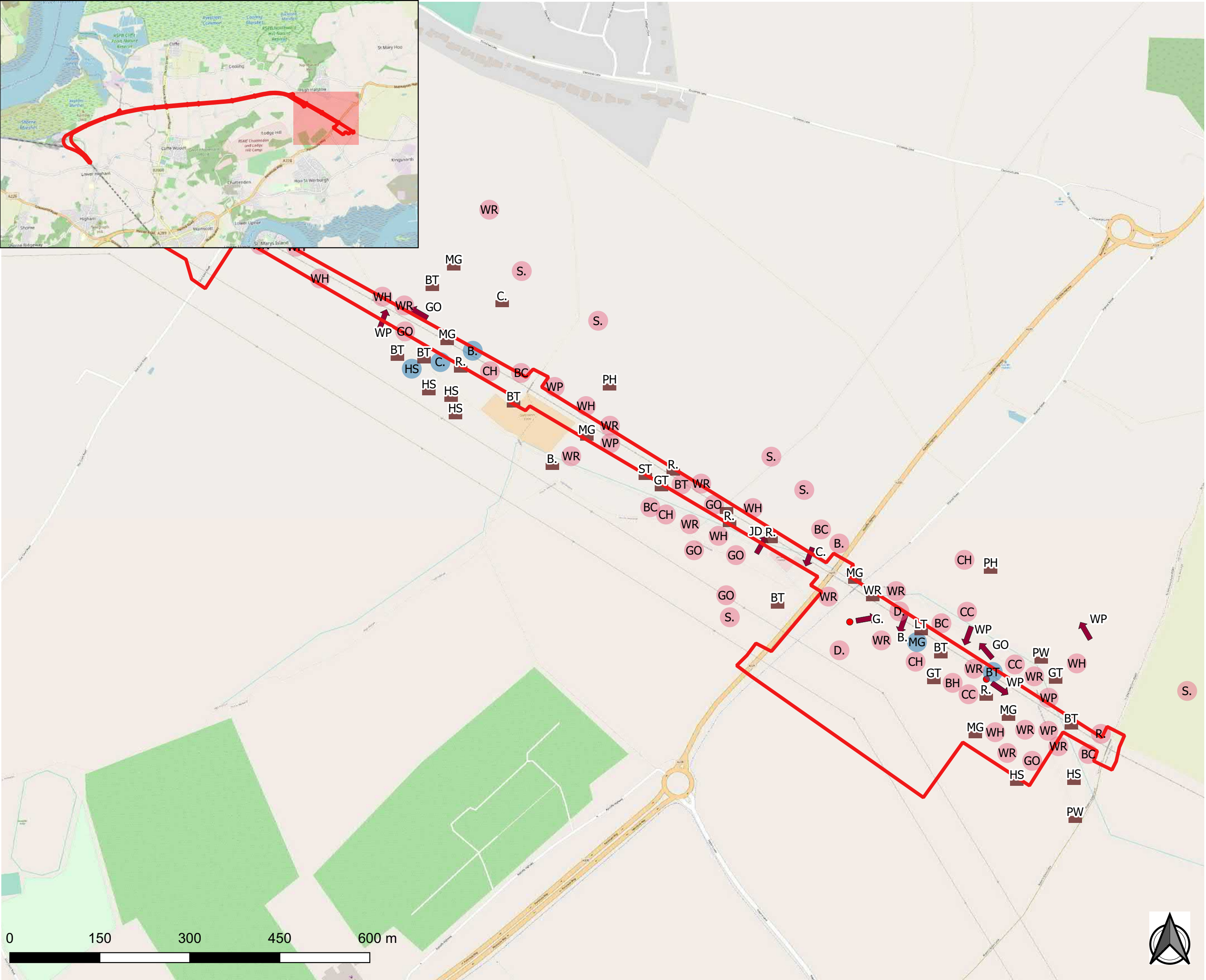
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Map - (Sheet 4 of 5)

June 2020



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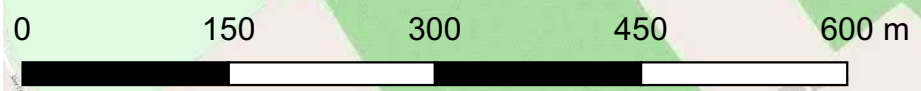
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Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 5 of 5)

June 2020



Legend

Site Red Line Boundary

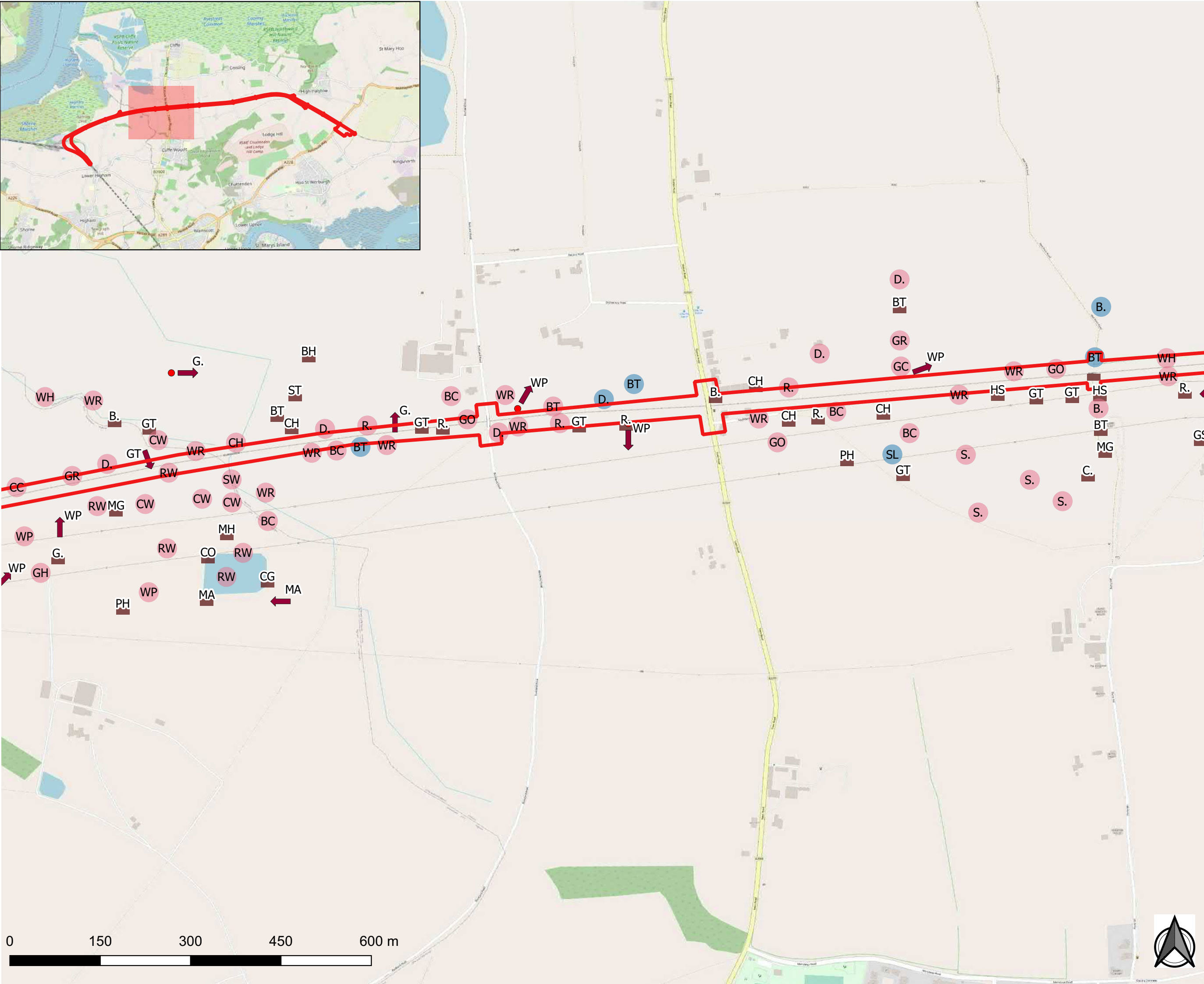
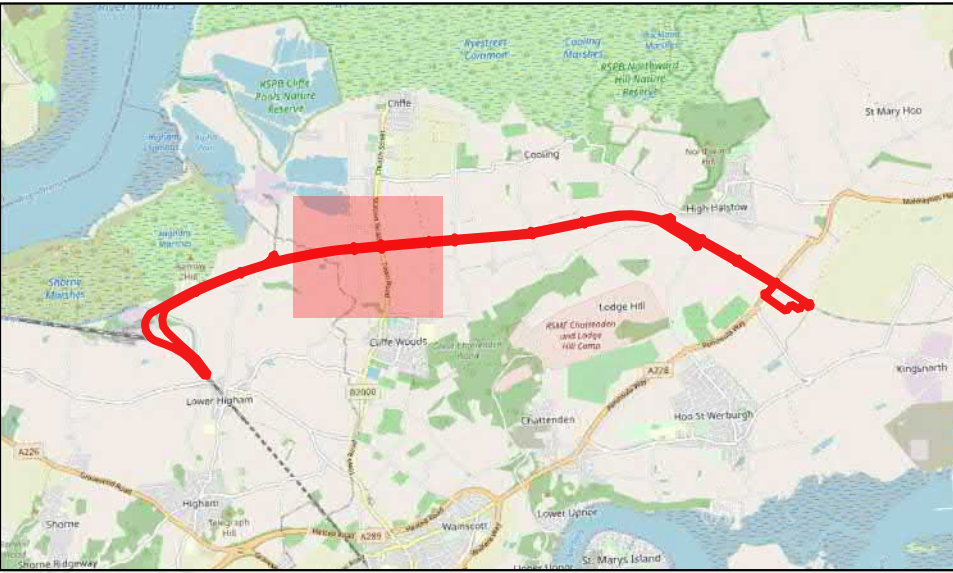
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Bird Flight Direction & Taking Off

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Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

Breeding Bird Survey
Map - (Sheet 2 of 5)

July 2020

Legend

Site Red Line Boundary

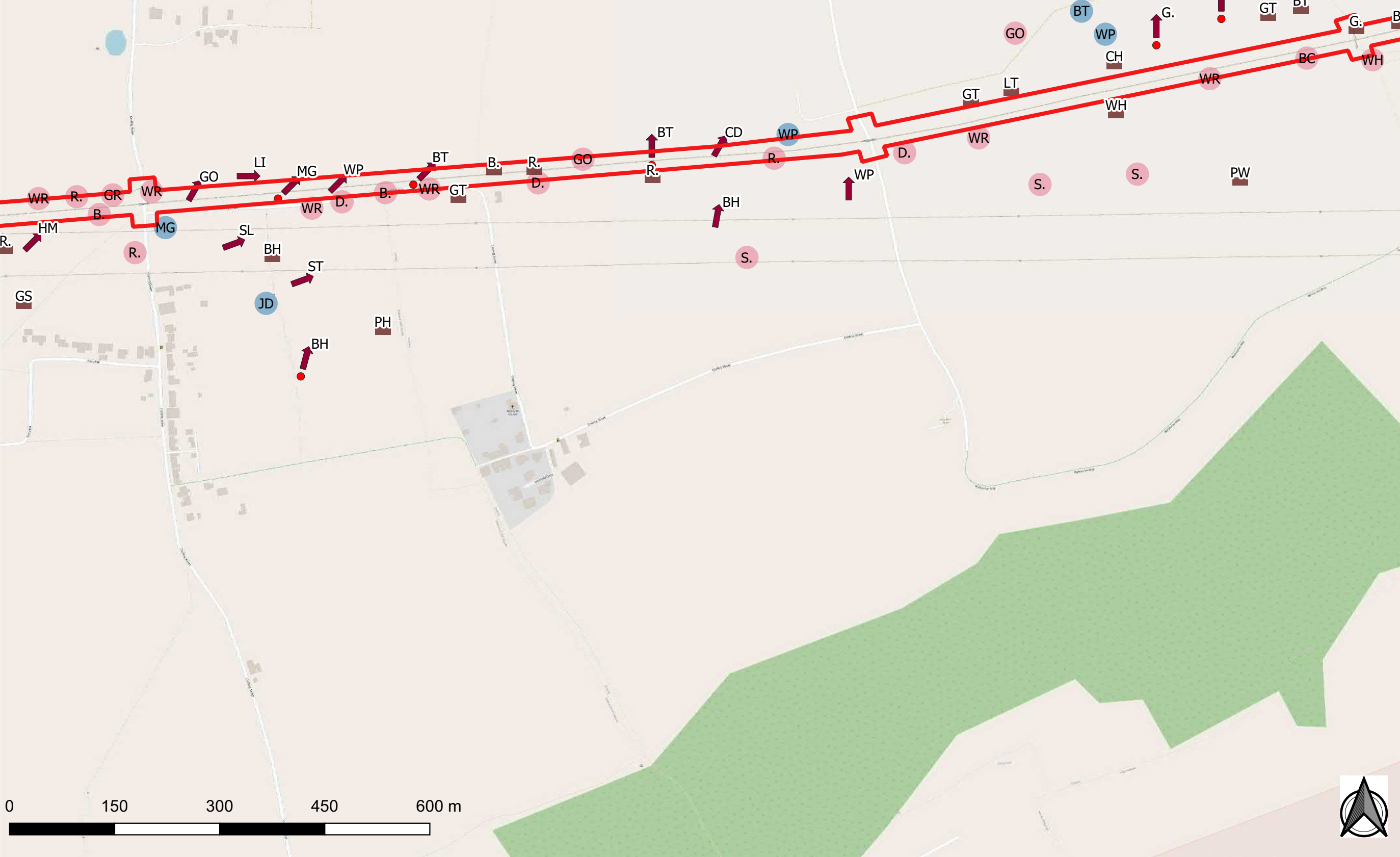
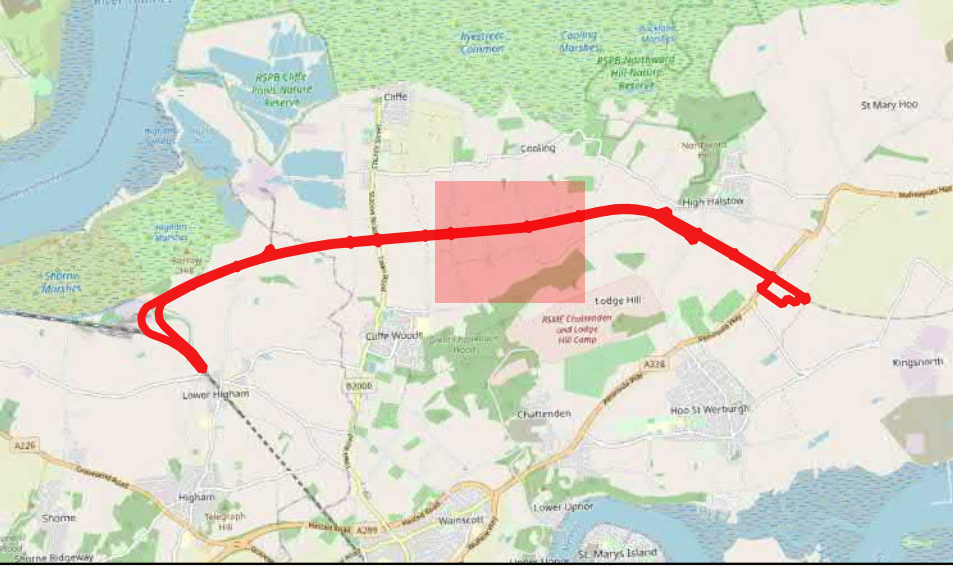
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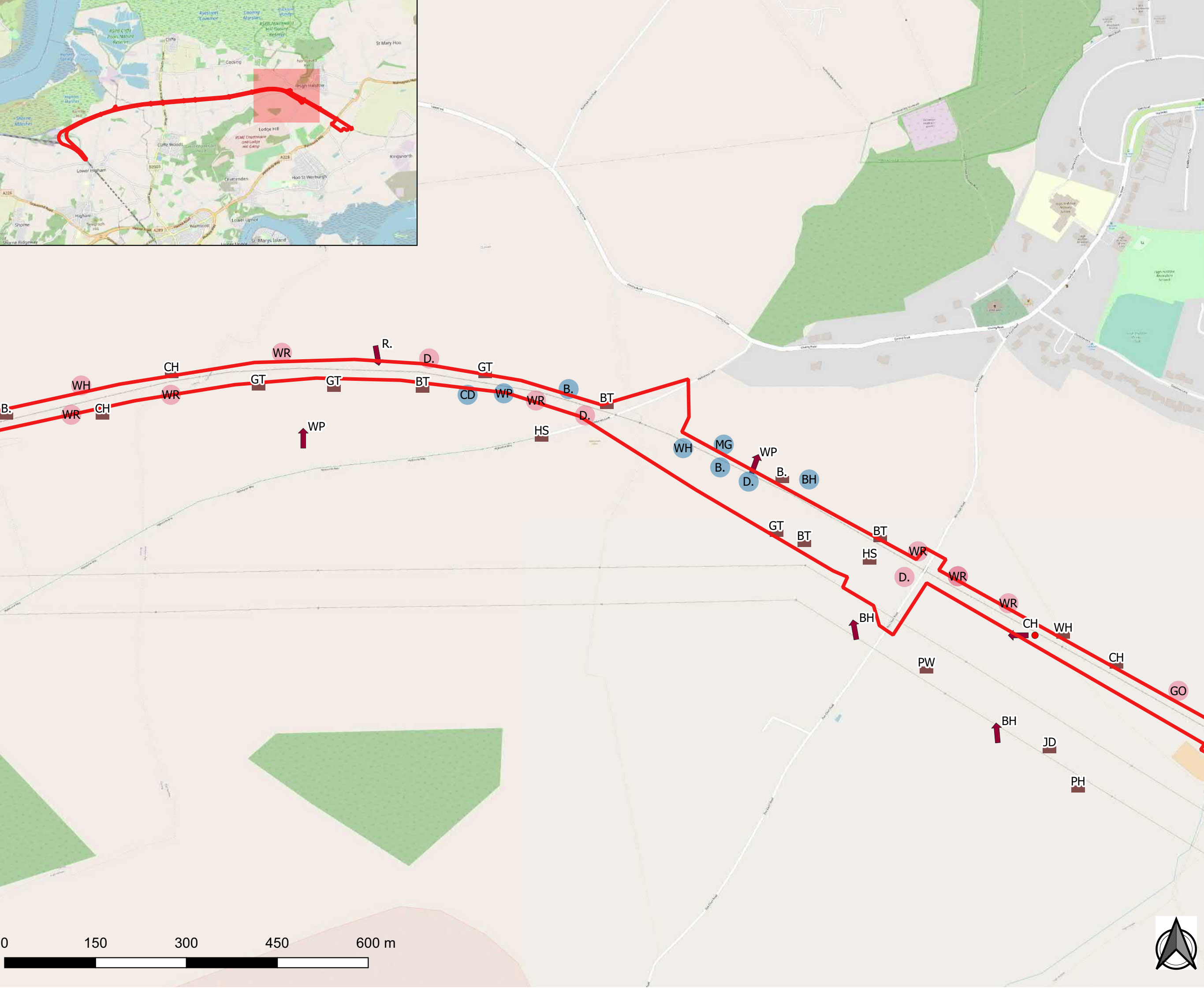
Breeding Bird Survey
Map - (Sheet 3 of 5)

July 2020



Legend

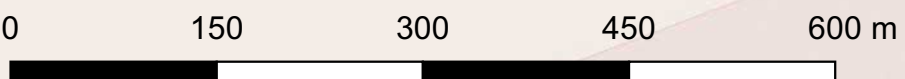
-  Site Red Line Boundary
-  Bird Singing
-  Bird Calling
-  Bird Flight Direction
-  Bird Flight Direction & Taking Off
-  Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
Branch Line for
Passenger Services

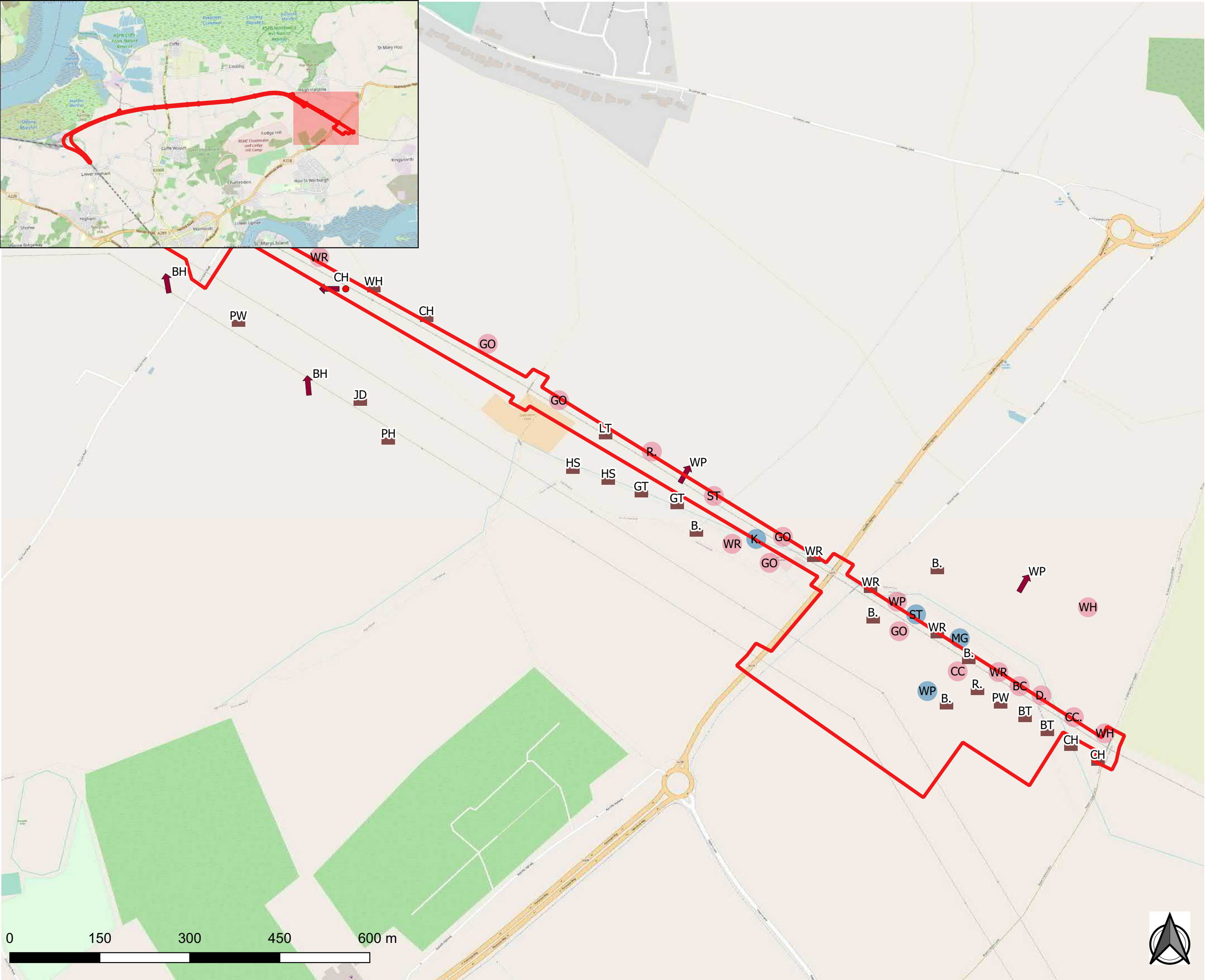
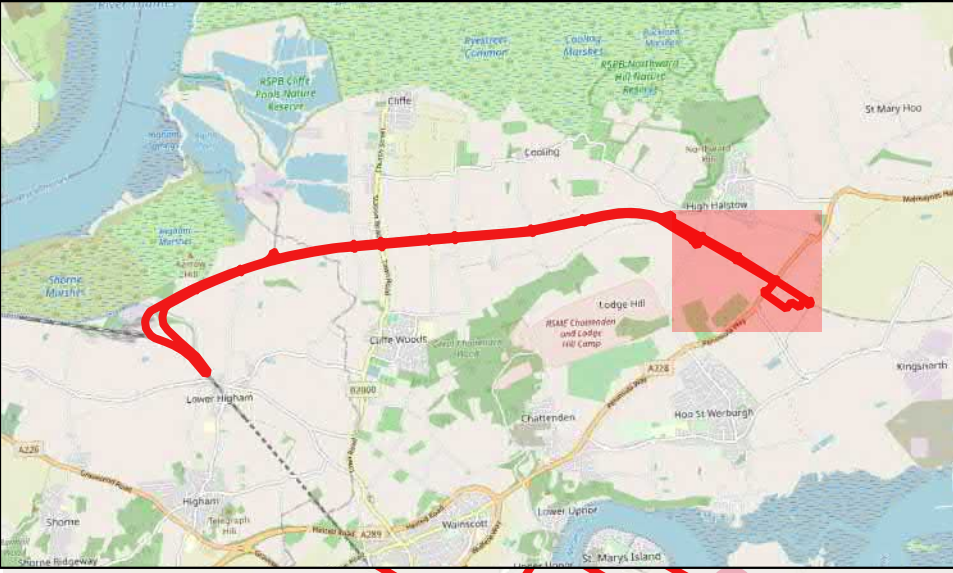
Breeding Bird Survey
Map - (Sheet 4 of 5)

July 2020



Legend

-  Site Red Line Boundary
-  Bird Singing
-  Bird Calling
-  Bird Flight Direction
-  Bird Flight Direction & Taking Off
-  Bird Seen Only



Hoo Station GRIP 3 -
Reopening of the Grain
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Passenger Services

Breeding Bird Survey
Map - (Sheet 5 of 5)

July 2020