

Wylfa Newydd Project

**6.7.25 ES Volume G - A5025 Off-line Highway
Improvements App G9-4 - A5025 Route
Improvement Contract EIA: Breeding Bird
Survey Report**

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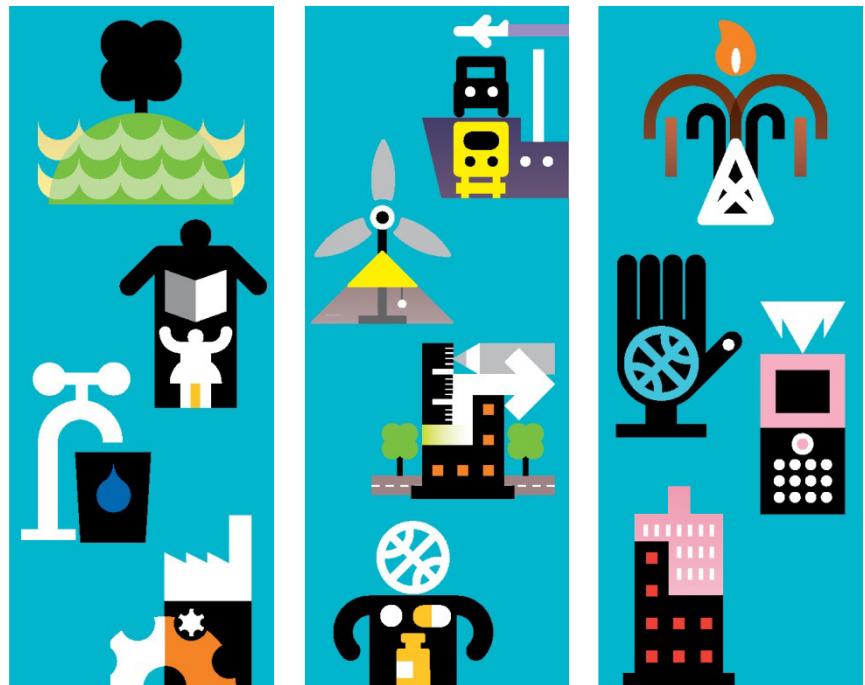
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A5025 Route Improvement Contract EIA

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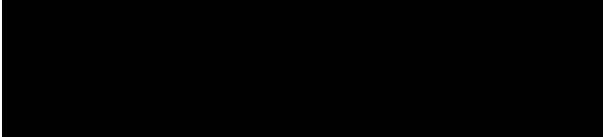
Breeding Bird Survey Report

May 2014

Horizon Nuclear Power

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1 Introduction

1.1 A5025 Background

Horizon Nuclear Power Ltd (a subsidiary of Hitachi Ltd) is proposing to build a new nuclear power station on land beside the existing operational Magnox nuclear power station on Wylfa Peninsula, Anglesey, North Wales. Horizon Nuclear Power (HNP) are currently preparing a Development Consent Order (DCO) application for the proposed power station, which will include nuclear reactors with a minimum generating capacity of up to 2,700 Mega Watts (MW) of electricity which will be submitted to The Planning Inspectorate for review.

In order to facilitate the construction and operation of the new power station, the project will require a number of additional components (which fall outside the DCO application) and these are termed 'associated developments'. One of which relates to the upgrade of the existing transport infrastructure and is termed the A5025 Route Improvement Contract (RIC). The purpose of the upgrade is to facilitate the movement of the workforce materials, and minimise the impact of the movements on local communities.

Mott MacDonald (MM) has been commissioned by HNP to undertake a Preliminary Ecological Appraisal (PEA) to identify any potential ecological impacts and constraints associated with the proposed development.

The proposed route, hereby referred to as the 'scheme', follows a 22 km length of the A5025 between National Grid references: SH4171093260; and SH3004078890. A plan showing the extent of the scheme is provided in Appendix A. The route starts at the junction of the A5 trunk road at the village of Valley, and runs in a north easterly direction towards the existing power station at Wylfa Head to the east of the Village of Cemaes. The scheme includes a small section of the un-graded road Pen-yr-Orsedd. This is located to the west of the A5025 and is situated approximately 2 km to the north of the village of Llanrhuddlad. The A5025 runs through a number of villages and small rural communities.

The scheme design is yet to be defined and a number of options are currently being considered in consultation with the Isle of Anglesey County Council (IoACC), the Highways Authority (North and Mid Wales Trunk Road Agency) and other stakeholders. It is anticipated that the majority of the works will be undertaken within the existing highway boundary (known as on-line works); however at a number of locations, works outside of the highway boundary (off-line works) may be required, which may include minor road straightening, by-passes, roundabouts and junction improvements as detailed below.

The following areas for possible offline route improvements are:

- The Valley crossroads which may require bypassing;
- Llanfachraeth where a bypass to the east of the village is being considered;
- Llanfaethlu where bends at the Black Lion Inn and Llanfaethlu may need to be straightened;
- Cefn Coch where the existing route between Bod-Hedd and Cefn Coch may need to be straightened;
- Tregele where modifications to the site access are being considered. Alternatively, a by-pass as well as potential changes to the access to Cemlyn may be required; and
- Improvements along the A5025, between the construction site and Amlwch, to the proposed new workers village.

A map is provided in Appendix A highlighting both the online and offline works proposed along the A5025.

1.2 Ecology Background

There are a number of Sites of Special Scientific Interest (SSSI) within 2 km of the road, some of which are designated due to their ornithological interest. In addition, improvements to the road are likely to require land-take in adjacent habitat where breeding birds are likely to occur. Subsequently a breeding bird survey area of up to 250 m from the areas of proposed road improvements was scoped in for the offline sections and up to 100 m for online sections. Breeding bird surveys were carried out from April 2013 to July 2013.

1.3 Scope of the Report

A new framework was set up in running from the 1st of April 2014 and Jacobs Engineering Group Inc. were commissioned to continue with the ecological surveys for the A5025 RIC. This report aims to summarise the information pertaining to reptiles that has been collated by Mott MacDonald to date, and provide a seamless mechanism to transfer the data in order for any further recommendations and/or surveys to be undertaken.

The objectives of this report are as follows:

- To present the methodology used for all breeding bird work to date;
- Present the results of the breeding bird field surveys;
- To establish the species of birds using the site to breed and the conservation value of each of the species; and
- To provide brief recommendations for further survey work.

1.4 Survey Limitations

It was not possible to survey some areas within the survey extent; this was largely due to limited and/or irregular land access. This had implications for timing and duration of the surveys, whereby some surveys were halted, restricted or had certain requirements (i.e. request for specific time for land access). Adverse weather conditions, particularly in March and April 2013, also resulted in a set-back for breeding birds and the subsequent surveying.

2 Methodology

All ecological works followed up to date best practice guidelines provided by the Chartered Institute of Ecology and Environmental Management (CIEEM). In addition, further specific highway guidance was also followed. This is provided by The Design Manual for Roads and Bridges (DMRB), specifically Volume 10 (Environmental Design and Management) and Volume 11 (Environmental Assessment), along with relevant Interim Advice Notes (IANs), such as IAN 130/10 Ecology and Nature Conservation: Criteria for Impact Assessment which supplements DMRB Volume 11, SECTION 3 Part 4 'Ecology and Nature Conservation'..

2.1 Desk Study

The aims of the desk study with specific regards to breeding birds was to review the presence of statutory and non-statutory designated sites within a 2 km buffer – these may be designated for the presence of birds or may provide habitat suitable for birds within the surrounding area. In addition the desk study allowed a review of any bird records within 2 km of the road.

The following databases were used to extract the required information outlined above:

- Cofnod – North Wales Environmental Information Service;
- Isle of Anglesey County Council;
- Anglesey Nature website: (<http://angleseynature.co.uk/>);
- Natural Resources Wales (NRW)/Countryside Council for Wales (CCW) websites: (<http://naturalresourceswales.gov.uk/splash?orig=/> and <http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/protected-sites-map.aspx?lang=en>);
- Joint Nature Conservation Committee (JNCC) website: (<http://jncc.defra.gov.uk/>); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website: (<http://magic.defra.gov.uk/>).

A review and summary of the desk study findings (including maps) was then carried out and presented within the A5025 Preliminary Ecological Appraisal Report (Mott MacDonald, 2014). Results of the bird record findings are presented within Section 3.

2.1.1 Barn Owl Desk Study

There are many rural buildings throughout the landscape within the vicinity of the A5025 that may provide suitable nesting habitat for Barn Owl *Tyto alba* and records of Barn Owl were returned for the desk study search area. Therefore a desk study was undertaken to systematically search for potential Barn Owl nesting sites (i.e. barns and out houses) within 1 km of the anticipated construction footprint boundary. This was done from Ordnance Survey (OS) maps and aerial photography.

2.2 Field Surveys

A survey area of up to 250 m from the areas of proposed road improvements was surveyed for the offline works and up to 100 m for the online works. This was considered to be adequate distance to cover the

area affected by the construction works, including the effects of disturbance (e.g. noise) generated by the works taking into account existing baseline levels of disturbance.

The field methodology involved three visits to all accessible areas within the survey extent. Survey transect routes specifically targeted hedgerows, drains and field boundaries within the survey area.

Each survey visit was undertaken by an experienced ornithologist and an assistant. Depending on weather conditions, surveying commenced no earlier than one hour after dawn, but no later than 09.00 am with each visit being completed by noon. Surveying after 12.00 pm is not considered to be best practice, as detectable bird activity is significantly reduced beyond this time. The first hour after dawn was avoided as there is generally heightened activity during this period that may lead to uneven coverage as a result of rapid changes in detection (Bibby et al. 2000).

Birds identified by sight or sound were registered electronically on an Ordnance Survey Master Map base map using a Trimble Nomad® handheld computer. The number of birds of each species was recorded with breeding evidence (Table 2.1) based on the standard list of conventions used by the European Bird Census Council (Sharrock, 1974)

In order to maintain a relatively consistent ability to detect breeding bird activity, surveys were planned as best as possible to avoid adverse weather conditions. Surveys were not conducted when winds were greater than 29 km/h, persistent precipitation or when visibility was poor, as this has the potential to heavily bias the results.

Areas within the survey area which include residential areas that will remain unaffected throughout the construction process, were not subject to breeding bird surveys, as it is considered that birds present within these areas will not be significantly impacted by the proposed A5025 upgrade.

Table 2.1: Summary of breeding evidence categories

Possible	Probable	Confirmed
Observed in suitable nesting habitat.	Pair observed in suitable nesting habitat.	Distraction display or injury feigning.
Singing male in suitable breeding habitat.	Courtship and display.	
	Used nest or eggshells.	
	Visiting probable nest site.	Recently fledged young.
	Agitated behaviour or calls suggesting probable presence of nest or young nearby.	Adults entering or leaving nest site or adults seen incubating.
	Nest building or excavation.	Adult carrying faecal sac or food for young.
		Nest containing eggs.
		Nest with young.

Source: based on Sharrock, 1974

2.3 Data Analysis Method

2.3.1 Species Excluded from the Analysis

Whilst the species given in Table 2.2 were observed during the breeding bird survey, they have been excluded from the analysis and assessment because they are either: non-native; feral birds considered to be on migration and/or native species where breeding evidence was not recorded.

Table 2.2: Species Excluded from Analysis

Species Name	Feral/Native/Introduced	Breeding Evidence
Pied Wagtail <i>Motacilla alba yarrellii</i>	Native	No evidence
Pheasant <i>Phasianus colchicus</i>	Introduced	Possible
Great Black-backed Gull <i>Larus marinus</i>	Native	No evidence
Herring Gull <i>Larus argentatus</i>	Native	No evidence
Feral Pigeon <i>Columba livia</i>	Feral	Possible
Marsh Harrier <i>Circus aeruginosus</i>	Native	No evidence
Golden Pheasant <i>Chrysolophus pictus</i>	Introduced	Possible
Starling <i>Sturnus vulgaris</i>	Native	No evidence
Sand Martin <i>Riparia riparia</i>	Native	No evidence
House Martin <i>Delichon urbicum</i>	Native	No evidence
Red-legged Partridge <i>Alectoris rufa</i>	Introduced	Possible
Grey Heron <i>Ardea cinerea</i>	Native	No evidence
Black-headed Gull <i>Chroicocephalus ridibundus</i>	Native	No evidence
Lesser Black-backed Gull <i>Larus fuscus</i>	Native	No evidence
Cattle Egret <i>Bubulcus ibis</i>	Native	No evidence

2.3.2 The 1% Rule

The 1% rule widely accepted international practice of using qualifying thresholds (e.g. 1% of a population) as a tool to identify important areas for protecting birds and their habitats (Baker et al. 2006). The conservation value of each species population (within the survey area) was calculated as follows:

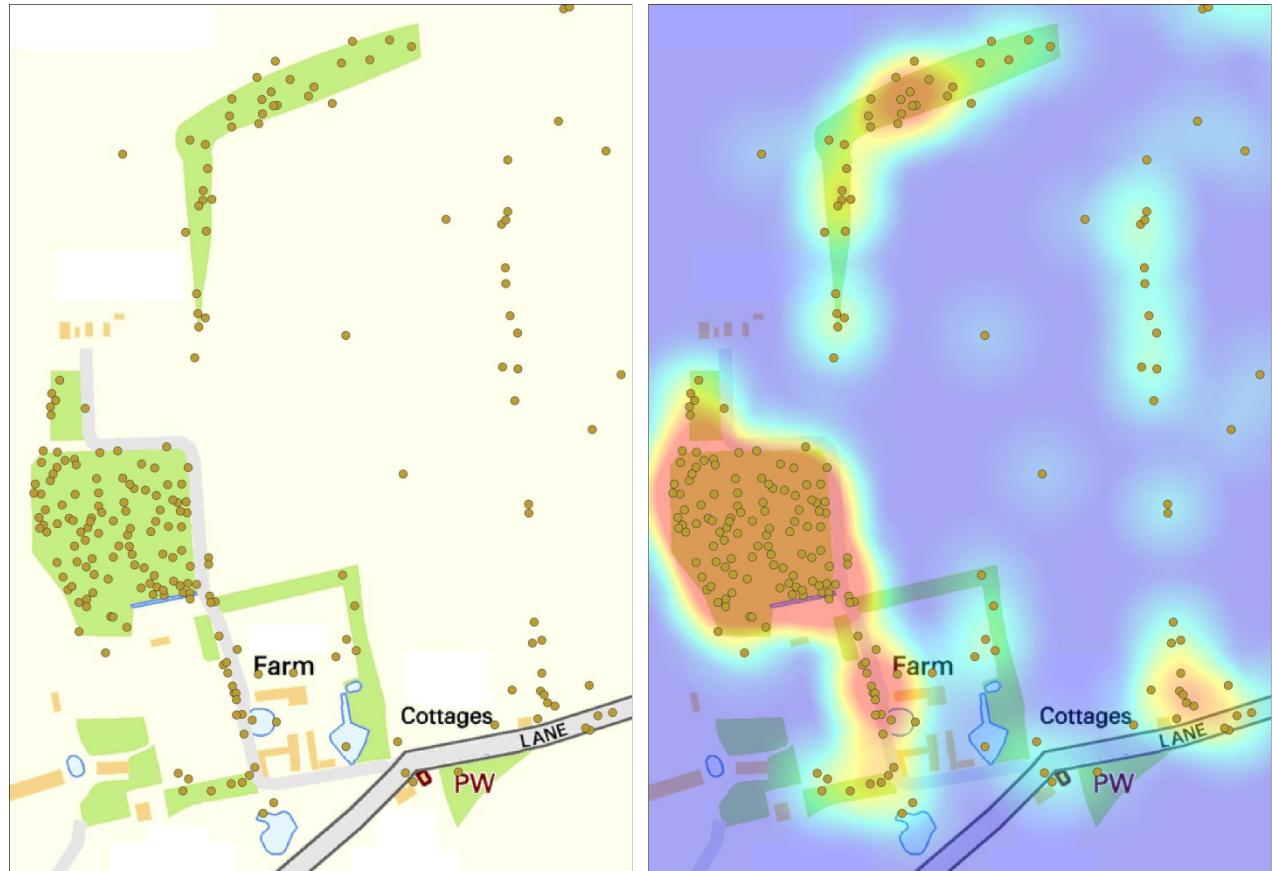
- If the distribution of a species within the survey area accounts for less than 1% of the total regional distribution in terms of the number of occupied tetrads (2 km x 2 km OS grid squares) it is considered to be of local conservation value;
- If the distribution of a species within the survey area accounts for more than 1% of the regional distribution then it is considered to be of at least county/regional conservation importance; and
- Where 1% of the regional range is exceeded, national and international 1% thresholds can be calculated to determine if the survey area populations are of national or international conservation value.

It is important to note that the valuing of ecological features may in some instances involve moderation by applying professional judgement on the basis of all of the available data, literature and local knowledge.

2.3.3 Observation Frequency Map

The data was used to generate an 'observation frequency' map which illustrates the frequency and density of registrations (points). The map consists of an invisible grid, where the value of each cell of the grid represents the number and density of points in that cell. The value of any one cell will also be influenced by the proximity of points in adjacent cells. Each point will be weighted according to the number of birds attributed to that point such that the value of the point will increase with increasing bird number. The graphical representation of the map depicts cell values on a continuous colour scale from dark blue (low frequency and density) to dark red (high frequency and density). An example is given in Figure 2.3. Assuming that observation frequency and density is correlated with habitat use, the map enables hotspots of habitat utilisation and therefore the importance of habitats to be easily identified. It should however be noted that areas of low habitat utilisation may be important to the ecological requirements of certain species and do not necessarily mean they have no or low ecological value.

Figure 2.3: Example observation bird point data (left) and utilisation distribution (right).



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2.4 Limitations

The point density estimation overestimates the intensity of sample area use by breeding birds on narrow, linear features such as hedgerows. This is because the area of influence attributed to each point to enable the hotspot formation is in the form of a radius around the point greater in extent than that of a linear feature such as a hedgerow.

2.5 Nomenclature

The English vernacular and scientific bird names used in this report follows that of the 8th Edition of the British List (Harrop et al. 2013).

3 Results

Breeding evidence was recorded for a total of 39 species (some species are cited in multiple conservation statuses) of which:

- Eight species are of principle importance in Wales, with one species listed on the Anglesey BAP;
- Four species are Red List Birds of Conservation Concern (RSPB Cymru et al., 2009);
- Ten species are Amber List Birds of Conservation Concern (RSPB Cymru et al., 2009); and
- Twenty-five species are Green List Birds of Conservation Concern (RSPB Cymru et al., 2009).

A map showing the utilisation distribution of breeding birds can be found in Appendix B.

Table 3.1 provides a summary of the number of species of birds assessed as using the survey area with evidence and likelihood of breeding within the survey area (Table 2.1 gives the definition of breeding evidence categories). A full species list and their breeding evidence or likelihood can be found in Table C.1, Appendix C of this report. Maps indicating the location of notable bird species recorded during the surveys can be found in Appendix D.

Table 3.1: Number of bird species with evidence or likelihood of breeding in the survey area

Breeding Status	Number of Species
Confirmed	8
Probable	8
Possible	23

Wren (*Troglodytes troglodytes*), Swallow (*Hirundo rustica*), Chaffinch (*Fringilla coelebs*), House Sparrow (*Passer domesticus*) and Rook (*Corvus fruilegus*) were the most numerous species in terms of the maximum number of individuals recorded on any one survey visit. Wren, Chaffinch, Willow Warbler (*Phylloscopus trochilus*) Whitethroat (*Sylvia communis*) and Dunnock (*Prunella modularis*) were the most numerous species in terms of the maximum number of singing individuals recorded on any one survey visit.

The following species exceed 1% of the Anglesey breeding population and are therefore considered to be of County conservation value: Whitethroat, Lesser Whitethroat (*Sylvia curruca*) and Greylag Goose (*Anser anser*). The remainder of the breeding bird assemblage is considered to be of Local conservation value.

3.1 Barn Owl Desk Study

In the 1 km survey area, 112 features suitable for roosting and breeding barn owls were identified during the desk study. These features include potential barns, sheds and farm outbuildings. A number of these features lay immediately adjacent to the A5025. Appendix E contains maps showing the desk study results. These features were only identified from aerial photography and OS maps and therefore it is likely that many of these features can be ruled out as potential barn owl roosting/breeding sites, through ground truthing as described within Section 4.1.

3.2 Utilisation Distribution

Utilisation distribution of breeding birds highlighted areas of relatively high intensity bird use in woodland, hedgerows, wet and dry scrub, mature trees, and hedgerows. Areas of higher densities of breeding birds include the following locations:

- Farmland including a small woodland, water bodies and scrub, east of Llanfachraeth (Map 2 of 6);
- A band of mature trees surrounding the rectory at the north of Llanfachraeth, which houses a rookery, and an old drovers road opposite the rookery (Map 3 of 6);
- Scrub and hedging around a residential property at Llanfaethlu (Map 4 of 6);
- Scrub and infrastructure associated with a unmanned sewage treatment works at Llanfaethlu (Map 4 of 6);
- Scrub and hedgerow alongside a water course (Map 5 of 6);
- Trees and shrubs within a garden opposite Llyn Llygeirian (Map 5 of 6); and
- Woodland and rush pasture at the northern most point of the survey area (see Map 6 of 6)

4 Recommendations

4.1 Barn Owl Desk Study

As suitable features have been identified, landowners should now be contacted to ascertain whether the buildings are suitable for Barn Owls or have ever been used by Barn Owls. In addition, NRW and the local Barn Owl surveyors and ringers, such as the North Wales Raptor Study Group should be contacted in order to ascertain whether the sites have been recently (in the past year) surveyed. Barn Owl nest box locations should also be requested from these groups.

If the sites have not been surveyed within the past few years, permission to survey the potential nest site should be requested from the landowner. Surveys can be undertaken at any time of year; however June-July or August- October is optimal (depending on how the weather impacts breeding season). Dawn/dusk vantage point surveys can be undertaken to check individual sites for activity if access is not possible. The site should be visited by surveyors with a Schedule 1 Barn Owl licence if disturbance of the species is considered likely whilst breeding. The survey method expected to be followed would be that within the 'Barn Owl *Tyto Alba* Survey Methodology and Techniques' (Shawyer, 2012).

4.2 Breeding Birds

Direct impacts to breeding birds would be expected along the A5025 and the immediate surrounding area; in particular where vegetation is present adjacent to the road and where offline works are proposed.

The areas in which breeding bird species were found at the highest densities include:

- Valley – Section 42 species;
- Llanfachraeth – Section 42 and BoCC species;
- Bytheicws – Section 42 and BoCC species;
- Llanfaethlu – Section 42 and BoCC species;
- North of Llanrhyddlad – Section 42 and BoCC species; and
- The end of the route at the north – Section 42 and BoCC species.

Works would be expected to only commence once a working methodology was in place. In particular the working methods would be expected to include avoidance or sensitive working practices in areas where works are proposed close to areas of vegetation, where vegetation removal is required and where works are proposed close to the high population density areas outlined above.

To compensate for any habitat loss, a mitigation and reinstatement plan should be developed and implemented.

5 References

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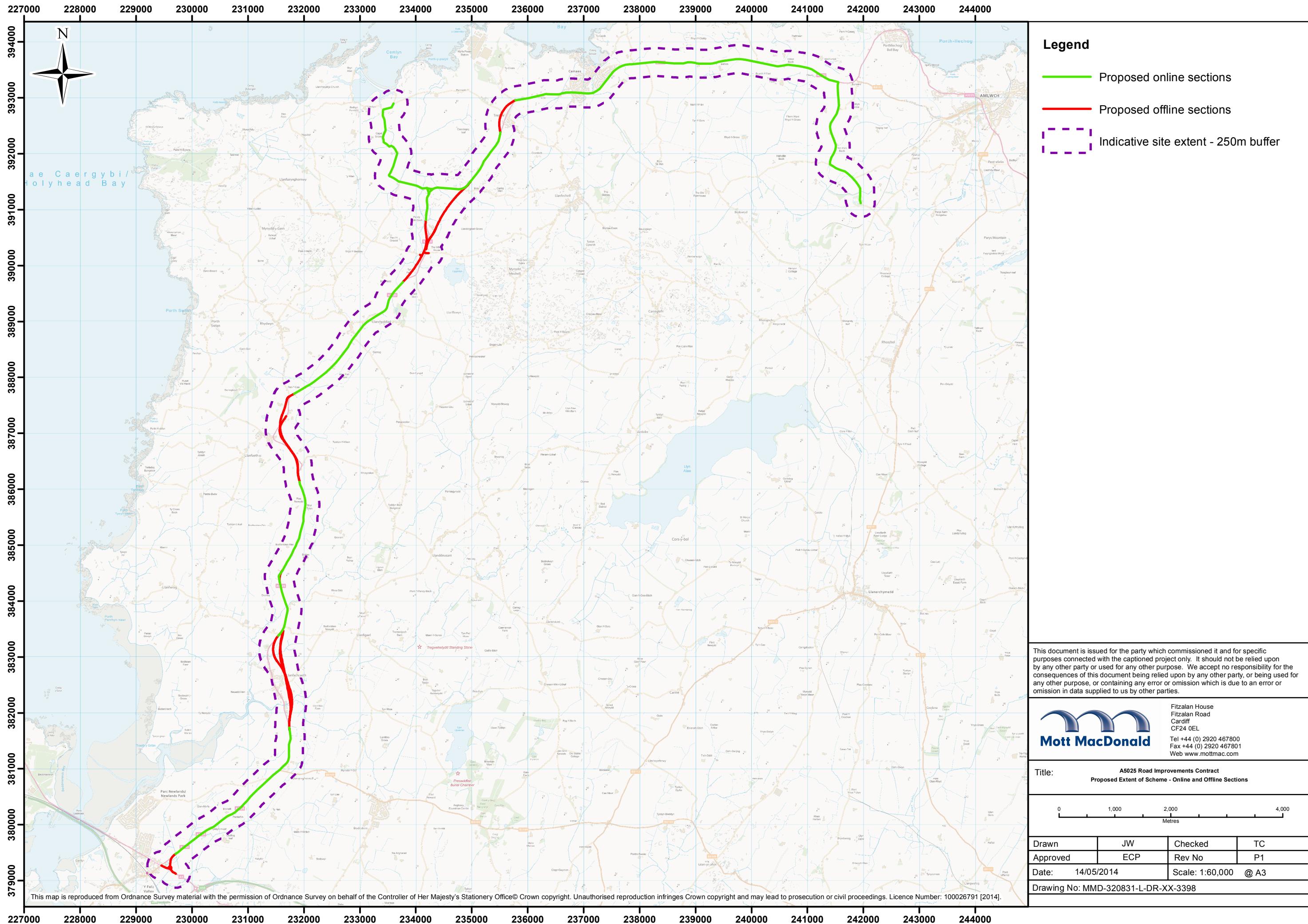
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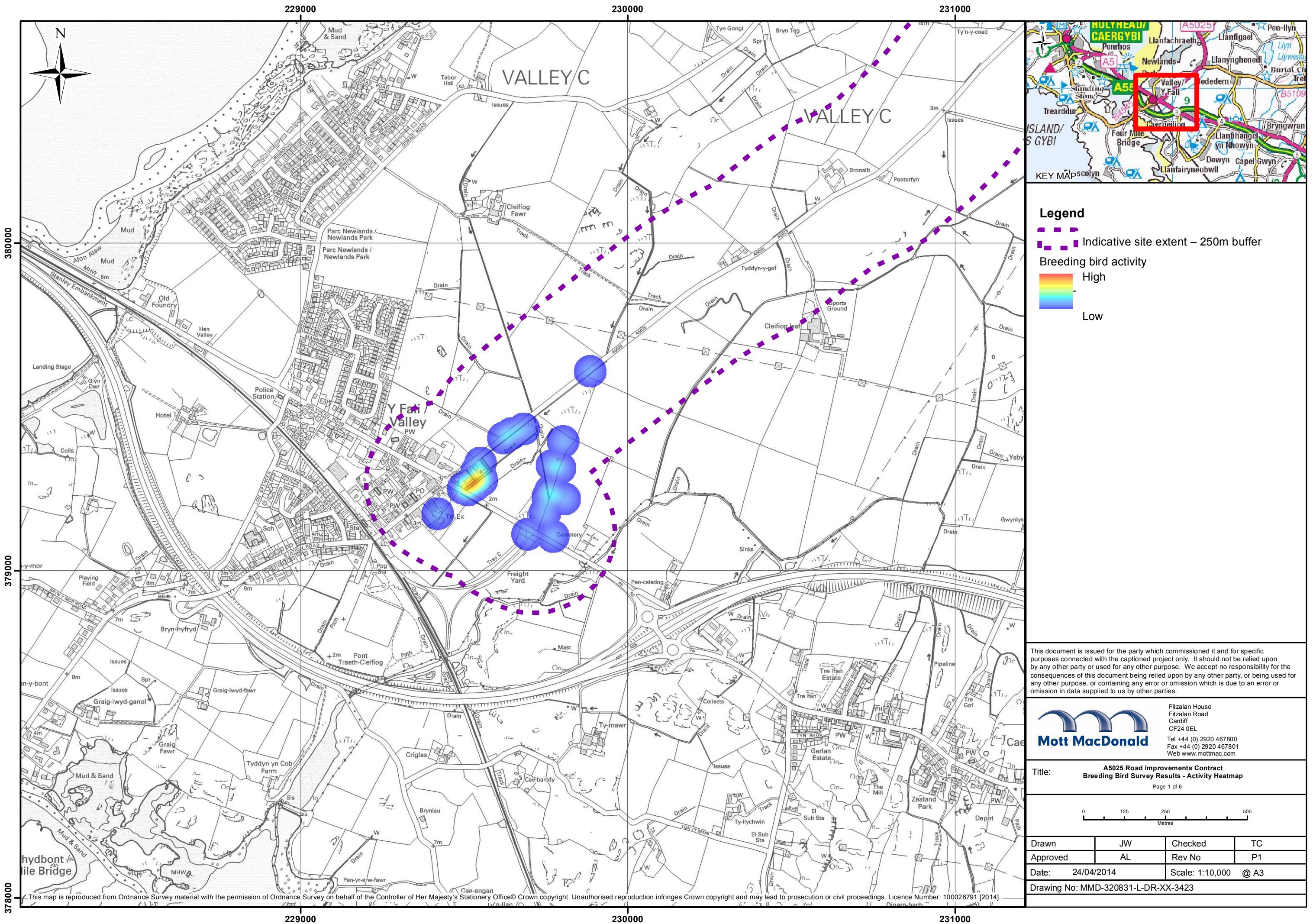
Appendices

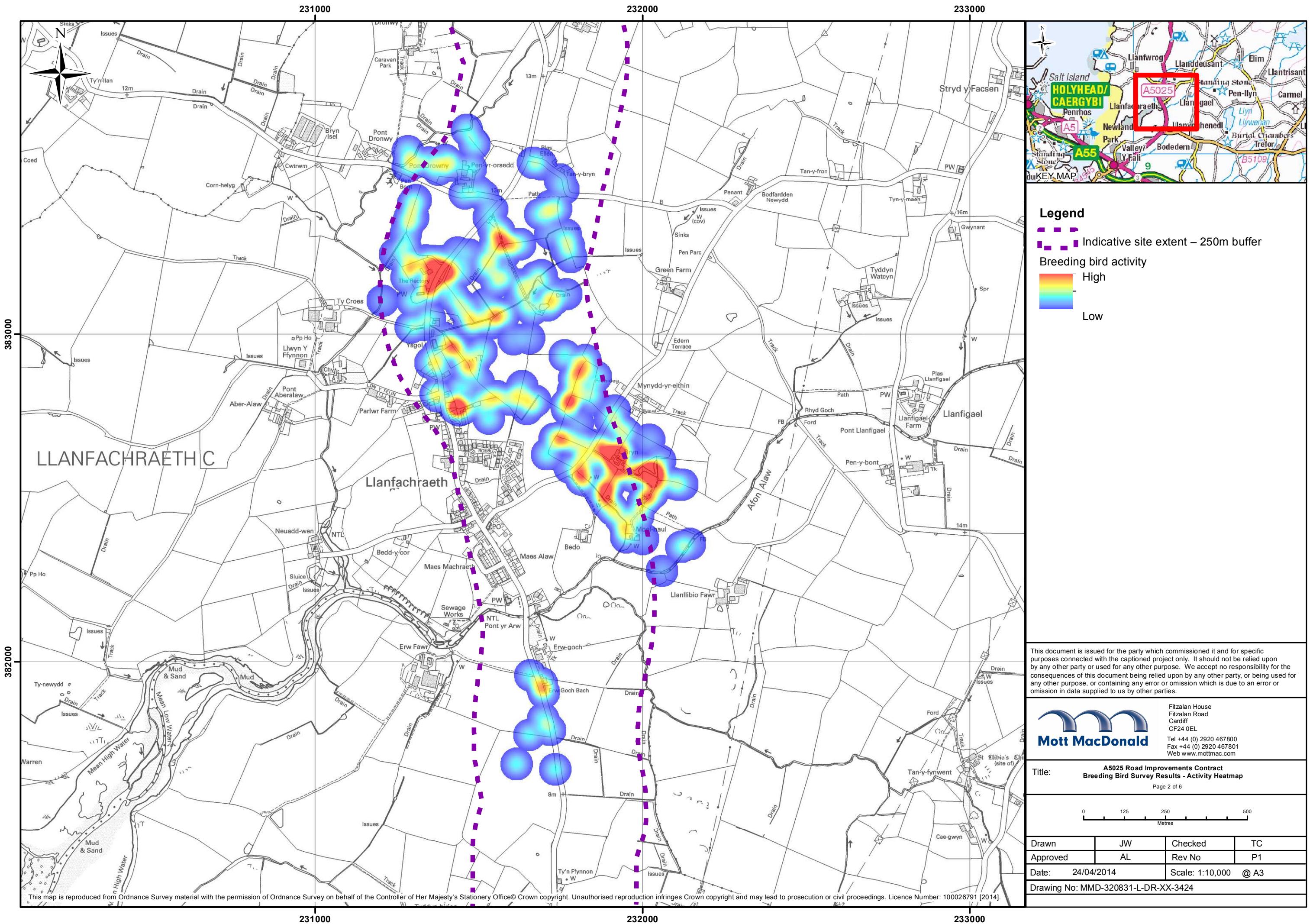
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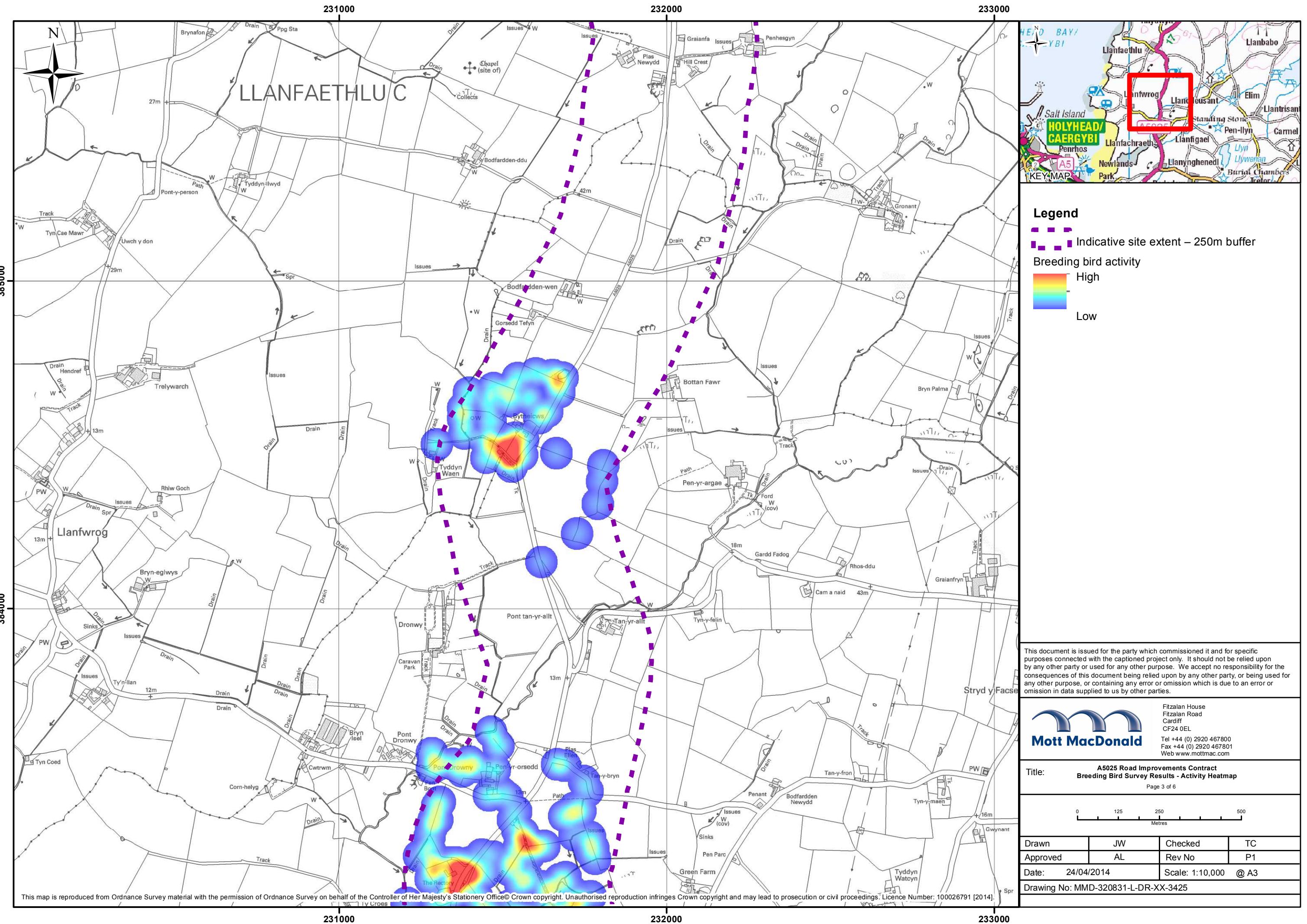
Appendix A. A5025 Online and Offline Works

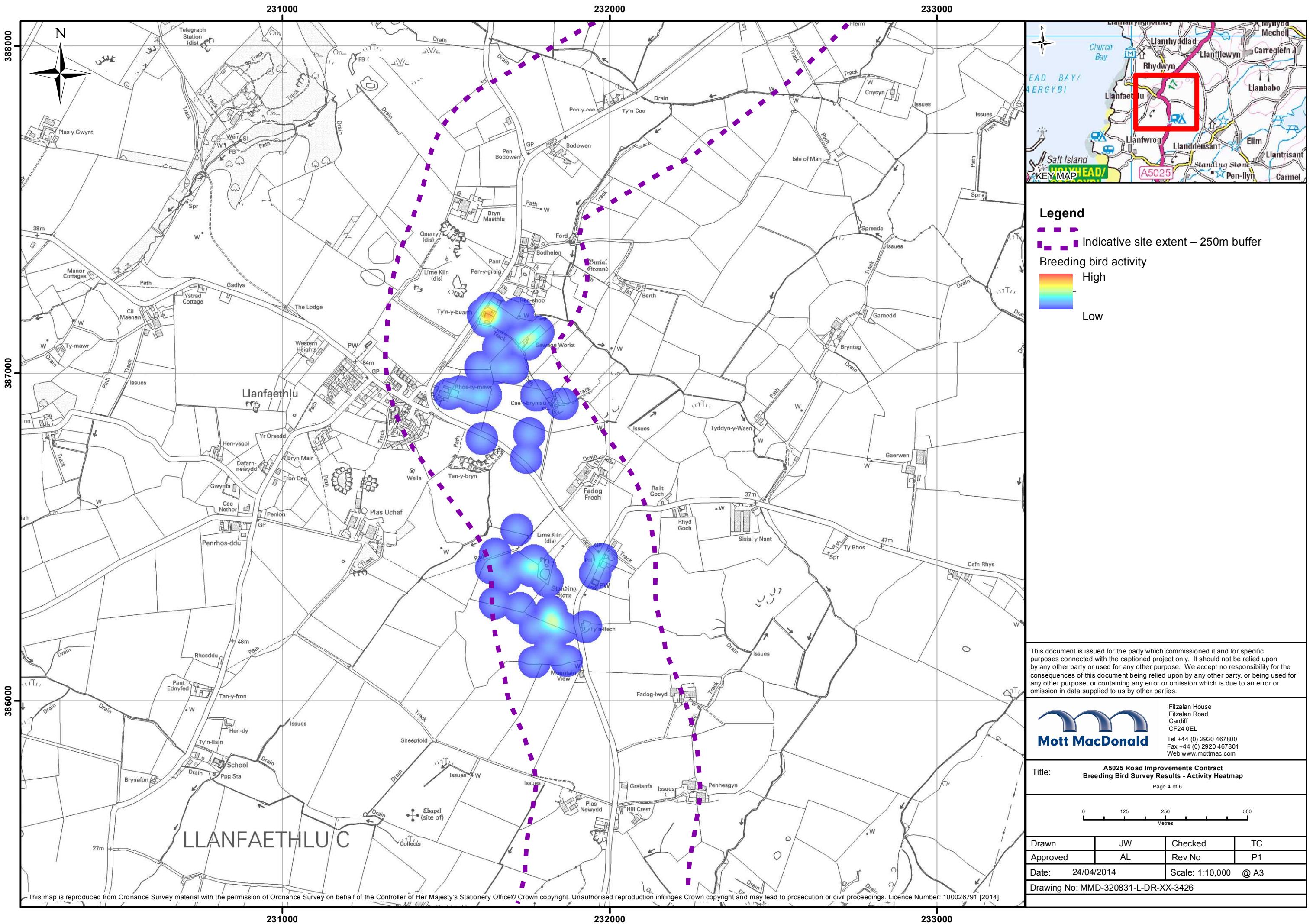


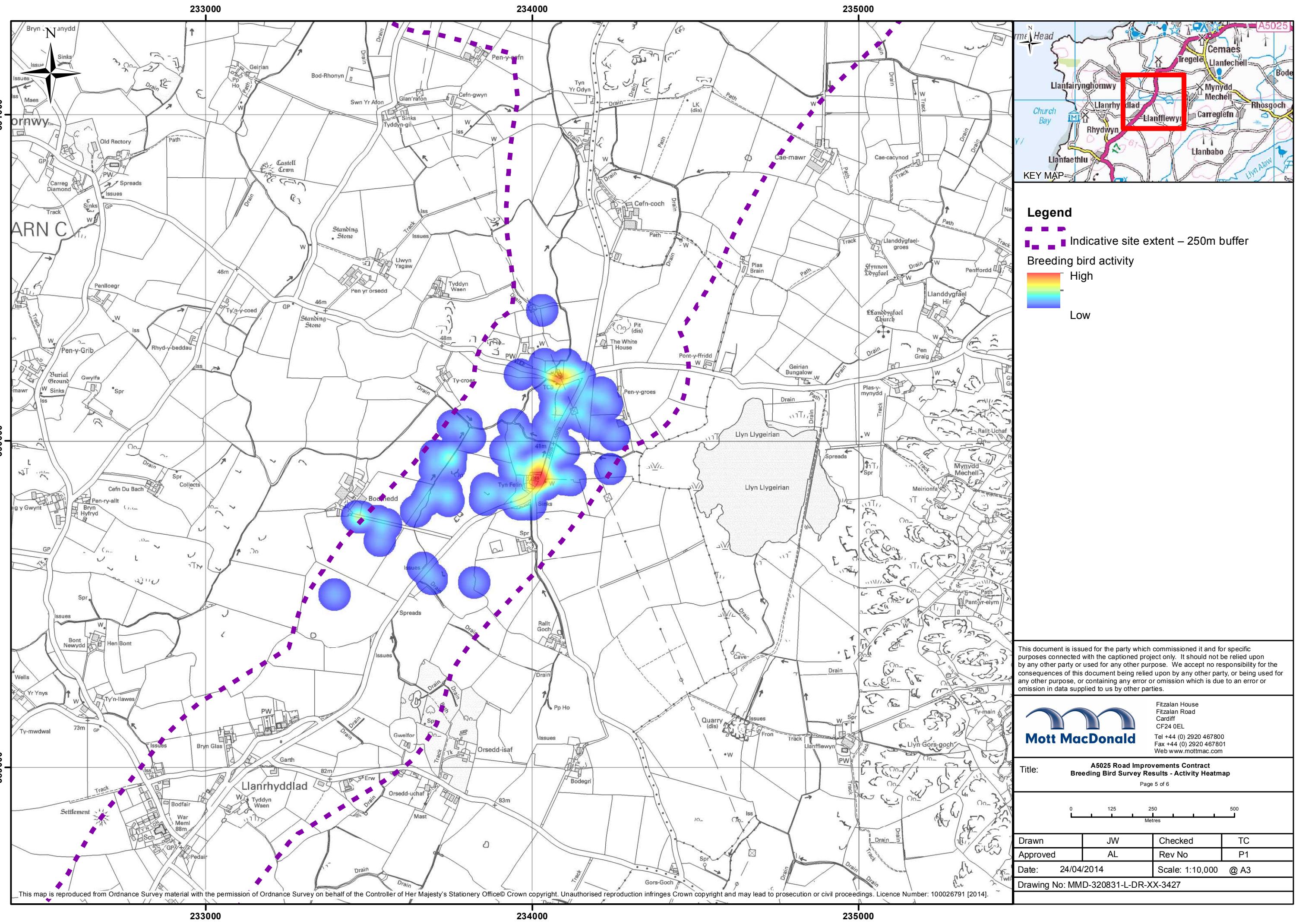
Appendix B. Breeding Bird Utilisation Distribution Map

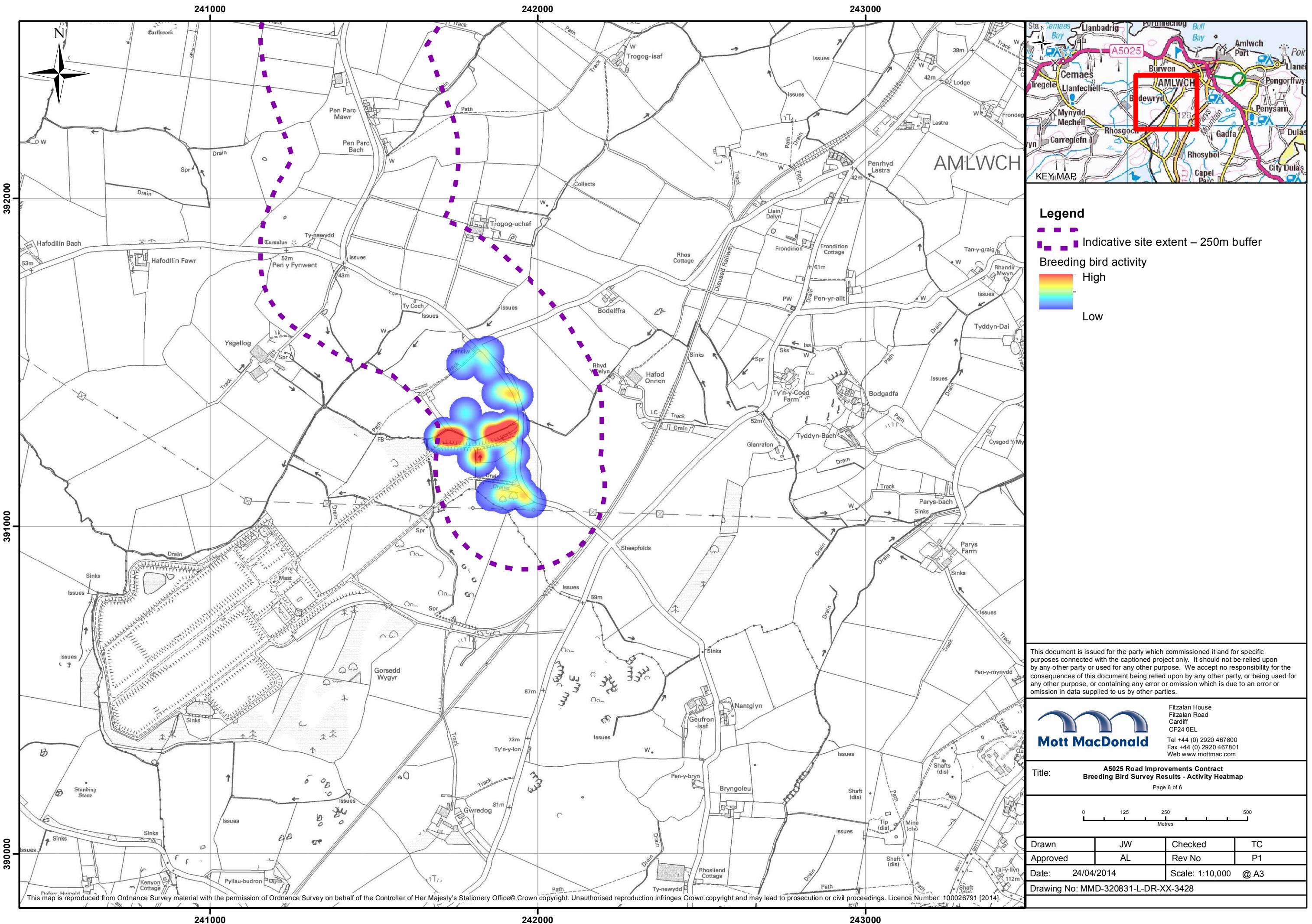












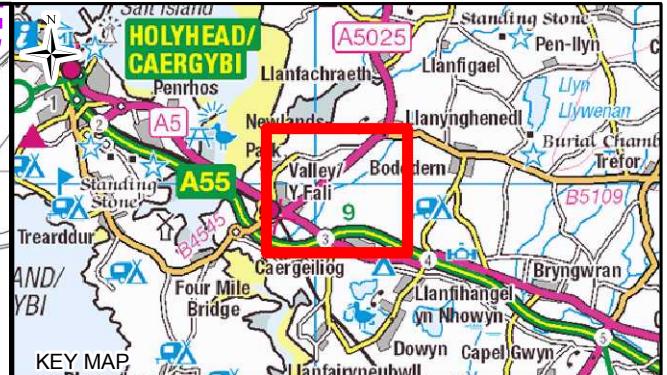
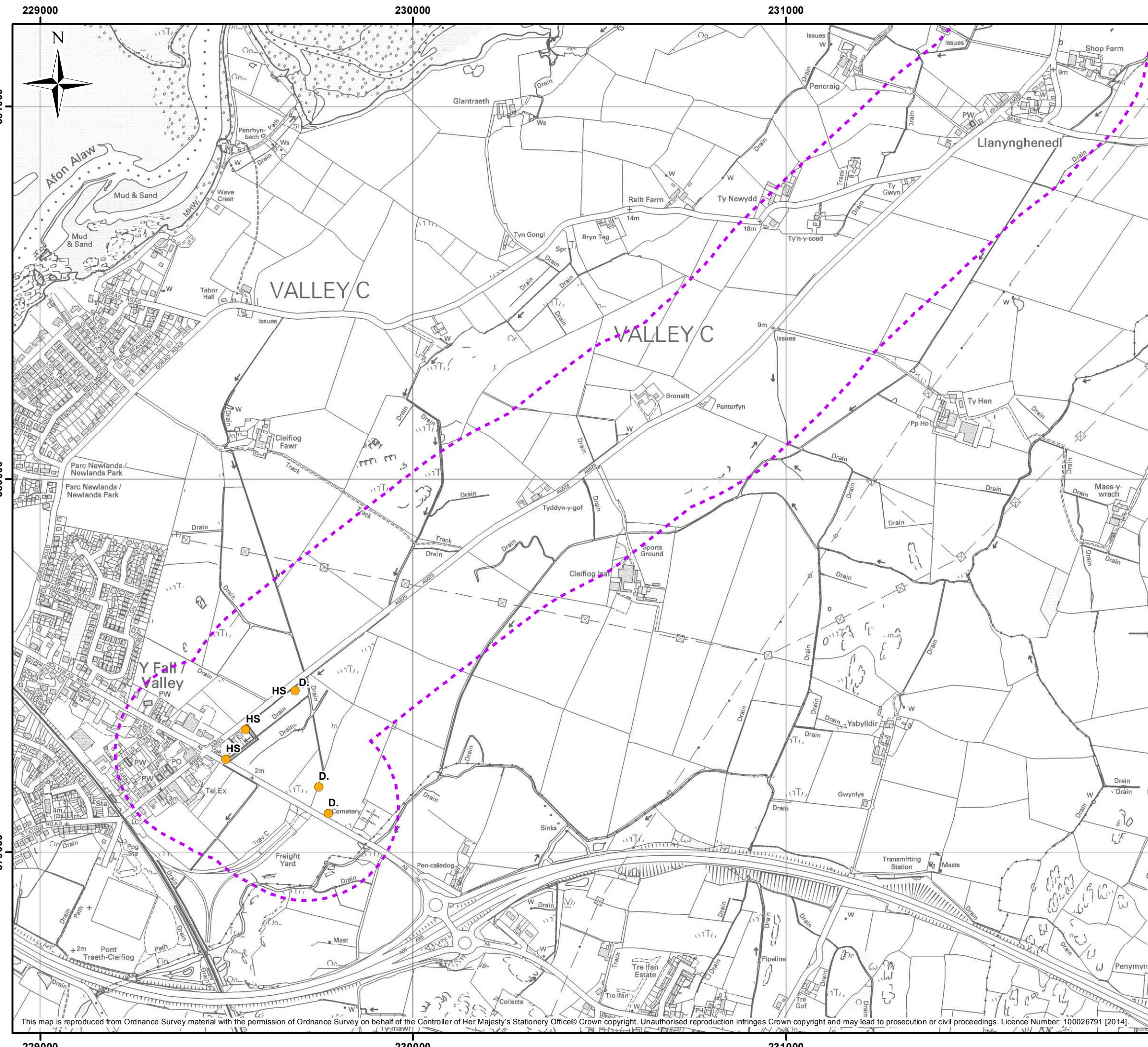
Appendix C. Full Species List of Birds Observed

Table C.1: Observed Species List

British Vernacular Name	Scientific Name	Annex 1	Schedule 1	Section 4*	LBAP	Birds of Conservation Concern	Breeding Evidence
House Sparrow	<i>Passer domesticus</i>			x		Amber	Confirmed
Robin	<i>Erithacus rubecula</i>					Green	Confirmed
Wren	<i>Troglodytes troglodytes</i>					Green	Confirmed
Buzzard	<i>Buteo buteo</i>					Green	Possible
Carriion Crow	<i>Corvus corone</i>					Green	Possible
Goldfinch	<i>Carduelis carduelis</i>					Green	Possible
Dunnock	<i>Prunella modularis</i>			x		Green	Confirmed
Willow Warbler	<i>Phylloscopus trochilus</i>					Red	Confirmed
Blue Tit	<i>Cyanistes caeruleus</i>					Green	Confirmed
Magpie	<i>Pica pica</i>					Green	Probable
Whitethroat	<i>Sylvia communis</i>					Amber	Probable
Pied Wagtail	<i>Motacilla alba yarrellii</i>					Green	No Evidence
Jackdaw	<i>Corvus monedula</i>					Green	Possible
Mallard	<i>Anas platyrhynchos</i>					Amber	Probable
Wheatear	<i>Oenanthe oenanthe</i>					Amber	Probable
Woodpigeon	<i>Columba palumbus</i>					Green	Possible
Song Thrush	<i>Turdus philomelos</i>			x		Amber	Possible
Lesser Whitethroat	<i>Sylvia curruca</i>					Green	Possible
Great Tit	<i>Parus major</i>					Green	Confirmed
Chaffinch	<i>Fringilla coelebs</i>					Green	Probable
Chiffchaff	<i>Phylloscopus collybita</i>					Green	Possible
Blackbird	<i>Turdus merula</i>					Green	Probable
Rook	<i>Corvus frugilegus</i>					Green	Probable
Great Spotted Woodpecker	<i>Dendrocopos major</i>					Green	Possible
Lesser Redpoll	<i>Carduelis cabaret</i>			x		Red	Possible
Pheasant	<i>Phasianus colchicus</i>					Unlisted	Possible
Blackcap	<i>Sylvia atricapilla</i>					Green	Possible
Goldcrest	<i>Regulus regulus</i>					Amber	Possible
Raven	<i>Corvus corax</i>					Green	Probable
Linnet	<i>Carduelis cannabina</i>			x		Red	Possible
Collared Dove	<i>Streptopelia decaocto</i>					Green	Possible
Great Black-backed Gull	<i>Larus marinus</i>					Red	No Evidence

British Vernacular Name	Scientific Name	Annex 1	Schedule 1	Section 4*	LBAP	Birds of Conservation Concern	Breeding Evidence
Skylark	<i>Alauda arvensis</i>			x	x	Amber	Possible
Swallow	<i>Hirundo rustica</i>					Amber	Possible
Meadow Pipit	<i>Anthus pratensis</i>					Amber	Possible
Herring Gull	<i>Larus argentatus</i>			x		Red	No Evidence
Feral Pigeon	<i>Columba livia</i>					Unlisted	Possible
Lesser Black-backed Gull	<i>Larus fuscus</i>					Amber	No Evidence
Greylag Goose	<i>Anser anser</i>					Green	Possible
Grasshopper Warbler	<i>Locustella naevia</i>			x		Red	Possible
Marsh Harrier	<i>Circus aeruginosus</i>	x	x			Amber	No Evidence
Reed Bunting	<i>Emberiza schoeniclus</i>			x		Amber	Possible
Siskin	<i>Carduelis spinus</i>					Green	Possible
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>					Green	Possible
Golden Pheasant	<i>Chrysolophus pictus</i>					Unlisted	Possible
Starling	<i>Sturnus vulgaris</i>			x		Red	No Evidence
Moorhen	<i>Gallinula chloropus</i>					Green	Confirmed
Greenfinch	<i>Chloris chloris</i>					Green	Possible
Sand Martin	<i>Riparia riparia</i>					Amber	No Evidence
House Martin	<i>Delichon urbicum</i>					Amber	No Evidence
Red-legged Partridge	<i>Alectoris rufa</i>					Unlisted	Possible
Grey Heron	<i>Ardea cinerea</i>					Green	No Evidence
Black-headed Gull	<i>Chroicocephalus ridibundus</i>			x		Red	No Evidence
Cattle Egret	<i>Bubulcus ibis</i>					Green	No Evidence

Appendix D. Location of Notable Species



Legend

[Purple dashed box] Indicative site extent - 250m buffer

Bird Species Conservation Status:

- Section 42
- Section 42 & LBAP
- Section 42 & BoCC - Red
- BoCC - Red

BTO Code	Common Name
D.	Dunnock
HS	House Sparrow
S.	Skylark
WW	Willow Warbler
LR	Lesser Redpoll
ST	Song Thrush
LI	Linnet
RB	Reed Bunting

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Title: A5025 Improvements
Breeding Bird Survey Results - Notable Species
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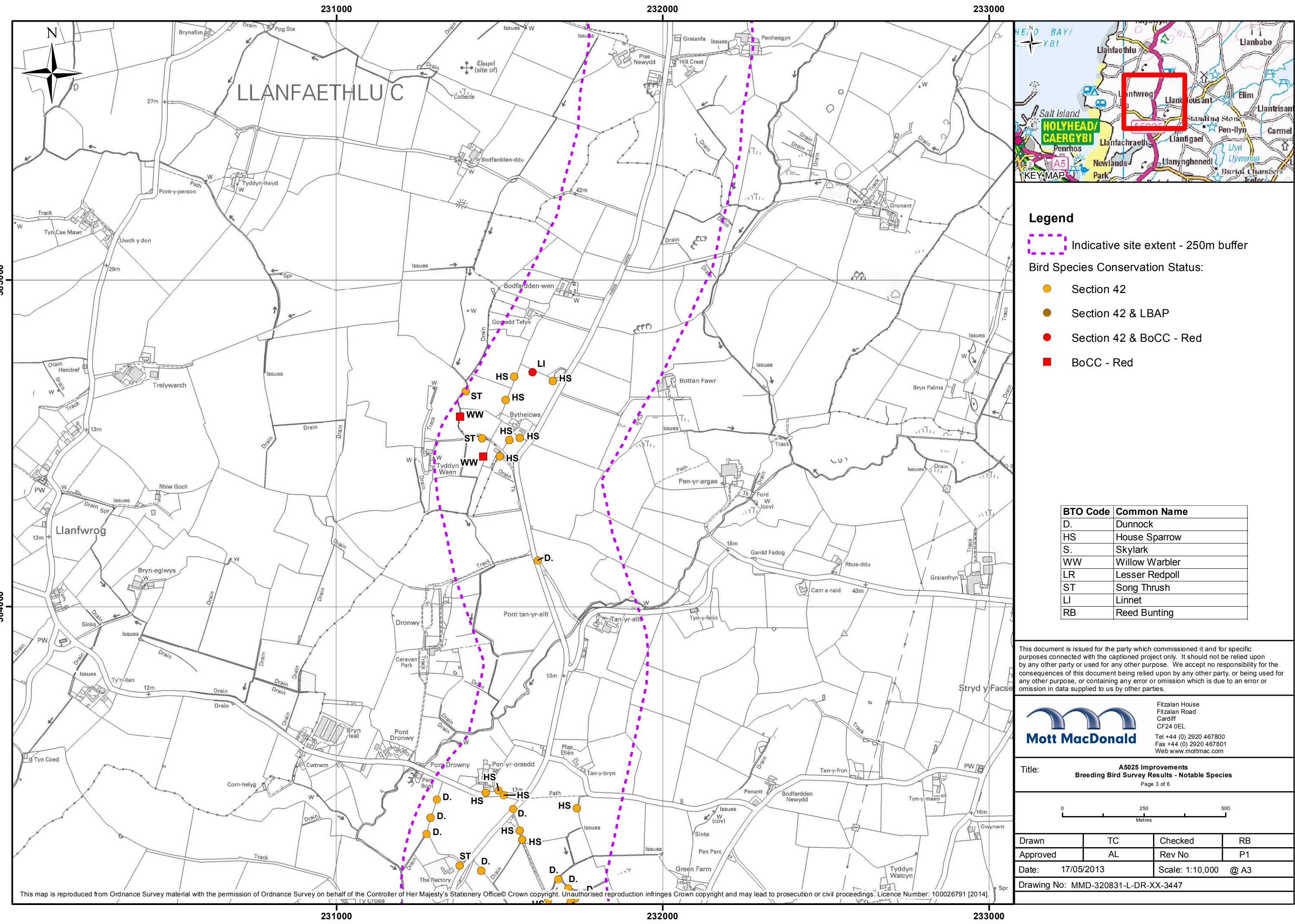
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Metres

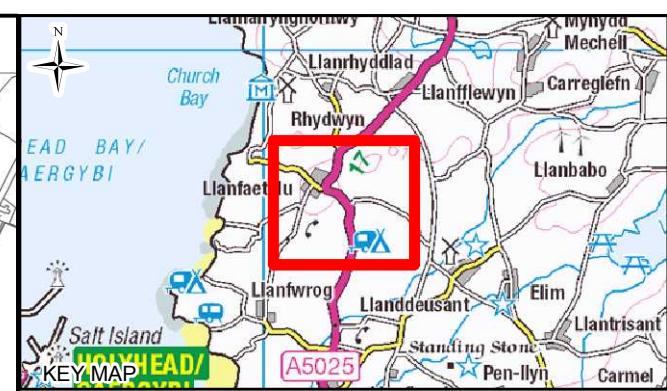
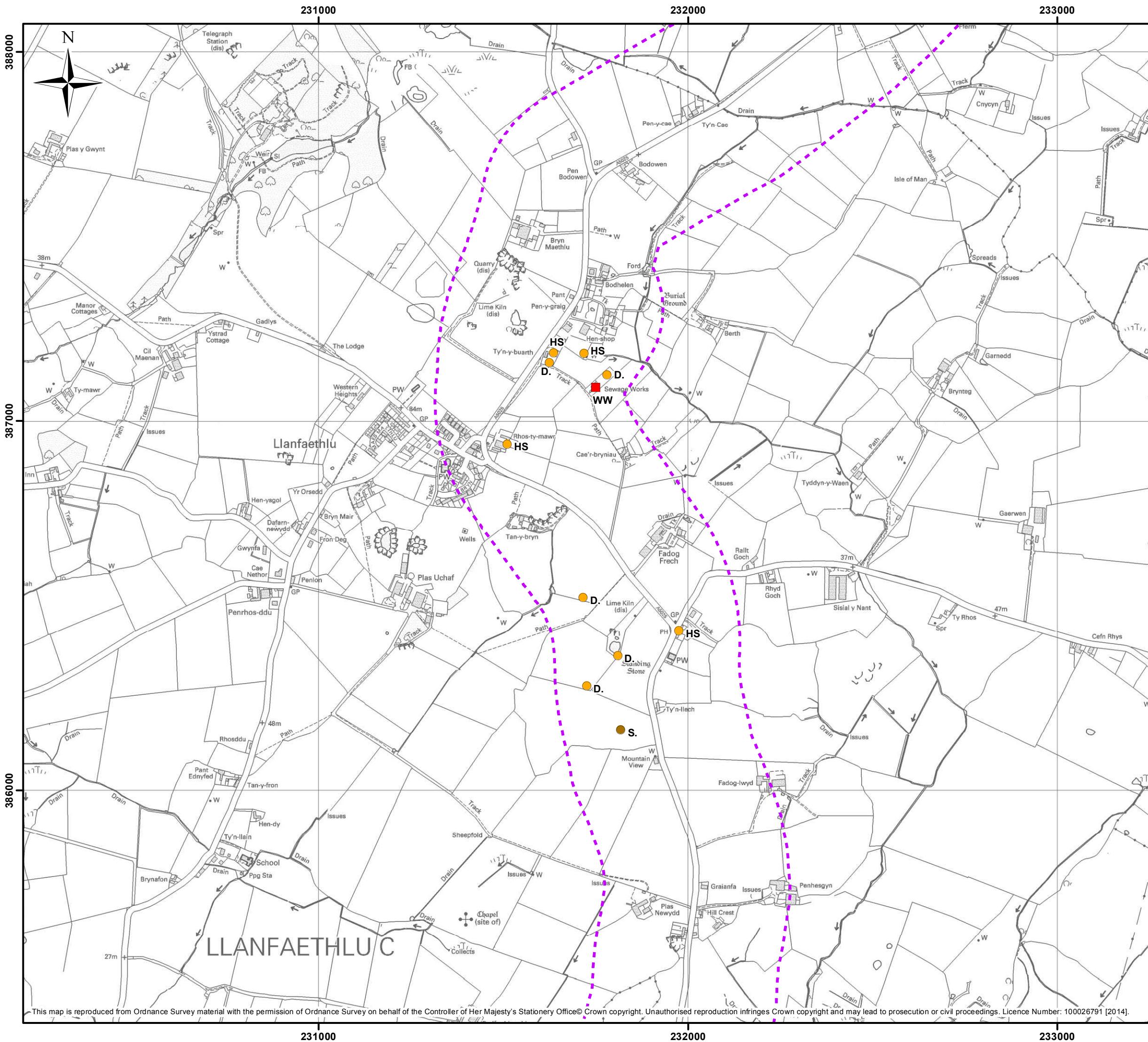
Drawn TC Checked RB

Approved AL Rev No P1

Date: 17/05/2013 Scale: 1:10,000 @ A3

Drawing No: MMD-320831-L-DR-XX-3445





Legend

[Dashed magenta line] Indicative site extent - 250m buffer

Bird Species Conservation Status:

- Section 42
- Section 42 & LBAP
- Section 42 & BoCC - Red
- BoCC - Red

BTO Code	Common Name
D.	Dunnock
HS	House Sparrow
S.	Skylark
WW	Willow Warbler
LR	Lesser Redpoll
ST	Song Thrush
LI	Linnet
RB	Reed Bunting

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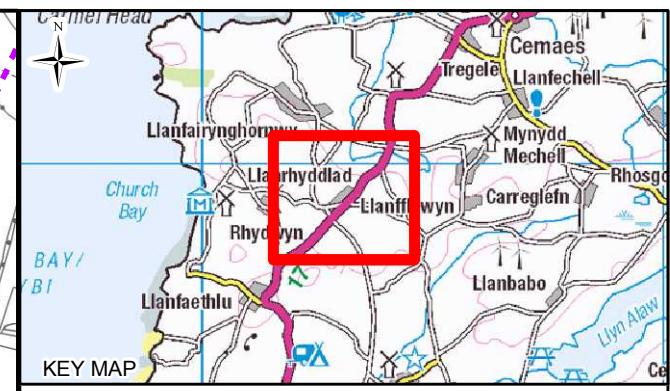
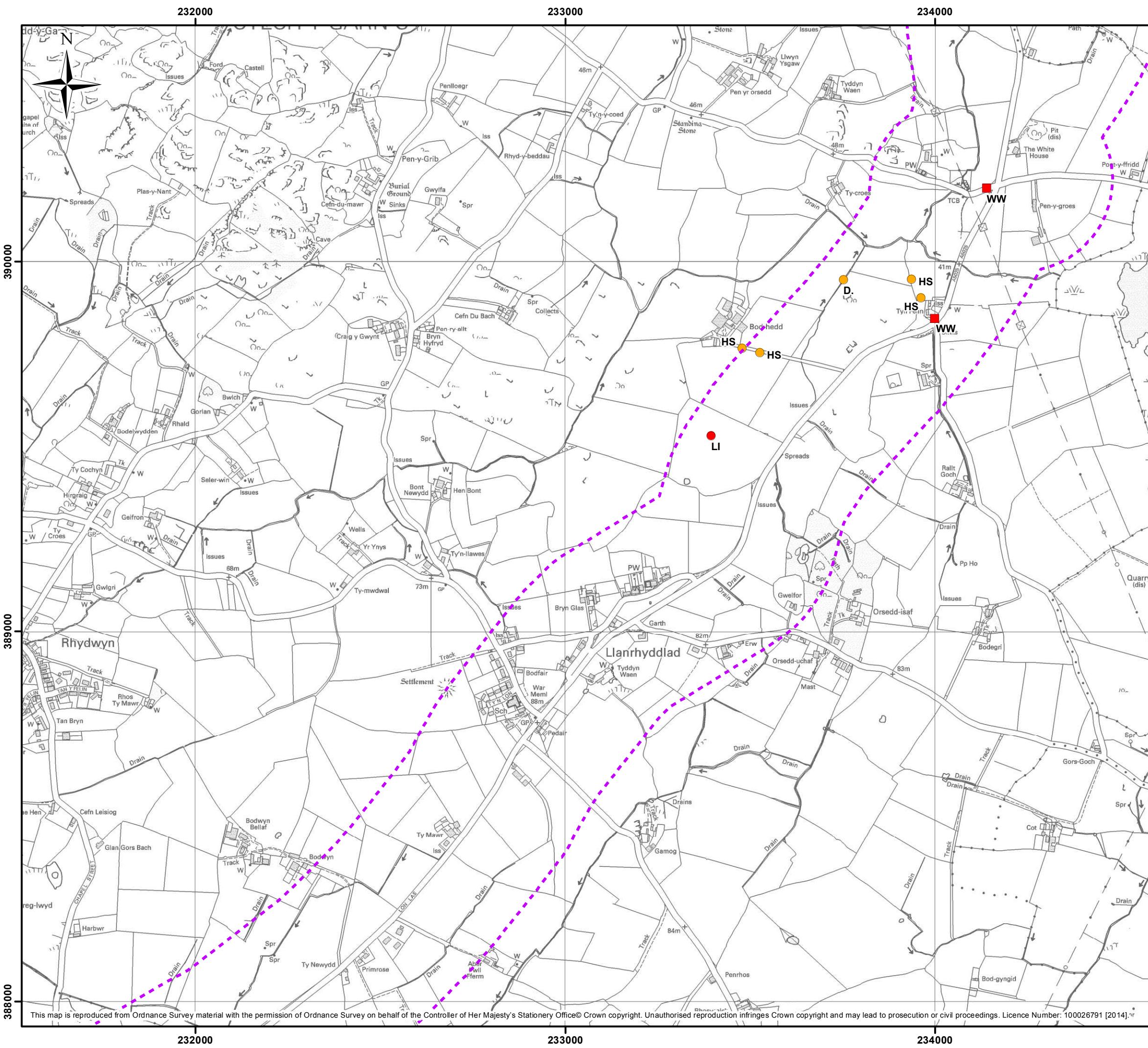


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0 250 500
Metres

Drawn	TC	Checked	RB
Approved	AL	Rev No	P1
Date: 17/05/2013	Scale: 1:10,000 @ A3		
Drawing No: MMD-320831-L-DR-XX-3448			



Legend

Indicative site extent - 250m buffer

Bird Species Conservation Status:

- Section 42
- Section 42 & LBAP
- Section 42 & BoCC - Red
- BoCC - Red

BTO Code	Common Name
D.	Dunnock
HS	House Sparrow
S.	Skylark
WW	Willow Warbler
LR	Lesser Redpoll
ST	Song Thrush
LI	Linnet
RB	Reed Bunting

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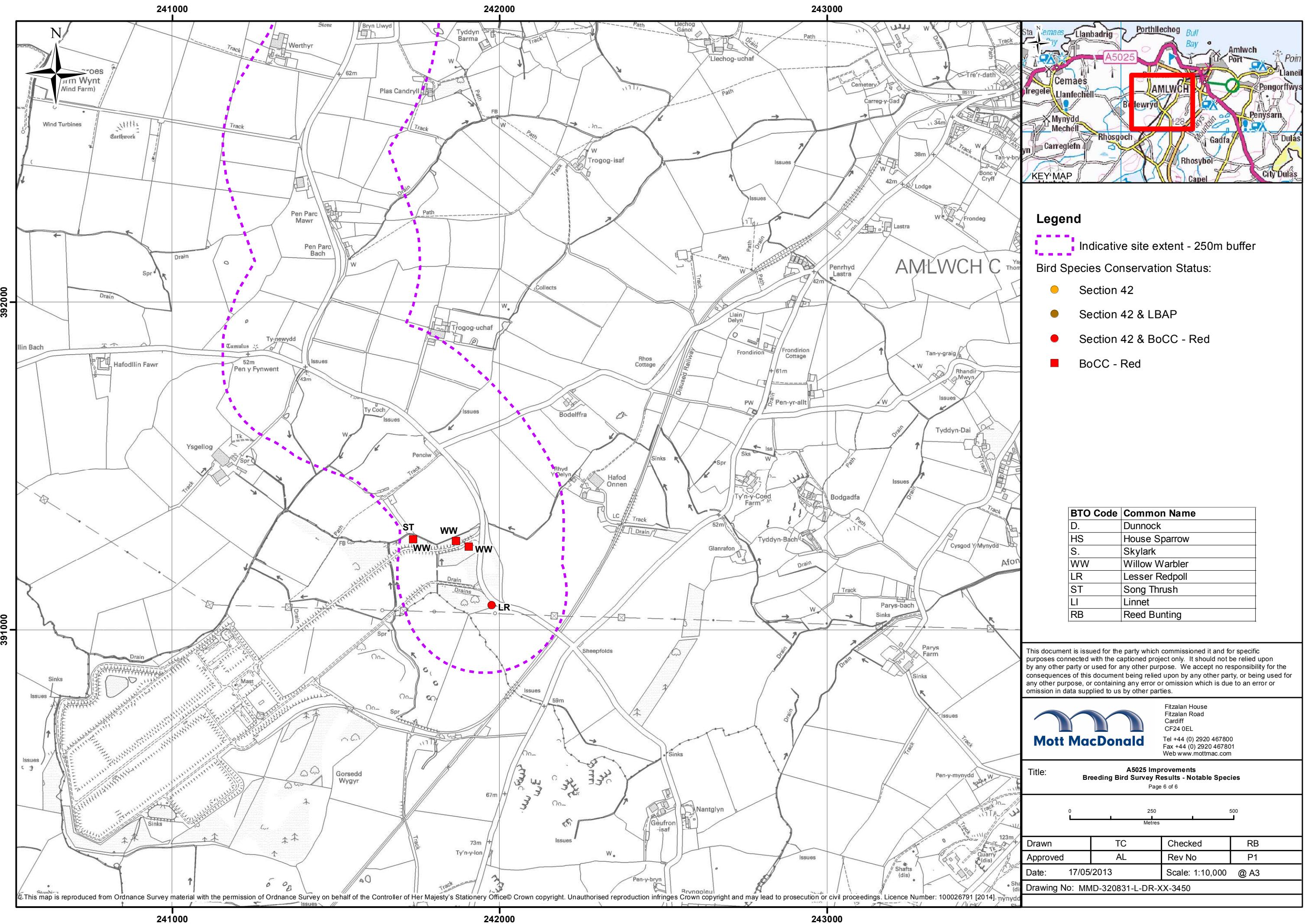


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Appendix E. Potential Barn Owl Roosting/Breeding Locations

