Meridian Solar Farm

EN010169

Volume 6

Environmental Statement

6.3 ES Appendix 9-10: Vantage Point Survey Report

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

March 2026

Contents

Abbreviations and Acronyms

The following list is compiled of the abbreviations and acronyms used throughout this report:

Term	Definition
BAP	Biodiversity Action Plan
CRZ	Collision Risk Zone
DCO	Development Consent Order
EIA	Environmental Impact Assessment
IIWS	Internationally Important Wildlife Site
LNR	Local Nature Reserve
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PoC	Point of Connection
SAC	Special Area of Conservation
SPA	Special Protection Area
SPI	Species of Principal Importance
SSSI	Site of Special Scientific Interest
VP	Vantage Point

Executive Summary

Meridian Solar Farm Limited (hereafter referred to as 'the Applicant') has prepared this wintering birds vantage point survey report as part of its application for a Development Consent Order ('the DCO Application') for the construction, operation and decommissioning of the proposed Meridian Solar Farm ('the Scheme').

The DCO Application is for a Nationally Significant Infrastructure Project (NSIP) comprising the construction, operation (including maintenance) and decommissioning of photovoltaic (PV) solar panels and up to 13 km of overhead line connection into National Grid's planned Weston Marsh B substation. The Scheme will also include associated infrastructure, including co-located battery energy storage systems (BESS) and inter-array connections to link together the land parcels where the solar panels are located.

Vantage Point surveys were undertaken at five locations to assess the importance of the area from which the Grid Connection would be selected (the Initial Grid Connection Routing Study Area and an additional 1km radius (referred to collectively as the Survey Area)) for wintering birds, with a particular focus on potential disturbance/redistribution effects and collision risk with overhead lines. Monthly visits were made between October 2024 and March 2025 in line with current best practice[1][2]. The main findings were as follows:

- A total of 48 species were recorded during the surveys including 21 Primary Focal Species, with movements in all directions across the Survey Area.
- The main areas of activity were central and to the south of the Survey Area.
- Birds were recorded across all five height bands with 11 species observed flying within the collision risk zone of 25-50m. These included dunlin, golden plover, lapwing, mallard, pink-footed goose, red kite, ruff, shelduck, snipe, teal and whooper swan.

[1] NatureScot (2025) *Recommended bird survey methods to inform impact assessment of onshore windfarms* https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms

[2] Bird Survey & Assessment Steering Group. (2025). Bird Survey Guidelines for assessing ecological impacts, https://birdsurveyguidelines.org *[Accessed February 2026]*

Consideration therefore needs to be given to ensure that areas occupied by Primary Focal Species avoid significant effects as a consequence of the proposed Grid Connection. The information contained within this report will be used to inform the design of the Scheme and the subsequent mitigation strategy as part of the EIA and DCO application.

1 Introduction

BACKGROUND

1.1 Meridian Solar Farm Limited (hereafter referred to as 'the Applicant') has prepared this wintering birds vantage point survey report as part of its application for a Development Consent Order ('the DCO Application') for the construction, operation and decommissioning of the proposed Meridian Solar Farm ('the Scheme').

1.2 The survey covered land within the Grid Connection Route and was extended to a 1km radius within the surrounding landscape (henceforth referred to as 'the Survey Area'), as shown in Appendix 1, Figure A1.1. A Feasibility Study was initially undertaken in 2023 to determine suitable locations for the Vantage Points (VP)[3] (Temple 2023). These locations have been adopted here, but the Feasibility Study should be read in conjunction with this report.

SCOPE OF THE REPORT

1.3 This report details the methods and findings of the wintering bird Vantage Point (VP) surveys undertaken by Temple between October 2024 and March 2025. The aim was to identify and categorise the species moving into and out of the Survey Area and to map the flight paths and heights of Primary Focal Species. These are defined as:

- qualifying species of local statutory and non-statutory nature conservation designations, and qualifying species of Internationally Important Wildlife Sites (IIWS); and
- Wildlife and Countryside Act 1981 (as amended), Schedule 1 species (these are included to provide additional information on the usage of the Site outside of the breeding season by Schedule 1 species).

1.4 The data gathered focussed on the use of the Grid Connection Potential Cable Routing Area and surrounding areas to identify key risk areas as part of route

[3] Temple (2023) Meridian Solar Farm, Lincolnshire. Wintering Bird Survey 2022-2023. Report for Meridian Solar Farm Ltd Temple London.

selection and design evolution. Additional surveys were undertaken by National Grid during the winter of 2024-2025 and the results are included in this report.

1.5 This report has been prepared with reference to best practice guidance published by the Chartered Institute for Ecology and Environmental Management[4] and as detailed in British Standard 42020:2013 Biodiversity – Code of Practice for Biodiversity and Development (BSI, 2013)[5].

SITE CONTEXT AND STATUS

1.6 The Meridian Solar Farm NSIP Project (the Scheme) consists of three elements, the Solar Development Area (SDA), the Grid Connection Route, and the Inter-Array Connections. The Solar Development Area, which would house the PV Arrays, co-located Battery Energy Storage System (BESS), on-site substations and associated supporting infrastructure is approximately 1,128ha in size and is centred on Ordnance Survey National Grid reference TF 29441 19897, approximately 12km west of Wisbech and 11km south of Holbeach. The Grid Connection Potential Cable Routing Area (the Study Area) covered the width of the Solar Development Area to a point of connection (PoC) at the proposed 400kV National Grid Weston Marsh B substation, north of Weston (Appendix 1, Figure A1.1).

1.7 The Study Area and the associated Survey Area comprised arable farmland, ditches and isolated pockets of plantation woodland, a small number of hedgerows, and parcels of scrub. Landscape features within the vicinity consist of steep man-made agricultural drainage ditches typically bordering arable field boundaries with isolated pockets of plantation and a number of towns and villages.

PROJECT DESCRIPTION

1.8 The Scheme would comprise the construction, operation (including maintenance) and decommissioning of a solar PV electricity generating station with associated infrastructure, including co-located Battery Energy Storage System (BESS), Inter-

[4] CIEEM (2017). Guidelines for Ecological Report Writing, 2nd Edition. CIEEM, Winchester.
[5] British Standards Institution (2013) *BS 42020:2013. Biodiversity — Code of practice for planning and development*. London BSI

Array Connections to link the land parcels that form the Solar Development Areas, and an up to 13km overhead line Grid Connection (with one short undergrounded section) which would run north towards a point of connection (PoC) at the proposed Weston Marsh B National Grid Electricity Transmission (NGET) substation, to the north of Weston.

RELEVANT LEGISLATION AND PLANNING POLICY

1.9 The following key pieces of nature conservation legislation are relevant to this appraisal.

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities Act 2006; and
- Environment Act 2021.

1.10 The Overarching National Policy Statement (NPS) for Energy (EN-1)[6], National Policy Statement for Renewable Energy Infrastructure (EN-3) and National Policy Statement for Electricity Networks Infrastructure (EN-5)[7] set out the Government's energy policy, the need for new infrastructure and guidance for determining an application for a DCO. The NPS include specific criteria and issues which should be covered by applicants' assessments of the effects of their scheme, and how the decision maker should consider these impacts. For example, NPS (EN-3), paragraph 2.4.2[8], which underlines the importance of good design for energy infrastructure in design of the project to mitigate impacts such as noise and effects on ecology.

[6] DESNZ (2025). Overarching NPS for Energy (NPS EN-1). Available at: https://assets.publishing.service.gov.uk/media/68093d68148a9969d2394f59/draft-nps-en-1.pdf [Accessed 25 February 2026]

[7] DESNZ (2025) NPS for Electricity Networks (NPS EN-5). Available at: https://assets.publishing.service.gov.uk/media/695d12e1b5c46330350ed9a1/national-policy-statement-for-electricity-networks-infrastructure-en-5-web-accessible.pdf [Accessed 25 February 2026]

[8] DESNZ (2025) NPS for Renewable Energy Infrastructure (NPS EN-3). Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3). [Accessed 25/02/2026].

1.11 The National Planning Policy Framework (NPPF)[9] requires local authorities to avoid and minimise impacts on biodiversity and should provide net gains in biodiversity when taking planning decisions.

1.12 Other planning policies at the local level which are of relevance to this development include the South-East Lincolnshire Local Plan[10] and the Lincolnshire BAP[11].

[9] Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. Ministry of Housing, Communities and Local Government, London. Available from: National Planning Policy Framework [Accessed 25/02/2026].

[10] South-East Lincolnshire Joint Strategic Planning Committee (2019). *South East Lincolnshire Local Plan 2011-2036. Adopted Plan | South East Lincolnshire – Local Plan* (southeastlincslocalplan.org) [Accessed 25/02/2026]

[11] Lincolnshire Biodiversity Partnership (2011). *Lincolnshire Biodiversity Action Plan 2011 – 2020 (3rd edition)* CHttpHandler.ashx (southkesteven.gov.uk) [Accessed 25/02/2026]

2 Methodology

DESKTOP STUDY

2.1 The Desktop Study was carried out for the 2022-2023 Wintering Bird Survey[3]. A search was made on MAGIC[12] for statutory designated sites relating to birds within 15km of the Survey Area. In line with professional judgment, a 15km buffer was chosen in relation to IIWS, including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, given the scale and nature of the works and potential impact pathways for qualifying species. Additionally, a search of up to 2km was made for other statutory designated sites including Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR), for which birds are included within the designation.

2.2 Ornithological data for a 15km buffer was obtained from the Greater Lincolnshire Nature Partnership, the local Biological Records Centre. This buffer was chosen given the nature of the Scheme, including the Grid Connection, and the proximity to IIWS.

2.3 Data from wintering bird surveys during 2024-2025, undertaken by National Grid at the northern extent of the Site Area, was also collated for the report.

FIELD SURVEY

2.4 The purpose of the VP surveys was to collate data to inform the evolving route selection and design for the Grid Connection using a proportionate approach to data collection over a large area. It will allow for an initial collision risk assessment of birds with proposed structures such as pylons and associated overhead lines and will inform the scope of further survey work where necessary.

2.5 The surveys recorded levels of activity of bird species within the airspace of the proposed overhead line infrastructure that present a potential collision hazard. In

[12] MAGIC (2026) Defra's MAGIC. Available at: https://magic.defra.gov.uk/ [Accessed on 25/02/2026].

addition, these surveys provide information on the use of land within the Survey Area that could provide important resources for wintering birds, acting as Functionally Linked Land (FLL) in relation to IIWS, which could be subject to loss or disturbance as a result of the Grid Connection. This will also help to inform likely movement corridors for birds that could interact with the proposed overhead line infrastructure.

2.6 Activity patterns of birds within the Survey Area may also inform the assessment of the potential consequences of displacement and habitat loss or fragmentation. The Survey Area was chosen to ensure that movements of birds were identified.

2.7 The wintering VP surveys were undertaken by a team of surveyors, all proficient in bird identification, survey techniques and VP methodology (Table 2.1 below).

Table 2.1: Ornithological Surveyors

Grade	Qualification	CIEEM	Ornithological Experience
Senior Ecologist	HND	Pending	15 Years
Senior Ecologist	BSc & MSc	ACIEEM	10 years
Consultant Ecologist	BSC (Hons)	MCIEEM	12 years
Senior Ecologist	BSc (Hons) & MSc	ACIEEM	10 years
Senior Ecologist	BSc (Hons)	MCIEEM	8 years
Consultant Ecologist	BSc (Hons)		3 years
Assistant Ecologist			2 years
Consultant Ecologist	MSc	Pending	2 years
Consultant Ecologist	BSc (Hons)		5 years
Consultant Ecologist	BA, MSc		3 years
Assistant Ecologist	BSc (Hons)		5 years
Assistant Ecologist	BSc (Hons)		2 years

2.8 This report was compiled by a Senior Ecologist and full member of CIEEM with 10 years' ornithological experience. The assessment was reviewed by a Principal Ecologist and full member of CIEEM, with over 40 years ornithological experience.

2.9 The Scheme is located within a broad area of relatively homogeneous habitat and landscape character. Surveys were carried out using five VPs that afforded good views into the Survey Area. These are listed in Table 2.2 and shown in Appendix 1 Figure A1.1.

Table 2.2: VP Locations

Vantage Point	Location	PRoW	OS Grid
VP1	Along South Holland Main Drain, east of Crowland Bypass, Whitehouse Farm	No	TF 27045 15913
VP2	Along Moulton Mere Bank, Ashgrove Farm	Within highways boundary	TF 29125 20845
VP3	Within highways boundary, along Wiseman's Gate	Within highways boundary	TF 28441 24924
VP4	Land east, along Cloot Drove, Little Lodge Farm	Within highways boundary	TF 24893 13127
VP5	Land west of Langary Gate Road, along Lambert Drain	No	TF 34108 14635

2.10 Methodologies for these surveys were based on NatureScot[13] guidance on survey methods to inform onshore windfarm development assessments, which has been adapted to be appropriate to overhead lines. These methods were subject to minor modification given the scale of the area and the intention to refine designs for the Grid Connection to avoid significant negative impacts on birds as far as possible. Collision risk associated with overhead lines is presumed to be dependent on the level of flight activity over the proposed route and the ability of the birds to detect and avoid these lines. Birds that collide with overhead lines are likely to be killed or fatally injured e.g., extreme injury (e.g. wing breakage) would be eventually fatal

[13] NatureScot (2025). *Recommended bird survey methods to inform impact assessment of onshore wind farms*, Version 2. Nature Scot available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms [Accessed 25/02/2026]

without causing instantaneous death. This may, in turn, affect the maintenance of bird populations.

2.11 The purpose of the VP surveys was to collect data to enable estimates to be made of:

- the time spent flying over the Survey Area;
- the relative use of different parts of the Survey Area; and
- the proportion of flying time spent within different flight bands.

2.12 Twelve survey visits were carried out between October 2024 and March 2025, with approximately two weeks between each visit, except from VP3. Additionally, each VP was subject to two three-hour daytime survey visits per month equalling a total of 36 hours at each location (24 hours at VP3), plus a single three-hour nocturnal survey per month.

2.13 Each visit was carried out by a pair of competent surveyors, both of whom are experienced field ornithologists to allow for full visibility of the viewshed[14] and recording of simultaneous movements of multiple birds / flocks. At each survey location, the VP was located in the same place with the same viewshed on each survey visit. Birds were recorded within an envelope of at least 2km from the VP location where topographical conditions allowed.

2.14 Surveys proceeded in inclement weather as it is important to record bird activity and behaviour in a range of conditions. However, surveys were avoided where visibility was less than 1km for prolonged periods (either from mist, heavy rain or low cloud-base), or in high winds (over Beaufort 5) as these conditions are likely to significantly impair the ability to record bird activity as well as restricting bird activity.

2.15 Weather conditions were recorded at least hourly, or more often if there were significant changes noted. Any disturbance events liable to affect the behaviour of

[14] The term used to define the area visible from a defined vantage point.

birds within the viewshed, such as farming activities, people walking or low-flying aircraft, were also recorded.

2.16 Target species, referred to as 'Primary Focal Species', included qualifying features of the IIWS, and those which could present a collision risk with the Grid Connection (see Table 2.3 below). Target species for vantage point surveys included the following species/species groups:

- waders, all geese, swans and ducks (except Canada goose);
- common crane; and
- all Schedule 1 and Annex I raptors and owls (e.g. marsh harrier and red kite) were included to provide additional information on distribution at the request of Natural England).

Table 2.3: Primary Focal Species

Species	Scientific Name	IIWS Qualifying Species	Collision Risk
Avocet	*Recurvirostra Avosetta*		Yes
Barn owl	*Tyto alba*		Yes
Bewick's swan	*Cygnus columbianus*	Yes	Yes
Black-tailed godwit	*Limosa limosa*	Proposed (this is not yet confirmed. As such, in line with current guidance, it is considered as a qualifying feature for the purpose of this assessment.)	
Brent goose	*Branta bernicla*	Yes	Yes
Common crane	*Grus grus*		Yes
Curlew	*Numenius arquata*	Yes	Yes
Dunlin	*Calidris Alpina*	Yes	
Garganey	*Spatula querquedula*	Yes	
Goldeneye	*Bucephala clangula*		Yes
Golden Plover	*Pluvialis Apricaria*		Yes

Species	Scientific Name	IIWS Qualifying Species	Collision Risk
Greylag Goose	*Anser anser*		Yes
Hen harrier	*Circus cyaneus*		Yes
Lapwing	*Vanellus vanellus*	Yes	Yes
Mallard	*Anas platyrhynchos*		Yes
Marsh harrier	*Circus aeruginosus*		Yes
Merlin	*Falco columbarius*		Yes
Mute swan	*Cygnus olor*		Yes
Osprey	*Pandion haliaetus*		Yes
Peregrine	*Falco peregrinus*		Yes
Pink-footed goose	*Anser brachyrhynchus*		Yes
Pintail	*Anas acuta*	Yes	
Redshank	*Tringa totanus*	Yes	
Ruff	*Philomachus pugnax*		Yes
Shelduck	*Tadorna tadorna*	Yes	
Snipe	*Gallinago gallinago*	Yes	
Teal	*Anas crecca*	Yes	
Turnstone	*Arenaria interpres*	Yes	
Whooper swan	*Cygnus cygnus*		Yes
Wigeon	*Anas penelope*	Yes	

2.17 Primary Focal Species were recorded for the duration they were in flight within view, with time of detection and flight duration also recorded. The route of flight was plotted in the field onto 1:25 000 scale Ordnance Survey base maps. Bird flight height was estimated at the point of detection, and then at 15 second intervals, thereafter, using five height categories determined to correlate with the anticipated pylon cable heights (see Table 2.4). Height band 3 corresponds to the top of the proposed pylons and sag of the cables, with bands 4 and 5 added as precautionary

measure to allow for flexibility in design. The height bands were based on initial information provided by the Applicant.

Table 2.4: Height bands for records bird species

Height band 1	Height band 2	Height band 3	Height band 4	Height band 5
<10m	10-25m	**25-50m**	50-75m	>75m

2.18 Height band 3 is referred to as the Collision Risk Zone (CRZ) throughout the report.

2.19 The number and activity of Secondary Species (i.e. all species not listed as Primary Focal Species) was recorded in 15-minute periods throughout the VP surveys. Perched birds and birds on waterbodies were recorded once only on arrival. Thereafter, only flying birds and newly noticed perching/swimming birds were included in the activity summaries. Observing and recording Primary Focal Species took priority over Secondary Species activity summaries. Secondary species are not considered within this report, but information can be made available if requested.

Diurnal Vantage Point Surveys

2.20 Diurnal visits to each VP were alternated between morning and afternoon, (whenever possible) starting within one hour after dawn or finishing within one hour before dusk. The surveyors used 8 or 10x42 binoculars and a 20-60x zoom telescope to assist with bird identification and scaled field maps to record the registrations/numbers of each bird species observed.

Nocturnal Vantage Point Surveys

2.21 Nocturnal surveys were undertaken any time after sunset following the guidelines described by Bird Survey and Assessment Steering Group[15]. Each surveyor was equipped with a thermal imaging monocular, Pulsar Telos XP50 to aid bird detection within the landscape.

[15] Bird Survey & Assessment Steering Group. (2023). *Bird Survey Guidelines for assessing ecological impacts*, v.1.1.0. https://birdsurveyguidelines.org [25/02/2026]

Survey Details

2.22 The times, dates and weather conditions of all survey visits are detailed in Table 2.5 and 2.6, below. Where a range is given, this refers to changes in condition from the start to the end of the survey.

Table 2.5: Daytime Vantage Point survey dates and times

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
VP1	15/10/2024	07:10	10-11	8	2 SE	0	Good visibility
	31/10/2024	13:35	14-11	7	4 SW	0	Good visibility
	13/11/2024	13:20	11-9	2	1 SE	0	Good Visibility
	28/11/2024	07:50	0-2	2	1 W	0	Good visibility
	09/12/2024	13:10	7-6	5	1 NW	0	Moderate visibility
	18/12/2024	08:00	13-14	7	5 N	Light rain	Very windy
	07/01/2025	13:00	3	5	2 W	Light rain	Good visibility
	30/01/2025	08:30	1	4	2 NW	0	Good visibility
	04/02/2025	13:45	7-8	6	2 SSW	0	Good visibility
	18/02/2025	07:00	1-2	3	2 W	0	Good visibility
	04/03/2025	14:45	13-10	2	3 SW	0	Breezy, sunny, cool
	18/03/2025	05:45	0-6	0	2 E	0	Cold and frosty start with a slight breeze
VP2	15/10/2024	15:15	14-13	8	3 S	0	Moderate visibility

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
	31/10/2024	06:45	12-11	8	1 SE	0	Moderate visibility
	13/11/2024	07:25	6-7	8	1 SE	0	Good visibility
	28/11/2024	12:30	4-3	4	1 W	0	Good visibility
	10/12/2024	13:00	6-5	8-7	1 NE	Drizzle	Dry but started to lightly drizzle
	17/12/2024	08:00	7-9	8	3 N	0	Windy and cloudy
	08/01/2025	13:00	1	7	1 W	0	Good visibility
	23/01/2025	08:15	2	4	2 S	0	Good visibility
	05/02/2025	13:30	8-7	7	2 WNW	0	Good visibility
	19/02/2025	07:10	0-2	7	3 SE	0	Good visibility
	03/03/2025	15:15	12-9	2	2 NE	0	Sunny, warm, light breeze
	19/03/2025	06:30	-1 - 4	1	1 E	0	Ground frost
VP3	N/A						
	N/A						
	N/A						
	N/A						
	10/12/2024	08:00	7	8	3 N	0	Good visibility
	16/12/2024	13:00	12-11	7	5 SW	0	Very windy
	07/01/2025	08:20	2	1	0	0	Ground frost

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
	20/01/2025	12:45	7-8	6	1 SW	0	Good visibility
	04/02/2025	08:00	7-8	6	2 S	0	Good visibility
	18/02/2025	14:19	6-3	5	2 SE	0	Good visibility
	04/03/2025	07:00	2-8	1	1 SW	0	Ground frost
	18/03/2025	14:30	11-10	0	2 ESE	0	Good visibility
VP4	14/10/2024	16:00	12-10	7	2 SE	0	Good visibility
	01/11/2024	06:30	10-11	8	2 SW	0	Good visibility
	12/11/2024	12:50	11	8	3 SW	0	Good visibility
	29/11/2024	08:00	3-5	7	1 W	0	Moderate visibility
	11/12/2024	08:15	7	7	2 SE	0	Good visibility
	18/12/2024	13:00	13-12	7	6 NE	0	Very windy
	09/01/2025	08:15	-3-0	0	1 SW	0	Ground frost
	29/01/2025	13:00	8-7	5	0 SW	0	Good visibility
	17/02/2025	14:16	5-2	1	3 E	0	Good visibility
	06/02/2025	08:00	7-8	5	2 SSW	0	Good visibility
	05/03/2025	07:00	3-7	3	2 SW	0	Ground frost present at start of survey
	17/03/2025	14:30	9-7	5	3 E	0	Good visibility
VP5	16/10/2024	07:25	14-15	8	4 SE	0	Moderate visibility

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
	30/10/2024	13:45	12-11	8	2 SW	0	Moderate visibility
	14/11/2024	07:25	9-10	3	2 S	0	Moderate visibility
	27/11/2024	12:50	6-5	7	4 N	Light Rain	Good visibility
	12/12/2024	19:30	8-7	8	3 NW	Drizzle	Some drizzle halfway through
	19/12/2024	08:00	5-6	3	5 SE	0	Cold and windy
	07/01/2025	13:00	3	5	6 SW	Drizzle	Good visibility
	21/01/2025	08:30	3	8	2 SW	0	Misty at start but cleared throughout
	03/02/2025	13:30	8-7	8	2 SSW	0	Good visibility
	18/02/2025	07:15	-1 - 1	2	2 E	0	Good visibility
	04/03/2025	15:00	12-8	3	3 SSW	0	Good visibility
	18/03/2025	06:30	1-5	0	2 E	0	Ground frost at start

Table 2.6: Nocturnal Vantage Point survey dates and times

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
VP1	12/12/2024	19:30	7-6	5	1 NW	0	Moderate visibility
	06/01/2025	18:30	3	7	3 WSW	0	Cool and cloudy
	03/02/2025	19:30	6-5	1	2	0	Moderate visibility
	03/03/2025	18:45	7-6	3-7	1 SW	0	Cool and calm
VP2	11/12/2024	20:45	6-5	8-7	1 NE	1	Cool with some drizzle
	08/01/2025	18:45	-1	8	0	0	Cold and cloudy
	05/02/2025	18:30	3	1	1 NW	0	Cool and calm
	05/03/2025	18:45	9-6	0	3 SSW	0	Moderate visibility
VP3	09/12/2024	20:15	7	8	3 N	0	Cool and cloudy
	09/01/2025	18:45	0- -1	1	1 SW	0	Ground frost
	06/02/2025	18:30	5-3	1-5	2 NE	0	Moderate visibility
	04/03/2025	18:45	8-6	6	3 SSW	0	Dry, and cool
VP4	17/12/2024	18:00	9	6	4 N	1	Windy with occasional spots of rain

VP	Date	Start Time	Temp (˚C)	Cloud Cover Oktas	Wind Beaufort Scale and Direction	Rain	Comment
	20/01/2025	19:45	4	8	1 SW	1	Cloudy with occasional drizzle
	18/02/2025	19:00	1	4	1 W	0	Moderate visibility
	18/03/2025	19:30	4-2	0	2 E	0	Cool and calm
VP5	16/12/2024	19:00	10	7-2	3 NE	0	Windy
	21/01/2025	20:00	2	2	1 S	0	Cool with a light mist
	19/02/2025	19:30	4	5	1 NW	0	Moderate visibility
	19/03/2025	19:00	11-9	5-3	1 SW	0	Cool and calm

2.23 Upon completion of the surveys, information obtained from each visit was transferred to a separate map and digitised using ArcGIS software.

NOMENCLATURE

2.24 Common names only are used throughout the text of this report, with scientific names for all species included in Appendix 4. The naming convention follows the Natural History Museums species dictionary[16].

LIMITATIONS AND SURVEY CONSTRAINTS

2.25 Every effort has been made to provide robust and comprehensive data. However, the following limitations apply:

[16] Natural History Museum. (undated). *UK Species Inventory*. Available at: https://www.nhm.ac.uk/our-science/data/uk-species/species/index.html [Accessed 25/02/2026]

- Surveys were broadly restricted to using public rights of way for access. However, given the relative homogeneity of the habitats within the landscape and the open flat character, this still allows for extensive lines of sight. This is deemed to result in a robust representation of the usage of the landscape by wintering species within the Survey Area and is not considered a limitation;

- Individual birds and different bird species vary in their behaviour and detectability, and it is unlikely that registrations were detected for all birds during each survey visit. Nevertheless, it is considered that the majority of the wintering bird activity was recorded over the course of the surveys (using professional judgement) and the data collected is therefore considered sufficiently robust;

- Weather conditions for the December visits were exceptionally windy, and the results from these surveys have only been included for completeness but will reflect a drop in usage of the Study Area as a result. Time constraints (due to the Christmas period) did not permit rescheduling these visits.

- VP3 was commissioned after the commencement of surveys. However given the similarity of the results compared to the other VP surveys, this is not considered to be a limitation.

3 Results

DESKTOP STUDY

Statutory Designated Sites

3.1 The following IIWS, for which the qualifying species including wintering or breeding birds, are located within 15km of the Study Area (refer to Table 3.1 for details and Appendix 1, Figure A1.2 for the locations of these sites):

- Nene Washes Ramsar site and SPA; and
- The Wash Ramsar site and SPA.

3.2 There are no SSSI or other statutory sites for nature conservation within a 2km buffer of the Study Areas for which birds are a primary reason for designation.

Table 3.1: IIWS within 15km of the Study Area

Site Name	Distance and Orientation from Site	Ornithological Qualifying features/Description
The Wash Ramsar site	8.4km north-east	Ramsar criterion 5: assemblages of international importance, species peak counts in winter. Criterion 6: oystercatcher, grey plover, knot, sanderling, curlew, redshank, turnstone, pink-footed goose, dark-bellied brent goose, shelduck, pintail, dunlin, bar-tailed godwit, golden plover, lapwing (wintering) Black-tailed godwit and ringed plover have been identified subsequent to designation for possible future consideration as qualifying species.
The Wash SPA	8.4km north-east	Article 4.1 of the EC Bird Directive by regularly supporting nationally important breeding numbers of little tern and common terns, plus nationally important numbers of Bewick's swan in the winter. Article 4.2 by supporting, in winter, internationally important wintering populations of dark-bellied brent geese, pink-footed goose, shelduck, pintail, oystercatcher, grey plover, sanderling, knot, dunlin, bar-tailed godwit, curlew, redshank and turnstone. In addition, the site supports nationally important wintering populations of wigeon, goldeneye, gadwall and common scoter and black-tailed godwit.
The Nene Washes Ramsar site	13.5km south	Ramsar criterion 6: Bewick's swan and pintail (wintering).

Site Name	Distance and Orientation from Site	Ornithological Qualifying features/Description
		Populations of black-tailed godwit have been proposed for possible future consideration as qualifying species, and in accordance with the current guidance are considered in the same way as the qualifying species.
The Nene Washes SPA	13.5km south	Article 4.1 of the EC Birds Directive by regularly supporting, in winter, an internationally important wintering population of Bewick's swan. Article 4.2 by supporting, in winter, nationally important wintering populations of wigeon, teal, gadwall and shoveler.

Species Data

3.3 The local record centre returned 1,272 records of 41 notable species. Table 3.2 provides a summary of these for the Primary Focal Species. The full data search results are contained in the Winter Bird Survey 2023 – 2024 Report[17].

3.4 A heat map showing the distribution of all the desktop study records for the 15km buffer from the Study Area is contained in Appendix 1; Figure A1.3.

Table 3.2: Summary of Desk-top Data for Primary Focal Species

Common Name	No of Records	Last Year Recorded
Barn owl	65	2021
Bewick's swan	15	2021
Black-tailed godwit	4	2025
Brent goose	17	2023
Canada goose	18	2025
Common crane	1	2011
Greylag goose	86	2025
Hen harrier	13	2025

[17] Temple (2024) *Meridian Solar Farm, Lincolnshire. Wintering Bird Survey 2023-2024*. Report for Meridian Solar Farm Ltd Temple London.

Common Name	No of Records	Last Year Recorded
Lapwing	154	2025
Marsh harrier	7	2023
Red kite	28	2023
Redshank	57	2022
Whooper swan	46	2025

3.5 The Desktop data shows a higher concentration of birds along the western and northern side of the Site, although is, in part, due to a number of waterbodies and areas regularly visited by local birdwatchers.

FIELD SURVEY

3.6 A total of 43 species were recorded including 21 Primary Focal Species. Table 3.3 shows the total time spent in the viewshed by Primary Focal Species, expressed as number of birds multiplied by the number of seconds, from each VP. Table 3.4 displays all other species which may cause a collision risk but are not listed within the Primary Focal Species. A list of the species recorded during the surveys provided in Appendix 4, including the numbers for each VP and peak counts.

3.7 Twenty-one of the Primary Focal Species were found to be utilising the areas within the VP viewsheds for commuting, with the most activity around the southern section of the Survey Area. The majority of observations were below 50m, and therefore within the presumed height of the lower cables (25-50m).

3.8 Only three focal species were recorded flying only in the lower height band: barn owl, marsh harrier and redshank.

3.9 Birds recorded flying within the 25-50m band were dunlin, golden plover, lapwing, mallard, pink-footed goose, red kite, ruff, shelduck, snipe, teal and whooper swan.

3.10 Eight of the wintering species observed in the Survey Area are listed as qualifying features for the Nene Washes SPA / Ramsar site, or the Wash SPA / Ramsar site.

These were teal, snipe, redshank, pink footed goose, shelduck, turnstone, wigeon, and dunlin. Several of these species were recorded within the collision risk height band. Birds were recorded flying in the collision risk zones at all the viewsheds from each VP location. A number of wildfowl were also recorded foraging during the winter surveys at each location, especially around flooded areas which, given recent climatic changes, could be a regular feature.

3.11 Shooting and the use of bird scarers did not appear to have any influence on bird activity within the viewsheds.

3.12 During the National Grid surveys to the north of the Site in 2024-2025, a total of 45 species were recorded. Ten of these are listed as Primary Focal Species including golden plover, kestrel, lapwing, mallard, mute swan, peregrine, pink-footed goose, redshank, whooper swan and wigeon. Eight whooper swan were recorded flying over Survey Area during the January survey visit.

Table 3.3: Flight Duration (number of birds x seconds) of Primary Focal Species

Species	Diurnal VP Surveys Results					Nocturnal VP Survey Results				
Focal Species	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**
Barn owl		30		240		75	30	30	270	420
Common crane	765									
Dunlin		810								
Golden plover	3,375	749,970	2,730	19,785	51,000		630			1,200
Greylag goose					120				9,900	
Lapwing	11,25	75,330	267,465	446,955	312,660	30	1,440	3,000		285
Mallard	20,030	5,250	1,005	20,520	31,785	240	2,760		60	240
Marsh harrier			120	1,395						
Merlin				45						
Mute swan	1,490			540	1440	1,020				
Peregrine			105	120						
Pink-footed goose	27,675	37,935	26,550	227,520	37,845					
Red kite	1,170			1,695	600					

Species	Diurnal VP Surveys Results					Nocturnal VP Survey Results				
Focal Species	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**
Redshank				15						
Ruff		4,860								
Shelduck				555						
Snipe	15			75	405	240				915
Teal	1,620			600	10,980	240				975
Turnstone	150									
Whooper swan	7,275	2,190	45	97,065	16,500				74,100	90
Wigeon							120		60	

Table 3.4: Flight Duration (number of birds x seconds) of Other Species

Species	Diurnal VP Surveys Results					Nocturnal VP Survey Results				
Other Species	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**
Common buzzard	610	1,650	1,080	1,710	1,320					
Coot						240				
Cormorant	30			615	60					
Duck species				2,820					100,800	4,890
Goose species					7,380					
Great white egret	30			60	60					
Grey heron	165		165		240					
Kestrel	1,540	525	15	1,470	2,040					
Little egret		300		270						
Mandarin duck			720							
Moorhen				480						
Owl species										60
Sparrowhawk	90		330	30	180					
Starling	49,500	1,050	4,425	70,500	17,400					

Species	Diurnal VP Surveys Results					Nocturnal VP Survey Results				
Other Species	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**
Swan species	180				30					
Tawny owl							180			
Wader species									90	
Woodpigeon	409,200	75,750	64,875	381,300	559,800					

PRIMARY FOCAL SPECIES RECORDED WITHIN THE SURVEY AREA

Barn owl

3.13 Two barn owls were recorded from VP4 with a single barn owl seen continuously hunting along the site boundary during the survey on the 18 December 2024. At VP2 a single barn owl was recorded for 30 seconds, flying along a ditch, on the 19 February 2025. The birds were flying in the lower height band, below the risk of collision.

3.14 Barn owl was frequently recorded during the nocturnal surveys across all the VP locations. They were recorded actively foraging above the fields yet remaining in the lowest height band and below the risk of collision. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.1.

3.15 Barn owl not likely affected by the OHL and whilst VPs 4 and 5 are preferred locations, there are no significant locational constraints in terms of collision risk.

Common crane

3.16 Common crane was recorded at VP1 on three occasions during the diurnal surveys. Ten individuals were seen on the 30 January 2025, two on the 4 February 2025 and a further 11 on the 18 February 2025. These birds spent a total of 510 seconds flying within the 10m height band and a further 255 seconds between 10-25m. These were recorded foraging along the ditches at the eastern side of the Site.

3.17 Common crane was not recorded during the nocturnal surveys. All flight lines have been mapped and can be seen in Appendix 6, Figure A6.2.

3.18 Common crane are not likely to be affected by the OHL as they were not recorded flying within the CRZ.

Dunlin

3.19 The maximum count of 14 dunlin was observed at VP2 on 19 February 2025. This species was recorded to have spent 135 seconds in the 25-50m height band equating to 20.5% of the flight duration, and therefore in the collision risk zone. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.3.

Table 3.5:Dunlin Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1						
VP2		525	**135**			660
VP3						
VP4						
VP5						

Golden Plover

3.20 Golden plover was recorded across all the VP locations as they commuted to and from feeding areas or where disturbed whilst feeding. The largest count was of approximately 1000 on the 3 March 2025, in the vicinity of VP2, which spent 135 seconds in the 25-50m height band. Flocks in excess of 100 were recorded from VPs 1, 2 & 5. 51% of the flight time in VP1 was spent within the Risk Zone, 33.5% at VP1, 19% at VP3, and 11.5% at VP5. This equates to 32.6% of the total flight times.

3.21 During the nocturnal surveys, golden plover was recorded at VP5 and VP2.

3.22 Table 3.6 shows the bird/seconds per flight band. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.4.

Table 3.6: Golden Plover Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	2,805	9,000	**21,750**	9,000		42,555
VP2	152,235	403,920	**373,200**	157,050	28,275	1,114,680

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP3			**525**	2,205		2,730
VP4	3,240	6,150		10,395		19,785
VP5	23,700	22,500	**6,000**			52,200

Greylag Goose

3.23 A maximum count of seven greylag geese were observed at VP1 on 18 March and a single bird was observed on 19 December 2024 at VP5. A further 60 greylag geese were recorded during the nocturnal surveys at VP4 on 17 December 2024, where they were coming to roost on a flooded field.

3.24 This species was recorded to have a maximum flight height of 10-25m within the survey time and therefore outside of the CRZ. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.5.

Lapwing

3.25 Lapwing was recorded at all five VP locations. The largest count was of 1,500 birds at VP4 on 1 November 2024. This flock spent 165 seconds within the 25-50m height band – the collision risk zone. Flocks of over 100 were recorded at VP2, 3, 4 & 5 and within the Risk Zone. 67% of the flight time at VP1 was within height band 25-50m and at risk of collision, along with 12% at VP2, 36% at VP3, 67% at VP4 and 35% at VP5.

3.26 Lapwing were recorded at VP1, 2, 3 & 5 during the nocturnal surveys. The highest count of 100 birds was noted at VP3 on the 9 January 2025. These were recorded flying at <10m and below the CRZ.

3.27 Table 3.7 shows the bird/seconds per flight band. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.6.

Table 3.7: Lapwing Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	540	3,135	**7,680**			11,355
VP2	3,240	11,505	**9,150**	52,800		76,695
VP3	115,500	53,085	**99,120**	2,760		270,465
VP4	23,205	67,350	**306,900**	49,500		446,955
VP5	825	23,970	**90,750**	141,750		257,295

Mallard

3.28 Mallard was recorded at every VP location during the diurnal survey visits. A maximum count of 220 mallard was observed at VP5 on 16 October 2024, spending 45 seconds at flight height 10-25m. This species was also recorded during the nocturnal survey visits at every VP location accept VP3. 43% of the flight durations in VP2 were in the CRZ; 8% in VP4 and less than 1% in VP5.

3.29 This species was recorded to have a maximum flight height of 25-50m and therefore within the CRZ. Table 3.8 shows the bird/seconds per flight band and the flight lines have been mapped and can be seen in Appendix 6, Figure A6.7.

Table 3.8: Mallard Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	10,945	9,565				20,510
VP2	3,600	390	**3,000**			6,990
VP3	525	300				825
VP4	4,515	4,860	**900**			10,275
VP5	12,915	17,550	**255**			30,720

Marsh harrier

3.30 Marsh harrier was recorded from VP3 on 18 February 2025 and on five of the visits to VP4. The birds spent a total of 1,515 seconds at flight height <10m and below the

risk of collision. This species was not recorded during the nocturnal surveys. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.8.

Merlin

3.31 A single merlin was recorded at VP4 on 05 March 2025 hunting across the fields. The bird spent a total of 45 seconds at flight height <10m and another 45 seconds at flight height 10-25m, staying below the CRZ. This species was not recorded during the nocturnal surveys. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.9.

Mute Swan

3.32 Mute swan was recorded at VP1 during both the diurnal and nocturnal surveys and, VP4 and VP5 within the diurnal surveys only. A maximum count of 12 birds were recorded at VP5 on 3 February 2025 where they stayed within the flight height <10m. The species spent a total of 165 seconds within flight height 10-25m and did not enter the CRZ. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.10.

3.33 Mute swan are not likely to be affected by the OHL, as they were not recorded flying within the risk heights.

Peregrine

3.34 Two individual peregrines were recorded on the survey visits: one at VP3 on 20 January 2025 and another at VP4 on 29 November 2024. At VP3, the bird was seen flying >75m for 105 seconds. At VP4 the species was seen to fly from <10m and rise up to 10-25m, staying below the CRZ. Flight lines have been mapped and can be seen in Appendix 6, Figure A6.11.

3.35 Peregrine are not likely to be affected by the OHL, as they were not recorded flying within the risk heights.

Pink-footed goose

3.36 Pink-footed geese were recorded at all VP locations, with VP1, 2 & 4 noting flocks of over 100. The largest of these was a flock of 350 birds on 11 December 2024, spending 180 seconds at flight height 25-50m – above the CRZ. A total of 183,150 seconds were spent with the height Risk Zone during the surveys, which equates to 50% of the total flight time, this is broken down with 22% of time in VP1 in CRZ; 5% in VP2; 92% in VP3; 63% in VP4 and 20% in VP5.

3.37 This species was not recorded during the nocturnal surveys. Table 3.9 shows the bird/seconds per flight band and mapped flight lines can be found in Appendix 6, Figure A6.12.

Table 3.9: Pink-footed Goose Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1			**6,075**	21,600		27,675
VP2			**1,935**	36,000		37,935
VP3		720	**24,660**	1,170		26,550
VP4	16,500	27,855	**142,905**	40,260		227,520
VP5			**7575**	30,270		37,845

Red kite

3.38 Red kite was recorded at VP1, VP4 and VP5 as shown in Table 3.10 below. This species was not recorded during the nocturnal surveys. Red Kite spent 23% of their time within the collision risk band with 6.4% in VP1; 14% in VP4 and 100% in VP5. Mapped flight lines for this species can be found in Appendix 6, Figure A6.13.

Table 3.10: Red Kite Flight Duration

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	180	915	**75**			1,170
VP4	765	690	**240**			1,695
VP5			**480**			480

Redshank

3.39 A single redshank was seen at VP4 during visit 4 during the diurnal surveys. The bird was recorded for 15 seconds at height band 1 (<10m). Mapped flight lines for this species can be found in Appendix 6, Figure A6.14.

3.40 Redshank are not likely to be affected by the OHL, as they were not recorded flying within the risk heights.

Ruff

3.41 A group of 9 ruff was recorded at VP2 on 19 March. They were observed taking off from the ground before reaching a height of 50-75m. This would result in the flock flying within the CRZ for a total of 15 seconds (16% of the flight duration). Mapped flight lines for this species can be found in Appendix 6, Figure A6.15.

Shelduck

3.42 Shelduck was recorded at VP4 on three occasions during the diurnal surveys. Two individuals were observed on 18 December 2025 for 240 seconds at <10m. The maximum flight height was the 25-50m for 45 seconds, within the CRZ in VP3 (13% of the flight duration) and for 75 seconds in VP5 (42% of the flight duration). Mapped flight lines for this species can be found in Appendix 6, Figure A6.16.

Table 3.11: Shelduck Flight Duration

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	60	30				90
VP2						

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP3		285	**45**			330
VP4	30					30
VP5	105		**75**			180

Snipe

3.43 Snipe was recorded during the diurnal survey from VP1, 2, 4 & 5, as shown in Table 3.12 below, with all flights below the collision risk band with the exception of 45 seconds in VP5, equating to 6% of the flight time in that VP. Mapped flight lines for this species can be found in Appendix 6, Figure A6.17.

3.44 Additionally, this species was recorded during the nocturnal surveys at VP1 & 5 for a total of 1,135 seconds, all within height band 1 (<10m).

3.45 73% of diurnal data and 81% of nocturnal data (77% total) were recorded at VP5.

Table 3.12: Snipe Flight Duration

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	255					255
VP2	60					60
VP4	75					75
VP5	570	105	**45**			720

Teal

3.46 Teal was recorded at VP1, VP4 and VP5 as shown in Table 3.13 below. At VP5 40% of the flight duration was within the CRZ.

3.47 Additionally, teal was recorded on nocturnal surveys at VP1 & 5 for a total of 1,080 seconds, all within height band 1 (<10m). Mapped flight lines for this species can be found in Appendix 6, Figure A6.18.

Table 3.13: Teal Flight Duration

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	1,860					1,860
VP4	600					600
VP5	2,775	3,390	**3,945**			10,110

Turnstone

3.48 A flock of five turnstone were recorded flying over VP1 on 15 October for a total of 150 seconds. These were flying at a height of 10-25m and below the CRZ. Mapped flight lines for this species can be found in Appendix 6, Figure A6.19.

3.49 Turnstone are not likely to be affected by the OHL, as they were not recorded flying within the risk heights.

Whooper swan

3.50 Whooper swan was recorded at all five VPs, and from 14 October 2024 until 18 March 2025, with a maximum count of 350 birds at VP4 on 11 December 2024. Table 3.14 shows the bird/seconds per flight band during the surveys and the flight lines for this species can be found mapped in Appendix 6, Figure A6.20. Approximately 73% of whooper swan activity was recorded below 10m, with less than 1% of flight time within the CRZ.

3.51 Notably, 75% of diurnal data and 99.9% of nocturnal data (84% total) were recorded at VP4.

Table 3.14: Whooper Swan Diurnal Flight Durations

VP	<10m	10-25m	25-50m	50-75m	>75m	TOTAL
VP1	3,060	7,215	**1,350**			11,625
VP2	300	1,710	**180**			2,190
VP3	45					45
VP4	134,925	29,115				164,040
VP5	660	15,930				16,590

Wigeon

3.52 Wigeon was recorded during the nocturnal surveys at VP2 on 05 March 2025 (two birds) and VP4 on 17 December 2024 (four birds). These individual birds did not take flight on the surveys and therefore were not seen to be flying within the CRZ. Mapped flight lines for this species can be found in Appendix 6, Figure A6.21.

3.53 While there is a chance for wigeon to stray within the collision risk height, the risk is considered to be low, and proposed mitigation will further reduce this.

Other species

3.54 There were another 34 other species recorded within the VP viewsheds that could potentially cause a collision risk. However, only one of these flight lines were within the CRZ. This was a large flock of circa 400 woodpigeon, which spent 60 seconds flying at between 50-75m at VP3 on 18 February.

3.55 The flight lines falling within the CRZ have been mapped and can be found in Appendix 5.

4 Discussion And Recommendations

OVERVIEW

4.1 The results of these surveys informed a collision-risk assessment, which will be used to evaluate potential impacts on wintering birds as a result of the operational phase of the proposed overhead grid connections. The results of this can be found in the Avian Collision Risk Model, Technical Note Report[18].

4.2 The data also highlights areas of frequent use by wintering birds that could form functionally linked land supporting birds associated with the populations for which wildlife sites, in particular The Wash SPA/Ramsar and Nene Washes SPA/Ramsar, have been designated.

4.3 The data show relatively low numbers of birds within the 25-50m collision risk zone at VP1, with the greatest numbers of notable species being of pink-footed goose (6075 bird-seconds) and lapwing (5100 bird-seconds). Few birds were recorded in this location in the nocturnal surveys (the maximum being five mute swan).

4.4 VP2 showed a relatively high density of golden plover movements (373,200 bird-seconds) within the collision-risk height, primarily linked to activity focused on fields immediately to the west of the connection corridor. The low numbers of golden plover recorded during nocturnal surveys (630 bird-seconds) indicate that this area is used for foraging rather than as a core roost site.

4.5 Activity within the collision-risk height at VP3 consisted predominantly of lapwing (99,120 bird seconds), with relatively high numbers of pink-footed goose (24,660 bird-seconds). Only one flock of 100 lapwing was recorded during nocturnal surveys indicating that the area is not used regularly as a roost site for this species.

4.6 Relatively high levels of activity of lapwing (306,900 bird-seconds) and pink-footed goose (142,905 bird-seconds) were recorded in the collision-risk zone at VP4, mainly

[18] Ramboll (2026) Meridian Solar, Avian Collision Risk Model. Technical Note. Merdian Solar Farm Ltd

associated with land to the west, along the River Welland. Nocturnal flocks of up to 300 whooper swan, 420 mixed ducks and up 60 greylag geese indicate that the area does provide some nocturnal foraging and or roosting value for waterfowl.

4.7 Activity within the collision-risk zone at VP5 included relatively high numbers of lapwing (143,625 bird-seconds) and common gull (92,400 bird-seconds), with higher numbers of teal recorded here than elsewhere (4,425 bird-seconds). Low numbers of birds recorded during the nocturnal surveys (peaking at 20 mixed ducks), indicating that there is limited nocturnal bird activity in this area.

4.8 While no common crane were recorded within the collision-risk height, flocks of up to 11 birds were recorded on three occasions at VP1, mostly at ground level or moving between fields below 25m. Since common crane are a scarce species in the UK, with a nationally important population located at Willow Tree Fen to the west of Spalding, note is made of these records as they represent a significant number of birds.

REQUIREMENTS

4.9 Collision-risk modelling was undertaken to fully evaluate the potential impact of the proposed overhead lines on wintering bird assemblages[19]. However, outline recommendations can be drawn from the survey data.

4.10 Land to the west of VP1, along the River Welland, is of some importance for a range of wildfowl, potentially for both daytime and night-time foraging and roosting; designs should therefore take account of this and aim to minimise loss and disturbance of habitats in this area.

4.11 Land to the west of VP2 shows evidence of value for foraging golden plover, so it is recommended that the cable routing should be sited toward the east of the proposed corridor to minimise potential effects on this area. Subject to the results of collision-risk analysis, it might be appropriate to consider the use of line-markers

[19] Ramboll (2026) Meridian Solar, Avian Collision Risk Model. Technical Note. Merdian Solar Farm Ltd.

in this location to mitigate the risk of collision events and the effect of these on the local golden plover population.

4.12 Similarly, there are relatively high movements of lapwing at VP3, for which collision-risk analysis will inform the potential need, or otherwise, for line-markers.

4.13 Given the sensitivity of the local population of common crane, although none were recorded within the collision-risk height, consideration is given to the risk of birds straying into the cable array, which could result in a significant effect even if only small numbers of birds are impacted directly.

4.14 Further daytime and nocturnal vantage point surveys for common crane have been recommended to be carried out during the summer of 2025, particularly focusing on the post-breeding juvenile dispersal period from July to September. These results can be found in the Summer 2025 Vantage Point Survey Report[20].

[20] Temple (2025) *Appendix 9-13 Summer 2025 Vantage Point Survey Report*.

Appendix 1: Scheme Maps

Figure A1.1: Site Map Showing Location of the Study Area and Locations of the VPs

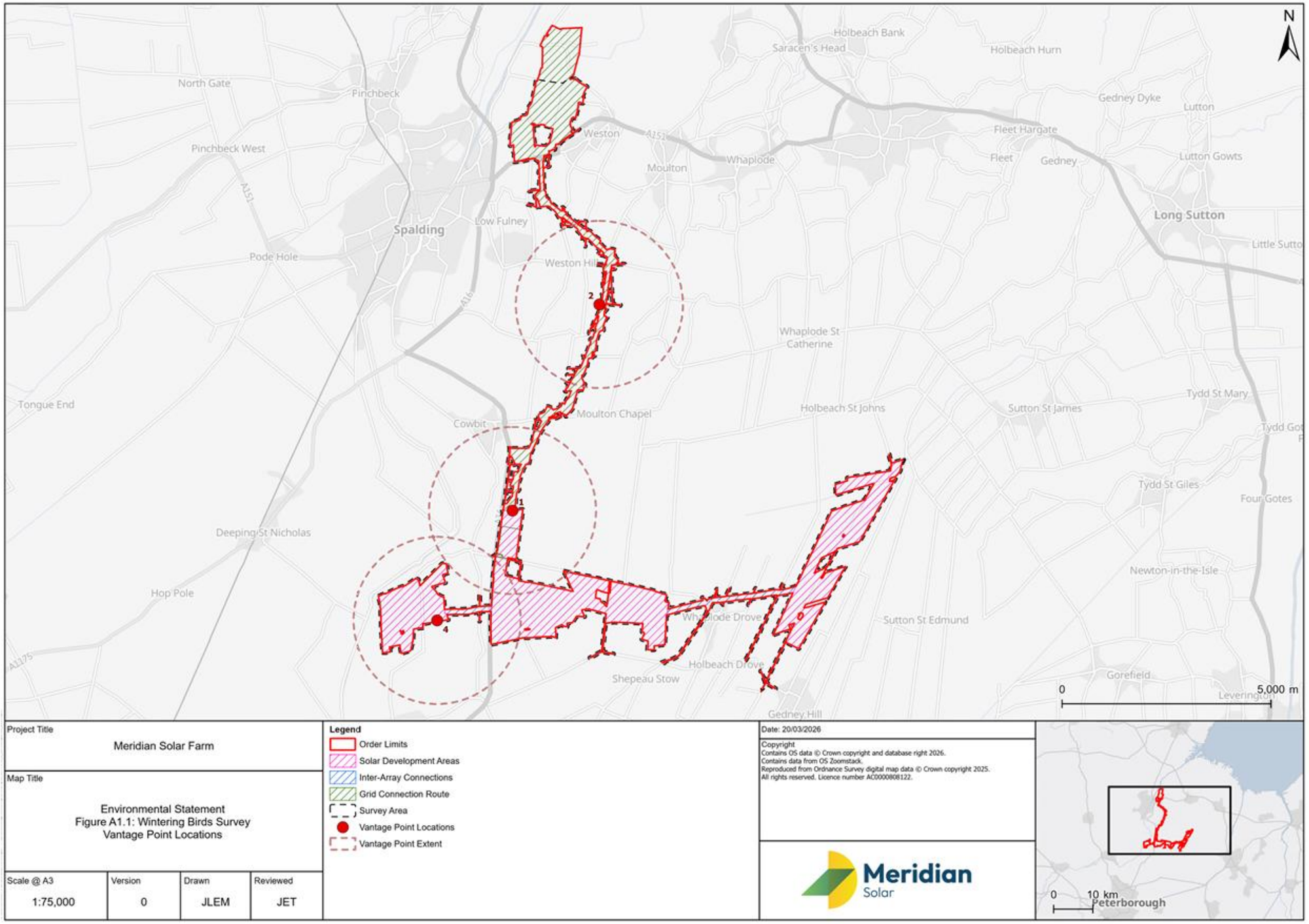


Figure A1.2: International Designated Sites, Local Designated Sites and Priority Habitats

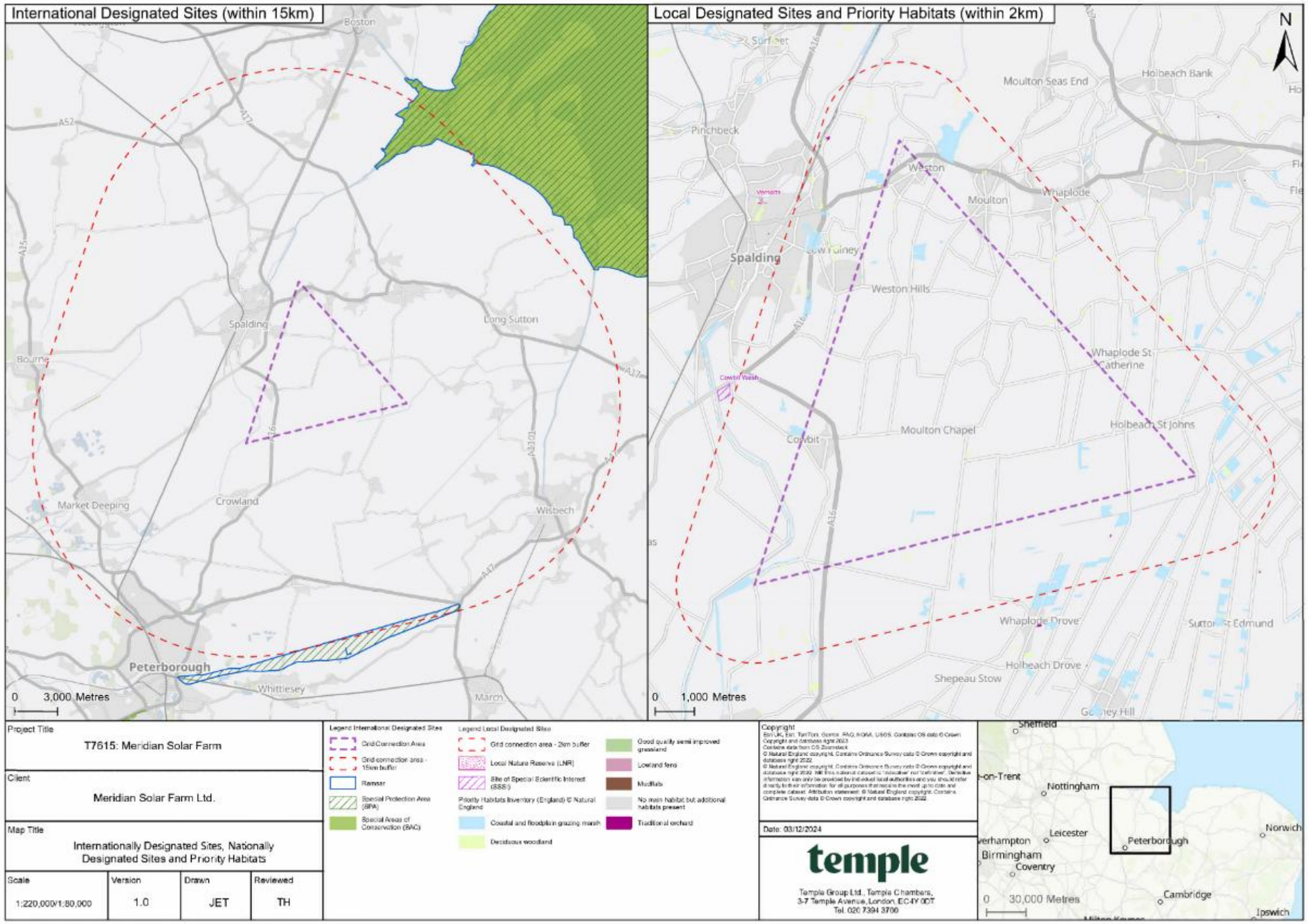
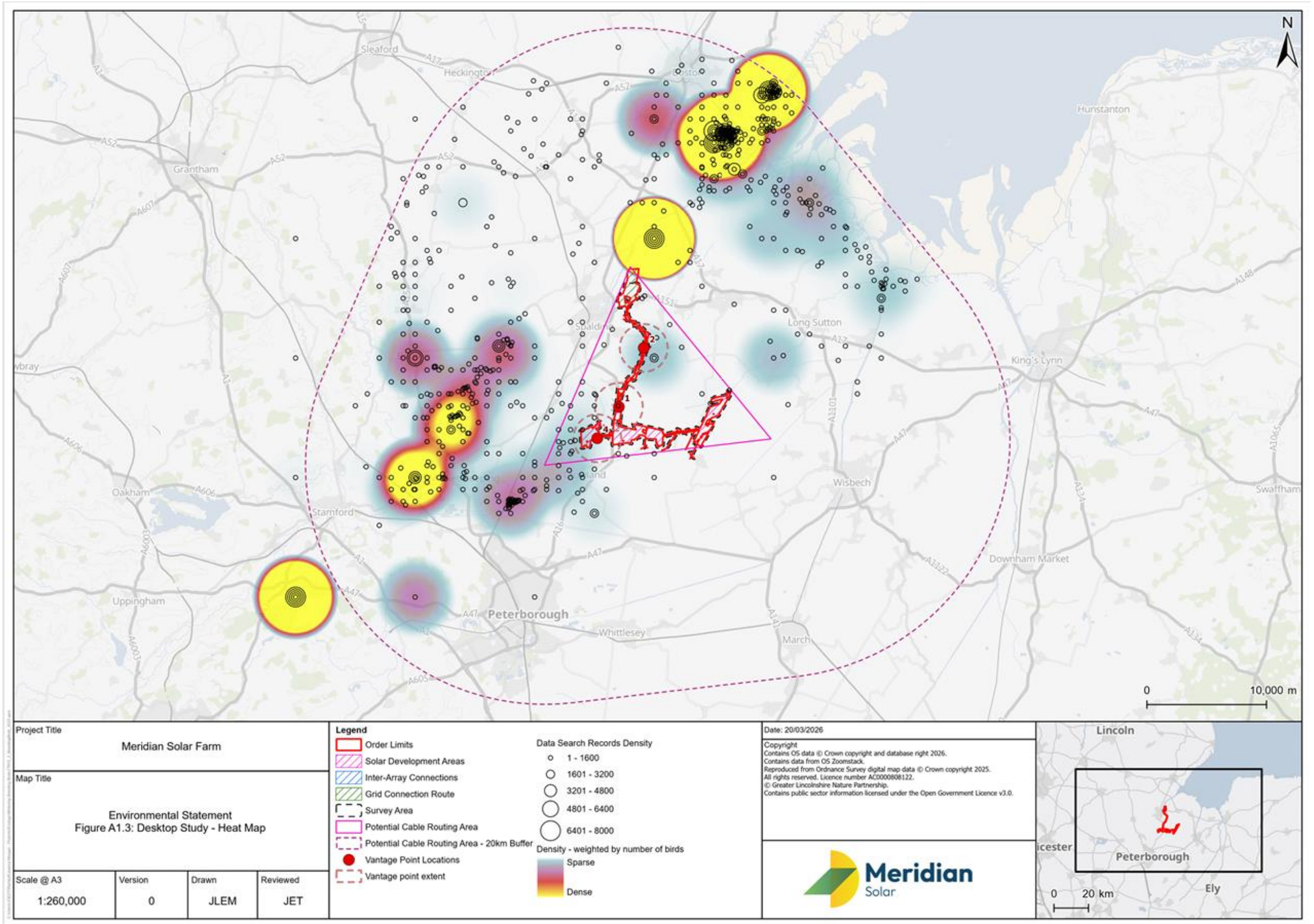


Figure A1.3: Heat Map Showing Species Density from The Desktop Data.



Appendix 2: Designated Sites Citations

EC Directive 79/409 on the conservation of wild birds: Special Protection Area

Nene Washes (Cambridgeshire)

The Nene Washes is an area of seasonally flooding grassland and grazing marsh in the lower reaches of the River Nene, Cambridgeshire. The boundaries of the site follows those of the Nene Washes (Whittlesey) SSSI.

The site qualifies under Article 4.1 of the EC Birds Directive by regularly supporting, in winter, an internationally important wintering population of Bewick's swan *Cygnus columbarius bewickii* (1,300 individuals: over 7% of the north-west European population wintering population: average of peak counts for the five year period 1987/88 to 1991/92).

Nene Washes qualifies also under Article 4.2 by supporting, in summer, in recent years, nationally important breeding populations of regularly occurring migratory species: 25 pairs of gadwall *Anas strepera* (5% of British): five pairs of garganey *Anas querquedula (10%* of British), 36 pairs of shoveler *A. clypeata* (3% of British), and 16 pairs of black-tailed godwits *Limosa limosa* (30% of British), as well as several other rare birds.

The site further qualifies under Article 4.2 by supporting, in winter, nationally important wintering populations of five migratory species (average peak counts for the most recent five year period for which data is available (1984/5 - 1985/86 and 1988/89 - 1990/91): 3,640 wigeon *Anas penelope* (over 1 % of the British wintering population): 980 teal *A. crecca* (1% of British), 95 gadwall *Anas strepera* (over 1% of British): 440 Pintail *Anas acuta* (over 1% of British) and 110 shoveler *Anas clypeata* (over 1% of British).

The Nene Washes is also of importance for a diverse assemblage of breeding birds of wet grasslands, including: redshank *Tringa totanus*, snipe *Gallinago gallinago*, lapwing *Vanellus vanellus*, mute swan *Cygnus olor*, sedge warbler *Acrocephalus shoenobaenus* and yellow wagtail *Motacilla flava*. The site has an important role in maintaining the range of several of these species which have been affected by changes in habitat elsewhere in Britain.

Also notable is an assemblage of wintering waterfowl including, in addition to species listed above, mute swan, whooper swan *C. cygnus*, mallard *Anas platyryhnchus*, pochard *Aythya ferina*, tufted duck *Aythya fuligula*, shelduck *Tadorna tadorna* and coot *Fulica atra*. A wide range of raptors occur through the year on the Nene Washes, including merlin *Falco columbarius*, hobby *F. subbuteo*. peregrine *F. peregrimus*, marsh harrier *Circus aeruginosus*, hen harrier *C. cyaneus*, sparrowhawk *Accipiter nisus*, short-eared owl *Asio flammeus*, long-eared owl *A. otus*, and barn owl *Tyto alba*.

During severe winter weather elsewhere, the Nene Washes can assume even greater national and international importance as wildfowl and waders from many other areas arrive, attracted by the relatively mild climate, compared with continental European areas, and the abundant food resources available. It can also assume greater importance at times on deep flooding on the nearby Ouse Washes when it holds displaced birds.

The continued international importance of this site is dependant on the maintenance of a winter flooding regime and a high, but controlled summer water table.

SPA Citation
DAS June 1992

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
Designated: 05 March 1993

3. Country:
UK (England)

4. Name of the Ramsar site:
Nene Washes

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) hard copy (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii) an electronic format (e.g. a JPEG or ArcView image) Yes
iii) a GIS file providing geo-referenced site boundary vectors and attribute tables *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

52 34 41 N 00 04 33 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Peterborough

The site extends for 21 km east from Peterborough, in eastern England.

Administrative region: Cambridgeshire; City of Peterborough

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 1517.49

Min. 1
Max. 6
Mean 2

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

This site is an extensive area of seasonally-flooding wet grassland (washland) of importance for national and international populations of breeding and wintering waders and wildfowl. During severe winter weather elsewhere, the site can attract waterfowl from other areas due to its relatively mild climate (compared with continental Europe) and abundant food resources available. The site is also notable for the diversity of plant and associated animal life within its network of dykes.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

2, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 2

The site supports an important assemblage of nationally rare breeding birds. In addition, a wide range of raptors occur through the year. The site also supports several nationally scarce plants, and two vulnerable and two rare British Red Data Book invertebrate species have been recorded.

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in winter:

Tundra swan , *Cygnus columbianus bewickii*, NW Europe	694 individuals, representing an average of 2.3% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species with peak counts in spring/autumn:

Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	482 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3 - spring peak)

Species with peak counts in winter:

Northern pintail , *Anas acuta*, NW Europe	1848 individuals, representing an average of 3% of the population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

---

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

---

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, basic, neutral, clay, alluvium, peat
Geomorphology and landscape	lowland, floodplain
Nutrient status	eutrophic
pH	circumneutral
Salinity	fresh
Soil	mainly organic
Water permanence	usually seasonal / intermittent

Summary of main climatic features	Annual averages (Cambridge, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/cambridge.html) Max. daily temperature: 14.1° C Min. daily temperature: 6.1° C Days of air frost: 41.9 Rainfall: 553.5 mm Hrs. of sunshine: 1501.2

General description of the Physical Features:

The Nene Washes are an extensive area of seasonally-flooding wet grassland ('washland') lying along the River Nene.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Nene Washes are an extensive area of seasonally-flooding wet grassland ('washland') lying along the River Nene.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Flood water storage / desynchronisation of flood peaks

19. Wetland types:

Human-made wetland, Inland wetland

Code	Name	% Area
4	Seasonally flooded agricultural land	100

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

A mixture of largely arable land and agriculturally-improved, floristically-poor grassland. The latter being dominated by species such as *Elymus repens*, *Poa trivialis* and *Deschampsia cespitosa*. Areas of more structurally-diverse grassland exist containing a range of grasses, sedges and rushes. Species of frequent occurrence include *Eleocharis palustris*, *Glyceria fluitans*, *Glyceria maxima*, *Phalaris arundinacea*, *Alopecurus geniculatus* and *Juncus effusus*. A couple of small semi-natural grassland areas are also present. The washlands are used for the seasonal uptake of floodwaters and traditionally, cattle grazing in summer months. The mosaic of rough grassland and wet pasture provide a variety of habitats for breeding and feeding birds. Many of the ditches hold a rich flora and several nationally scarce plants including fringed water-lily *Nymphoides peltata*, hair-like pondweed *Potamogeton trichoides* and marsh dock *Rumex palustris*.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher Plants.
Nymphoides peltata, Potamogeton trichoides, Rumex palustris, Potamogeton friesii, Alisma lanceolatum, Hordeum marinum.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species with peak counts in winter:

Whooper swan , *Cygnus cygnus*, Iceland/UK/Ireland	80 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian wigeon , *Anas penelope*, NW Europe	9651 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian teal , *Anas crecca*, NW Europe	2015 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , *Anas clypeata*, NW & C Europe	343 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)
Common pochard , *Aythya ferina*, NE & NW Europe	1795 individuals, representing an average of 3% of the GB population (5 year peak mean 1998/9-2002/3)
European golden plover , *Pluvialis apricaria apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic	2949 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , *Philomachus pugnax*, Europe/W Africa	98 individuals, representing an average of 14% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site.

Invertebrates.
Valvata macrostoma, Agabus undulatus, Libellula fulva, Anasimyia interpuncta.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Livestock grazing
Non-consumptive recreation
Sport hunting

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	
Private	+	+
Private	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Recreation	+	
Permanent arable agriculture	+	+
Permanent pastoral agriculture	+	+
Hay meadows	+	
Flood control	+	
Transport route		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site, management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Fauna.

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Annual breeding bird survey.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Occasional guided walks are provided by RSPB warden.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Wildfowling and sport hunting annually from September to February.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

Environment Agency (1996) *Nene Washes water level management plan. Draft*. Environment Agency

Folkard, N, Ausden, M & Kitchen, C (1998) *Conservation management of the Nene Washes RSPB Reserve*. Royal Society for the Protection of Birds, Sandy

McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. www.jncc.gov.uk/SACselection

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Shirt, DB (ed.) (1987) *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough

Stewart, A, Pearman, DA & Preston, CD (eds.) (1994) *Scarce plants in Britain*. Joint Nature Conservation Committee, Peterborough

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: **+41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

EC Directive 79/409 on the conservation of wild birds: Special Protection Area

The Wash (Norfolk & Lincolnshire)

The Wash is numerically the most important area in Britain for wintering waterfowl, taking waders and wildfowl together. It is also the most important area in Britain in early autumn for moulting waders. The Wash is important also to certain wintering passerines, to breeding waders and terns, and to certain seabirds.

The Wash qualifies under Article 4(1) because it supports 30 breeding pairs of little terns *Sterna albifrons* (2% of the British population) and 220 pairs of common tems *Sterna hirundo* (2%); and because it supports 130 Bewick's swans *Cygnus cygnus* (3%) in winter.

The Wash qualifies under Article 4(2) as au internationally important wetland by supporting in winter an average of 163,000 waders and also 51,000 wildfowl; and because it supports on average the following internationally important numbers of individual species: 17,000 dark-bellied brent geese *Branta bernicla bernicla* (12% of the European wintering population), 7,300 pinkfooted geese *Anser brachyrhynchus* (7%), 16,000 shelducks *Tadorna tadorna* (12%), 1,700 pintails *Anas acuta* (2%), 24,000 oystercatchers *Haematopus ostralegus* (3%), 5,500 grey plovers *Pluvialis squatarola* (7%), 500 sanderlings *Calidris alba* (3%), 7,500 knots *Calidris canutus* (21%) 29,000 dunlins *Calidris alpina* (1%) 8,200 bar-tailed godwits *Limosa lapponica* (1%), 3,700 curlews *Numenius arquata* (1%), 4,331 redshanks *Tringa totanus* (5%) and 980 turnstones *Arenaria interpres* (2%).

In addition the site qualifies because of its national importance to other migratory birds. Wintering birds include 3,900 wigeon *Anas penelope* (2% of the British wintering population), 220 goldeneye *Bucephala clangula* (1%), 130 gadwall *Anas strepera* (3%), 830 common scoters *Melanitta nigra* (2%), 260 black-tailed godwits *Limosa limosa* (6%) and probably several gull species (*Larus*). Important populations of wintering passerines are also supported.

The salt-marshes support a diverse breeding bind population, including over 4,000 pairs of black-headed gulls *Larus ridibundus* (2%), shelducks and numerous wader species. Breeding redshanks occur at exceptionally high densities, and the breeding population of this species is undoubtedly of national importance although its exact size is still being assessed.

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
Designated: 30 March 1988

3. Country:
UK (England)

4. Name of the Ramsar site:
The Wash

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) hard copy (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii) an electronic format (e.g. a JPEG or ArcView image) Yes
iii) a GIS file providing geo-referenced site boundary vectors and attribute tables *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

52 56 16 N 00 17 12 E

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: King's Lynn

The Wash is located on the east coast of England between the coastal towns of Hunstanton in north Norfolk and Skegness in Lincolnshire.

Administrative region: Lincolnshire; Norfolk

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 62211.66

Min. -3
Max. 4
Mean 0

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Wash is the largest estuarine system in Britain. It is fed by the rivers Witham, Welland, Nene and Great Ouse. There are extensive saltmarshes, intertidal banks of sand and mud, shallow waters and deep channels. It is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. It supports a valuable commercial fishery for shellfish and also an important nursery area for flatfish. It holds one of the North Sea's largest breeding populations of common seal *Phoca vitulina* and some grey seals *Halichoerus grypus*. The sublittoral area supports a number of different marine communities including colonies of the reef-building polychaete worm *Sabellaria spinulosa*.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 3, 5, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.

Ramsar criterion 3

Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:
292541 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering	15616 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/3)
Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering	13129 individuals, representing an average of 5.3% of the population (5 year peak mean 1998/9-2002/3 - spring peak)
Red knot , *Calidris canutus islandica*, W & Southern Africa (wintering)	68987 individuals, representing an average of 15.3% of the population (5 year peak mean 1998/9-2002/3)
Sanderling , *Calidris alba*, Eastern Atlantic	3505 individuals, representing an average of 2.8% of the population (5 year peak mean 1998/9-2002/3)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	9438 individuals, representing an average of 2.2% of the population (5 year peak mean 1998/9-2002/3)
Common redshank , *Tringa totanus totanus*,	6373 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)
Ruddy turnstone , *Arenaria interpres interpres*, NE Canada, Greenland/W Europe & NW Africa	888 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Pink-footed goose , *Anser brachyrhynchus*, Greenland, Iceland/UK	29099 individuals, representing an average of 12.1% of the population (5 year peak mean 1998/9-2002/3)
Dark-bellied brent goose, *Branta bernicla bernicla*,	20861 individuals, representing an average of 9.7% of the population (5 year peak mean 1998/9-2002/3)

Common shelduck , *Tadorna tadorna*, NW Europe	9746 individuals, representing an average of 3.2% of the population (5 year peak mean 1998/9-2002/3)
Northern pintail , *Anas acuta*, NW Europe	431 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	36600 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/3)
Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	16546 individuals, representing an average of 13.7% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*, Europe/Northwest Africa	1500 individuals, representing an average of 2% of the population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	6849 individuals, representing an average of 19.5% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

European golden plover , *Pluvialis apricaria apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic	22033 individuals, representing an average of 2.3% of the population (5 year peak mean 1998/9-2002/3)
Northern lapwing , *Vanellus vanellus*, Europe - breeding	46422 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.
See Sections 21/22 for details of noteworthy species
Details of bird species occuring at levels of National importance are given in Section 22

---

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

---

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality, water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	cobble, gravel, biogenic reef, neutral, shingle, sand, mud, clay, nutrient-rich, sedimentary, limestone

Geomorphology and landscape	lowland, coastal, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, lagoon
Nutrient status	eutrophic
pH	circumneutral
Salinity	saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Marham, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/marham.html) Max. daily temperature: 13.8° C Min. daily temperature: 5.7° C Days of air frost: 51.9 Rainfall: 621.3 mm Hrs. of sunshine: 1536.6

General description of the Physical Features:

The Wash is the largest estuarine system in the UK. It is fed by the rivers Witham, Welland, Nene and Great Ouse that drain much of the east Midlands of England. The Wash comprises very extensive saltmarshes, major intertidal banks of sand and mud, shallow waters and deep channels. The eastern end of the site includes low chalk cliffs at Hunstanton.

To the north, the coastal habitats of The Wash are continuous with Gibraltar Point, whilst to the east The Wash adjoins the North Norfolk Coast.

---

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Wash is the largest estuarine system in the UK. It is fed by the rivers Witham, Welland, Nene and Great Ouse that drain much of the east Midlands of England. The Wash comprises very extensive saltmarshes, major intertidal banks of sand and mud, shallow waters and deep channels. The eastern end of the site includes low chalk cliffs at Hunstanton.

To the north, the coastal habitats of The Wash are continuous with Gibraltar Point, whilst to the east The Wash adjoins the North Norfolk Coast.

---

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

No special values known

---

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
A	Shallow marine waters	51.7
G	Tidal flats	41
H	Salt marshes	7.2
E	Sand / shingle shores (including dune systems)	0.03
J	Coastal brackish / saline lagoons	0.03

---

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The intertidal flats of the Wash form one of the largest intertidal areas in Britain and these are predominantly sandy. The flats support high concentrations of marine worms and shellfish. There is an abundant growth of algae and high concentrations of marine invertebrates which provides a food source for over 300,000 wintering wildfowl and supports an important fishery and seal colony. Extensive saltmarshes fringe the bay but much of the older and botanically more diverse saltmarsh has been lost due to a long history of land-claim. Higher level marshes are characterised by *Elytrigia atherica*, *Atriplex portulacoides*, *Suaeda maritima* and *Limonium vulgare*. Where the saltmarsh has been grazed by cattle and wildfowl, there may be extensive lawns of *Puccinellia* spp. Abundant *Aster tripolium* occurs at lower levels whilst *Salicornia* spp. and *Spartina anglica* are the principal colonising species.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.
Higher plants.
Salicornia spp.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Lesser black-backed gull , *Larus fuscus graellsii*, W Europe/Mediterranean/W Africa	1378 apparently occupied nests, representing an average of 1.2% of the GB population (Seabird 2000 Census)
Common tern , *Sterna hirundo hirundo*, N & E Europe	152 pairs, representing an average of 1.4% of the GB population (Count as at 1993)
Little tern , *Sterna albifrons albifrons*, W Europe	33 pairs, representing an average of 1.6% of the GB population (5 year mean 1992-1996)

Species with peak counts in spring/autumn:

Great cormorant , *Phalacrocorax carbo carbo*, NW Europe	367 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Pied avocet , *Recurvirostra avosetta*, Europe/Northwest Africa	422 individuals, representing an average of 12.4% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , *Philomachus pugnax*, Europe/W Africa	25 individuals, representing an average of 3.5% of the GB population (5 year peak mean 1998/9-2002/3)
Whimbrel , *Numenius phaeopus*, Europe/Western Africa	191 individuals, representing an average of 6.3% of the GB population (5 year peak mean 1998/9-2002/3)

Common greenshank , *Tringa nebularia*, Europe/W Africa	376 individuals, representing an average of 62.9% of the GB population (5 year peak mean 1998/9-2002/3)
Lesser black-backed gull , *Larus fuscus graellsii*,	1993 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3)
Species with peak counts in winter:	
Red-throated diver , *Gavia stellata*, NW Europe	55 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Bean goose , *Anser fabalis fabalis*, NW Europe - wintering	7 individuals, representing an average of 1.7% of the GB population (Source period not collated)
Greater white-fronted goose , *Anser albifrons albifrons*, NW Europe	100 individuals, representing an average of 1.7% of the GB population (Source period not collated)
Common eider , *Somateria mollissima mollissima*, NW Europe	1109 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Black (common) scoter , *Melanitta nigra nigra*,	1190 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank , *Tringa erythropus*, Europe/W Africa	54 individuals, representing an average of 39.7% of the GB population (5 year peak mean 1998/9-2002/3)
Black-headed gull , *Larus ridibundus*, N & C Europe	31403 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Species occurring at levels of international importance.

Mammals.

Phoca vitulina

---

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Fisheries production
Livestock grazing
Non-consumptive recreation
Scientific research
Sport hunting
Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+
Other	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Recreation	+	
Current scientific research	+	
Fishing: (unspecified)	+	
Fishing: commercial	+	+
Marine/saltwater aquaculture	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Grazing (unspecified)	+	
Rough or shifting grazing	+	
Hunting: recreational/sport	+	+
Harbour/port	+	+
Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Transport route	+	
Domestic water supply		+
Urban development		+
Non-urbanised settlements		+
Military activities	+	

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	
Other	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring, existence of a field research station, etc.

Fauna.

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Bird Studies by the Wash Wader Ringing Group.

Waterfowl and invertebrate ecology studies by the Centre for Ecology and Hydrology.

Seal population studies by the Sea Mammal Research Unit.

Annual monitoring of shellfish stocks by Eastern Sea Fisheries Joint Committee.

Environment.

Sediment types and distribution, processes, erosion, tides and currents have been studied by a variety of institutions and are expected to continue.

The shoreline and water quality is routinely monitored by the Environment Agency.

Land-Ocean Interaction Study by the Natural Environment Research Council (1992-98).

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

There are two field centres. Lincolnshire County Council run the Freiston field centre and Lincolnshire Wildlife Trust run the Gibraltar Point Field Station.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

Land based recreation is chiefly limited to wildfowling, bird watching and walking along the sea banks around two-thirds of the site. The Peter Scott Walk between the outlets of the Rivers Nene and Great Ouse, has been promoted by the local authorities. Some access points to the shore have also been improved by local authorities. Snettisham Bird Reserve provides facilities for bird watching. Traditional beach recreational activities occur between Hunstanton and Snettisham.

Facilities for pleasure craft are limited to some mud berths and stage moorings on the tidal rivers and at the ports of Kings Lynn and Boston. The principal locations for sailing boats are found at the Skegness Yacht Club at Wainfleet and Snettisham Beach Sailing Club and Hunstanton.

Other water sports including windsurfing, water-skiing and power boats occur mainly at Hunstanton and Heacham on the Norfolk shore. Zoning of watercraft is managed by the local authority. Recreational activities are subject to the Wash Estuary Management Plan but are not generally seen as detrimental to the site.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1995) *Coasts and seas of the United Kingdom. Region 6 Eastern England: Flamborough Head to Great Yarmouth.* Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

Brown, AF, Grice, PV, Radley, GP, Leafe, RN & Lambley, P (1994) Towards a strategy for the conservation of coastal habitats in north Norfolk. A discussion paper. *English Nature Research Reports*, No. **74**

Buck, AL (ed.) (1993) *An inventory of UK estuaries. Volume 5. Eastern England.* Joint Nature Conservation Committee, Peterborough

Burd, F (1989) *The saltmarsh survey of Great Britain. An inventory of British saltmarshes.* Nature Conservancy Council, Peterborough (Research & Survey in Nature Conservation, No. 17)

Covey, R (1998) Chapter 6. Eastern England (Bridlington to Folkestone) (MNCR Sector 6). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 179-198. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)

Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts.* British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

Davidson, NC, Laffoley, D d'A, Doody, JP, Way, LS, Gordon, J, Key, R, Pienkowski, MW, Mitchell, R & Duff, KL (1991) *Nature conservation and estuaries in Great Britain.* Nature Conservancy Council, Peterborough

Dipper, F (2003) The Lincolnshire and North Norfolk maritime area: a review of the past and present status of its species and habitats. *English Nature Research Reports*, No. **542**. www.english-nature.org.uk/pubs/publication/PDF/542.pdf

Doody, P & Barnett, B (eds.) (1987) *The Wash and its environment. Report of a conference held on 8–10 April 1987.* Nature Conservancy Council, Peterborough (Research and survey in nature conservation, No. 7)

Doody, JP, Johnston, C & Smith, B (1993) *Directory of the North Sea coastal margin.* Joint Nature Conservation Committee, Peterborough

Foster-Smith, RL & Sotheran, I (1999) Broad scale remote survey and mapping of sublittoral habitats and biota of the Wash and the Lincolnshire and the north Norfolk coasts. *English Nature Research Reports*, No. **336**

Foster-Smith, RL, Sotheran, I & Walton, R (1997) Broadscale mapping of habitats and biota of the sublittoral seabed of the Wash: final report of the 1996 Broadscale Mapping Project (BMP) survey. *English Nature Research Reports*, No. **238**

Foster-Smith, RL & White, WH (2004); Foster-Smith, RL (2004); Foster-Smith, RL & Hendrick, VJ (2004) *Sabellaria spinulosa* in the Wash and North Norfolk Coast cSAC and its approaches: Parts I–III. *English Nature Research Reports*, Nos. **543**, **544**, **545**

Gibbons, B (1996) Reserve focus. Gibraltar Point NNR, Lincolnshire. *British Wildlife*, **7**(3), 177-179

Goss-Custard, JD, Jones, RE & Newbury, PE (1977) The ecology of the Wash I. Distribution and diet of wading birds (Charadii). *Journal of Applied Ecology*. **14**, 681-687

Hill, M (1988) *Saltmarsh vegetation of the Wash. An assessment of change from 1971 to 1985.* Nature Conservancy Council, Peterborough (Research and survey in nature conservation, No. 13)

May, VJ & Hansom, JD (eds.) (2003) *Coastal geomorphology of Great Britain.* Joint Nature Conservation Committee, Peterborough (Geological Conservation Review Series, No. 28)

McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK.* 2nd edn. Joint Nature Conservation Committee, Peterborough. www.jncc.gov.uk/SACselection

Mortimer, D (n.d. [2002]) *Wash and North Norfolk Coast European Marine Site management scheme.* [English Nature, Peterborough]

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts.* British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Palmer, DW (2004) Growth of the razor clam *Ensis directus*, an alien species in the Wash on the east coast of England. *Journal of the Marine Biological Association*, **84**(5), 1075-1076

Pye, K (1995) Controls on long-term saltmarsh accretion and erosion in the Wash, eastern England. *Journal of Coastal Research*, **11**, 337-356

Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Yates, M, Garbutt, A, Rispin, E & Brown, N (2004) Low tide survey of The Wash Special Protection Area. Final report of the winter 2002–2003 shorebird survey. *English Nature Research Reports*, No. **589**. www.english-nature.org.uk/pubs/publication/PDF/589.pdf

Yates, MG, Garbutt, RA, Barratt, DR, Turk, A, Brown, NJ, Rispin, WE, McGrorty, S, Vdit Durell, SEA le, Goss-Custard, JD, Murray, E & Russell, D (2002) Littoral sediments of the Wash and North Norfolk Coast SAC: the 1998 and 1999 surveys of intertidal sediment and invertebrates. *English Nature Research Reports*, No. **470**

Yates, MG & Goss-Custard, JD (1991) A comparison between high and low water ****

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: **+41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

Appendix 3: Species Recorded During the Survey.

BTO Code	Common name	*Scientific Name*	BoCC	S41	Sch1
AN	Crane	*Grus grus*	Amber		
B.	Blackbird	*Turdus merula*			
BH	Black-headed gull	*Chroicocephalus ridibundus*	Amber		
BO	Barn owl	*Tyto alba*			Yes
BZ	Buzzard	*Buteo buteo*			
C.	Carrion crow	*Corvus corone*			
CA	Cormorant	*Phalacrocorax carbo*			
CM	Common gull	*Larus canus*	Red		
DN	Dunlin	*Calidris alpina*	Red		
FF	Fieldfare	*Turdus pilaris*	Red		Yes
GJ	Greylag goose	*Anser anser*	Amber		
GP	Golden plover	*Pluvialis apricaria*			
H.	Grey heron	*Ardea cinerea*			
HG	Herring gull	*Larus argentatus*	Red	Yes	
HW	Great white egret	*Ardea alba*	Amber		
JD	Jackdaw	*Coloeus monedula*			
K.	Kestrel	*Falco tinnunculus*	Amber		
KT	Red kite	*Milvus milvus*			Yes
L.	Lapwing	*Vanellus vanellus*	Red	Yes	
LB	Lesser black-backed gull	*Larus fuscus*	Amber		
LE	Long-eared owl	*Asio otus*			
LG	Little grebe	*Tachybaptus ruficollis*			
LI	Linnet	*Linaria cannabina*	Red	Yes	
MA	Mallard	*Anas platyrhynchos*	Amber		
MH	Moorhen	*Gallinula chloropus*	Amber		
ML	Merlin	*Falco columbarius*	Red		Yes
MN	Mandarin duck	*Aix galericulata*			
MR	Marsh harrier	*Circus aeruginosus*	Amber		Yes
MS	Mute swan	*Cygnus olor*			
PE	Peregrine	*Falco peregrinus*			Yes
PG	Pink-footed goose	*Anser brachyrhynchus*	Amber		
RE	Redwing	*Turdus iliacus*	Amber		Yes
RK	Redshank	*Tringa totanus*	Amber		
RO	Rook	*Corvus frugilegus*	Amber		
RU	Ruff	*Calidris pugnax*	Red		Yes
SG	Starling	*Sturnus vulgaris*	Red	Yes	
SH	Sparrowhawk	*Accipiter nisus*	Amber		
SN	Snipe	*Gallinago gallinago*	Amber		
SU	Shelduck	*Tadorna tadorna*	Amber		
T.	Teal	*Anas crecca*	Amber		
TT	Turnstone	*Arenaria interpres*	Amber		
WP	Woodpigeon	*Columba palumbus*	Amber		
WS	Whooper swan	*Cygnus cygnus*	Amber		Yes

Appendix 4: Primary Focal Species Summary.

Primary Focal Species Records

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
20/01/2025	Nocturnal	Barn owl	1	1	75	<10m
19/02/2025	Dawn	Barn owl	2	1	30	<10m
05/03/2025	Nocturnal	Barn owl	2	1	30	<10m
04/03/2025	Nocturnal	Barn owl	3	1	30	<10m
11/12/2024	Dawn	Barn owl	4	2	0	<10m
17/12/2024	Nocturnal	Barn owl	4	1	60	<10m
18/12/2024	Dusk	Barn owl	4	1	240	<10m
18/03/2025	Nocturnal	Barn owl	4	1	120	<10m
18/03/2025	Nocturnal	Barn owl	4	1	90	<10m
19/03/2025	Nocturnal	Barn owl	5	1	75	<10m
16/12/2025	Nocturnal	Barn owl	5	1	105	<10m
16/12/20272025	Nocturnal	Barn owl	5	1	240	<10m
30/01/2025	Dawn	Common crane	1	10	15	<10m
04/02/2025	Dusk	Common crane	1	2	60	10-25m
18/02/2025	Dawn	Common crane	1	11	49	<10m
19/02/2025	Dawn	Dunlin	2	10	30	10-25m
19/02/2025	**Dawn**	**Dunlin**	**2**	**9**	**15**	**25-50m**
19/02/2025	Dawn	Dunlin	2	1	15	10-25m
19/02/2025	Dawn	Dunlin	2	14	15	10-25m
09/12/2024	Dusk	Golden plover	1	75	45	10-25m
18/03/2025	Dawn	Golden plover	1	6	30	<10m
18/03/2025	Dawn	Golden plover	1	300	90	50-75m
18/03/2025	Dawn	Golden plover	1	50	240	50-75m
31/10/2024	Dawn	Golden plover	2	145	75	>75m
31/10/2024	Dawn	Golden plover	2	20	45	50-75m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
31/10/2024	Dawn	Golden plover	2	40	60	>75m
31/10/2024	Dawn	Golden plover	2	70	45	50-75m
28/11/2024	Dusk	Golden plover	2	450		<10m
28/11/2024	**Dusk**	**Golden plover**	**2**	**29**	**45**	**25-50m**
28/11/2024	**Dusk**	**Golden plover**	**2**	**480**	**45**	**25-50m**
28/11/2024	**Dusk**	**Golden plover**	**2**	**480**	**240**	**25-50m**
10/12/2024	Dusk	Golden plover	2	450	240	50-75m
10/12/2024	**Dusk**	**Golden plover**	**2**	**180**	**240**	**25-50m**
10/12/2024	**Dusk**	**Golden plover**	**2**	**120**	**240**	**25-50m**
17/12/2024	**Dawn**	**Golden plover**	**2**	**500**	**60**	**25-50m**
08/01/2025	Dusk	Golden plover	2	100	-	<10m
23/01/2025	Dawn	Golden plover	2	2	45	10-25m
05/02/2025	**Dusk**	**Golden plover**	**2**	**1**	**15**	**25-50m**
05/02/2025	Nocturnal	Golden plover	2	1	120	<10m
03/03/2025	Dusk	Golden plover	2	1000	240	>75m
03/03/2025	**Dusk**	**Golden plover**	**2**	**1000**	**240**	**25-50m**
03/03/2025	Dusk	Golden plover	2	500	240	10-25m
03/03/2025	Dusk	Golden plover	2	500	240	10-25m
03/03/2025	Dusk	Golden plover	2	50	90	10-25m
05/03/2025	Nocturnal	Golden plover	2	2	240	<10m
05/03/2025	Nocturnal	Golden plover	2	1	30	10-25m
10/12/2024	Dawn	Golden plover	3	28	60	50-75m
04/03/2025	Dawn	Golden plover	3	35	30	50-75m
12/11/2024	Dusk	Golden plover	4	55	165	50-75m
12/11/2024	Dusk	Golden plover	4	11	120	50-75m
09/01/2025	Dawn	Golden plover	4	30	15	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
09/01/2025	Dawn	Golden plover	4	30	135	10-25m
09/01/2025	Dawn	Golden plover	4	30	30	10-25m
09/01/2025	Dawn	Golden plover	4	23	30	10-25m
06/02/2025	Dawn	Golden plover	4	30	45	10-25m
17/02/2025	Dusk	Golden plover	4	50	30	10-25m
27/11/2024	Dusk	Golden plover	5	300	150	10-25m
12/12/2024	**Dusk**	**Golden plover**	**5**	**200**	**30**	**25-50m**
16/12/2024	Nocturnal	Golden plover	5	5	240	<10m
18/03/2025	Dawn	Greylag goose	1	7	75	<10m
18/03/2025	Dawn	Greylag goose	1	2	45	<10m
18/03/2025	Dawn	Greylag goose	1	2	15	<10m
17/12/2025	Nocturnal	Greylag goose	4	30	240	<10m
17/12/2025	Nocturnal	Greylag goose	4	60	45	10-25m
19/12/2024	Dawn	Greylag goose	5	5	120	10-25m
31/10/2024	**Dusk**	**Lapwing**	**1**	**34**	**240**	**25-50m**
13/11/2024	**Dusk**	**Lapwing**	**1**	**9**	**135**	**25-50m**
13/11/2024	**Dusk**	**Lapwing**	**1**	**13**	**105**	**25-50m**
20/01/2025	Nocturnal	Lapwing	1	2	15	<10m
04/03/2025	Dusk	Lapwing	1	13	45	10-25m
31/10/2024	**Dawn**	**Lapwing**	**2**	**5**	**45**	**25-50m**
13/11/2024	Dawn	Lapwing	2	24		<10m
10/12/2024	Dusk	Lapwing	2	220	240	50-75m
23/01/2025	**Dawn**	**Lapwing**	**2**	**4**	**150**	**25-50m**
23/01/2025	**Dawn**	**Lapwing**	**2**	**140**	**150**	**25-50m**
19/02/2025	Dawn	Lapwing	2	60	15	10-25m
19/02/2025	Dawn	Lapwing	2	60	30	10-25m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
19/02/2025	Dawn	Lapwing	2	15	15	10-25m
19/02/2025	Dawn	Lapwing	2	14	15	10-25m
19/02/2025	Dawn	Lapwing	2	5	15	10-25m
05/03/2025	Nocturnal	Lapwing	2	4	240	10-25m
05/03/2025	Nocturnal	Lapwing	2	2	240	10-25m
10/12/2024	Dawn	Lapwing	3	2	60	50-75m
10/12/2024	Dawn	Lapwing	3	90	150	50-75m
10/12/2024	**Dawn**	**Lapwing**	**3**	**7**	**225**	**25-50m**
07/01/2025	Dawn	Lapwing	3	300	240	<10m
07/01/2025	**Dawn**	**Lapwing**	**3**	**300**	**240**	**25-50m**
07/01/2025	**Dawn**	**Lapwing**	**3**	**300**	**240**	**25-50m**
07/01/2025	Dawn	Lapwing	3	200	240	10-25m
09/01/2025	Nocturnal	Lapwing	3	100	30	<10m
20/01/2025	Dusk	Lapwing	3	75	15	10-25m
04/02/2025	**Dawn**	**Lapwing**	**3**	**200**	**60**	**25-50m**
04/02/2025	**Dawn**	**Lapwing**	**3**	**6**	**240**	**25-50m**
04/02/2025	**Dawn**	**Lapwing**	**3**	**40**	**240**	**25-50m**
14/10/2024	Dusk	Lapwing	4	60	60	10-25m
01/11/2024	Dawn	Lapwing	4	55	210	10-25m
01/11/2024	Dawn	Lapwing	4	150	30	10-25m
01/11/2024	**Dawn**	**Lapwing**	**4**	**1500**	**180**	**25-50m**
29/11/2024	Dawn	Lapwing	4	28	45	<10m
11/12/2024	Dawn	Lapwing	4	300		<10m
11/12/2024	Dawn	Lapwing	4	300	240	50-75m
18/12/2024	**Dusk**	**Lapwing**	**4**	**150**	**240**	**25-50m**
18/12/2024	**Dusk**	**Lapwing**	**4**	**40**	**105**	**25-50m**

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/12/2024	Dusk	Lapwing	4	5	240	<10m
09/01/2025	Dawn	Lapwing	4	20	30	<10m
09/01/2025	Dawn	Lapwing	4	10	30	<10m
09/01/2025	Dawn	Lapwing	4	30	105	<10m
09/01/2025	Dawn	Lapwing	4	200	45	10-25m
09/01/2025	Dawn	Lapwing	4	20	120	10-25m
09/01/2025	Dawn	Lapwing	4	10	75	10-25m
29/01/2025	Dusk	Lapwing	4	70	30	10-25m
06/02/2025	**Dawn**	**Lapwing**	**4**	**100**	**210**	**25-50m**
17/02/2025	Dusk	Lapwing	4	200	30	10-25m
17/02/2025	Dusk	Lapwing	4	15	15	<10m
17/02/2025	Dusk	Lapwing	4	1	15	<10m
17/02/2025	Dusk	Lapwing	4	200	30	10-25m
17/02/2025	Dusk	Lapwing	4	20	15	<10m
17/02/2025	Dusk	Lapwing	4	10	15	<10m
16/10/2024	Dawn	Lapwing	5	50	90	10-25m
16/10/2024	Dawn	Lapwing	5	32	60	10-25m
16/10/2024	Dawn	Lapwing	5	16	45	10-25m
16/10/2024	Dawn	Lapwing	5	15	60	10-25m
27/11/2024	Dusk	Lapwing	5	6	250	10-25m
12/12/2024	**Dusk**	**Lapwing**	**5**	**100**	**120**	**25-50m**
12/12/2024	Dusk	Lapwing	5	150	250	50-75m
12/12/2024	Dusk	Lapwing	5	200	250	50-75m
16/12/2024	Nocturnal	Lapwing	5	1	45	10-25m
06/01/2025	Dusk	Lapwing	5	400	120	50-75m
06/01/2025	Dusk	Lapwing	5	600	165	50-75m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/02/2025	Dawn	Lapwing	5	50	30	10-25m
18/02/2025	Dawn	Lapwing	5	30	15	10-25m
18/03/2025	Dawn	Lapwing	5	2	60	<10m
19/03/2025	Nocturnal	Lapwing	5	2	120	<10m
15/10/2024	Dawn	Mallard	1	5	40	10-25m
15/10/2024	Dawn	Mallard	1	23	30	10-25m
31/10/2024	Dusk	Mallard	1	75	60	10-25m
13/11/2024	Dusk	Mallard	1	22	45	10-25m
13/11/2024	Dusk	Mallard	1	19	30	10-25m
28/11/2024	Dawn	Mallard	1	16	135	10-25m
28/11/2024	Dawn	Mallard	1	40	75	10-25m
09/12/2024	Dusk	Mallard	1	3	30	10-25m
07/01/2025	Dusk	Mallard	1	6		<10m
30/01/2025	Dawn	Mallard	1	6	30	10-25m
30/01/2025	Dawn	Mallard	1	23	45	10-25m
04/02/2025	Dusk	Mallard	1	15	120	<10m
18/02/2025	Dawn	Mallard	1	2	30	<10m
18/02/2025	Dawn	Mallard	1	4	15	<10m
18/02/2025	Dawn	Mallard	1	8	45	10-25m
03/03/2025	Nocturnal	Mallard	1	2	120	10-25m
04/03/2025	Dusk	Mallard	1	35	30	<10m
04/03/2025	Dusk	Mallard	1	3	75	10-25m
18/03/2025	Dawn	Mallard	1	2	30	<10m
18/03/2025	Dawn	Mallard	1	12	240	<10m
18/03/2025	Dawn	Mallard	1	2	30	10-25m
18/03/2025	Dawn	Mallard	1	1	15	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/03/2025	Dawn	Mallard	1	11	15	<10m
15/10/2025	Dawn	Mallard	1	4	15	10-25m
10/12/2024	**Dusk**	**Mallard**	**2**	**18**	**60**	**25-50m**
10/12/2024	**Dusk**	**Mallard**	**2**	**32**	**60**	**25-50m**
23/01/2025	Dawn	Mallard	2	3	30	<10m
05/02/2025	Nocturnal	Mallard	2	6	240	<10m
05/02/2025	Nocturnal	Mallard	2	1	240	<10m
03/03/2025	Dusk	Mallard	2	2	75	<10m
03/03/2025	Dusk	Mallard	2	6	75	<10m
05/03/2025	Nocturnal	Mallard	2	4	240	<10m
05/03/2025	Nocturnal	Mallard	2	2	60	10-25m
19/03/2025	Dawn	Mallard	2	6	90	10-25m
04/02/2025	Dawn	Mallard	3	2	30	<10m
04/03/2025	Dawn	Mallard	3	2	45	<10m
04/03/2025	Dawn	Mallard	3	1	30	<10m
04/03/2025	Dawn	Mallard	3	3	15	10-25m
04/03/2025	Dawn	Mallard	3	1	15	<10m
04/03/2025	Dawn	Mallard	3	2	30	10-25m
04/03/2025	Dawn	Mallard	3	3	15	10-25m
04/03/2025	Dawn	Mallard	3	3	60	10-25m
04/03/2025	Dawn	Mallard	3	2	45	<10m
04/03/2025	Dawn	Mallard	3	1	30	10-25m
04/03/2025	Dawn	Mallard	3	2	40	10-25m
18/03/2025	Dusk	Mallard	3	2	30	<10m
18/03/2025	Dusk	Mallard	3	2	30	<10m
18/03/2025	Dusk	Mallard	3	1	45	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
14/10/2024	Dusk	Mallard	4	4	120	10-25m
14/10/2024	Dusk	Mallard	4	9	50	10-25m
14/10/2024	Dusk	Mallard	4	32	25	10-25m
01/11/2024	Dawn	Mallard	4	4	75	10-25m
12/11/2024	Dusk	Mallard	4	8	45	10-25m
12/11/2024	Dusk	Mallard	4	4	45	10-25m
29/11/2024	**Dawn**	**Mallard**	**4**	**60**	**45**	**25-50m**
29/11/2024	Dawn	Mallard	4	12		<10m
29/11/2024	Dawn	Mallard	4	16	150	<10m
11/12/2024	Dawn	Mallard	4	6	30	10-25m
11/12/2024	Dawn	Mallard	4	70	30	10-25m
11/12/2024	Dawn	Mallard	4	24	15	<10m
29/01/2025	Dawn	Mallard	4	30	30	10-25m
06/02/2025	Dawn	Mallard	4	3	15	<10m
06/02/2025	Dawn	Mallard	4	4	15	<10m
17/02/2025	Dusk	Mallard	4	3	15	<10m
05/03/2025	Dawn	Mallard	4	2	15	<10m
05/03/2025	Dawn	Mallard	4	2	15	<10m
05/03/2025	Dawn	Mallard	4	3	30	<10m
05/03/2025	Dawn	Mallard	4	1	30	10-25m
05/03/2025	Dawn	Mallard	4	4	15	<10m
05/03/2025	Dawn	Mallard	4	8	30	<10m
17/03/2025	Dusk	Mallard	4	3	60	10-25m
17/03/2025	Dusk	Mallard	4	8	60	<10m
17/03/2025	Dusk	Mallard	4	3	60	10-25m
17/03/2025	Dusk	Mallard	4	6	60	10-25m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/03/2025	Nocturnal	Mallard	4	2	30	<10m
16/10/2024	Dawn	Mallard	5	220	75	10-25m
16/10/2024	Dawn	Mallard	5	35	45	10-25m
30/10/2024	Dusk	Mallard	5	14	30	10-25m
14/11/2024	Dawn	Mallard	5	2	75	10-25m
14/11/2024	Dawn	Mallard	5	6	75	10-25m
27/11/2024	Dusk	Mallard	5	32	45	10-25m
27/11/2024	Dusk	Mallard	5	6	30	10-25m
12/12/2024	Dusk	Mallard	5	9	45	10-25m
19/12/2024	Dawn	Mallard	5	6	45	<10m
19/12/2024	Dawn	Mallard	5	32	30	<10m
19/12/2024	Dawn	Mallard	5	5	60	<10m
19/12/2024	Dawn	Mallard	5	32	30	<10m
06/01/2025	**Dusk**	**Mallard**	**5**	**6**	**60**	**25-50m**
06/01/2025	Dusk	Mallard	5	4	105	10-25m
21/01/2025	Nocturnal	Mallard	5	2	60	10-25m
03/02/2025	Dusk	Mallard	5	20	240	10-25m
04/03/2025	Dusk	Mallard	5	2	240	<10m
04/03/2025	Dusk	Mallard	5	2	90	10-25m
04/03/2025	**Dusk**	**Mallard**	**5**	**1**	**60**	**25-50m**
04/03/2025	Dusk	Mallard	5	4	60	10-25m
18/03/2025	Dawn	Mallard	5	5	120	<10m
19/03/2025	Nocturnal	Mallard	5	4	30	25-30m
18/02/2025	Dusk	Marsh harrier	3	1	60	<10m
18/02/2025	Dusk	Marsh harrier	3	1	60	<10m
01/11/2024	Dawn	Marsh harrier	4	1	150	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
29/11/2024	Dawn	Marsh harrier	4	1	1	<10m
29/11/2024	Dawn	Marsh harrier	4	1	180	<10m
29/11/2024	Dawn	Marsh harrier	4	1	120	<10m
29/11/2024	Dawn	Marsh harrier	4	2	195	<10m
09/01/2025	Dawn	Marsh harrier	4	1	60	<10m
06/02/2025	Dawn	Marsh harrier	4	1	135	<10m
17/03/2025	Dusk	Marsh harrier	4	1	150	<10m
17/03/2025	Dusk	Marsh harrier	4	1	120	<10m
05/03/2025	Dawn	Merlin	4	1	45	10-25m
15/10/2024	Dawn	Mute swan	1	2	25	<10m
15/10/2024	Dawn	Mute swan	1	4		<10m
31/10/2024	Dusk	Mute swan	1	6		<10m
13/11/2024	Dusk	Mute swan	1	1		<10m
28/11/2024	Dawn	Mute swan	1	4		<10m
07/01/2025	Dusk	Mute swan	1	4		<10m
30/01/2025	Dawn	Mute swan	1	6		<10m
04/02/2025	Dusk	Mute swan	1	3	240	<10m
18/02/2025	Dawn	Mute swan	1	8		<10m
03/03/2025	Nocturnal	Mute swan	1	1	60	10-25m
03/03/2025	Nocturnal	Mute swan	1	4	240	<10m
04/03/2025	Dusk	Mute swan	1	3	240	<10m
18/03/2025	Dawn	Mute swan	1	4	45	<10m
18/03/2025	Dawn	Mute swan	1	2	60	<10m
01/11/2024	Dawn	Mute swan	4	2	105	10-25m
06/02/2025	Dawn	Mute swan	4	3		<10m
17/02/2025	Dusk	Mute swan	4	2	30	10-25m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
05/03/2025	Dawn	Mute swan	4	2	15	<10m
17/03/2025	Dusk	Mute swan	4	2	120	<10m
03/02/2025	Dusk	Mute swan	5	12	240	<10m
04/03/2025	Dusk	Mute swan	5	4	240	<10m
18/03/2025	Dawn	Mute swan	5	1	30	<10m
20/01/2025	Dusk	Peregrine	3	1	105	>75m
29/11/2024	Dawn	Peregrine	4	1	120	10-25m
28/11/2024	**Dawn**	**Pink-footed goose**	**1**	**29**	**150**	**25-50m**
28/11/2024	**Dawn**	**Pink-footed goose**	**1**	**23**	**75**	**25-50m**
28/11/2024	Dawn	Pink-footed goose	1	160	150	50-75m
13/11/2024	**Dawn**	**Pink-footed goose**	**2**	**3**	**135**	**25-50m**
10/12/2024	Dusk	Pink-footed goose	2	200	105	50-75m
10/12/2024	Dusk	Pink-footed goose	2	80	150	50-75m
10/12/2024	Dusk	Pink-footed goose	2	40	75	50-75m
10/12/2024	**Dusk**	**Pink-footed goose**	**2**	**18**	**90**	**25-50m**
10/12/2024	**Dawn**	**Pink-footed goose**	**3**	**54**	**105**	**25-50m**
10/12/2024	Dawn	Pink-footed goose	3	24	240	50-75m
10/12/2024	**Dawn**	**Pink-footed goose**	**3**	**8**	**60**	**25-50m**
10/12/2024	**Dawn**	**Pink-footed goose**	**3**	**10**	**240**	**25-50m**

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
20/01/2025	**Dusk**	**Pink-footed goose**	**3**	**90**	**135**	**25-50m**
20/01/2025	Dusk	Pink-footed goose	3	1	90	50-75m
12/11/2024	**Dusk**	**Pink-footed goose**	**4**	**2**	**120**	**25-50m**
12/11/2024	Dusk	Pink-footed goose	4	170	165	10-25m
29/11/2024	**Dawn**	**Pink-footed goose**	**4**	**85**	**240**	**25-50m**
29/11/2024	**Dawn**	**Pink-footed goose**	**4**	**41**	**135**	**25-50m**
29/11/2024	Dawn	Pink-footed goose	4	6	120	50-75m
29/11/2024	**Dawn**	**Pink-footed goose**	**4**	**11**	**135**	**25-50m**
29/11/2024	**Dawn**	**Pink-footed goose**	**4**	**26**	**150**	**25-50m**
29/11/2024	**Dawn**	**Pink-footed goose**	**4**	**12**	**205**	**25-50m**
29/11/2024	Dawn	Pink-footed goose	4	120	195	50-75m
29/11/2024	Dawn	Pink-footed goose	4	7	90	<10m
11/12/2024	Dawn	Pink-footed goose	4	80	15	<10m
11/12/2024	**Dawn**	**Pink-footed goose**	**4**	**350**	**180**	**25-50m**
11/12/2024	**Dawn**	**Pink-footed goose**	**4**	**90**	**240**	**25-50m**
11/12/2024	**Dawn**	**Pink-footed goose**	**4**	**60**	**180**	**25-50m**
11/12/2024	**Dawn**	**Pink-footed goose**	**4**	**30**	**195**	**25-50m**

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
11/12/2024	**Dawn**	**Pink-footed goose**	**4**	**60**	**240**	**25-50m**
06/02/2025	Dawn	Pink-footed goose	4	28	60	50-75m
06/02/2025	Dawn	Pink-footed goose	4	100	240	50-75m
14/11/2024	**Dawn**	**Pink-footed goose**	**5**	**2**	**135**	**25-50m**
14/11/2024	**Dawn**	**Pink-footed goose**	**5**	**15**	**105**	**25-50m**
14/11/2024	Dawn	Pink-footed goose	5	35	165	50-75m
14/11/2024	**Dawn**	**Pink-footed goose**	**5**	**4**	**240**	**25-50m**
14/11/2024	Dawn	Pink-footed goose	5	37	240	50-75m
27/11/2024	**Dusk**	**Pink-footed goose**	**5**	**53**	**90**	**25-50m**
12/12/2024	Dusk	Pink-footed goose	5	15	120	50-75m
12/12/2024	Dusk	Pink-footed goose	5	45	195	50-75m
06/01/2025	Dawn	Pink-footed goose	5	21	240	50-75m
31/10/2024	**Dusk**	**Red kite**	**1**	**1**	**240**	**25-50m**
13/11/2024	Dusk	Red kite	1	1	105	10-25m
13/11/2024	Dusk	Red kite	1	1	30	<10m
13/11/2024	Dusk	Red kite	1	1	105	10-25m
13/11/2024	Dusk	Red kite	1	1	210	10-25m
28/11/2024	Dawn	Red kite	1	1	240	10-25m
30/01/2025	Dawn	Red kite	1	1	180	10-25m
04/02/2025	Dusk	Red kite	1	1	60	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
01/11/2024	Dawn	Red kite	4	1	240	10-25m
12/11/2024	Dusk	Red kite	4	1	135	10-25m
29/11/2024	Dawn	Red kite	4	2	240	<10m
29/11/2024	Dawn	Red kite	4	1	105	<10m
09/01/2025	Dawn	Red kite	4	1	240	10-25m
09/01/2025	Dawn	Red kite	4	1	210	10-25m
29/01/2025	**Dusk**	**Red kite**	**4**	**1**	**240**	**25-50m**
06/02/2025	Dawn	Red kite	4	1	0	0
17/03/2025	Dusk	Red kite	4	1	90	<10m
16/10/2024	Dawn	Red kite	5	2	240	10-25m
29/11/2024	Dawn	Redshank	4	1	15	<10m
19/03/2025	Dawn	Ruff	2	9	60	50-75m
18/12/2024	Dusk	Shelduck	4	2	240	<10m
29/01/2025	**Dusk**	**Shelduck**	**4**	**1**	**60**	**25-50m**
06/02/2025	Dawn	Shelduck	4	1	15	<10m
28/11/2024	Dawn	Snipe	1	1	15	<10m
03/03/2025	Nocturnal	Snipe	1	1	240	<10m
19/03/2025	Dawn	Snipe	2	1	30	<10m
14/10/2024	Dusk	Snipe	4	5	20	<10m
16/10/2024	Dawn	Snipe	5	1	30	<10m
30/10/2024	**Dusk**	**Snipe**	**5**	**1**	**45**	**25-50m**
27/11/2024	Dusk	Snipe	5	7	30	10-25m
12/12/2024	Dusk	Snipe	5	1	30	<10m
16/12/2024	Nocturnal	Snipe	5	1	15	<10m
16/12/2024	Nocturnal	Snipe	5	3	60	<10m
06/01/2025	Dusk	Snipe	5	2	30	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/03/2025	Dawn	Snipe	5	1	30	<10m
19/03/2025	Nocturnal	Snipe	5	3	240	<10m
09/12/2024	Dusk	Teal	1	28		<10m
30/01/2025	Dawn	Teal	1	2		<10m
30/01/2025	Dawn	Teal	1	6	15	<10m
03/02/2025	Nocturnal	Teal	1	4	240	<10m
04/02/2025	Dusk	Teal	1	9	90	<10m
18/02/2025	Dawn	Teal	1	11		<10m
04/03/2025	Dusk	Teal	1	3	240	<10m
29/11/2024	Dawn	Teal	4	42	150	<10m
09/01/2025	Dawn	Teal	4	50	15	<10m
09/01/2025	Dawn	Teal	4	20	30	<10m
29/01/2025	Dusk	Teal	4	30	30	<10m
06/02/2025	Dawn	Teal	4	50	15	<10m
27/11/2024	Dusk	Teal	5	8	45	10-25m
12/12/2024	Dusk	Teal	5	14	45	10-25m
16/12/2024	Nocturnal	Teal	5	2	60	<10m
19/12/2024	Dawn	Teal	5	7	240	<10m
19/12/2024	Dawn	Teal	5	5	45	<10m
06/01/2025	**Dusk**	**Teal**	**5**	**32**	**90**	**25-50m**
06/01/2025	**Dusk**	**Teal**	**5**	**27**	**75**	**25-50m**
15/10/2024	Dawn	Turnstone	1	5	30	10-25m
15/10/2024	Dawn	Whooper swan	1	15	100	10-25m
13/11/2024	Dusk	Whooper swan	1	7	75	10-25m
30/01/2025	Dawn	Whooper swan	1	15	240	10-25m
04/02/2025	Dusk	Whooper swan	1	5	240	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/02/2025	Dawn	Whooper swan	1	6	75	<10m
18/03/2025	Dawn	Whooper swan	1	70	30	10-25m
18/03/2025	**Dawn**	**Whooper swan**	**1**	**15**	**90**	**25-50m**
18/03/2025	Dawn	Whooper swan	1	12	75	10-25m
31/10/2024	Dawn	Whooper swan	2	4	240	10-25m
13/11/2024	Dawn	Whooper swan	2	6	90	10-25m
13/11/2024	Dawn	Whooper swan	2	4	105	10-25m
23/01/2025	**Dawn**	**Whooper swan**	**2**	**3**	**90**	**25-50m**
04/03/2025	Dawn	Whooper swan	3	3	15	<10m
14/10/2024	Dusk	Whooper swan	4	42		<10m
14/10/2024	Dusk	Whooper swan	4	23	60	10-25m
14/10/2024	Dusk	Whooper swan	4	11	60	<10m
14/10/2024	Dusk	Whooper swan	4	11	80	10-25m
14/10/2024	Dusk	Whooper swan	4	10	35	<10m
14/10/2024	Dusk	Whooper swan	4	10	60	<10m
14/10/2024	Dusk	Whooper swan	4	8	110	<10m
14/10/2024	Dusk	Whooper swan	4	7	60	<10m
14/10/2024	Dusk	Whooper swan	4	7	30	<10m
14/10/2024	Dusk	Whooper swan	4	7	80	<10m
14/10/2024	Dusk	Whooper swan	4	7	45	<10m
14/10/2024	Dusk	Whooper swan	4	6	80	<10m
14/10/2024	Dusk	Whooper swan	4	5	80	10-25m
14/10/2024	Dusk	Whooper swan	4	2	100	10-25m
01/11/2024	Dawn	Whooper swan	4	55	180	10-25m
01/11/2024	Dawn	Whooper swan	4	9	240	10-25m
01/11/2024	Dawn	Whooper swan	4	4	120	10-25m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
01/11/2024	Dawn	Whooper swan	4	1	240	10-25m
12/11/2024	Dusk	Whooper swan	4	60		<10m
12/11/2024	Dusk	Whooper swan	4	23	105	10-25m
12/11/2024	Dusk	Whooper swan	4	13	90	10-25m
12/11/2024	Dusk	Whooper swan	4	9	90	10-25m
12/11/2024	Dusk	Whooper swan	4	8	120	10-25m
12/11/2024	Dusk	Whooper swan	4	7	120	10-25m
12/11/2024	Dusk	Whooper swan	4	6	120	10-25m
12/11/2024	Dusk	Whooper swan	4	6	90	10-25m
12/11/2024	Dusk	Whooper swan	4	4	90	10-25m
12/11/2024	Dusk	Whooper swan	4	4	120	10-25m
12/11/2024	Dusk	Whooper swan	4	4	120	10-25m
29/11/2024	Dawn	Whooper swan	4	28	75	10-25m
11/12/2024	Dawn	Whooper swan	4	350		<10m
11/12/2024	Dawn	Whooper swan	4	40		<10m
17/12/2024	Nocturnal	Whooper swan	4	300	240	<10m
17/12/2024	Nocturnal	Whooper swan	4	7	30	<10m
18/12/2024	Dusk	Whooper swan	4	185	240	<10m
18/12/2024	Dusk	Whooper swan	4	36	90	10-25m
18/12/2024	Dusk	Whooper swan	4	24	30	<10m
18/12/2024	Dusk	Whooper swan	4	10	240	<10m
18/12/2024	Dusk	Whooper swan	4	10	90	<10m
18/12/2024	Dusk	Whooper swan	4	10	75	<10m
18/12/2024	Dusk	Whooper swan	4	7	105	<10m
18/12/2024	Dusk	Whooper swan	4	7	90	<10m
18/12/2024	Dusk	Whooper swan	4	5	240	<10m

Date	Survey Type	Species	VP	Number	Duration (Second)	Max Height Band
18/12/2024	Dusk	Whooper swan	4	4	30	<10m
18/12/2024	Dusk	Whooper swan	4	2	90	<10m
09/01/2025	Dawn	Whooper swan	4	10	15	10-25m
09/01/2025	Dawn	Whooper swan	4	4	135	10-25m
09/01/2025	Dawn	Whooper swan	4	4	45	10-25m
09/01/2025	Dawn	Whooper swan	4	2	120	10-25m
09/01/2025	Dawn	Whooper swan	4	2	45	10-25m
09/01/2025	Dawn	Whooper swan	4	2	45	<10m
09/01/2025	Dawn	Whooper swan	4	2	45	10-25m
06/02/2025	Dawn	Whooper swan	4	16	120	10-25m
06/02/2025	Dawn	Whooper swan	4	15	120	10-25m
06/02/2025	Dawn	Whooper swan	4	5	60	<10m
06/02/2025	Dawn	Whooper swan	4	4		<10m
05/03/2025	Dawn	Whooper swan	4	10	45	10-25m
05/03/2025	Dawn	Whooper swan	4	10	30	<10m
05/03/2025	Dawn	Whooper swan	4	2	30	10-25m
14/11/2024	Dawn	Whooper swan	5	6	165	10-25m
16/12/2024	Nocturnal	Whooper swan	5	2	45	10-25m
19/12/2024	Dawn	Whooper swan	5	5	90	10-25m
19/12/2024	Dawn	Whooper swan	5	2	60	<10m
03/02/2025	Dusk	Whooper swan	5	18	240	<10m
18/03/2025	Dawn	Whooper swan	5	80	120	10-25m
18/03/2025	Dawn	Whooper swan	5	40	120	10-25m
05/03/2025	Dusk	Wigeon	2	2	60	<10m
17/12/2024	Dusk	Wigeon	4	2	30	<10m

Appendix 5: Flight lines of Species within Collision Risk Zone

Figure A5.1: All Flight Lines Within Collision Risk Zones Across all Surveys and Species.

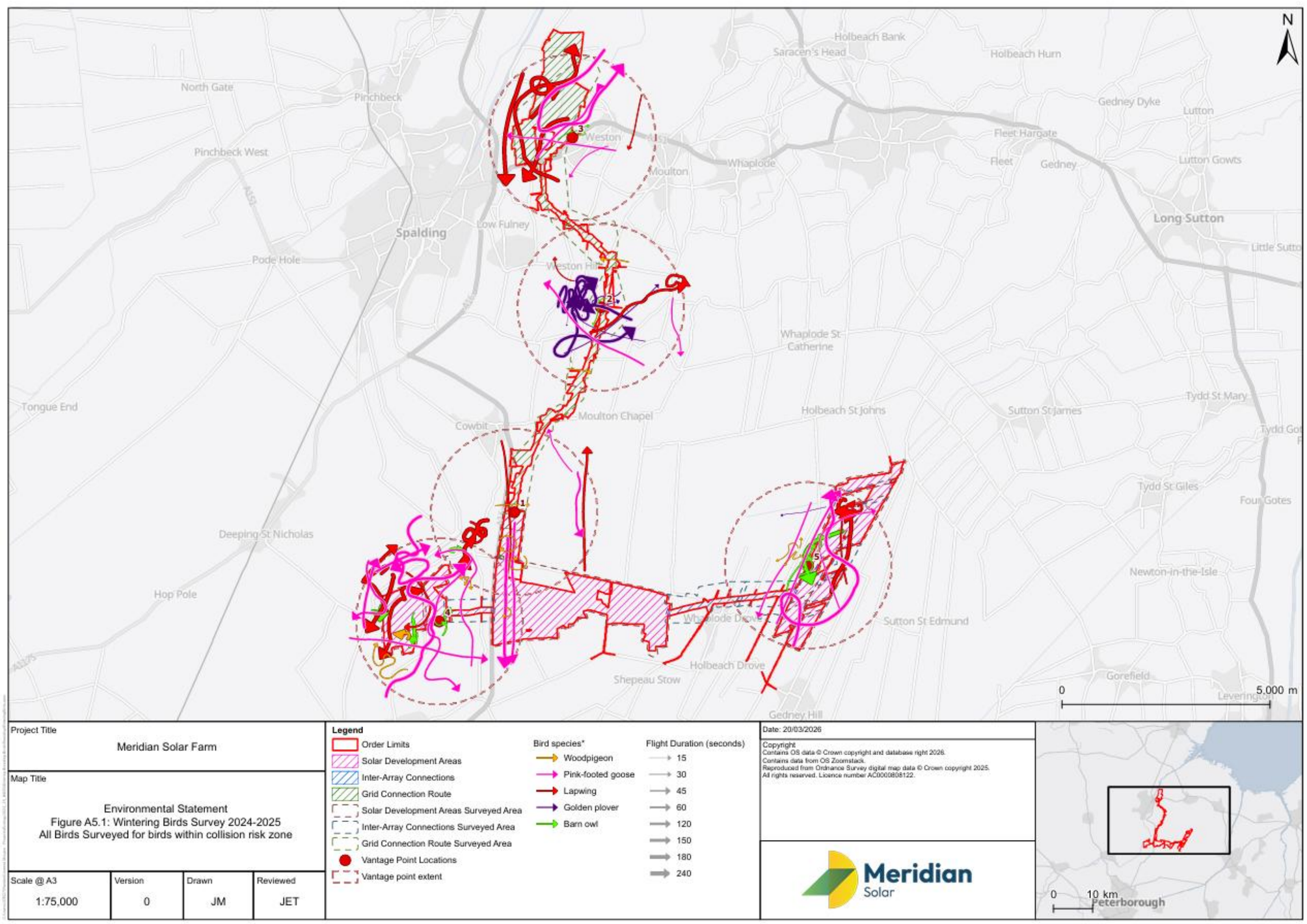


Figure A5.2: All Flight Lines Within Collision Risk Zones Across all Surveys and Species at Vantage Point 1.

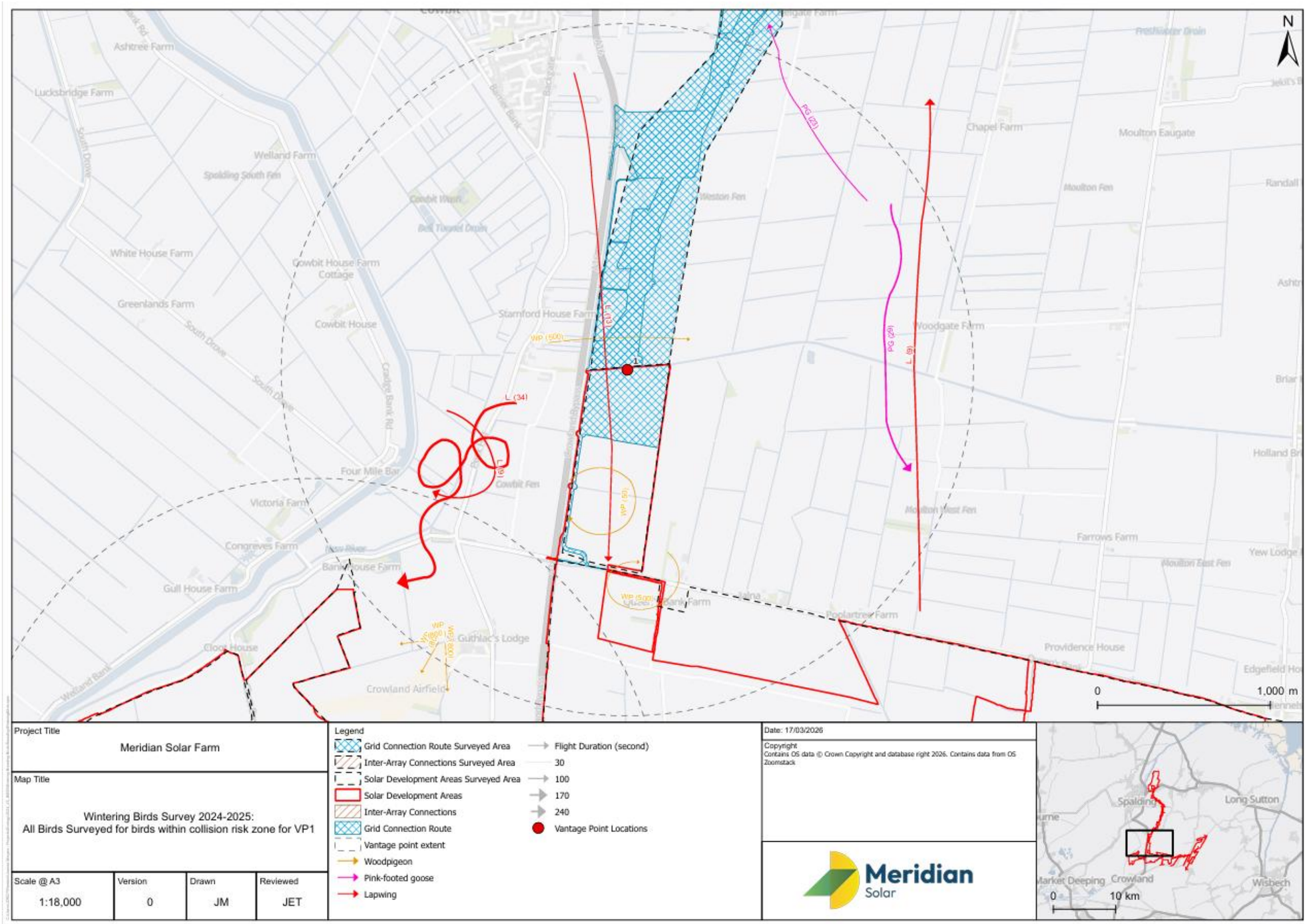


Figure A5.3: All Flight Lines Within Collision Risk Zones Across all Surveys and Species at Vantage Point 2.

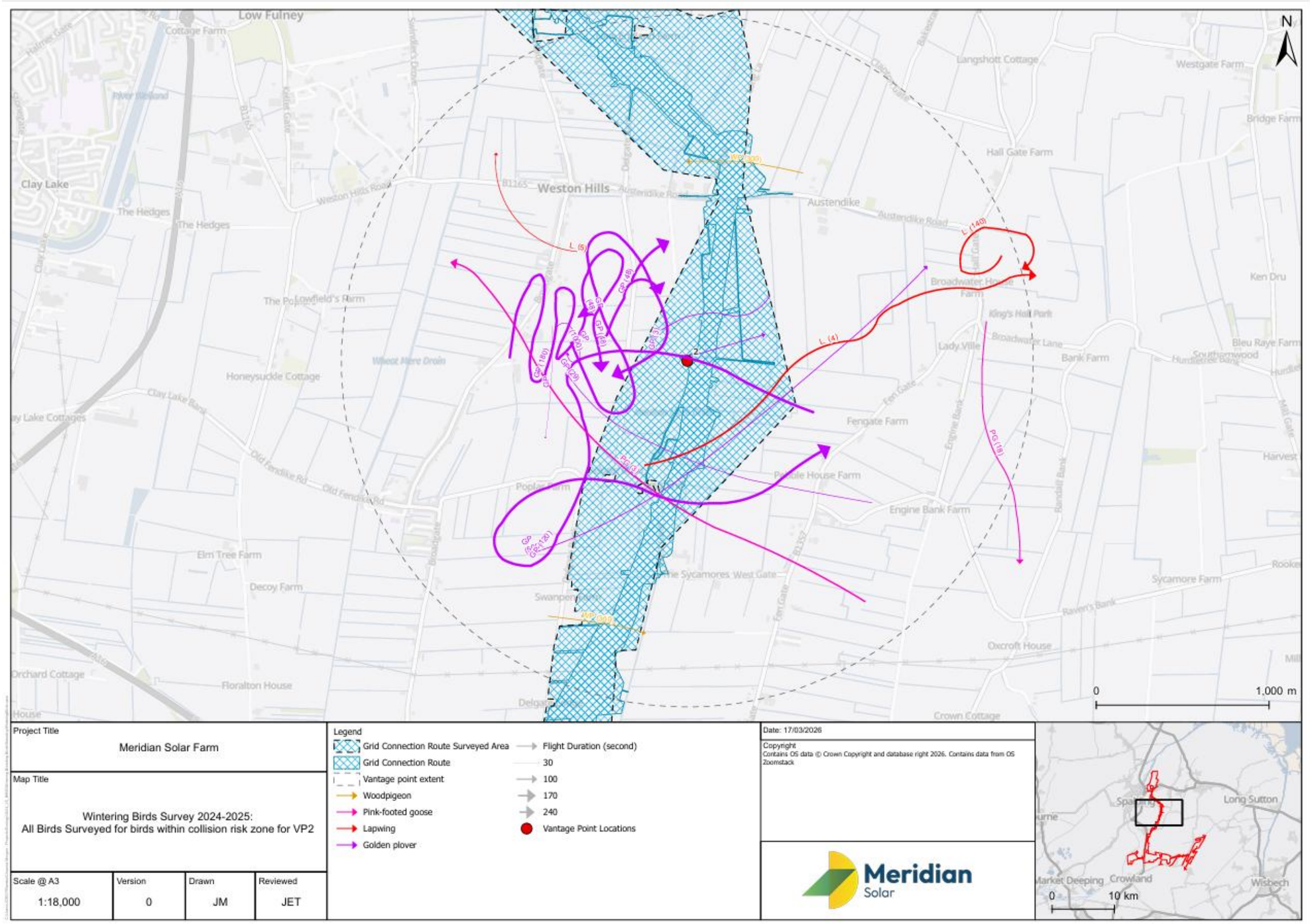


Figure A5.4: All Flight Lines Within Collision Risk Zones Across all Surveys and Species at Vantage Point 3.

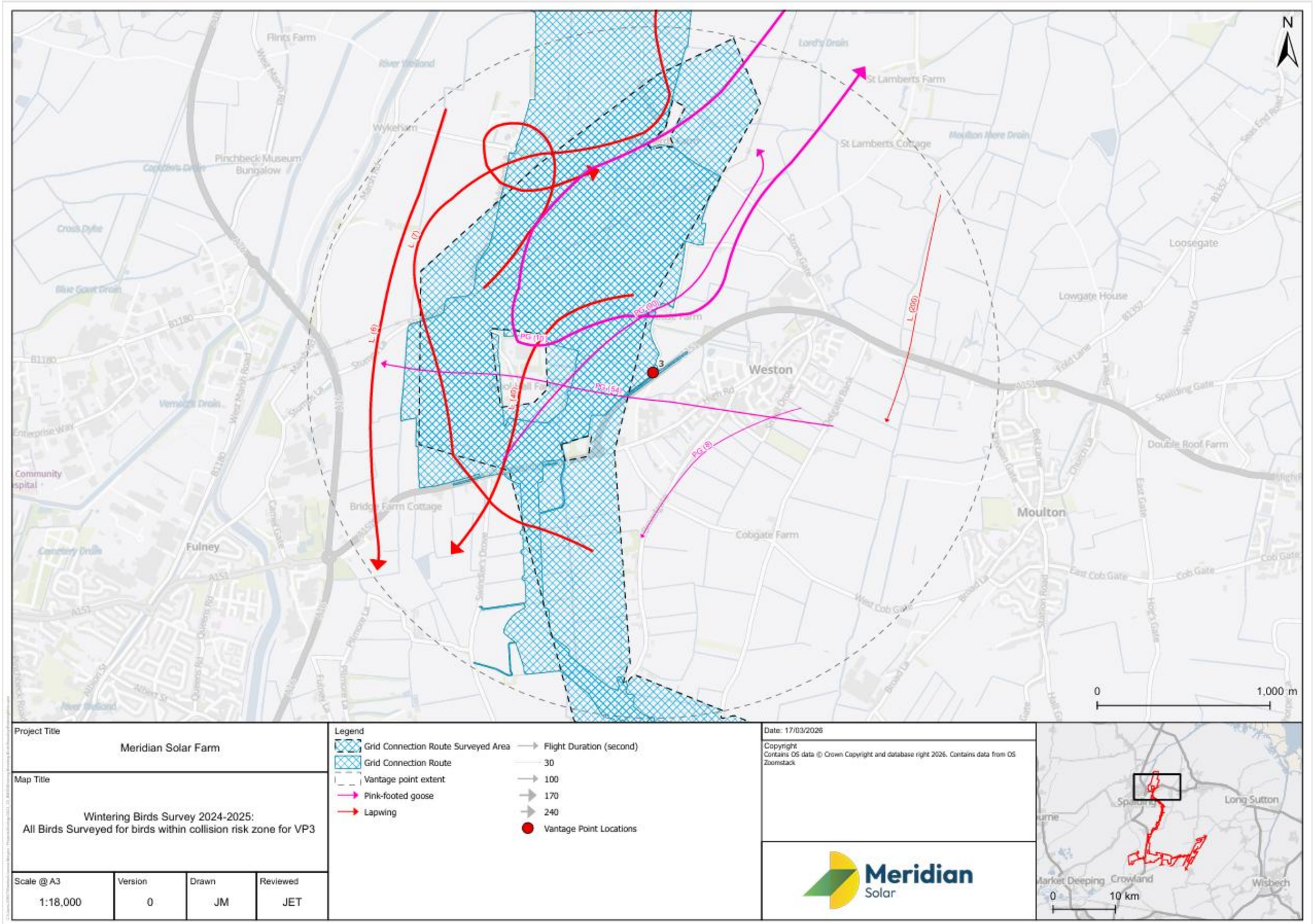


Figure A5.5: All Flight Lines Within Collision Risk Zones Across all Surveys and Species at Vantage Point 4.

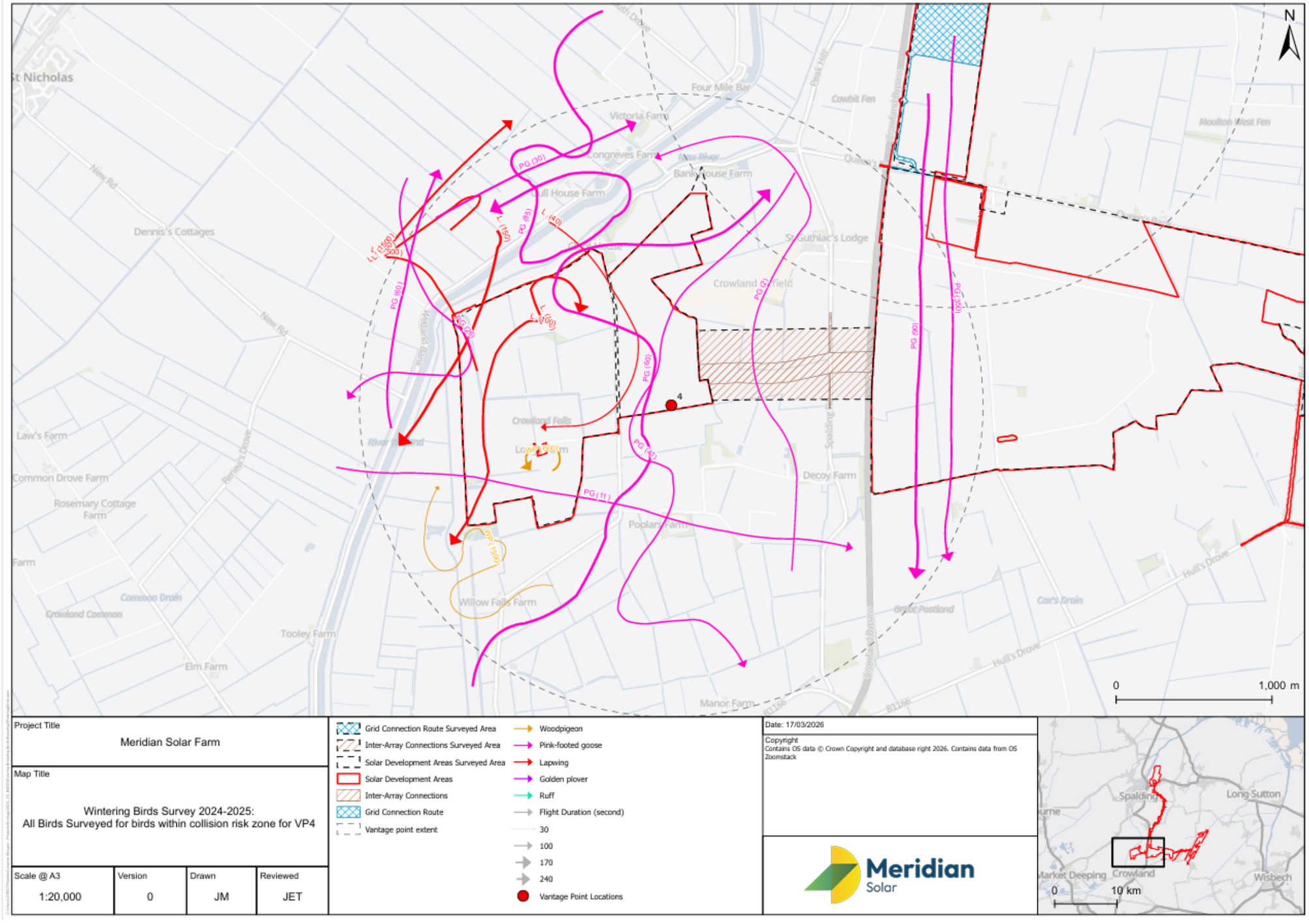
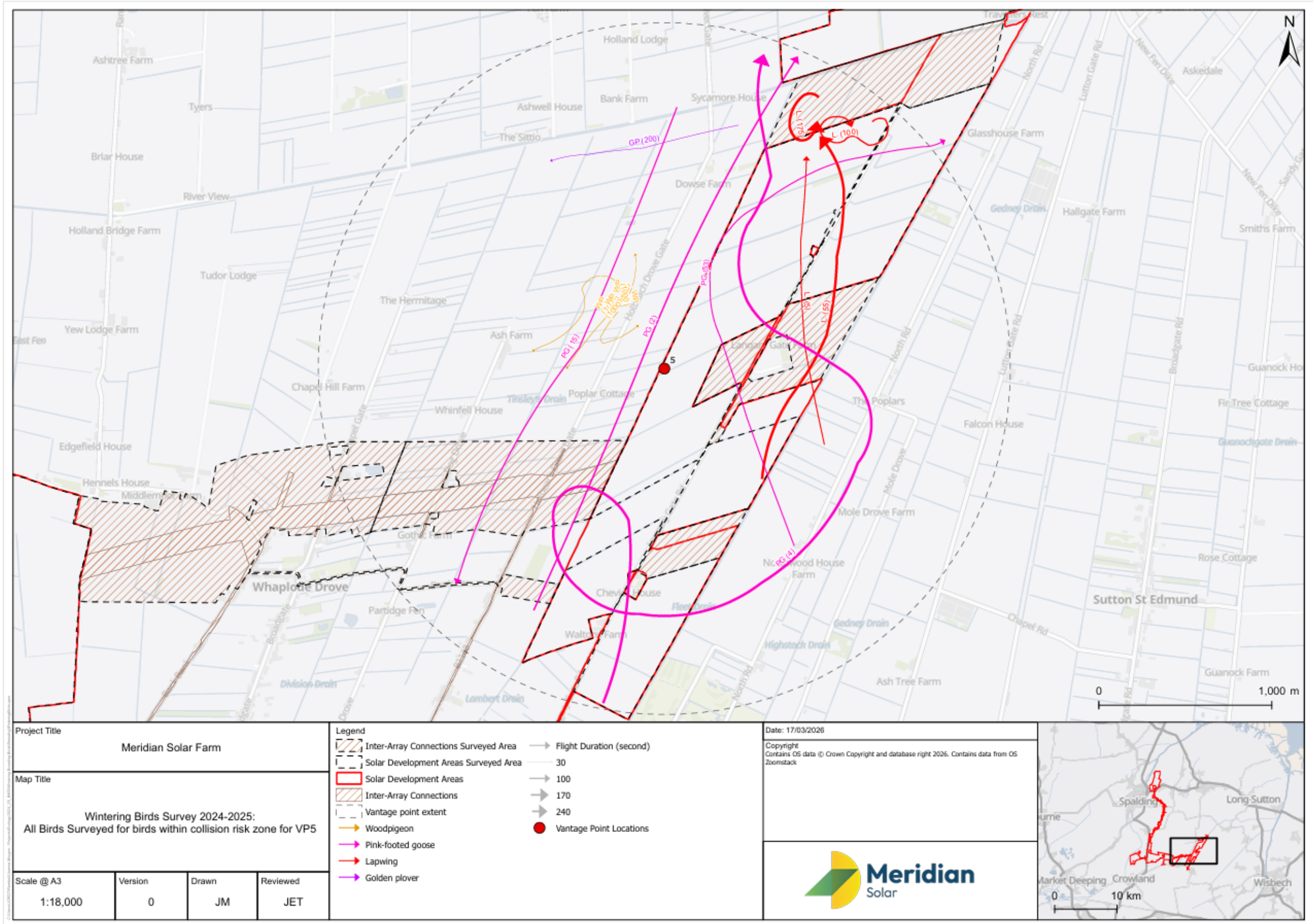


Figure A5.6: All Flight Lines Within Collision Risk Zones Across all Surveys and Species at Vantage Point 5.



Appendix 6: Flight lines of Primary Focal Species.

Figure A6.1: Flight Lines for Barn Owl Across all Surveys.

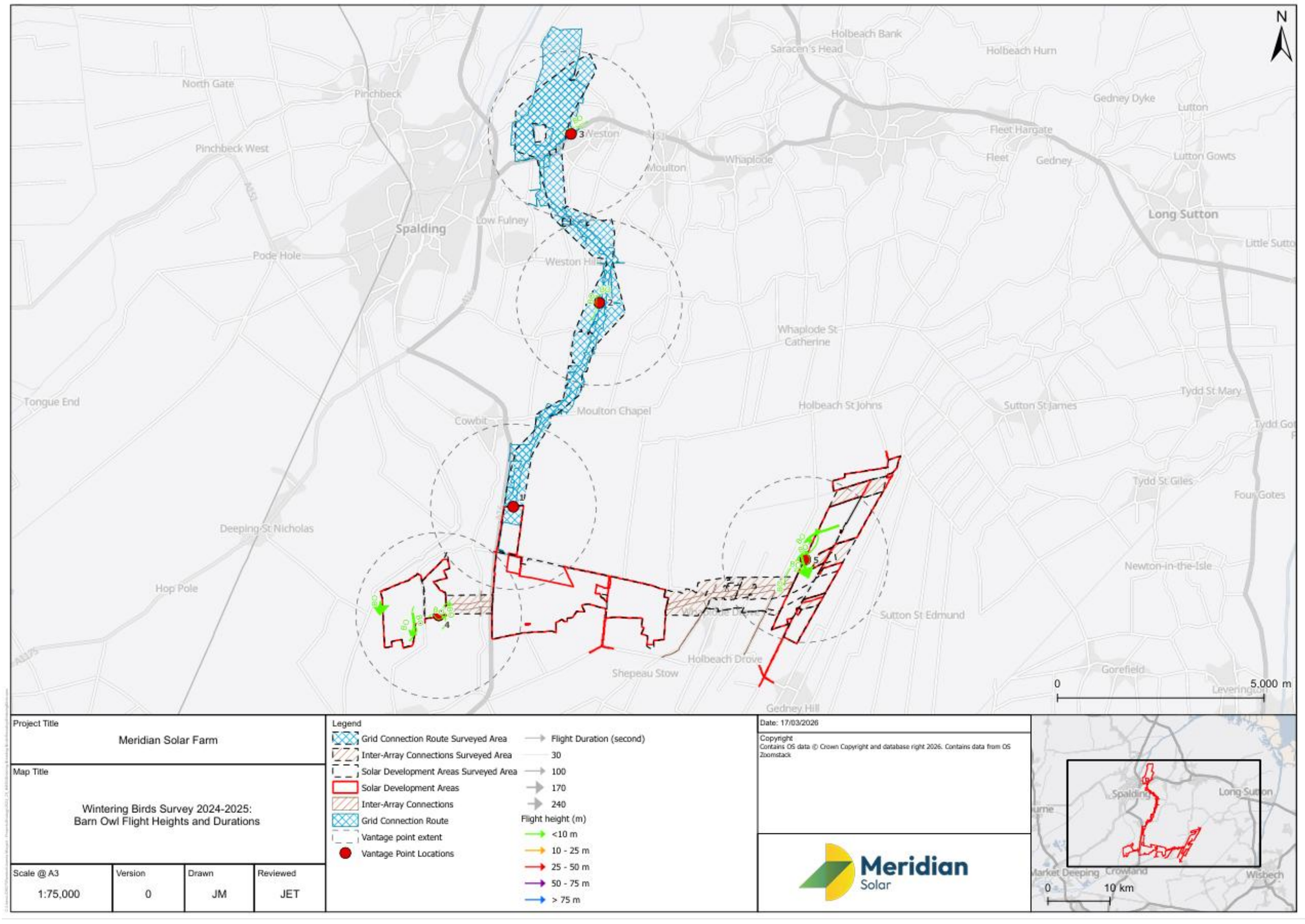


Figure A6.2: Flight Lines for Common Crane Across all Surveys.

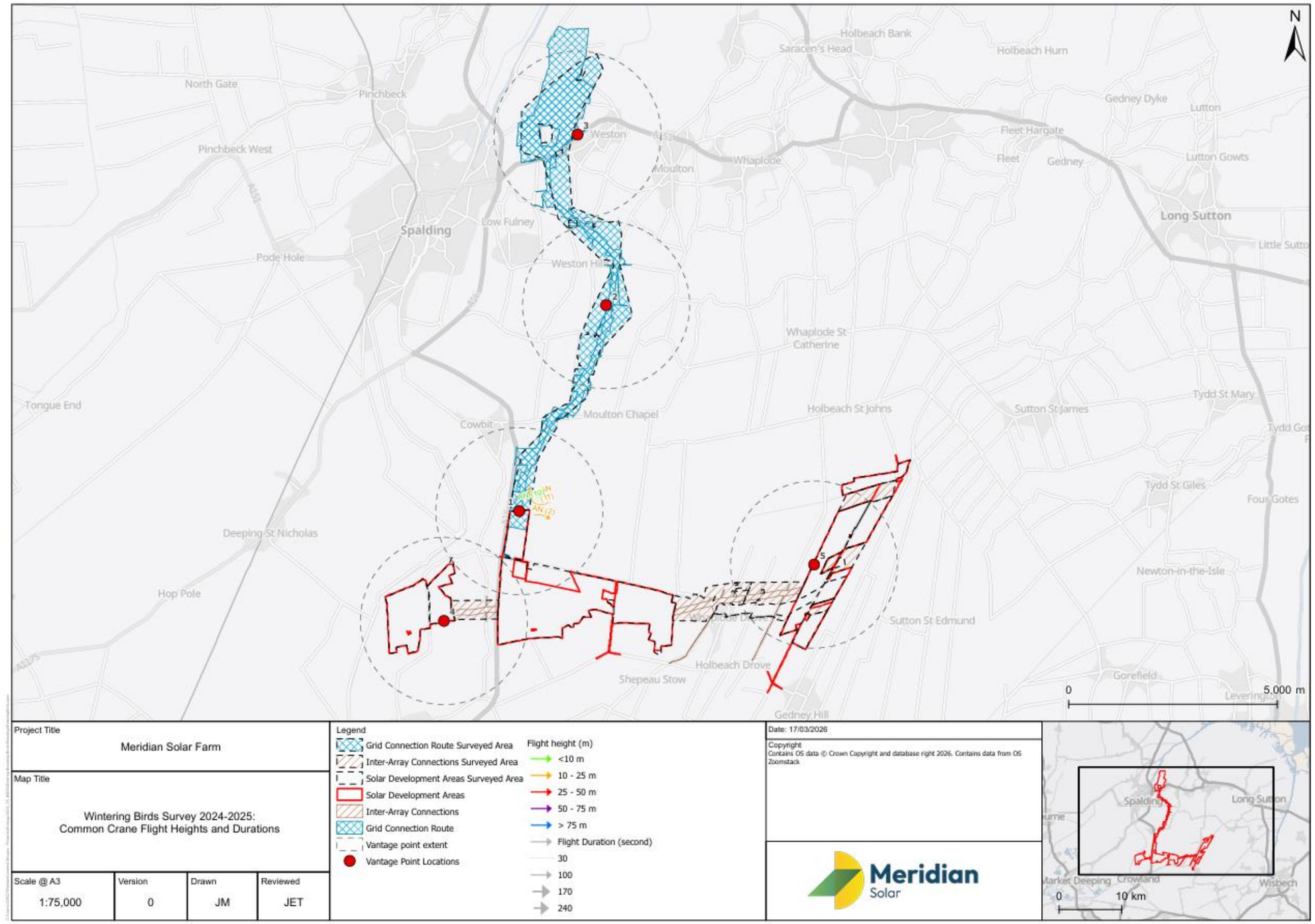


Figure A6.3: Flight Lines for Dunlin Across all Surveys.

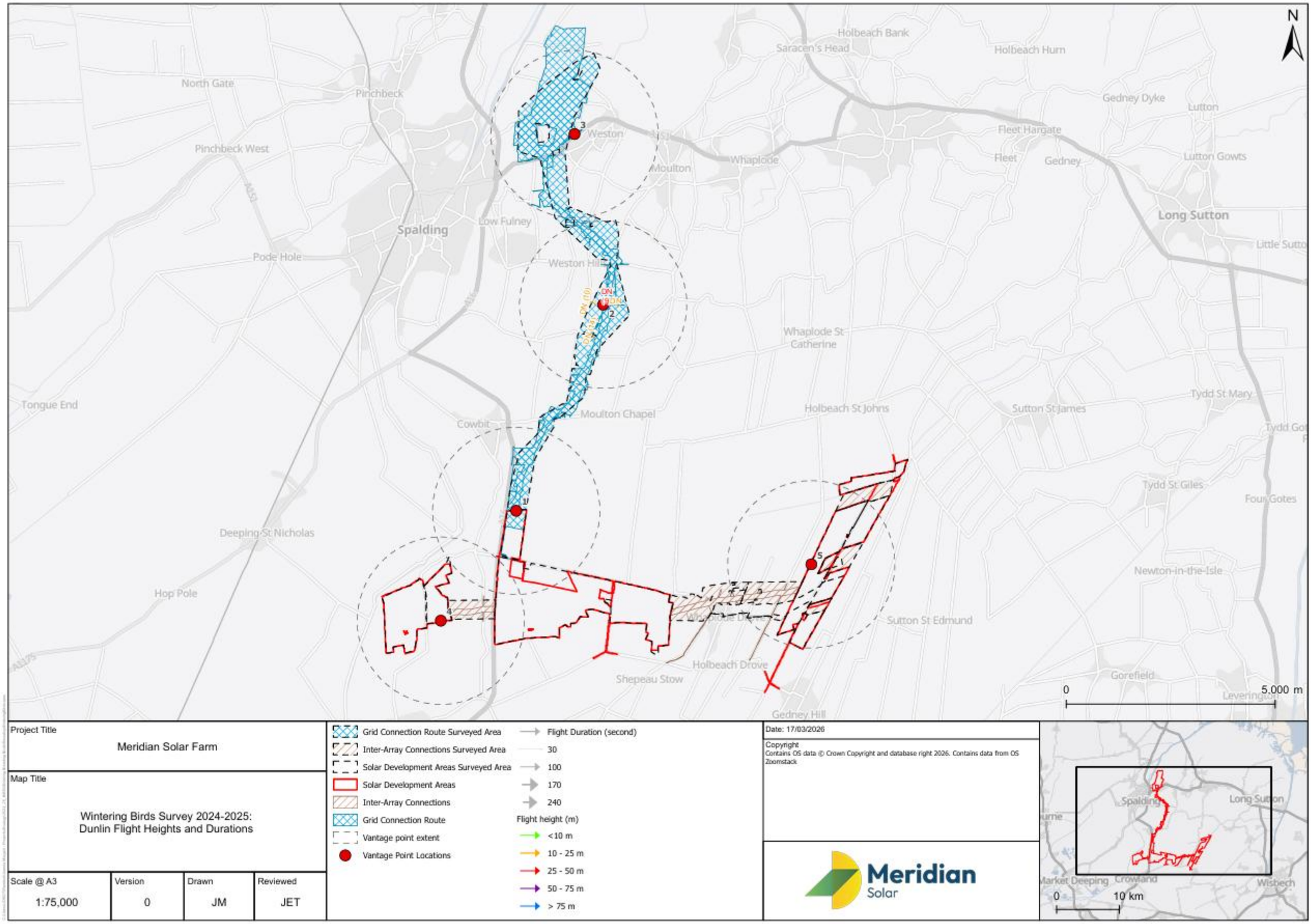


Figure A6.4: Flight Lines for Golden Plover Across all Surveys.

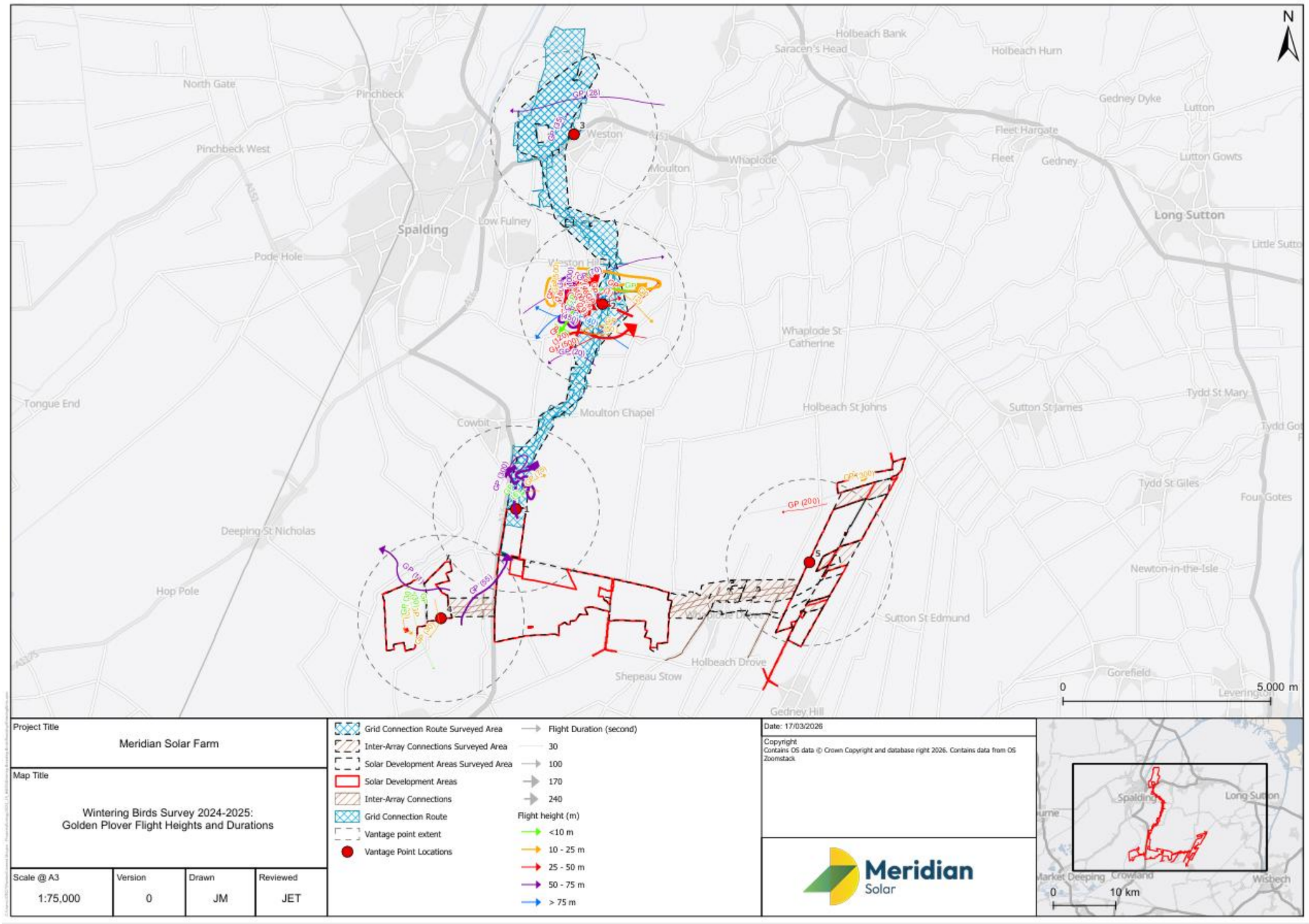


Figure A6.5: Flight Lines for Greylag Goose Across all Surveys

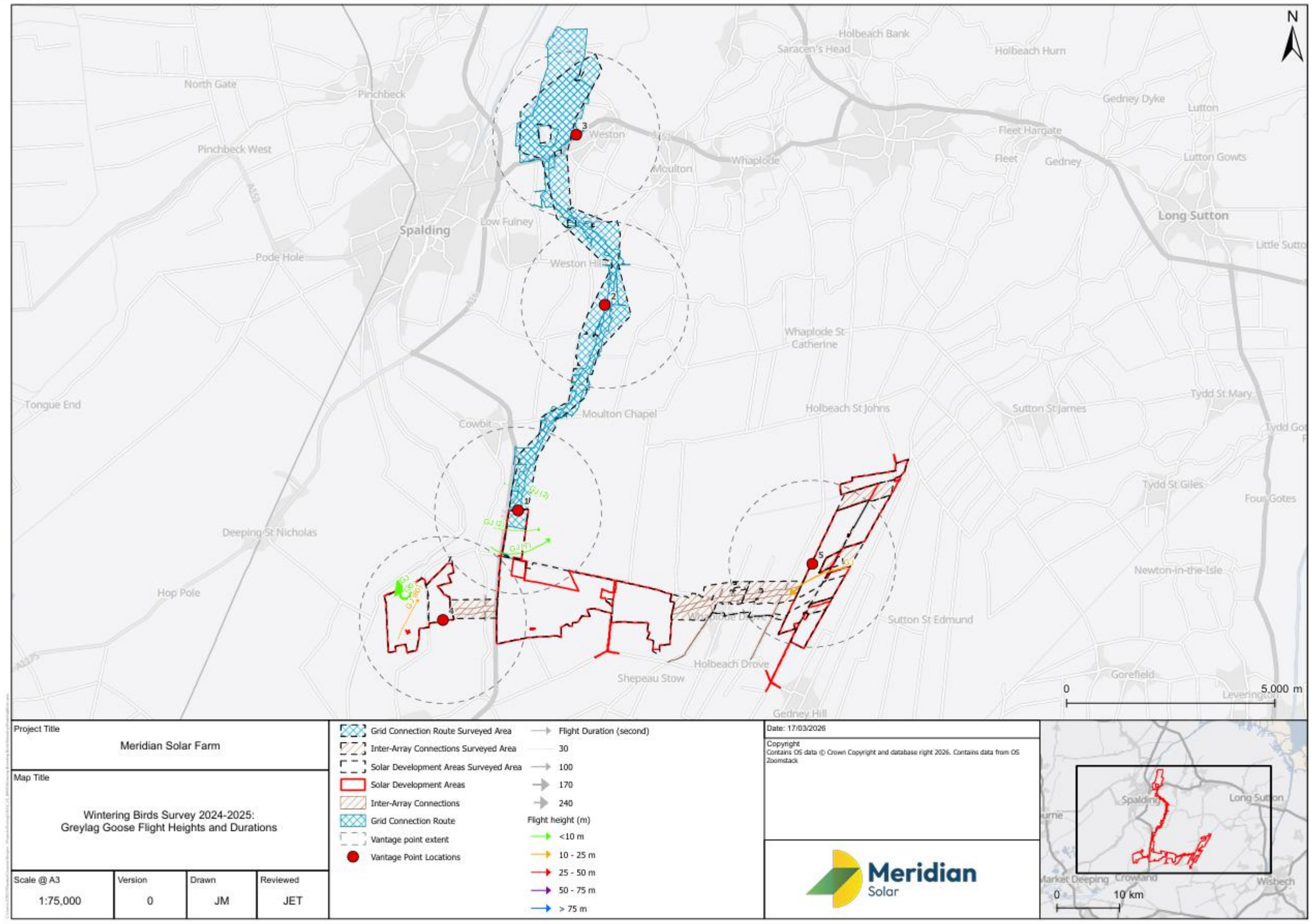


Figure A6.6: Flight Lines for Lapwing Across all Surveys.

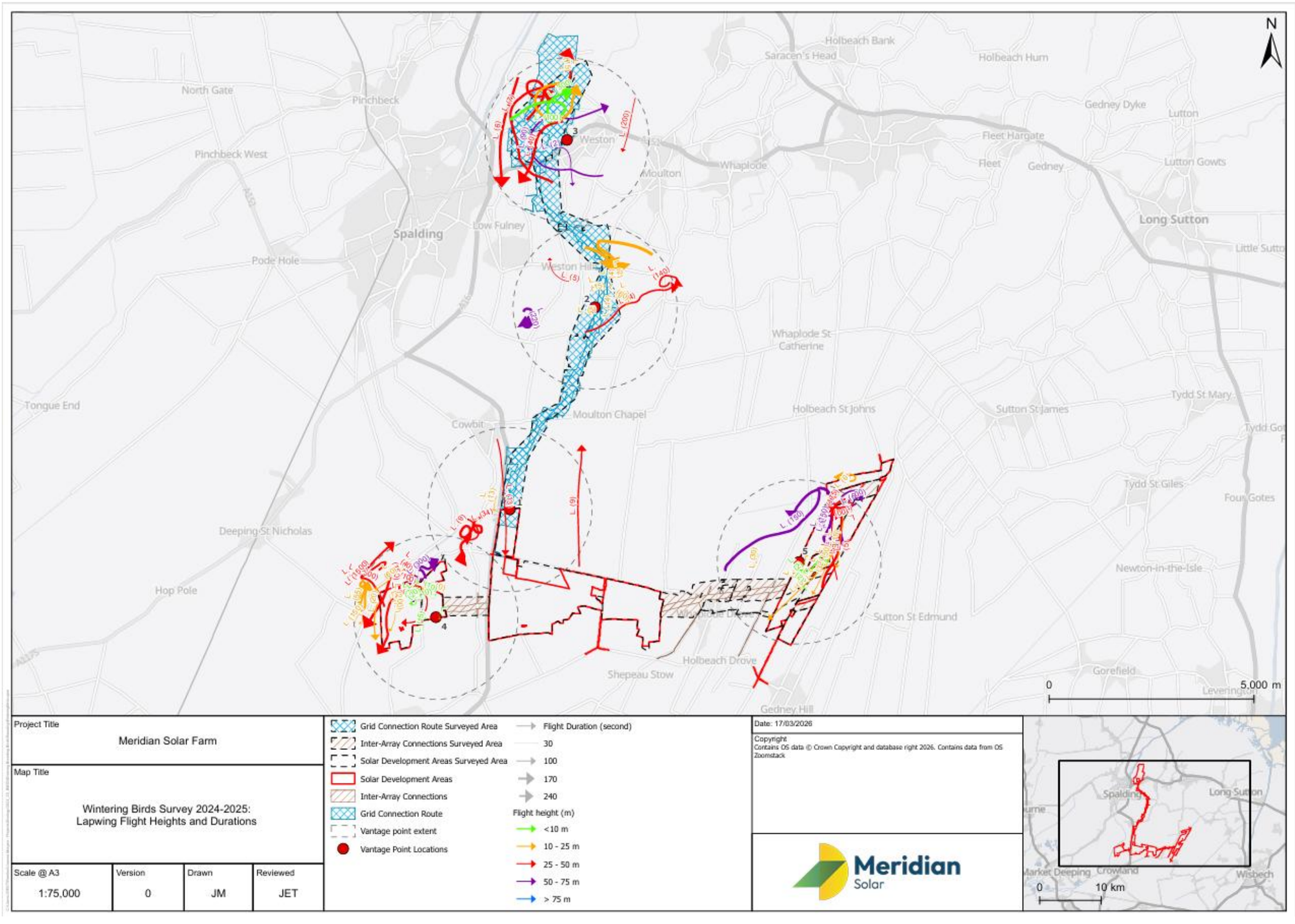


Figure A6.7: Flight Lines for Mallard Across all Surveys

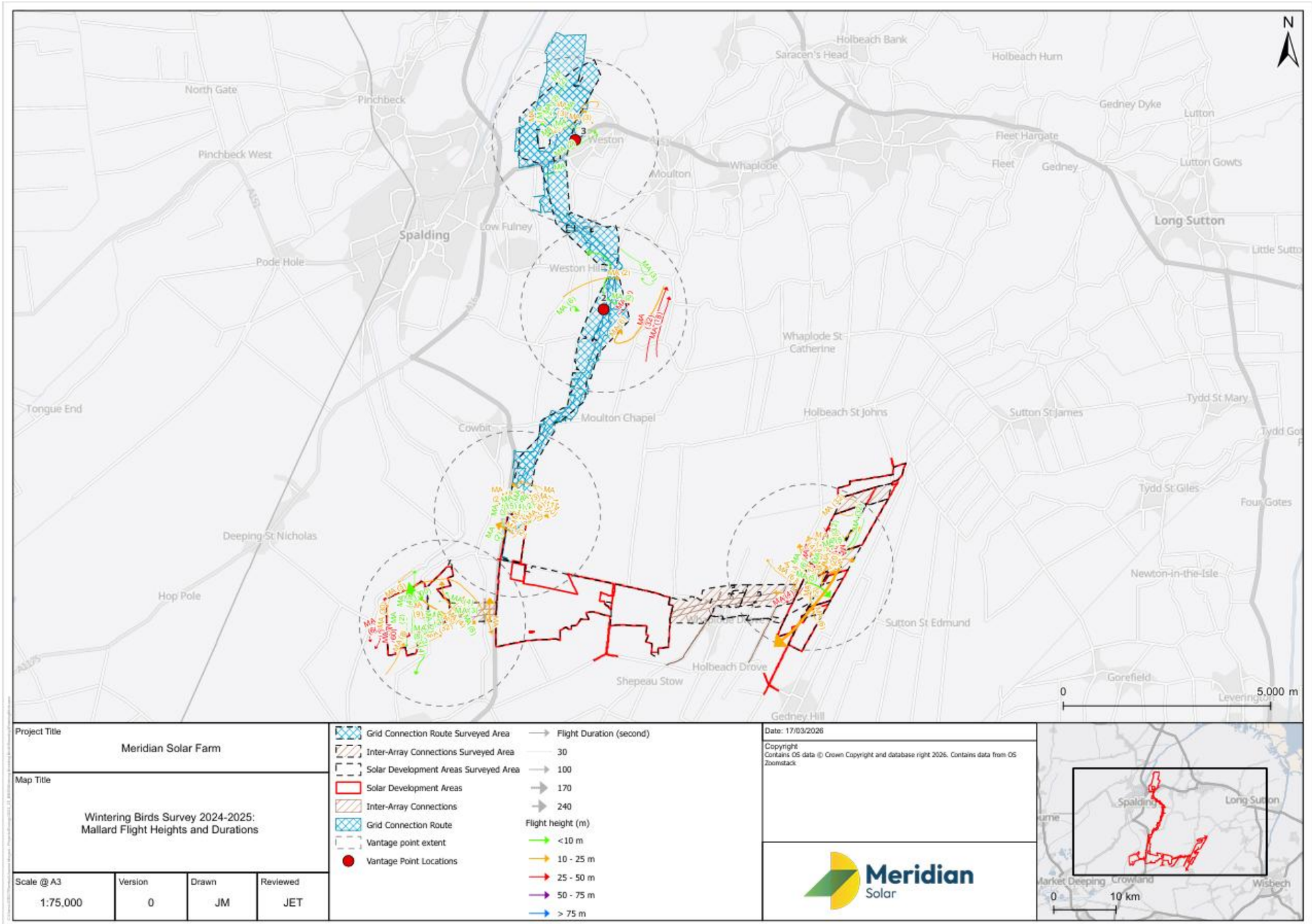


Figure A6.8: Flight Lines for Marsh Harrier Across all Surveys.

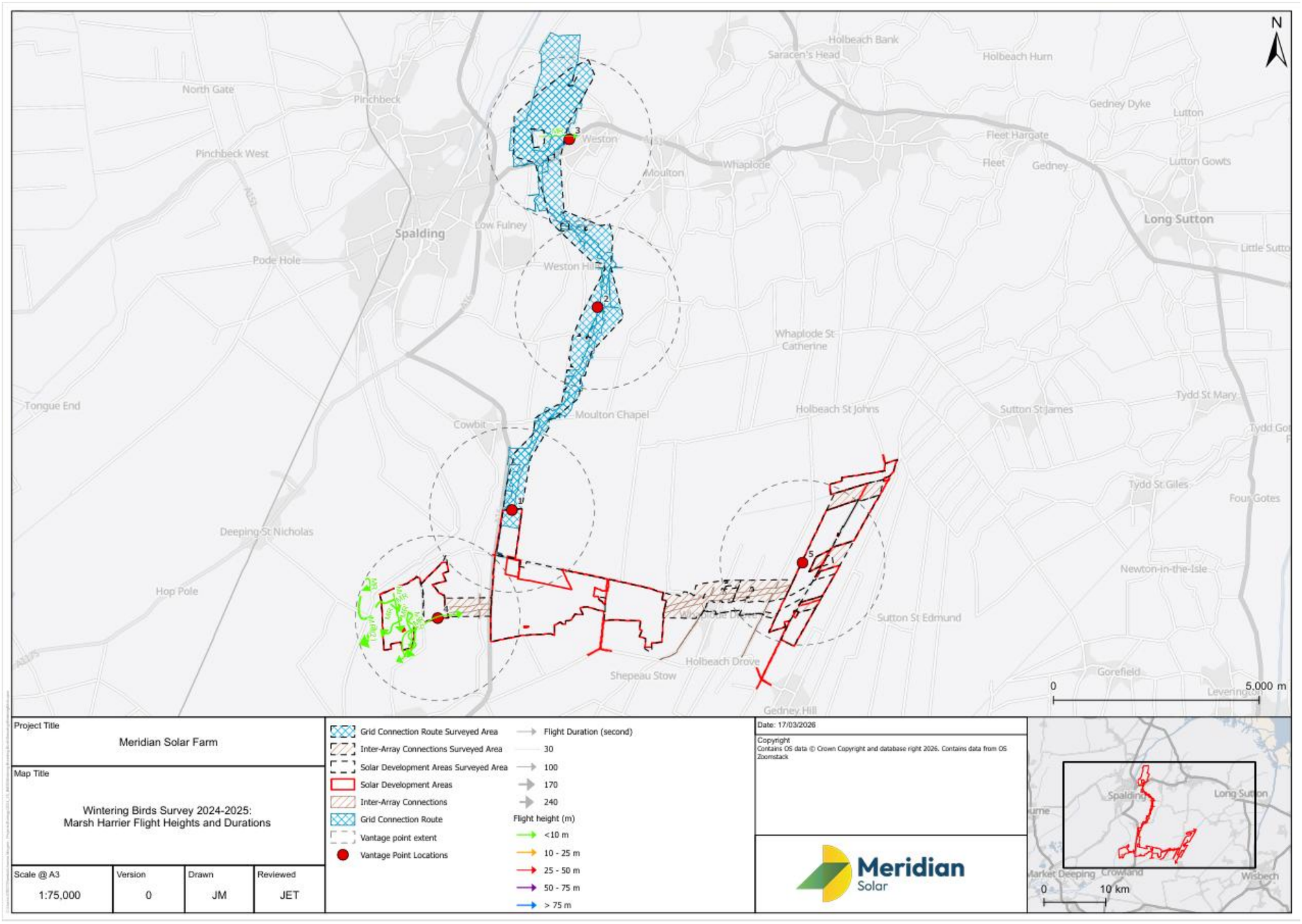


Figure A6.9: Flight Lines for Merlin Across all Surveys

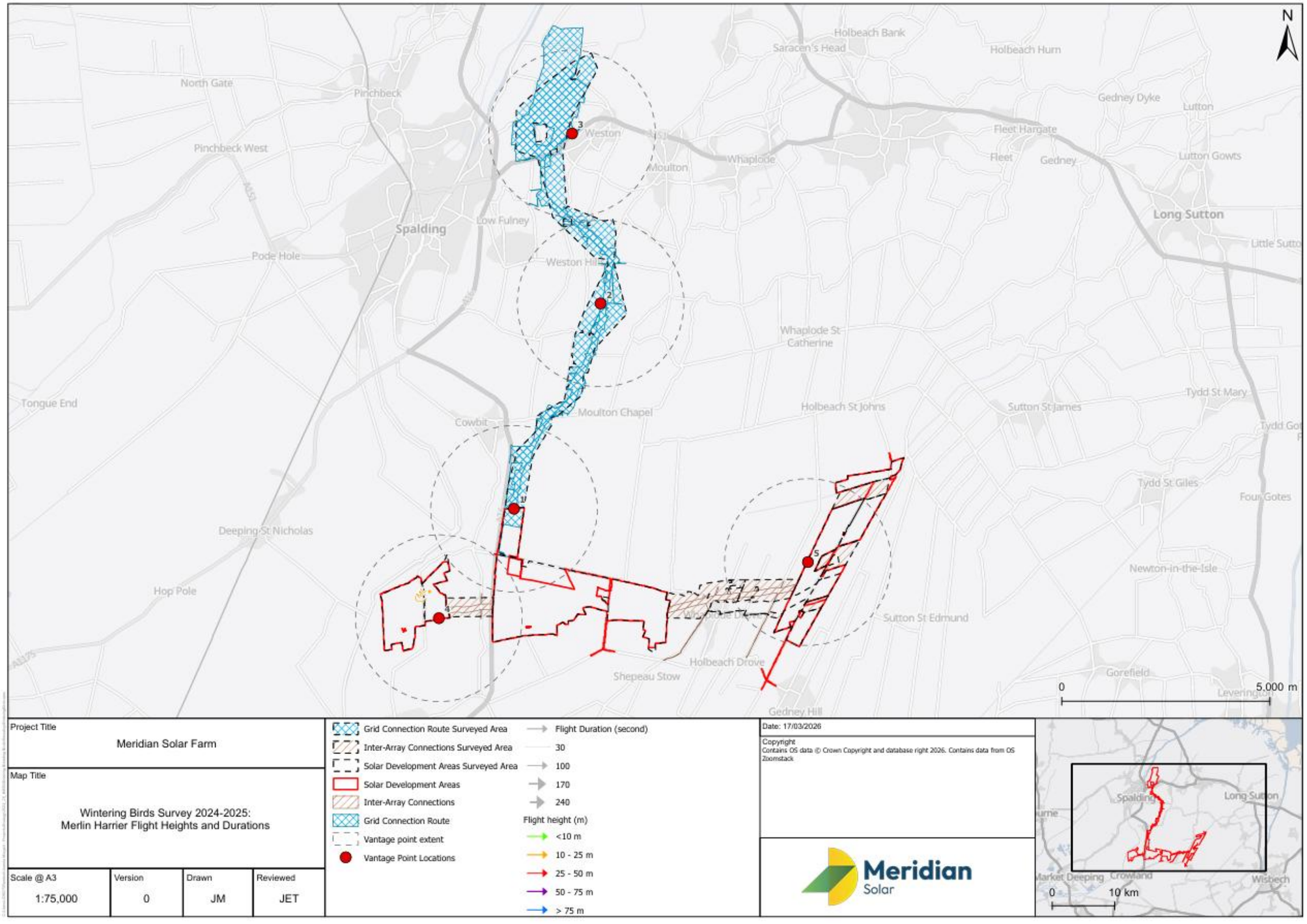


Figure A6.10: Flight Lines for Mute Swan Across all Surveys

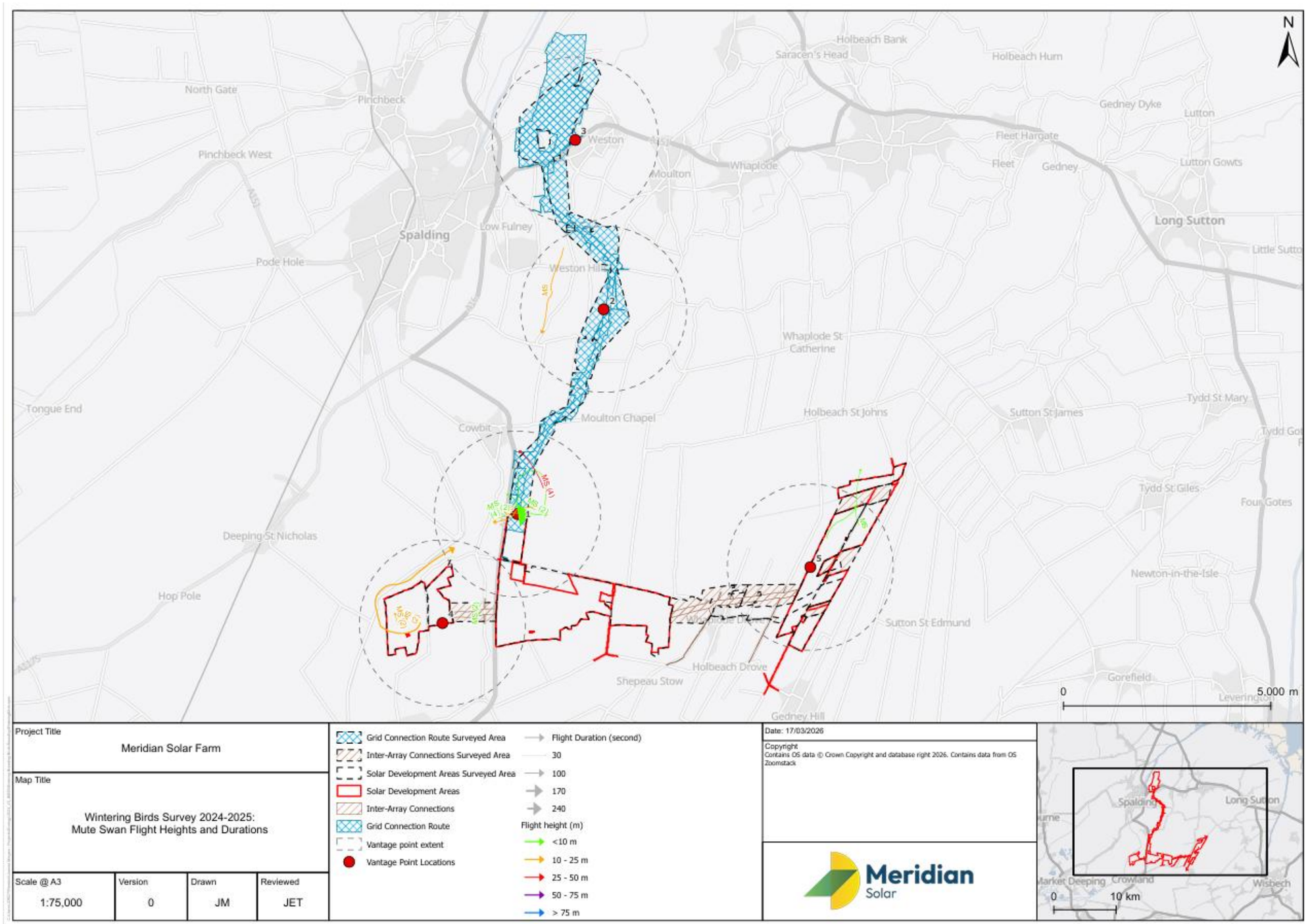


Figure A6.11: Flight Lines for Peregrine Across all Surveys

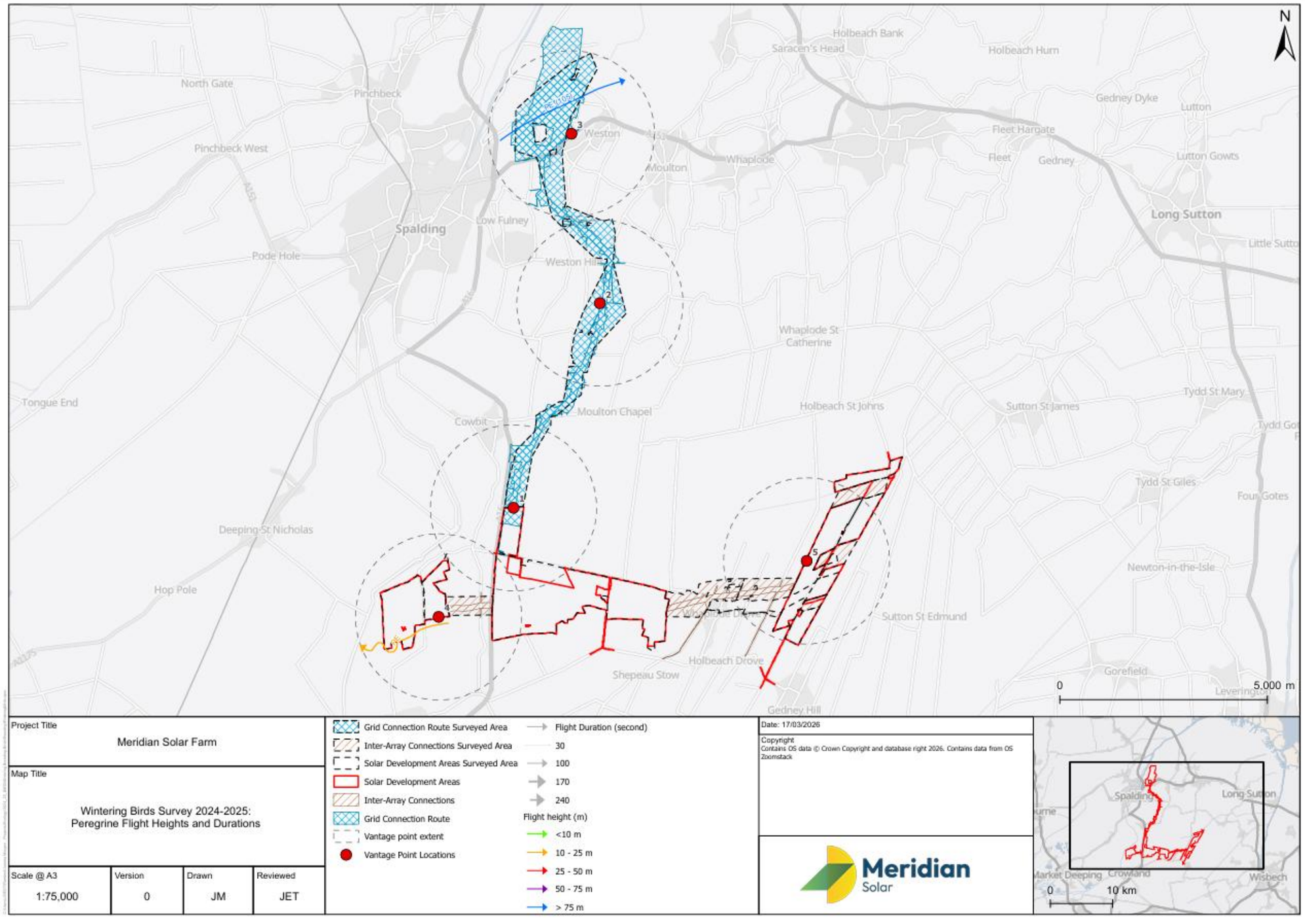


Figure A6.12: Flight Lines for Pink-footed Goose Across all Surveys.

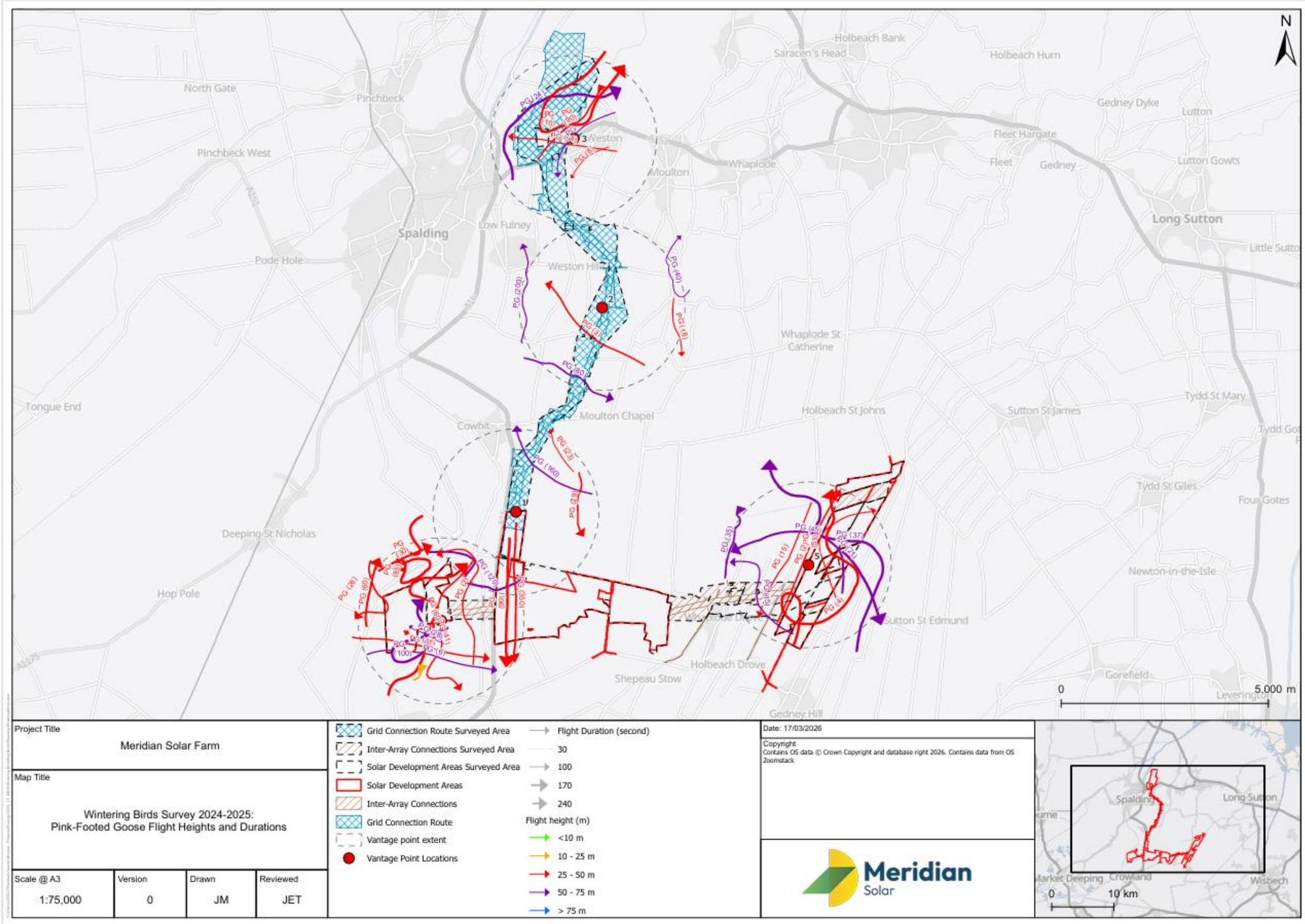


Figure A6.13: Flight Lines for Red Kite Across all Surveys.

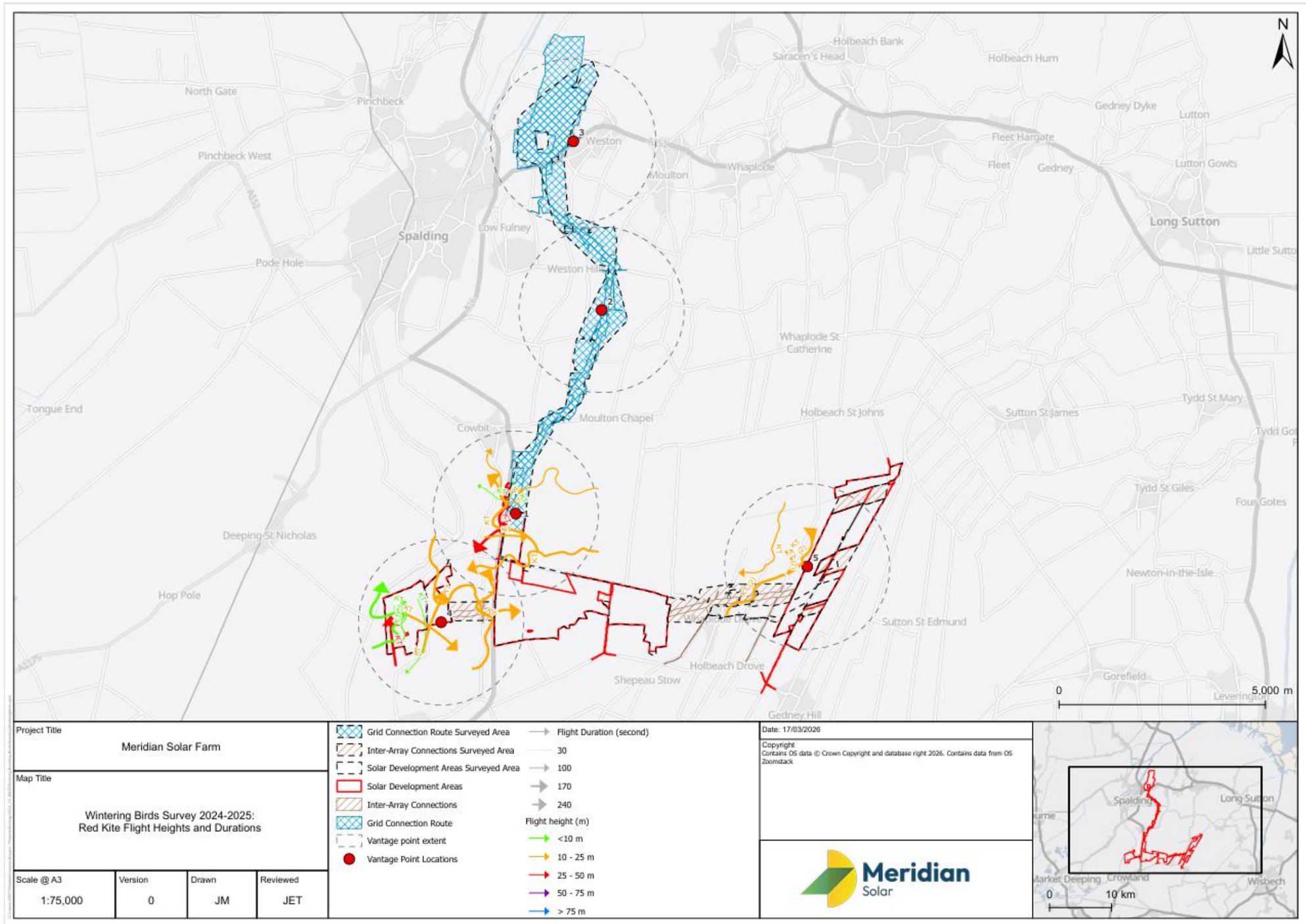


Figure A6.14: Flight Lines for Redshank Across all Surveys.

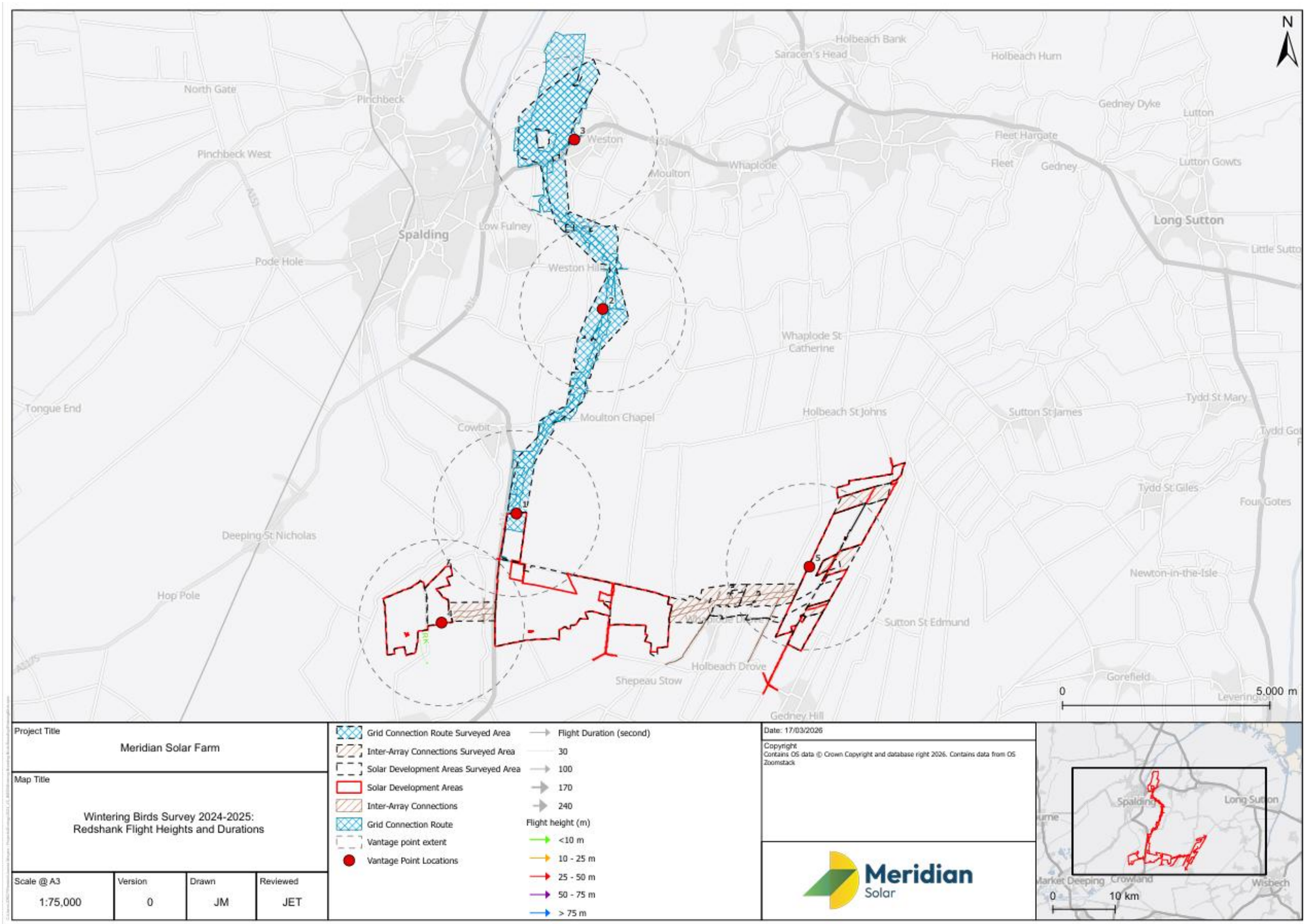


Figure A6.15: Flight Lines for Ruff Across all Surveys

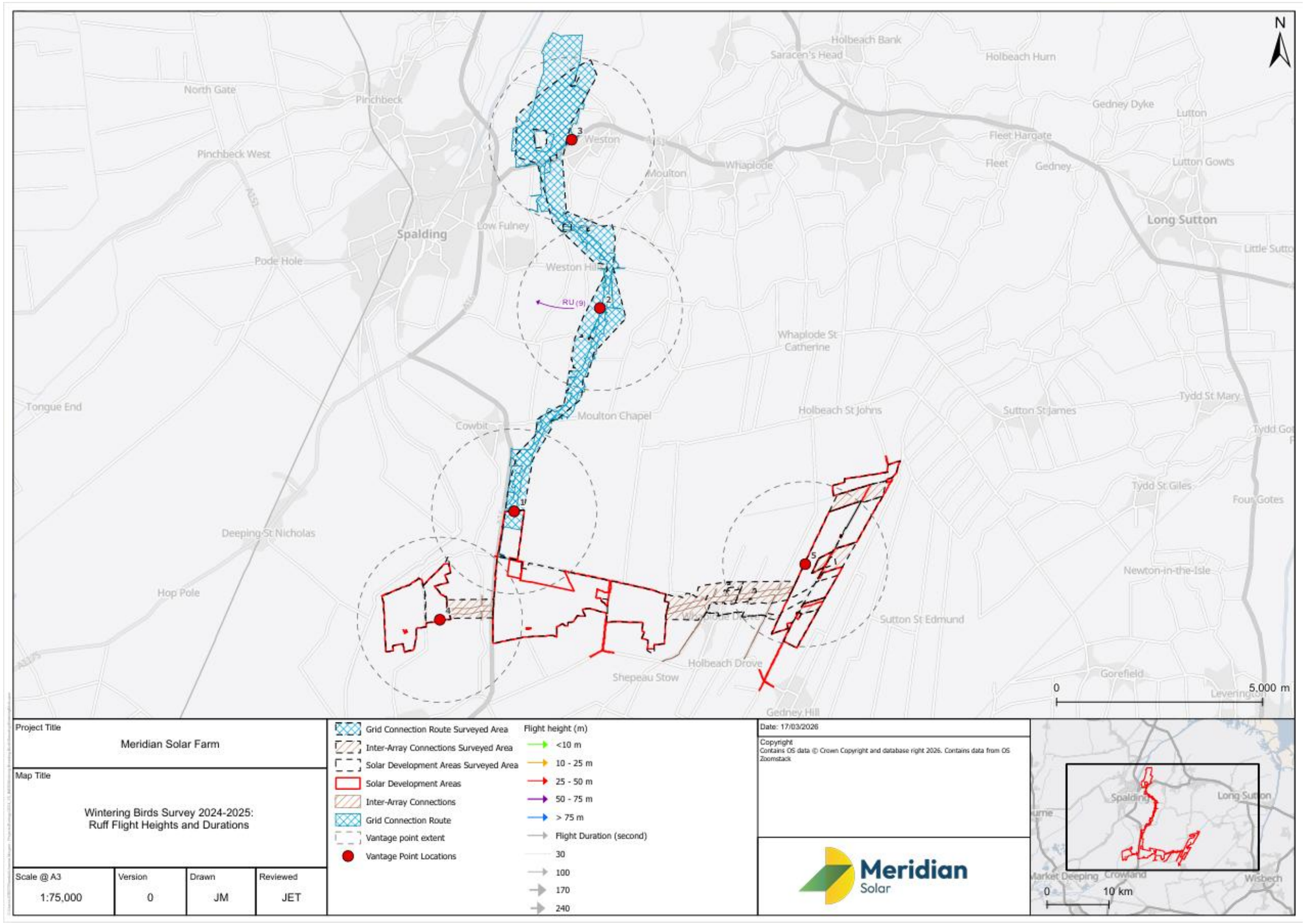


Figure A6.16: Flight Lines for Shelduck Across all Surveys.

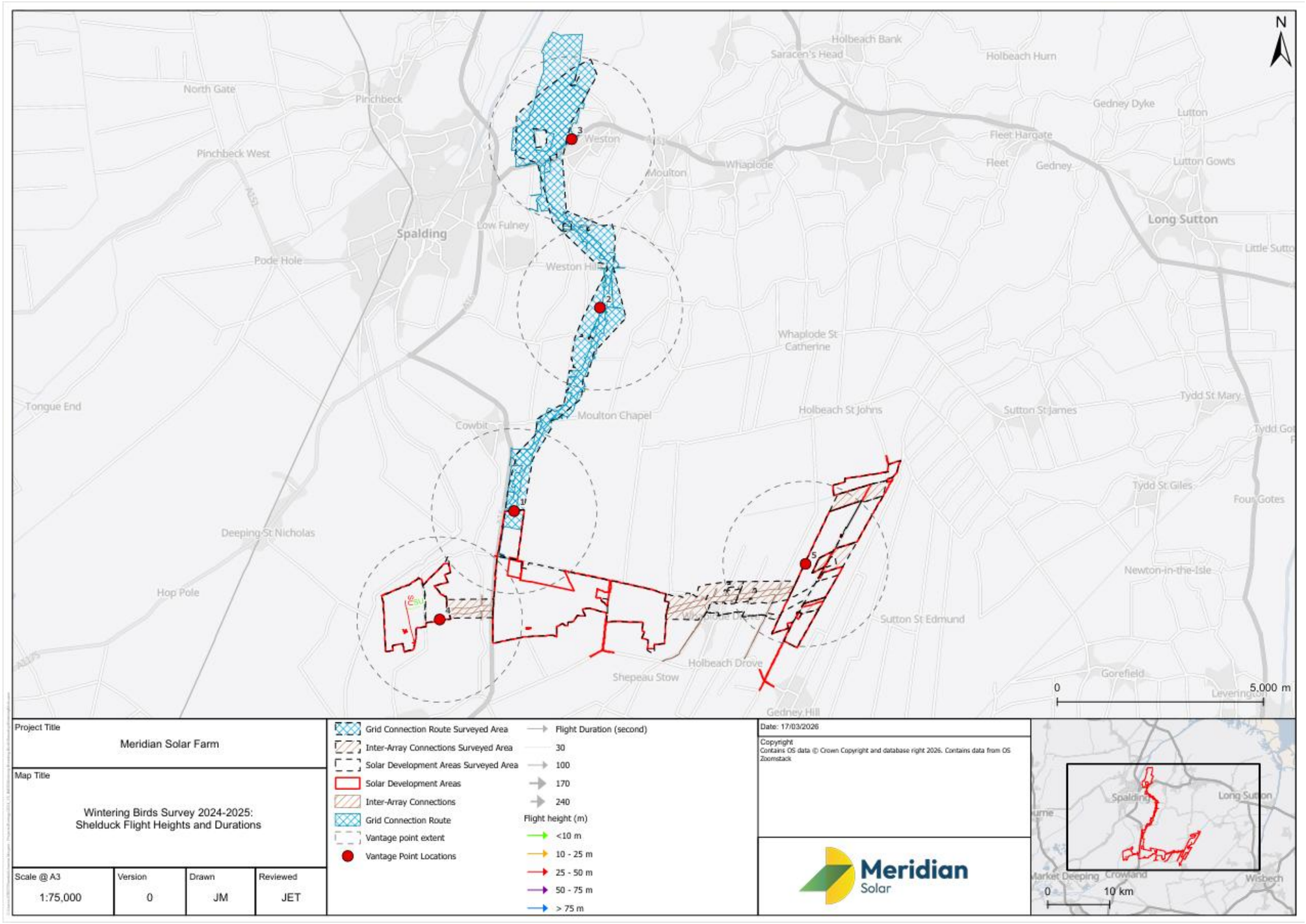


Figure A6.17: Flight Lines for Snipe Across all Surveys.

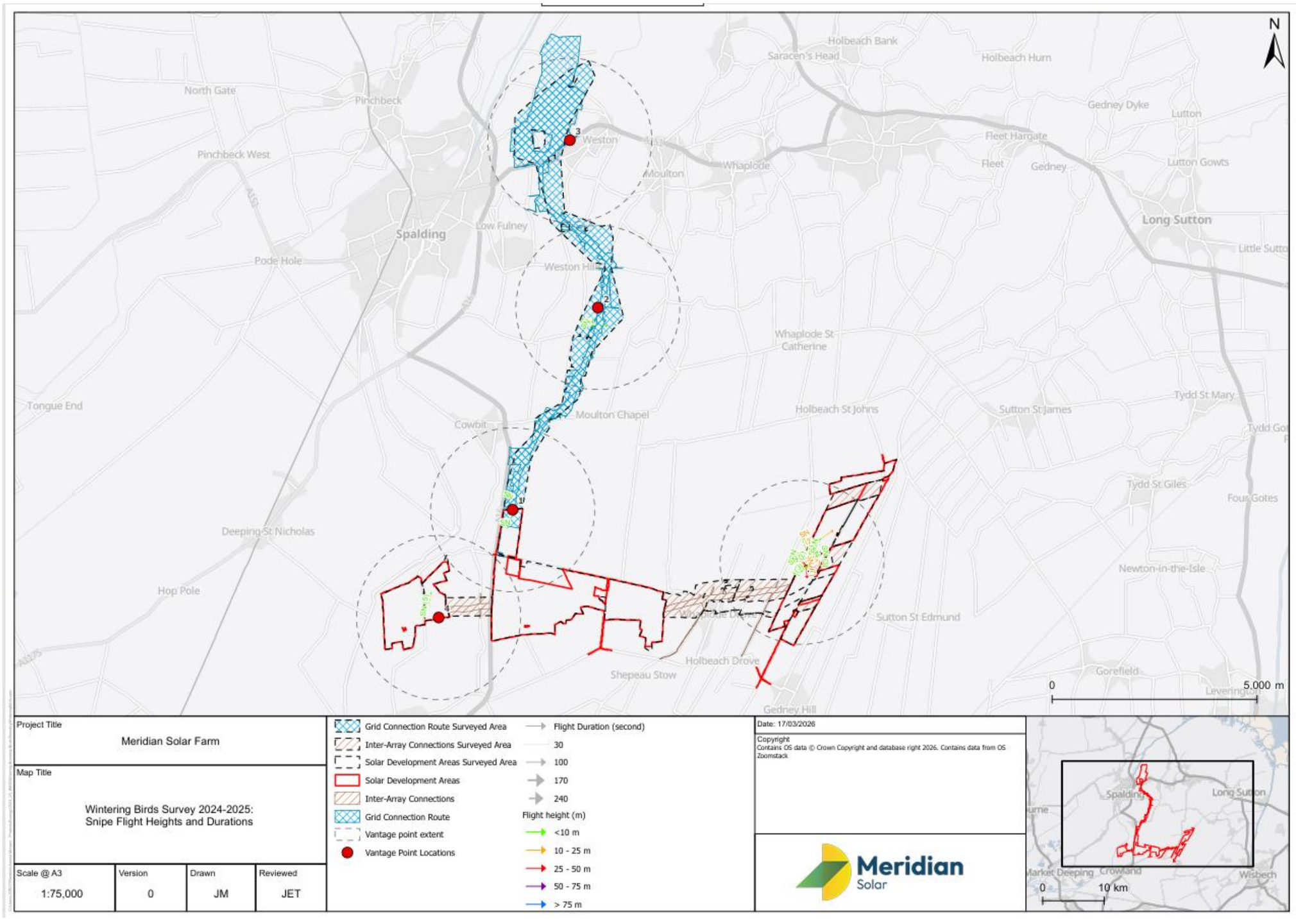


Figure A6.18: Flight Lines for Teal Across all Surveys.

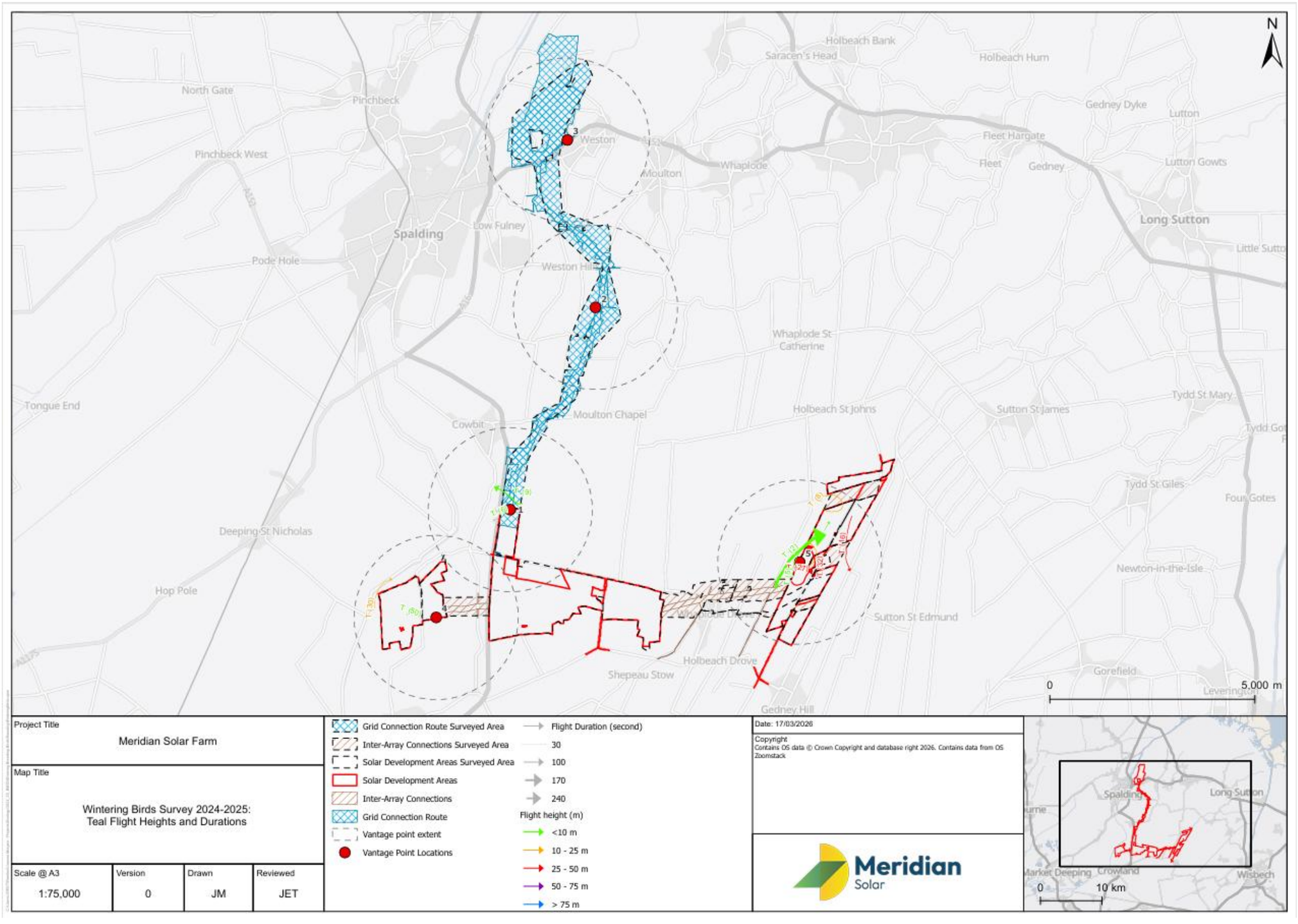


Figure A6.19: Flight Lines for Turnstone Across all Surveys

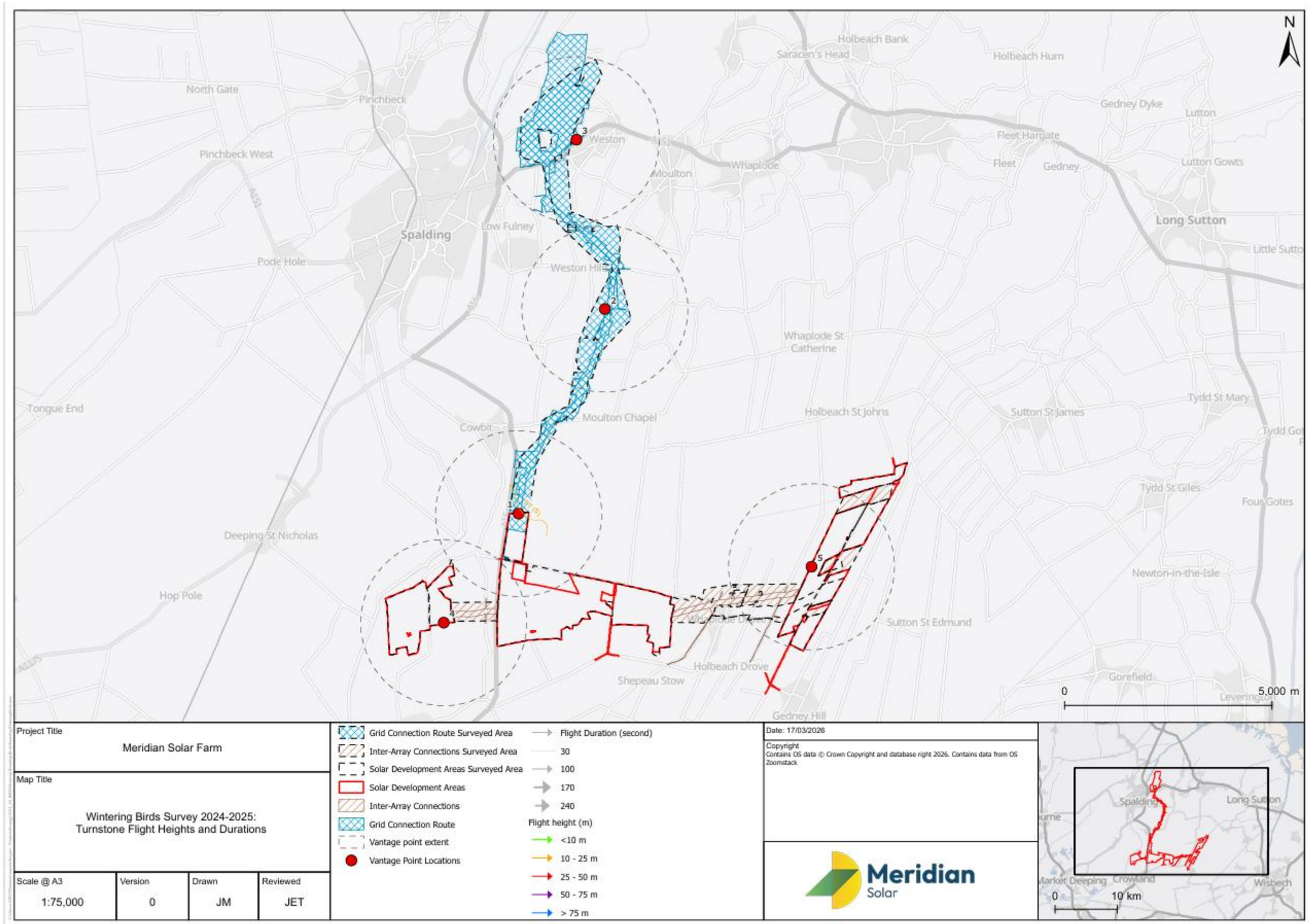


Figure A6.20: Flight Lines for Whooper Swan Across all Surveys.

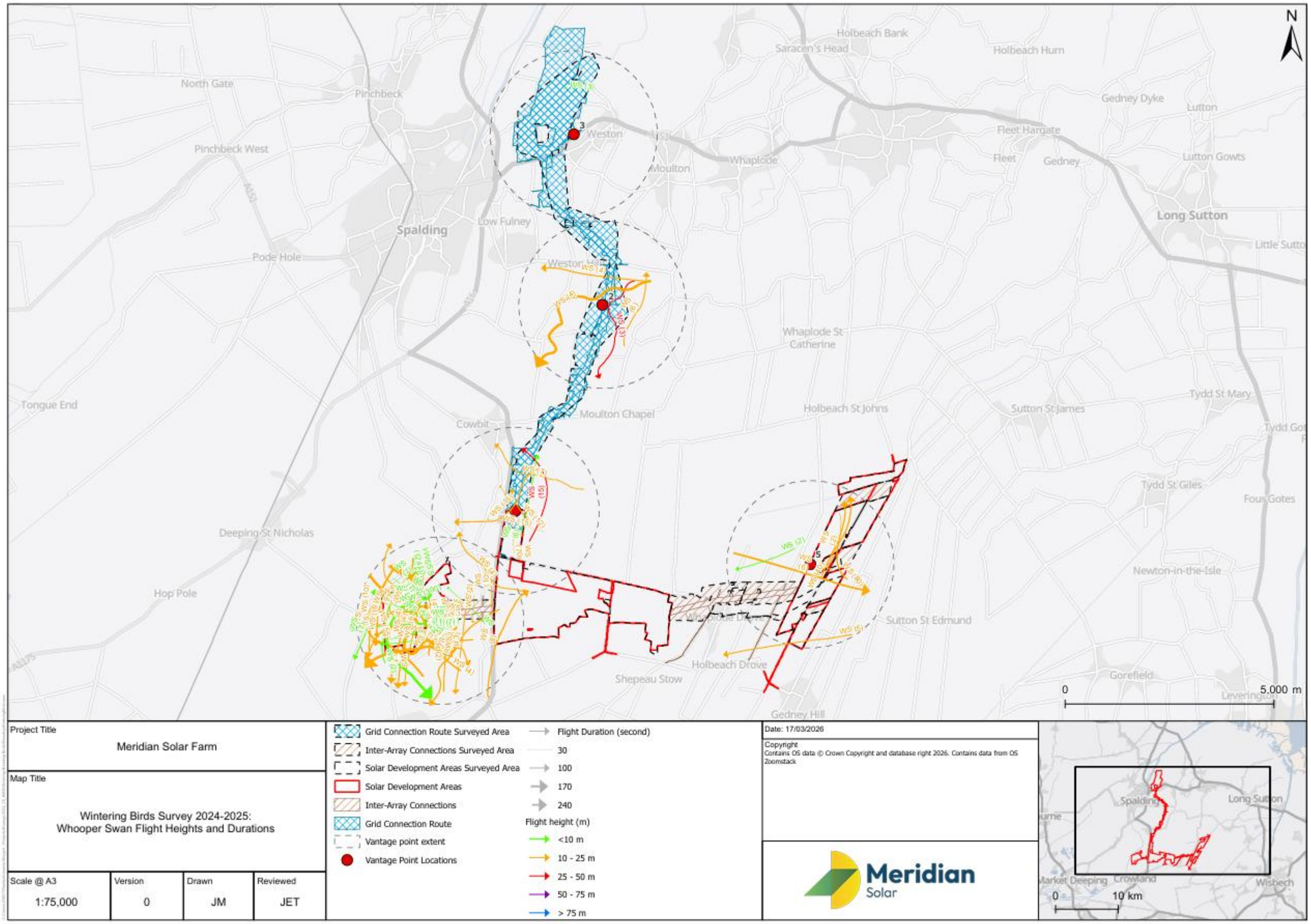
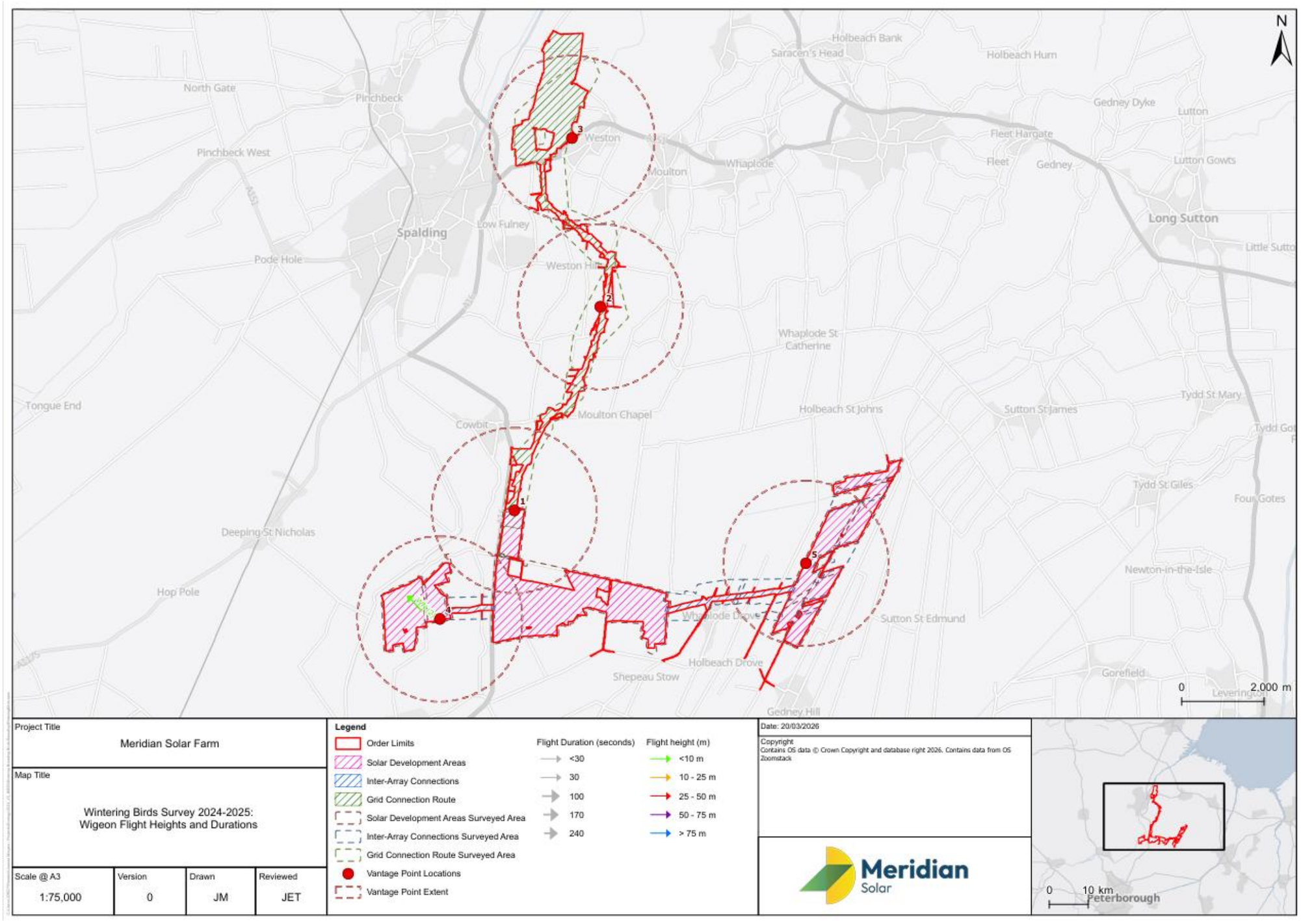


Figure A6.21: Flight Lines for Wigeon Across all Surveys



- London: Temple Chambers, 3-7 Temple Avenue, London, EC4Y 0DT. T: +44 (0)20 7394 3700
- Haywards Heath: Unit 6 Basepoint; John De Mierre House, 20 Bridge Road, Haywards Heath, RH16 1UA. T: +44 (0)20 7394 3700
- Lewes: 3 Upper Stalls, Iford, Lewes, East Sussex, BN7 3EJ. T: +44 (0) 1273 813739
- Lichfield: 1-2 Trent Park, Eastern Avenue, Lichfield, Staffordshire, WS13 6RN. T: +44 (0)1543 229049
- Manchester: Express Building, 9 Great Ancoats Street, Manchester, M4 5AD. T: +44 (0)161 509 4900
- Norwich: 60 Thorpe Road, Norwich, Norfolk, NR1 1RY. T: +44 (0)1603 628408
- Wakefield: St James Suite, Nostell Business Park, Doncaster Road, Wakefield, WF4 1AB. T: +44 (0)1924 921900
- Cardiff: Brunel House, 2 Fitzalan Place, Cardiff CF24 0EB