

The Great Grid Upgrade

Sea Link

Sea Link

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Vantage Point Survey Report

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Version History

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March 2025	A	Final	For DCO submission
November 2025	B	Final	Updated for Deadline 1A

1. Vantage Point Survey Report

1.1 Introduction

Background

1.1.1 The Sea Link Project (hereafter referred to as the 'Proposed Project') is a proposal by National Grid Electricity Transmission plc (hereafter referred to as National Grid) to reinforce the transmission network in the South East and East Anglia. The Proposed Project is required to accommodate additional power flows generated from renewable and low carbon generation, as well as accommodating additional new interconnection with mainland Europe. This would be achieved by reinforcing the network with a High Voltage Direct Current (HVDC) Link between the proposed Friston substation in the Sizewell area of Suffolk and the existing Richborough to Canterbury 400 kV overhead line close to Richborough in Kent.

1.1.2 The purpose of this document is to:

- detail the results of the vantage point bird surveys conducted between 2023 and 2024 in relation to the Kent Onshore Scheme Order Limits; and
- inform the need for any further surveys required and identify potential ecological constraints associated with bird flight lines for incorporation into the **Application Document 6.2.3.2 Part 3 Kent Chapter 2 Ecology and Biodiversity** for the Kent Onshore Scheme and the associated **Application Document 6.6 Habitats Regulations Assessment (HRA) Report**.

1.1.3 Details of avoidance, mitigation, compensation and enhancement measures (where required) relating to bird flight lines are not included in this report and are instead reported within **Application Document 6.2.3.2 Part 3 Kent Chapter 2 Ecology & Biodiversity**.

1.1.4 This appendix should be read in conjunction with the following figures:

- **Application Document 6.4.3.2.F Vantage Point Survey Report.**

Scope

1.1.5 The vantage points used are shown in **Application Document 6.4.2.2.F.1 Kent Vantage Point Survey Results**. This report aims to confirm flightlines of bird species in relation to the proposed Overhead Line of the Kent Offshore Scheme.

1.1.6 Proposed permanent above ground infrastructure as part of the Kent Onshore Scheme comprises the proposed Minster Converter Station and Substation, and overhead lines to the southwest. The remainder of the Kent Onshore Scheme is comprised of proposed underground cabling and proposed temporary construction compounds.

The Kent Onshore Scheme Order Limits comprises four core locations. These areas are also divided into individual 'parcels', which have been referenced within this report and are as follows:

- Pegwell Bay landfall (to the east of Thanet Coastal path) – field parcel 379;
- Eastern landfall route – between the proposed Minster Converter Station and Substation to the west and landfall area to the east – field parcels 238, 328, 336, 346 and 360;
- Proposed Minster Converter Station and Substation (fields east of the railway) – field parcels 244 and 238; and
- OHL route corridor (southwest of converter station fields to north) – field parcels 232, 233 and 236.

1.1.7 This report and the surveys undertaken are focused within the proposed OHL route corridor which includes:

- River Stour canal. A tributary of the Stour, running broadly west to east through the centre of this area and with a PRoW parallel to its northern bank.
- Railway line (Minster to Sandwich), which separates this overhead route area from the converter station site.
- Marsh Farm Road, which is the only immediate vehicle access to this area, and which has a water treatment facility at its southern termination.

1.1.8 The objectives of the vantage point survey, and this report were to:

- Identify the criteria where collisions could occur between bird flights and the proposed OHL as part of the Kent Onshore Scheme (i.e., risk height range' through review of proposed OHL specifications and location).
- Identify suitable vantage point locations, define Survey Area and survey effort to record current bird flights in proximity to the proposed OHL component of the Kent Onshore Scheme.
- Record flightlines of target species defined in Section 1.5, to inform assessment and mitigation - including flightline paths, flight height bands and flight times in accordance with relevant guidance (SNH, 2017).
- Record numbers and activity of secondary species in relation to the proposed OHL.
- Identify key observations and species sightings which can be incorporated into other ornithological assessments (i.e., additional observations relevant to wintering and breeding bird assemblage surveys).
- Provide initial evaluation of species with potential to be impacted by the Proposed Project and to be addressed by assessment and mitigation proposals (where required).

1.1.9 The vantage point survey follows on from previous winter and breeding bird surveys of the Kent Onshore Scheme Order Limits, which are referenced within this report. The full results of the wintering and breeding bird surveys can be found in the corresponding reports:

- **Application Document 6.3.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2023;**

- Application Document 6.3.2.3.C Appendix 3.2.C Wintering Bird Survey Report 2024;
- Application Document 6.3.2.3.D Appendix 3.2.D Breeding Bird Survey Report 2023; and
- Application Document 6.3.2.3.E Appendix 3.2.E Breeding Bird Survey Report 2024.

1.2 Bird legislation, policy and guidance

- 1.2.1 The legislation, policy and guidance detailed within this section has been used to define the 'notable' bird species which are the focus of this report due to their inclusion in relevant legislation, policy or guidance.

Legislation

Conservation of Habitats and Species Regulations 2017 (as amended) / Directive on the Conservation of Wild Birds 2009

- 1.2.2 A number of bird species recorded in the UK (including those that are resident, overwintering and migratory) are protected at a European level under the European Commission (EC) Directive on the Conservation of Wild Birds 2009 (2009/147/EC). The Directive applies to 193 bird species or sub-species, which are:
- in danger of extinction;
 - rare, or have restricted local distribution;
 - vulnerable to specific changes in their habitat; or
 - in need of particular attention for reasons of the specific nature of their habitat.
- 1.2.3 These species are afforded enhanced legal protection and European Union (EU) member states have a responsibility to maintain the populations of these species at a level that corresponds to their ecological, scientific and cultural requirements (Article 2). This Directive was transposed into English law through the Conservation of Habitats and Species Regulations 2017 (as amended).
- 1.2.4 Species listed on Annex 1 of the Directive are those for which the UK Government is required to take special conservation measures, including the designation of land as a Special Protection Area (SPA). These sites are automatically included within the Emerald network under the Bern Convention (formerly the Natura 2000 network within the UK); a network of core breeding and resting sites that are protected for rare and threatened species.
- 1.2.5 While the UK is no longer a member of the EU, EU legislation which applied directly or indirectly to the UK before 11pm on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.
- 1.2.6 The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the Conservation of Habitats and Species Regulations 2017 (referred to as the 2017 Regulations) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

Wildlife and Countryside Act 1981 (as amended)

- 1.2.7 All active bird nests, eggs and young are protected from intentional and reckless destruction by the Wildlife and Countryside Act 1981 (as amended).
- 1.2.8 The Act prohibits the intentional killing, injuring or taking of wild birds and, during the breeding season, the taking, damaging or destroying of eggs or nests (whether the nest is in use or being built). In addition to this general protection, certain rare, endangered, declining or vulnerable species are afforded special protection under Schedule 1 of the Act.
- 1.2.9 Bird species listed on Schedule 1 are additionally protected against disturbance while nesting. This means it is also an offence to disturb any Schedule 1 listed nesting birds or their young during the breeding season whilst they are occupying a nest site. This includes causing the parent birds or fledglings apparent stress, and/or which may lead to the parents abandoning their nests or young.

Natural Environment and Rural Communities Act 2006 (as amended)

- 1.2.10 In addition to the above legislation, 49 bird species are listed as being Species of Principal Importance for conservation in England under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. These species are a material consideration during the planning process.
- 1.2.11 The list of 49 'priority species' comprises those identified as requiring action under the UK Biodiversity Action Plan (UKBAP), which continue to be species of conservation priority under the UK Post-2010 Biodiversity Framework (which succeeded the UKBAP in July 2012).

Regional / Local Planning and Guidance

Birds of Conservation Concern (BoCC)

- 1.2.12 The Birds of Conservation Concern (BoCC) Red, Amber and Green lists (Stanbury et al., 2021) assigns UK species to those categories in accordance with criteria that are based on their population status and stability.
- 1.2.13 Where these species are present at a site, their conservation status should be taken into account in determining the likely impacts of a proposed development.
- 1.2.14 Red status species are those species of highest conservation concern and green status species are those of low or no conservation concern. Amber status species are those species of some conservation concern.
- 1.2.15 The BoCC assigns bird species red and amber status based on a set of criteria that are summarised in the following table.

Table 1.1 Birds of Conservation Concern (BoCC) red and amber list criteria.

Criteria	BoCC Status Code	Description
Red list	HD	Historical decline in breeding population.

Criteria	BoCC Status Code	Description
	BDp ¹ / BDp ²	Severe breeding population decline over 25 years / longer term.
	BDr ¹ / BDr ²	Severe breeding range decline over 25 years / longer term.
	WDp ¹ / WDp ²	Severe non-breeding population decline over 25 years / longer term.
	WDr ¹	Severe non-breeding range decline over 25 years.
	IUCN	Globally threatened – CR (critically endangered) EN (endangered) VU (vulnerable).
Amber list	BDMp ¹ / BDMp ²	Moderate breeding population decline over 25 years / longer term.
	WDMp ¹ / WDMp ²	Moderate non-breeding population decline over 25 years / longer term.
	BDMr ¹ / BDMr ²	Moderate breeding range decline over 25 years / longer term.
	WDMr ¹	Moderate non-breeding range decline over 25 years.
	ERLOB	Threatened in Europe – CR (critically endangered) EN (endangered) VU (vulnerable).
	HDrec	Historical decline in breeding population in recovery.
	BR / WR	Breeding rarity / non-breeding rarity.
	BL / WL	Breeding localisation / non-breeding localisation.
	BI / WI	Breeding bird of international importance / non-breeding bird of international importance.
Green	N/A	Green list species are not of conservation concern and include all other commonly occurring birds in the UK.
Other	N/A	Non-native species (e.g. Canada goose (<i>Branta canadensis</i>), feral pigeon (<i>Columba livia domestica</i>)) are not afforded Red, Amber or Green list status.

- 1.2.16 Although it does not offer any legal protection, BoCC 5 (Stanbury, 2021) provides guidance on the conservation status of UK bird species. Thus, it can be used to assess the ecological importance of bird populations and the habitats that they rely on, particularly at a local level.
- 1.2.17 These lists confer no legal status. However, they are useful when assessing the significance of predicted impacts and determining the level of mitigation that may be required when birds are to be affected by development.

Kent Local Wildlife Site Selection Criteria

1.2.18

In Kent an individual Local Wildlife Site (LWS) can be selected for birds if it meets the criteria within Kent LWS Selection Criteria (Kent Wildlife Trust, 2022). These guidelines are used as an informative when assessing of the geographic level of importance of a survey site for birds, especially when determining whether a site falls within Local or County importance parameters (noting that meeting LWS criteria does not automatically result in a site being assigned County level importance). These guidelines state that the criteria for selection of LWS applies to birds as follows:

“Birds

133) A set of criteria has been established by Kent Ornithological Society, as the relevant expert organisation, for the selection of Wildlife Sites on the basis of their bird fauna (which is here taken to mean the naturally occurring populations of wild birds on a site). The criteria are based on established criteria for the selection of Sites of Special Scientific Interest, and on the Kent Red Data Book.

134) The criteria are intended to be applied to areas of habitat which are more-or-less discrete and homogenous. For example, a large block of woodland should not be treated as part of the same site as a large block of farmland. However, an intimately mixed area of small fields, hedges and small woods may be treated as a unit, as may the mix of scrub, swamp, marsh and open water vegetation associated with flood plains or around abandoned quarries.

135) The criteria have been designed to recognise

a) The rarity of certain breeding and wintering bird species;

b) Birds which may be considered vulnerable because their populations are in decline;

c) Birds which are vulnerable because of their colonial nesting habitats;

d) Birds which may be considered vulnerable because their non-breeding populations are concentrated in a small number of sites; and

e) Sites of importance for the presence of a diversity of species.

A site should be selected as a Local Wildlife Site if it can be considered as a single, identifiable unit (as explained above) in terms of its bird fauna and where:

• It is occupied regularly by at least 2.5% of the county population of any one or more bird species, based on the most recent and authoritative data;

OR

• It is occupied regularly as a breeding site by species with a Kent population of 50 or fewer territories;

OR

• It holds ten or more Kent Red Data Book 2 (KRDB2) species in the breeding season;

OR

• It holds three or more Kent Red Data Book 3 (KRDB3) species at the appropriate time of year (normally this should not include a combination of breeding and wintering species);

OR

• *It holds one of the five largest colonies of colonial seabirds (with the exception of herring gull and black-headed gull), grey heron, little egret or sand martin;*

OR

• *It is occupied regularly by 5% or more of the county population of any one or more species in non-breeding seasons, based on the most recent and authoritative data;*

OR

• *It has been recorded as being regularly used in recent years by at least 50 breeding bird species;*

OR

• *It has been recorded as being regularly used in recent years by at least 60 wintering bird species;*

OR

• *It has been recorded as being regularly used in recent years by at least 100 passage bird species."*

1.3 Methodology

Vantage Point Method

- 1.3.1 The purpose of flight activity (vantage point) survey is to record flight lines of bird species potentially sensitive to collision with proposed infrastructure, to inform a qualitative assessment of collision risk, in this case with the proposed OHL in Kent. The survey methodology follows that outlined within Scottish Natural Heritage (SNH) guidance (2017), with the direction of movement, height and activity of all target and secondary species recorded, in addition to any details recorded on number, age, sex and behaviour of individual birds (where possible). The resulting data allows any bird flightlines to be identified and assessment of a likelihood of bird collisions to be made.

Target species

- 1.3.2 During vantage point survey visits, flightlines of target species are tracked and recorded, including:
- Qualifying species of all sites of international importance for nature conservation that are designated for their ornithological interest and located within 10 km;
 - Raptor and wader species listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
 - All diver and grebe species; and
 - All ducks, geese and swans.
- 1.3.3 Where such species were observed on the ground, this was recorded within the secondary data but flightline recording of target species took precedence.

- 1.3.4 The selection of target species was based upon the qualifying species of the nearby internationally designated sites, which are:
- Thanet Coast SPA and Ramsar – which overlap with the intertidal areas of the wider Kent Onshore scheme, and
 - Stodmarsh SPA and Ramar – located approximately 8km west.
- 1.3.5 The designated sites' citations and qualifying species are detailed in the wintering (**Application Document 6.3.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2023** and **Application Document 6.3.2.3.C Appendix 3.2.C Wintering Bird Survey Report 2024**) and breeding bird reports (**Application Document 6.3.2.3.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.3.2.3.E Appendix 3.2.E Breeding Bird Survey Report 2024**).
- 1.3.6 A review of these designated sites resulted in a priority target species list for the vantage point survey, as follows:
- Golden plover (*Pluvialis apricaria*), turnstone (*Arenaria interpres*), little tern (*Sterna albifrons*) - qualifying species of the Thanet Coast SPA and Ramsar.
 - Ringed plover (*Charadrius hiaticula*), greenshank (*Tringa nebularia*), red-throated diver (*Gavia stellata*), sanderling (*Calidris alba*), great crested grebe (*Podiceps cristatus cristatus*) - 'note-worthy fauna' of the Thanet Coast SPA and Ramsar.
 - Bittern (*Botaurus stellaris*), hen harrier (*Circus cyaneus*), shoveler (*Anas clypeata*), gadwall (*Anas strepera*) - qualifying species of the Stodmarsh SPA.
 - Species associated with nearby Sandwich Bay and Hacklinge Marshes SSSI, notably dunlin (*Calidris alpina*), oystercatcher (*Haematopus ostralegus*), curlew (*Numenius arquata*), and redshank (*Tringa tetanus*), grey plover (*Pluvialis squatarola*), sanderling, ringed plover, mallard (*Anas platyrhynchos*), shelduck (*Tadorna tadorna*), brent goose (*Branta bernicla*) and little tern.
- 1.3.7 In addition, activity (birds on ground, birds in flight, large aggregations) by the following secondary species considered to be potentially relevant to the proposals (i.e., particularly vulnerable to collision or effects of habitat loss/disturbance) was recorded as part of five-minute activity summaries:
- All other wader species (e.g., common snipe (*Gallinago gallinago*)).
 - All other raptor species (e.g., common buzzard (*Buteo buteo*), kestrel (*Falco tinnunculus*) and sparrowhawk (*Accipiter nisus*) and other species of conservation concern e.g., raven (*Corvus corax*), turtle dove (*Streptopelia turtur*)).

Vantage point location and viewshed

- 1.3.8 Two vantage point (VP) locations were utilised, to allow the full extent of the proposed OHL to be covered, as shown in **Application Document 6.4.3.2.F.1 Kent Vantage Point Survey Locations**. These were referenced as VPA (western VP) and VPB (eastern VP).
- 1.3.9 These were positioned based on the land access available at the start of the survey and were located along the River Stour Canal to encompass the entire proposed OHL area within two 1 km, 180 degree viewsheds (referenced in this report as the 'primary viewshed'). These VPs were positioned within the access and topographical limitations of needing to be located on a PRoW.

- 1.3.10 Note that birds were however recorded whenever they were sighted beyond the 1 km viewshed, with a 'secondary viewshed' of 2 km used as a reference as to when birds were leaving the Survey Area and cessation of flightline tracking could be considered.
- 1.3.11 The VP locations were also selected to provide a good topographical view of the ground within the viewshed and provide at least partial shelter for surveyors to aid recording efficiency through increased surveyor 'comfort'.

Survey programme, duration and timings

- 1.3.12 Six hours of survey visits were undertaken from each VP per month, with each vantage point watch period comprising a maximum of two continuous hours with at least a 30-minute break between watches to assist surveyor concentration. The survey ran from February 2023 to January 2024, covering 12 months and 72 hours of survey effort at each VP (144 hours total survey effort).
- 1.3.13 Survey visits were conducted both during daylight hours and after sunset and were timed to coincide with the rising and high tide periods for the Thanet Coast and Sandwich Bay Ramsar, SPA, to record use of inland areas of birds from the nearby estuary. Each VP survey visit included survey periods within the window two hours either side of high tide. Survey visits were also planned to encompass dusk and dawn periods, with each month's visits planned to encompass at least one dawn and one dusk period whenever possible (when tide timings and daylight allowed).

Height bands

- 1.3.14 The following height bands were utilised during the VP survey when estimating the height of birds in flight:
- Band A – Below power line height (0 - <15 m);
 - Band B – Corresponding to broad power line height (15 m – 50 m); and
 - Band C - Above power line height' (>50 m).
- 1.3.15 As per SNH guidance (2017), a bird's flight height is estimated at the time of detection and then at 15 second intervals thereafter, in tandem with recording of flight paths.
- 1.3.16 As well as use of vantage point experienced staff and training of surveyors to judge flight bands through use of known local landmarks, existing OHL in proximity and within the viewshed acted as an aide to assist surveyor recording of flight height. Additionally, broad flight bands were deliberately chosen to assist surveyor recording.
- 1.3.17 The height bands were based upon potential OHL specifications provided by National Grid and also from review of criteria applied to the previous Richborough OHL assessment (National Grid, 2016) which is comparable and connects to the proposed OHL of the Kent Onshore Scheme. While the use of 40 m and 50 m height pylon specifications have been considered by National Grid, the practical difficulty of judging a narrow 10 m height band (i.e., 40-50 m) and likely limited difference in resulting collision risk, resulted in the use of a wider precautionary 15-50 m band which encompassed both OHL design options.

Risk height range

- 1.3.18 The 'risk height range' assessed within this report is the range of heights at which birds are at risk from collision with OHL suspended power lines. This is based on a number

of criteria informed by the proposed OHL specifications and simplified for the purpose of this report, but which will be reviewed and expanded upon within **Annex 2.F.2** and as follows:

- Risk of collision zone encompasses the zone between the vertical upper and lower power line and the horizontal space between the two sets of parallel pylons. The risk height range is likely to be precautionary as it includes areas beneath the lower cables when accounting for cable ‘sag’ and empty spaces between sets of power lines.
- Risk of collision from the pylons themselves is excluded, as it is assumed that birds will visually detect and avoid these large structures.
- The distribution of flights is unaffected by the presence of pylons - so the density of bird flights is uniform across each span.
- The risk to each bird is independent of other birds – i.e., no account is taken of avoidance behaviour or the influence of leading birds altering the flight paths of an entire flock in a manner that increases or decreases risk of collision.

1.3.19 Broadly the risk height range’ was assigned as 15-50 m based upon the supplied proposed OHL specifications and previous OHL assessment (National Grid, 2016).

Survey personnel, dates and weather

- 1.3.20 The vantage point survey visits were led by suitably qualified ecologists, including highly experienced surveyors with over 30 years of ornithological experience, which includes breeding and winter bird surveys as well as vantage point surveys.
- 1.3.21 Survey visits were conducted in the months of February 2023 to January 2024, inclusive.
- 1.3.22 Note that the requirement for 12 hours total of vantage point watch time each month meant that survey visits encompassed a wide range of weather conditions, reflective of weather throughout the year. While survey visits were programmed to avoid periods of prolonged heavy rain, strong wind (above Beaufort 4) or fog (which may limit or alter bird behaviour or where surveying may be impractical) wherever possible, these conditions could not be avoided entirely. Survey visits did however cease when visibility reduced to below 1 km, as the required 1 km viewshed was then not visible.
- 1.3.23 The survey visits were conducted on the dates shown in Table 1.2 below, with further detail of surveyors, weather conditions and tide times provided in **Annex 2.F.1**.

Table 1.2 Dates and weather conditions for each survey visit.

Month	Date	VP Location	VP Duration	VP Type
Feb 23	21.02.23	A	11:05-13:05	DAY
	21.02.23	B	13:50-14:50	DAY
	21.02.23	A	15:20-17:20	DUSK
	28.02.23	B	09:35-11:35	DAY
	28.02.23	A	12:05-14:05	DAY

Month	Date	VP Location	VP Duration	VP Type
	28.02.23	B	15:25-17:25	DUSK
	03.03.23	B	11:40-12:40	DAY
Mar 23	17.03.23	A	06:25-08:25	DAWN
	17.03.23	B	10:05-12:05	DAY
	17.03.23	A	12:40-14:40	DAY
	28.03.23	B	12:14-14:14	DAY
	28.03.23	A	15:20-17:20	DAY
	28.03.23	B	17:50-19:50	DUSK
April 23	14.04.23	B	06:00-08:00	DAWN
	14.04.23	B	08:30-10:30	DAY
	14.04.23	B	11:00-13:00	DAY
	28.04.23	A	13:15-15:15	DAY
	28.04.23	B	15:45-17:45	DAY
	28.04.23	A	16:15-18:15	DUSK
May 23	12.05.23	A	05:35-07:35	DAWN
	12.05.23	B	08:05-10:05	DAY
	12.05.23	A	10:35-12:35	DAY
	29.05.23	B	13:45-15:45	DAY
	29.05.23	A	16:15-18:15	DAY
	29.05.23	B	18:45-20:45	DUSK
June 23	09.06.23	B	04:45-06:45	DAWN
	09.06.23	A	07:15-09:15	DAY
	09.06.23	B	09:45-11:45	DAY
	28.06.23	A	14:45-16:45	DAY
	28.06.23	B	17:15-19:15	DAY
	28.06.23	A	19:15-21:15	DUSK
July 23	11.07.23	A	04:50-06:50	DAWN
	11.07.23	B	07:20-09:20	DAY
	11.07.23	A	09:50-11:50	DAY
	25.07.23	B	13:55-15:55	DAY

Month	Date	VP Location	VP Duration	VP Type
	25.07.23	A	16:25-18:25	DAY
	25.07.23	B	18:55-20:55	DUSK
Aug 23	10.08.23	B	05:32-07:32	DAWN
	10.08.23	A	08:02-10:02	DAY
	10.08.23	B	10:32-12:32	DAY
	25.08.23	A	12:50-14:50	DAY
	25.08.23	B	15:20-17:20	DAY
	25.08.23	A	17:50-19:50	DUSK
Sep 23	07.09.23	B	12:30-14:30	DAY
	07.09.23	A	15:00-17:00	DAY
	07.09.23	B	17:30-19:30	DUSK
	26.09.23	A	06:45-08:45	DAWN
	26.09.23	B	09:15-11:15	DAY
	26.09.23	A	11:45-13:45	DAY
Oct 23	10.10.23	B	07:00-09:00	DAWN
	10.10.23	A	09:30-11:30	DAY
	10.10.23	B	12:00-14:00	DAY
	27.10.23	A	10:40-12:40	DAY
	27.10.23	B	13:10-15:10	DAY
	27.10.23	A	15:40-17:40	DUSK
Nov 23	15.11.23	A	07:05-09:05	DAWN
	15.11.23	B	09:35-11:35	DAY
	15.11.23	A	12:05-14:05	DAY
	28.11.23	B	08:55-10:55	DAY
	28.11.23	A	11:25-13:25	DAY
	28.11.23	B	13:55-15:55	DUSK
Dec 23	12.12.23	A	08:45-10:45	DAY
	12.12.23	B	11:15-13:15	DAY
	12.12.23	A	13:55-15:55	DUSK
	15.12.23	B	07:45-09:45	DAWN

Month	Date	VP Location	VP Duration	VP Type
Jan 24	15.12.23	A	10:15-12:15	DAY
	15.12.23	B	12:45-14:45	DAY
	11.01.24	A	07:50-09:50	DAWN
	11.01.24	B	10:20-12:20	DAY
	11.01.24	A	12:50-14:50	DAY
	16.01.24	B	09:15-11:15	DAY
	16.01.24	A	11:45-13:45	DAY
	16.01.24	B	14:15-16:15	DUSK

Zone of Influence/survey area

- 1.3.24 The potential impact(s) of a development are not always limited to the boundaries of the site concerned. A development may also have the potential to result in impacts upon ecologically important sites, habitats or species that are located beyond the site boundaries.
- 1.3.25 The area over which a development may impact ecologically important features is known as the Zone of Influence (ZOI).
- 1.3.26 The ZOI is determined by the source/type of impact, the potential pathway(s) for that impact and the location and sensitivity of the ecologically important feature(s) beyond the boundary.
- 1.3.27 The potential ZOI of a project in relation to birds is used to determine the extents of the bird survey study area.
- 1.3.28 Standardised survey buffers for assessing the impacts of development on bird populations do not exist, however, the Survey Area used provides information on the birds within the area immediately surrounding the Kent Onshore Scheme Order Limits and includes areas contiguous with the Order Limits, where birds may potentially be adversely affected.
- 1.3.29 The wintering and breeding bird surveys used a standardised buffer of 250m from permanent infrastructure, including the proposed OHL route. Use of the vantage point methodology (SNH, 2017) does however entail a much larger viewing arc (viewshed) in order to detect flights within the target area.
- 1.3.30 In accordance with the proposed layout of the OHL, two viewsheds of a 1 km radius were used from the two vantage point locations to cover the OHL layout (the primary viewshed, see **Application Document 6.4.3.2.F.1 Kent Vantage Point Survey Locations**). Birds were however recorded at distance of 2 km or greater when possible, to maximise detection of potential flightlines to record activity in and out of the primary viewshed.
- 1.3.31 Recording of activity by secondary species was generally within the 1 km primary viewshed to maintain surveyor focus on flightlines of target species.

Assessment and evaluation

- 1.3.32 Assessment of the ornithological importance of the Survey Area was not the primary focus of the vantage point survey. Relevant observations from the vantage point survey have however been incorporated into the assessment and evaluation within the wintering and breeding bird reports.
- 1.3.33 A brief overview of the assessment criteria is however provided below, in particular to define 'notable' species, which are assessed in the separate wintering and breeding reports.

Assessment criteria

- 1.3.34 The assessment of the ornithological importance of the Survey Area during the wintering season was made by evaluating any species afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest, as detailed in within Section 4. These 'notable' species include:
- Species listed on Annex 1 of the EU Birds Directive or a qualifying feature of potentially functionally linked internationally designated sites;
 - Species listed on Schedule 1 of the WCA, 1981 (as amended);
 - Priority bird species in the UK;
 - Species listed as priority species or additional species of interest within Kent; and
 - Species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Stanbury, 2021).
- 1.3.35 Additionally, assemblages have been assessed against the criteria for LWS designation within the Kent Local Wildlife Site Selection Criteria (Kent Wildlife Trust, 2022).

Importance of bird populations (Valuation)

- 1.3.36 To inform assessment of the importance of the bird populations, their biodiversity values have been defined with reference to the geographical levels based on the importance levels presented in the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' (CIEEM, 2018) as well as professional judgement.
- 1.3.37 An overview of the valuation criteria is provided within the winter and breeding reports, which use the following geographic levels to assign importance:
- International or European;
 - UK or National;
 - Regional;
 - County;
 - Local; and
 - Negligible (Site).

Survey limitations

- 1.3.38 An ecological survey represents a 'snapshot' in time of the ecological condition of a site. The extent and quality of habitats present, and their suitability for protected and priority species, can change substantially throughout both the course of a year and between years. However, any seasonal limitations to the appraisal are clearly identified in this report, and Section 1.3 of this report at least partially addresses the potential for changes between years. Therefore, this standard limitation is addressed as far as is reasonably possible.
- 1.3.39 The aim of a desk study is to help characterise the baseline context of the site and provide valuable background information that would not be captured by a single site survey alone. Information obtained during a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Kent Onshore Scheme Order Limits.
- 1.3.40 Access at the commencement of surveys was limited to the PRoW. To maintain consistency, the vantage point locations (A and B) were kept the same after greater site access was made possible, even though improved visibility (due to topographical variation) may have been available from other potential locations away from the PRoW.
- 1.3.41 On occasion, the full survey hours for a given month could not be completed due to daylight restrictions. Where this occurred (i.e., in February 2023), the remaining survey hours were completed in the nearest available timeslot and accounted for within the following month (i.e., one hour of VP was completed in early March 2023 to complete the February 2023 12-hour requirement).
- 1.3.42 The inherent limitations and complications of the Band et al (Band, 2007) methodology are addressed where possible within the discussion of results and evaluation. These include the inherent difficulties in judging flight bands at distance, only being able to record one flightline at a time, difficulties in dealing with splitting and merging flocks, etc. These limitations are however also addressed within the relevant survey guidance and do not significantly alter the findings of this report.
- 1.3.43 Note that in some instances flightlines of secondary species were recorded (e.g., during periods of quiet activity or when in apparent at-risk flights) but such secondary species were not recorded consistently and so recording is an underrepresentation of full activity when taken in isolation from the secondary species data.

Lifespan of the appraisal

- 1.3.44 It should be noted that ecosystems and the distributions of highly mobile species groups are dynamic and constantly changing, and therefore species may move or new species may be recorded in subsequent years.
- 1.3.45 For this reason and in accordance with current guidance, the field survey data detailed in this report are valid for two years from the date of the survey (CIEEM, 2019). After this date, update surveys may be required and advice should be sought from an appropriately qualified ecologist to determine survey scope and methods.

1.4 Results

Target species flightline data

- 1.4.1 Detailed survey data for the recorded target species flightlines is shown in **Annex 2.F.2**, with a summary discussion of total flightlines, overall flight duration and bird numbers and seasonal variation provided below.

Total flightlines recorded

- 1.4.2 The number of flightlines recorded is shown below for each species, to indicate the most frequently recorded species.
- 1.4.3 Note that the number of flightlines only represents a measure of frequency, since a flightline can encompass either one or several hundred birds.
- 1.4.4 Also, as the flightlines recorded were targeted at key designated site species such as golden plover and marsh harrier (and only one flight can be recorded at a time), the targeting of these species will likely result in the under-recording of other species (since e.g., recording a long duration flightline of marsh harrier may prevent the recording of several mallard flights in the same time period).
- 1.4.5 As many flightlines were at low level, below the risk height range, the data has been subject to an initial review to separate out any flightlines where intervals of bird flight within the risk height band occur. Note that this does not account for whether such intervals overlap with the proposed OHL alignment, simply whether any interval of the flight occurs within the risk height band.

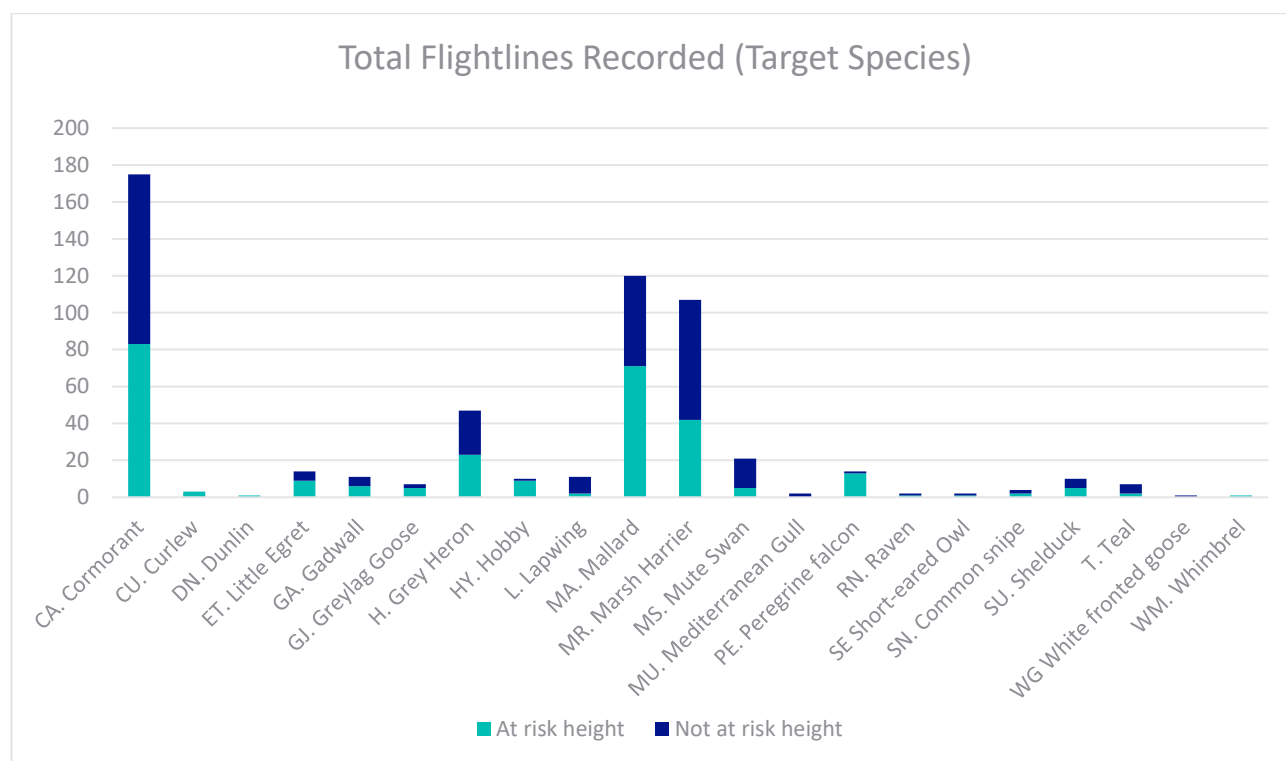


Plate 1.1 Target species number of flightlines, showing proportion containing an ‘at risk’ flight interval

Total number of birds and flight duration

- 1.4.6 The number of flightlines recorded is shown below for each species in comparison to total recorded flight time (number of 15 second intervals) and a sum of the number of recorded birds from all recorded flightlines.
- 1.4.7 The number of birds gives an indication of the number of birds that the flightlines are attributed to, though noting this is an indication of relative abundance only, since multiple flightlines can be attributed to the same birds.

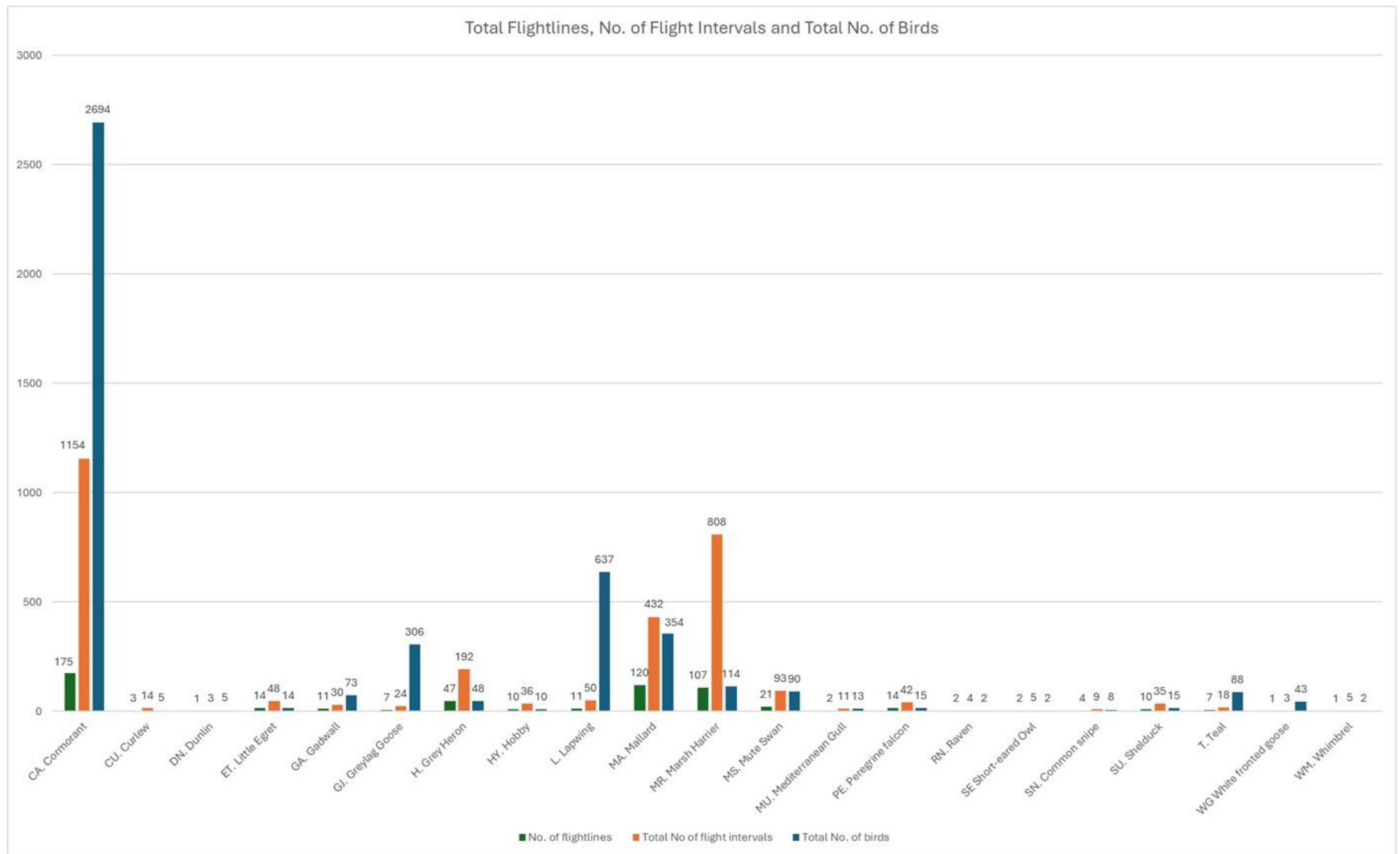


Plate 1.2 Target species number of flightlines, total flight intervals and sum of recorded birds

- 1.4.8 The data for a species can be broadly summarised into a few categories:
- Where the number of flightlines is relatively low in comparison to the number of birds and flight length, flightlines may comprise a number of long duration flights of many birds (e.g., cormorant (*Phalacrocorax carbo*), mallard).
 - Where the number of flightlines and flight time is low in comparison to the number of birds – a few flightlines consisting of large flocks with relatively direct flight across the viewshed (e.g., greylag goose (*Anser anser*), gadwall).
 - Where the number of flightlines and number of birds is low in comparison to flight duration – indicates long duration flights of small numbers of birds (e.g., marsh harrier, heron).
 - Where low numbers of flightlines, duration and birds indicate species rarely recorded and, when they occur, are short duration flights of small numbers of birds (e.g., dunlin, short-eared owl, snipe, whimbrel).
- 1.4.9 For example, marsh harrier (MR) data indicates a long flight duration of a relatively small number of birds (most flights being attributed to single birds), which were attributed to long flights throughout the viewshed. By contrast greylag goose (GJ) shows relatively few recorded intervals being attributed to a large number of birds but passing through the viewshed quickly on only a few occasions.

Flightline recording by month

- 1.4.10 The flightlines recorded during each month are shown below, noting that this excludes secondary species flights (e.g. buzzard, kestrel, sparrowhawk) which are presented within **Annex D: Detailed Survey Data**.
- 1.4.11 While monthly variation may not affect the outputs of the detailed assessment or CRM (see **Annex 2.F.2**), the results may indicate when the occurrence of a species is most frequent. This information can be also used to potentially target future survey effort.

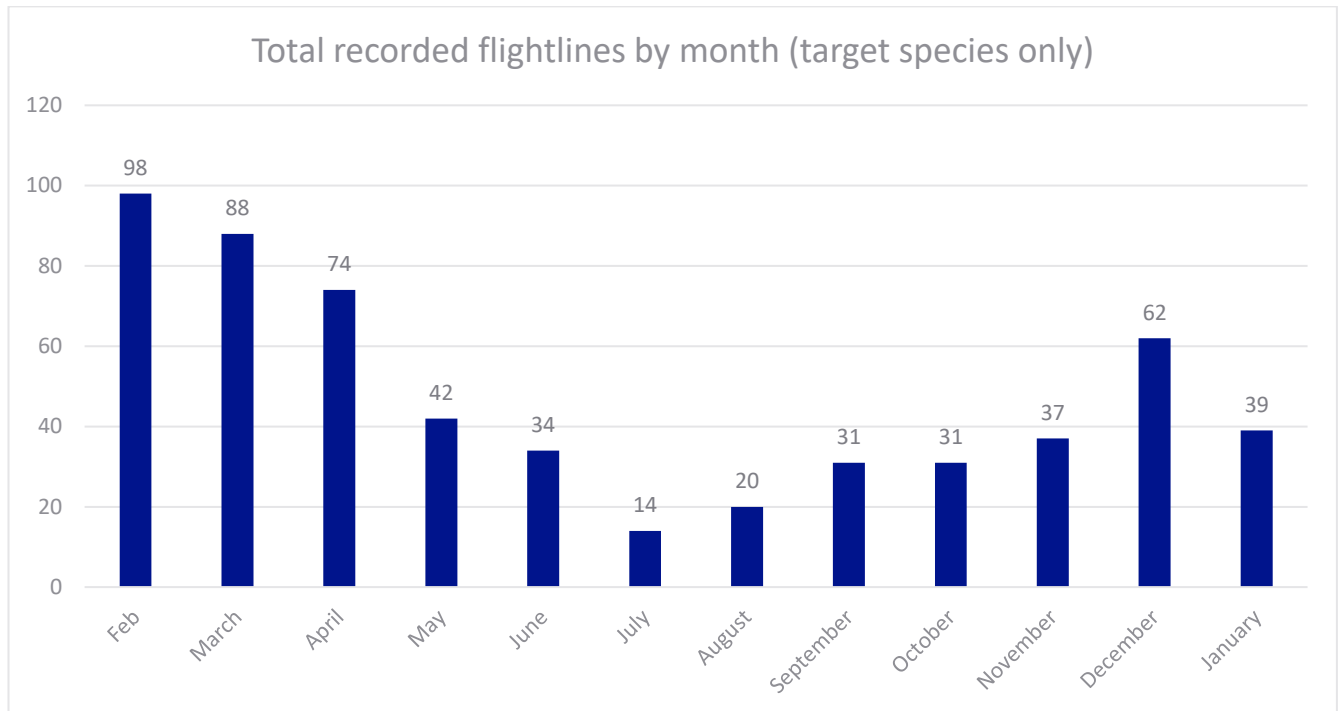


Plate 1.3 Total recorded flightlines per month

- 1.4.12 Overall, the total flightline recorded per month shows a decreasing trend from a potential mid-winter peak (February 2023), with February 2023 to April 2023 being the months with the largest number of flightlines. The lowest numbers occur in July 2023 and August 2023.
- 1.4.13 The flightlines by month are further broken down by species below (data labels are not shown due to data density).

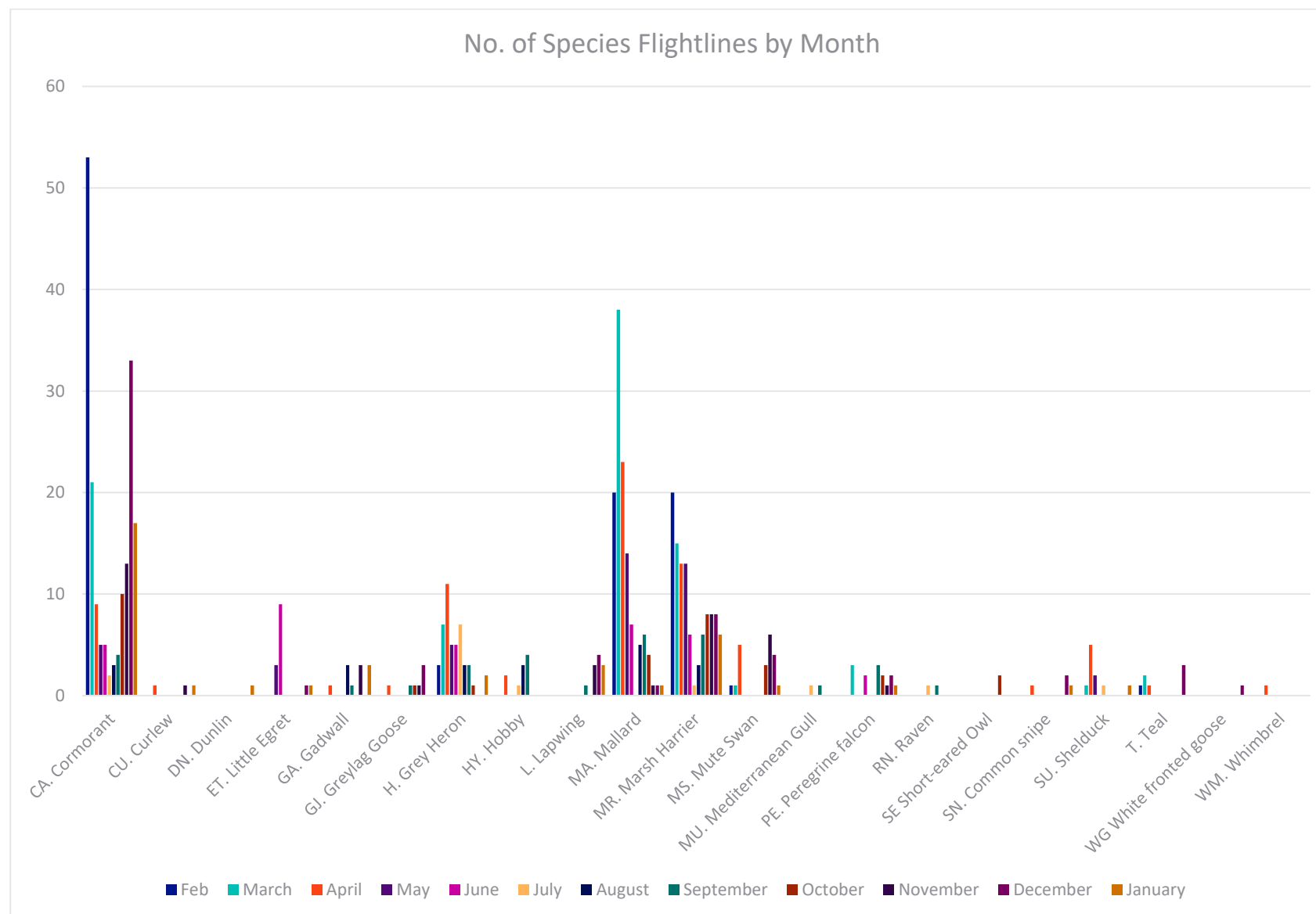


Plate 1.4 Species recorded flightlines per month

- 1.4.14 While variation against the total flightline trend is visible for some species, the most frequently recorded species (i.e. cormorant) broadly have peaks in the months of February 2023 to March 2023, consistent with the total recorded flightline trend. A few species such as marsh harrier were recorded in broadly consistent flightline numbers throughout the year.
- 1.4.15 Cormorant is notable for consisting of almost half the February 2023 flightlines, but decreases in March 2023 and April 2023 when mallard then provides the majority of recorded flightlines. Cormorant again becomes the most frequently recorded species during November 2023 to January 2024.

Secondary species / activity observations

Recorded species assemblage

- 1.4.16 The overall species assemblage recorded was of 86 species, noting this included the wintering, passage and breeding seasons.
- 1.4.17 Key species recorded relevant to the designated sites included:
- Golden plover recorded during October 2023, not seen, potentially using fields beyond surveyor location or outside of viewshed. Another two birds were recorded in November 2023, outside the viewshed and above risk height.
 - Marsh harrier frequently recorded, though primarily as target species flightlines rather than as secondary species data (i.e., rarely seen perched).
 - Gadwall recorded in September 2023 and January 2024 but, as per marsh harrier, is recorded more frequently as target species flightline data.
- 1.4.18 Lapwing was also recorded during the winter months, including a flight of 200 birds recorded outside the viewshed in December 2023 and a group of 90 (also part of a target species flightline) from birds appearing to have settled in fields beyond the existing OHL.
- 1.4.19 Golden plover, curlew, dunlin and shelduck were species generally recorded in small numbers. Other waders and wildfowl associated with Pegwell Bay were noted to be generally absent.

Secondary species flight data

- 1.4.20 Secondary species flight data is summarised below in Plate 1.5, which has been filtered to show notable or target species only and exclude small passerines (species at lower risk of collision).
- 1.4.21 Note that this is an indicative graph only as;
- target species are underrepresented (as these are recorded as target flightlines); and
 - only a simple sum of all peak count registrations is shown (i.e., relative abundance, as numbers will likely include double counts of the same birds max count recorded repeatedly on the same day from different VPs).
- 1.4.22 This does however provide an indicative 'at a glance' picture of the secondary species most often recorded in flight.

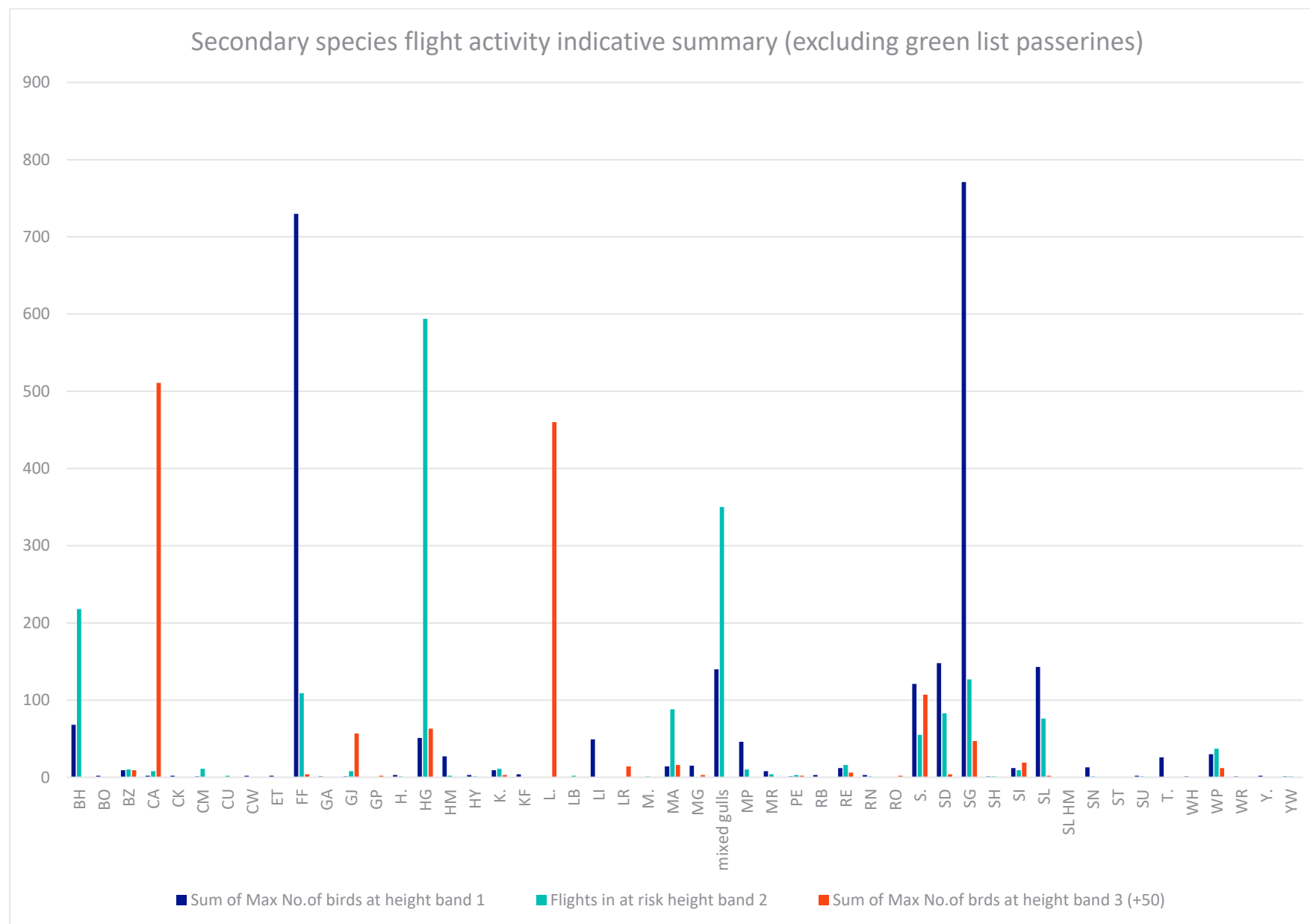


Plate 1.5 Sum of secondary species flight band counts

- 1.4.23 Recording of large flocks of starling (*Sturnus vulgaris*) contribute to this species having the largest combined number of registrations. High numbers of fieldfare are also shown. In both cases, the species were mostly recorded below the at-risk height band.
- 1.4.24 Movements of herring gull and black-headed gull (both secondary species) through the viewshed are also frequent and are notable as they occur most frequently in the at risk height band.
- 1.4.25 Notable registrations of rarer species include:
- Barn owl – recorded foraging at low level on dusk and dawn visits.
 - Curlew – recorded only in February 2023 to April 2023.
 - Greylag goose – recorded numbers include birds that were also recorded as target flightlines or where such flights were observed outside the viewshed.
 - Kingfisher – recorded along the River Stour Canal throughout the year.
 - Lapwing – records represent a mix of target species flightlines already accounted for in the target species data and flights outside the viewshed.
 - Peregrine falcon – noted to be present (perching) on the existing OHL.
 - Buzzard, sparrowhawk and kestrel – likely under recorded within secondary data as priority was given to other raptor species.
 - Swift, swallow and house martin – some mid-sized (under 50) flocks recorded but generally at heights below the at-risk height band.
 - White fronted goose – were recorded as a secondary species, but as duplication of a target species flightline and as such have been excluded from the graph.
- 1.4.26 The remaining species such as hobby, mute swan, redwing, raven, stock dove, snipe, shelduck and woodpigeon occur within the dataset but with relatively little representation.
- 1.4.27 The relative absence of species such as woodpigeon and stock dove appears to show limited use of the viewshed by large flocks of these species.

1.5 Evaluation

Target species flightline summary

- 1.5.1 Key target species from the Thanet Coast Ramsar and SPA (i.e., golden plover, turnstone and little tern) are noted as being generally absent from the recorded flightlines.
- 1.5.2 While some flightlines are attributed to species listed on the Stodmarsh SPA citation (i.e. gadwall), this species is assessed as originating from local populations rather than the SPA, based on Natural England guidance (Natural England, 2019) relating to likely dispersal distances and the distance of the Stodmarsh SPA/Ramsar from the Site compared to other available habitats in the local landscape/district that are able to support large numbers of these species.
- 1.5.3 The flightline frequency and flight duration of marsh harrier (a species featured on the Hacklinge Marshes SSSI citation) and overlap of flightlines with the Kent Onshore Scheme Order Limits, including flights within the at-risk height band means this species

may be a key species for review as part of a future assessment/CRM, especially in consideration of the low population densities at which this species occurs.

- 1.5.4 The frequency, height and occasional large flocks recorded for cormorant and mallard also highlight these species as being of potential importance for future assessment. Other species were recorded at much lower frequency, flight duration and numbers and so may generate fewer or no collisions in any future assessment, however this is only an initial prediction based on flight data and GIS observations.
- 1.5.5 A brief description of these and other key species is noted below, flightline figures are provided in the following:
- **Application Document 6.4.3.2.F.2 Kent VP survey flight lines – Cormorant;**
 - **Application Document 6.4.3.2.F.3 Kent VP survey flight lines - Gadwall;**
 - **Application Document 6.4.3.2.F.4 Kent VP survey flight lines - Lapwing;**
 - **Application Document 6.4.3.2.F.5 Kent VP survey flight lines - Mallard;**
 - **Application Document 6.4.3.2.F.6 Kent VP survey flight lines – Marsh Harrier;**
 - **Application Document 6.4.3.2.F.7 Kent VP survey flight lines – Peregrine; and Falcon;**
 - **Application Document 6.4.3.2.F.8 Kent VP survey flight lines – Teal.**

Individual target species commentary

- 1.5.6 A brief overview of the most frequently recorded target species is provided as an indication of the species which were recorded within the at-risk height band and may be the most likely species to generate collisions in a future assessment/CRM. Species are presented in order of the most frequently recorded species first.

Cormorant

- 1.5.7 One of the most frequently recorded species and while the largest flocks were recorded during the winter months (February, March and December 2023 and January 2024), flightlines from this species were recorded throughout the year as smaller groups and often within the at-risk height band. The largest single flock was of approximately 450 birds (above risk height) during December 2023, but several VP visits recorded several hundred birds on a single visit (as an aggregate of multiple flight lines).
- 1.5.8 Many flights appeared to comprise local movements, following the River Stour Canal and existing OHL possibly as navigational aids. Anecdotal evidence from local bird surveyors suggests that cormorant movements are linked to a large roost at Stodmarsh.

Marsh harrier

- 1.5.9 Another frequently recorded species, usually as individual birds with some flightlines of long duration, including long periods within the at-risk height band, such as during display flights. Flights were recorded throughout the year, in almost every month. It was noted that marsh harrier flights included extended foraging and display adjacent to the existing OHL, and that extended flight path modelling to cross into the proposed OHL will include birds flying in proximity to the existing OHL.

Mallard

- 1.5.10 Frequently recorded, generally as flights of individuals or small groups. While many flights were at low level and broadly following the River Stour Canal, many did occur within the at-risk height band.

Lapwing

- 1.5.11 Several flights of birds at risk height (flocks of 31, 7 and 16) were recorded in December 2023 and January 2024. Otherwise, occasional flocks of sometimes large numbers (including 26 birds during September 2023, flocks of approximately 120, 53 and 13 birds during November 2023 and approximately 200, 100 and 70 in December 2024) were recorded, but all as flights above the at-risk height band.
- 1.5.12 A single recording of approximately 90 birds during January 2024 represents the only recording of this species at ground level within the viewshed or immediate area.

Greylag goose

- 1.5.13 Large flocks of approximately 133 and 95 birds were recorded in September 2023 and December 2023, passing through the viewshed within the at-risk height band. Another large flock of 64 birds was recorded above risk height in November 2023. The species otherwise was generally limited to being recorded in secondary data beyond the viewshed or as flights of single birds.

Gadwall

- 1.5.14 While not recorded frequently, flocks of gadwall including groups of approximately 25 birds, were recorded within the at-risk height band during August 2023, with individual birds in March 2023, September 2023, November 2023 and January 2024. While flights were often short (between local waterbodies), the numbers of birds recorded could generate collisions in a future assessment.

Teal

- 1.5.15 A flock of approximately 43 birds at risk height was recorded passing through the viewshed in December 2023. Otherwise, this species was generally not recorded in flightlines or was only recorded as short flights from the River Stour or waterbodies below risk height.

Grey heron

- 1.5.16 Frequently recorded as individual birds though many flights were at low level, following the River Stour Canal. The number of flights recorded however requires review in a future assessment due to a relatively large overall number of flights occurring within the at-risk height band.

Peregrine

- 1.5.17 The small number of flights attributed to this species include flights in the risk zone from birds perched on the existing OHL, with flights originating or ending on pylons. Relatively few flights were recorded. While appearing to use the pylons irregularly in summer, the species was consistently recorded using the pylons within secondary data during December 2023 and January 2024. This indicates infrequent or seasonal use of the pylons as hunting perches.

Little egret

- 1.5.18 Recorded occasionally as individual birds and more frequently during the summer months, but did include flightlines within the at-risk height band, between waterbodies or leaving the viewshed.

Mute swan

- 1.5.19 A flight of ten birds was recorded during November 2023 at risk height but at distance from the proposed OHL. Generally, flights of this species were limited and comprised small numbers of birds flying below risk height. Flights originated from small groups (less than ten birds) settled in fields in proximity to the River Stour.

Other species

- 1.5.20 A number of other species including dunlin, curlew, whimbrel, mute swan, shelduck, hobby, short-eared owl and raven have single or few flightlines attributed to them and while including flights within the at-risk height band, the small number of birds or short flight times recorded mean that these species may be unlikely to generate collisions within an assessment. Flightlines of a few species (i.e. white-fronted goose) were recorded above the at-risk height and so were not recorded at-risk of collision.

Monthly fluctuations (all species)

- 1.5.21 As reflected in the flightline numbers, flightline activity generally followed expected seasonal patterns, with the largest flocks and flightlines recorded within the winter period (November to early March) and activity generally reducing in the summer with very few flightlines recorded in mid-summer (i.e., July 2023 and August 2023).
- 1.5.22 The spring period did include some summer display flights and records of summer visiting species (i.e., hobby), but the number of flightlines and overall numbers of birds was notably lower than during the winter period.

Secondary species activity

Species assemblage (conservation status)

- 1.5.23 From the secondary activity and target species observations, a total of 86 bird species were recorded during the course of the vantage point survey visits. Of these, 55 are notable species, as summarised within Section 1.4.
- 1.5.24 Note that notable species differ from vantage point target species, as the target species list contains (for example) large waterfowl which may be at risk of OHL collision but would not be defined as notable in terms of their conservation status.
- 1.5.25 The overall combined assemblage (noting this includes winter, passage and breeding) for the Survey Area included:
- Nine species included on Annex 1 of the EU Birds Directive (dunlin, golden plover, white-fronted goose, little egret, kingfisher, marsh harrier, peregrine, short-eared owl, and Mediterranean gull);
 - 11 species listed on Schedule 1 of the Wildlife and Countryside act 1981 (as amended) (barn owl, Cetti's warbler, fieldfare, green sandpiper, hobby, kingfisher, marsh harrier, Mediterranean gull, peregrine, redwing and whimbrel);

- 16 species listed as NERC Act Section 41 Species of Principal Importance (bullfinch, cuckoo, curlew, dunnoek, herring gull, lapwing, linnet, lesser redpoll, mistle thrush, reed bunting, skylark, starling, song thrush, white-fronted goose, yellowhammer and yellow wagtail);
- 18 species included on the BoCC Red List (cuckoo, curlew, dunlin, fieldfare, herring gull, house martin, lapwing, linnet, lesser redpoll, mistle thrush, skylark, starling, swift, whinchat, whimbrel, white fronted goose, yellowhammer and yellow wagtail); and
- 29 species included on the BoCC Amber List (bullfinch, black-headed gull, common gull, dunnoek, gadwall, greylag goose, kestrel, lesser black-backed gull, mallard, moorhen, meadow pipit, marsh harrier, Mediterranean gull, reed bunting, rook, stock dove, short-eared owl, snipe, shelduck, sedge warbler, song thrush, sparrowhawk, teal, wheatear, whitethroat, willow warbler, woodpigeon and wren).

1.5.26 The overall species assemblage is broadly equivalent to that recorded during other survey work conducted to date (**Application Document 6.3.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2023, Application Document 6.3.2.3.C Appendix 3.2.C Wintering Bird Survey Report 2024, Application Document 6.3.2.3.D Appendix 3.2.D Breeding Bird Survey Report 2023 and Application Document 6.3.2.3.E Appendix 3.2.E Breeding Bird Survey Report 2024**) with a small number of additional species recorded as individuals including short-eared owl, wheatear and whinchat or solely as flyovers (dunlin and white-fronted goose). These additional species may be a result of the increased survey duration of the vantage point surveys and additional coverage of the passage survey period.

Flight activity

- 1.5.27 Flight activity recorded by secondary species was mainly attributed to movements of gulls as well as common raptors including sparrowhawk, buzzard and kestrel. Large flocks of gulls as well as starling and fieldfare represented the largest aggregations of birds passing through the at-risk height band.
- 1.5.28 The sum number of gull registrations shown in Section 1.4 is actually lower than might be anticipated given the size of the gull aggregations that are known to use Pegwell Bay. Given that a sum of flocks could be expected to be many times greater than estuary numbers (as this represents recording of multiple flocks through the year) the use of the viewshed by large gull movements is noted but may not be significant. This is even when accounting for under recording due to inherent issues with the Band et al method (gulls are secondary species and would not be recorded when tracking target species, and the method does not require the tracking of all individual gull movements). The largest gull movements were noted to occur across February and March 2023, with much lower numbers recorded during the rest of the year.
- 1.5.29 Similar to gulls, some large flocks of swallow, swift and house martin were recorded but again the sum of all registrations is assessed as relatively low.
- 1.5.30 Secondary flight data for remaining species was generally recorded as being below the at-risk height band, comprising passerines moving at low level between local fields and hedgerows and birds moving at low level along the River Stour Canal.

Bird use of the River Stour Canal and adjacent habitats

- 1.5.31 Similar to the finding in the Winter bird reports (**Application Document 6.3.2.3.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.3.2.3.E Appendix 3.2.E Breeding Bird Survey Report 2024**), the habitats adjacent to the River Stour Canal were used by small parties of waterfowl and gulls but generally lacked large flocks of waders such as golden plover and lapwing (a flock of 90 lapwing was recorded settled south of the River Stour Canal and beyond the existing OHL from the VPs in Parcel 237 during January 2024). The scrapes and canal were generally the areas of highest bird interest, with small groups of ducks (mallard frequently, and more occasionally teal, gadwall and shelduck) on the scrapes and individuals and small groups of waterbirds (including cormorant, coot, moorhen, little egret, mallard, grey heron and teal) using the canal but rarely in large numbers. Flightlines of many waterbird species associated with the River Stour Canal tended to follow the canal and often be at low level.
- 1.5.32 The use of the canal by kingfisher was noted, with this species recorded relatively consistently commuting along the canal at very low level during a number of survey visits. Likewise, foraging barn owl was recorded on a few occasions using the rough grassland immediately north of the canal PRow for foraging, sometimes during dawn VP set up or dusk VP finish.
- 1.5.33 The grazing marsh south of the canal contained pools and areas of rush and reed bed likely utilised by waterbirds, but aside from flocks of gulls, were rarely used by large aggregations, with a noticeable absence of lapwing and golden plover. While some areas (i.e., pools obscured by reeds) were not readily visible from the VP locations, this was unlikely to be the cause of the lack of observations.
- 1.5.34 Use of the area by raptors was noted, in particular marsh harrier. The activity of this species often originated from areas to the east and, similar to observations for peregrine and raven, was likely to originate from habitats in and around Richborough power station further east of the Survey Area.

Existing OHL

- 1.5.35 The Survey Area and viewsheds were noted to already encompass two sets of pylons and associated powerlines located to the south of the River Stour Canal.
- 1.5.36 The existing powerlines run south-west to north-east adjacent to the canal (longitudinally) and were located within the primary viewsheds of both VP locations, with a closest point being approximately 350 m from VPA. The pylon routes also crossed the River Stour Canal at a location approximately 750 m west of VPA.
- 1.5.37 Cormorant flocks (one of the species most frequently and numerous recorded during the winter months) were noted to often follow the broad route of the existing powerlines (though noting the route also broadly follows that of the canal). The flocks of this species often followed and crossed through power lines. Marsh harrier flights were also noted to occur frequently in proximity to the existing OHL.
- 1.5.38 The existing OHL did offer perches for corvids and raptors, though observations of birds of prey or aggregations of corvids on the pylons were infrequent (though were recorded repeatedly in September and October 2023). Peregrines known anecdotally to originate from the nearby Richborough power station were recorded perching on pylons on limited occasions, reflected by the generally limited flight lines and secondary data recorded from this species.

Functionally linked land – designated site context

- 1.5.39 Areas that are functionally linked to European designated sites are considered within Habitats Regulations Assessment when they may be affected by plans and projects. For the purposes of this assessment, land is considered 'linked' to a European site if it serves an important ecological function in maintaining or restoring the population of qualifying species at favourable conservation status (Natural England , 2016).
- 1.5.40 As part of previous wintering bird surveys (**Application Document 6.3.2.3.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.3.2.3.E Appendix 3.2.E Breeding Bird Survey Report 2024**), several fields in proximity to the proposed Minster Converter Station and Substation site have been found to support foraging golden plover as a large proportion of the SPA and Ramsar citation population. It was assessed (**Application Document 6.6 Habitats Regulations Assessment Report**) as likely that this area constitutes functionally linked land associated principally with the Thanet Coast and Sandwich Bay SPA where golden plover is a named qualifying feature.
- 1.5.41 The results of the vantage point survey to date do not alter the previous functionally linked land assessment made in **Application Document 6.6 Habitats Regulations Assessment Report**. Very few records of species associated with the nearby designated sites were recorded as part of the vantage point survey.

References

- Band, W. M. (2007). *Developing field and analytical methods to assess avian collision risk at wind farms*. In: Janss, G, de Lucas, M & Ferrer, M (eds.) *Birds and Wind Farms*. . Quercus, Madrid. 259-275.
- CIEEM . (2019). *Advice Note: On the Lifespan of Ecological Reports and Surveys*. . Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM. (2018). *Guidelines for ecological impact assessment in the United Kingdom and Ireland: Terrestrial, Freshwater and Coastal. Version 1.1 (Updated September 2019)*. . Chartered Institute of Ecology and Environmental Management, Winchester.
- EirGrid. (2016). *Evidence Based Environmental Studies Study 5: Birds. Literature review and evidence based field study on the effects of high voltage transmission lines on birds*.
- Kent Wildlife Trust. (2022). *Local Wildlife Sites in Kent. Criteria for Selection and Delineation. Version 1.7*. Tyland Barn, Kent.
- National Grid. (2016). *Richborough Connection Project Order 5.4.9P Bird Collision Risk/Bird Flight Assessment*.
- Natural England . (2016). *Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – a review of authoritative decisions (NECR207)*.
- Natural England. (2019). *Impact Risk Zones Guidance Summary Sites of Special Scientific Interest Notified for Birds Version 1.1. Natural England Impact Risk Zones Project* .
- NatureScot. (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*.
- Scottish Natural Heritage. (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. Scottish Natural Heritage.
- Scottish Natural Heritage. (2018). *Avoidance Rates for Onshore Wind Farm Collision Risk Model V.2*. Scottish Natural Heritage.
- Scottish Natural Heritage. (2021). *Bats and onshore wind turbines - survey, assessment and mitigation*. Scottish Natural Heritage.
- Stanbury, A. J. (2021). *Birds of Conservation Concern 5. British Birds*, Volume: 114 pp25.

Annex 2.F.1 Detailed Survey Dates, Times and Conditions

Table A.1 Detailed Survey Dates, Times and Conditions

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
Feb 23	21.02.23	A	11:05-13:05	DAY	MW LS	12:20	6.33	06:59 17:20	Start 9 ⁰ C, 8/8 cloud, wind BF 2, dry, vis 3-5 km End 9 ⁰ C C, 8/8 cloud, wind BF 2, dry, vis 3-5 km
		B	13:50-14:50	DAY					Start 9 ⁰ C, 8/8 cloud, wind BF 2, dry, vis 3-5 km End 9 ⁰ C C, 8/8 cloud, wind BF 2, dry, vis 3-5 km
		A	15:20-17:20	DUSK					Start 9 ⁰ C, 8/8 cloud, wind BF 2-3, dry, vis 3-5 km End 7 ⁰ C C, 8/8 cloud, wind BF 1, dry, vis 2-3 km
	28.02.23	B	09:35-11:35	DAY	MW JT	17:40	4.85	06:44 17:33	Start 6 ⁰ C, 8/8 cloud, wind BF 4, dry, vis 3-5 km End 7 ⁰ C C, 8/8 cloud, wind BF 4, dry, vis 3-5 km
		A	12:05-14:05	DAY					Start 7 ⁰ C, 8/8 cloud, wind BF 3, dry, vis 5+km End 7 ⁰ C C, 8/8 cloud, wind BF 4, dry, vis 5+km
		B	15:25-17:25	DUSK					Start 7 ⁰ C, 8/8 cloud, wind BF 1, spots, vis 5+km End 4 ⁰ C C, 8/8 cloud, wind BF 1, drizzle during, vis 5+km
	03.03.23	B	11:40-12:40	DAY	LS NS	08:56	3.9	17:38	Start 4 ⁰ C, 7/8 cloud, wind BF 3-4, light, vis 3-5 km End 7 ⁰ C C, 4/8 cloud, wind BF 3-4, dry, vis 3-5 km
Mar 23	17.03.23	A	06:25-08:25	DAWN	JY MW	07:27	4.85	06:06 18:02	Start 9 ⁰ C, 8/8 cloud, wind BF 0, spots, vis 2-3 km End 10 ⁰ C C, 8/8 cloud, wind BF 2, dry, vis 2-3 km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
	28.03.23	B	10:05-12:05	DAY	JY LS	14:36	4.20	19:50	Start 10°C, 8/8 cloud, wind BF 2, light rain, vis 3-5km End 11°C C, 8/8 cloud, wind BF 2, dry, vis 3-5 km
		A	12:40-14:40	DAY					Start 11°C, 8/8 cloud, wind BF 1, dry, vis 5+km End 11°C C, 8/8 cloud, wind BF 0, dry, vis 5+km
		B	12:14-14:14	DAY					Start 8°C, 8/8 cloud, wind BF 4, dry, vis 2-3 km End 8°C C, 8/8 cloud, wind BF 4, dry, vis 2-3 km
		A	15:20-17:20	DAY					Start 7°C, 8/8 cloud, wind BF 4, rain, vis 2-3 km End 7°C C, 8/8 cloud, wind BF 4, dry, vis 2-3 km
		B	17:50-19:50	DUSK					Start 7°C, 8/8 cloud, wind BF 5, dry, vis 2-3 km End 8°C C, 8/8 cloud, wind BF 4, dry, vis 2-3 km
April 23	14.04.23	B	06:00-08:00	DAWN	LS BG	06:25	4.00	06:02	Start 6°C, 5/8 cloud, wind BF 1-2, dry, vis 1-2 km End 7°C C, 7/8 cloud, wind BF 2-3, dry, vis 1-2 km
		B	08:30-10:30	DAY					Start 7°C, 7/8 cloud, wind BF 3-4, dry, vis 2-3 km End 10°C C, 7/8 cloud, wind BF 3-4, dry, vis 2-3 km
		B	11:00-13:00	DAY					Start 11°C, 7/8 cloud, wind BF 3-4, dry, vis 1-2 km End 11°C C, 7/8 cloud, wind BF 3-4, dry, vis 1-2 km
	28.04.23	A	13:15-15:15	DAY	BG DW	18:49	3.85	20:11	Start 17°C, 8/8 cloud, wind BF 3, dry, vis 5+km End 16°C, 6/8 cloud, wind BF 3, dry, vis 5+km
		B	15:45-17:45	DAY					Start 16°, 7/8 cloud, wind BF 3-4, dry, vis 5+km End 15°C, 3/8 cloud, wind BF 3-5, dry, vis 5+km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
		A	18:15-20:15	DUSK					Start 14 ⁰ C, 1/8 cloud, wind BF 3, dry, vis 5+km End 11 ⁰ C, 5/8 cloud, wind BF 3, dry, vis 5+km
May 23	12.05.23	A	05:35-07:35	DAWN	LS DW	05:21	4.30	05:08	Start 11 ⁰ C, 8/8 cloud, wind BF 3, dry, vis 1-2 km End 11 ⁰ C, 8/8 cloud, wind BF 3, light drizzle, vis 1-2 km
		B	08:05-10:05	DAY					Start 11 ⁰ C, 8/8 cloud, wind BF 3, dry, vis 5+km End 11 ⁰ C, 8/8 cloud, wind BF 3, dry, vis 5+km
		A	10:35-12:35	DAY					Start 11 ⁰ C, 8/8 cloud, wind BF 4, heavy rain, vis 1-2 km End 11 ⁰ C, 8/8 cloud, wind BF 4, light rain, vis 1-2 km
	29.05.23	B	13:45-15:45	DAY	BG WH	19:58	3.9	20:57	Start 12 ⁰ C, 5/8 cloud, wind BF 5-6, dry, vis 5+km End 12 ⁰ C, 5/8 cloud, wind BF 5-6, dry, vis 5+km
		A	16:15-18:15	DAY					Start 14 ⁰ C, 6/8 cloud, wind BF 4-5, dry, vis 1-2 km End 13 ⁰ C, 6/8 cloud, wind BF 5-6, dry, vis 1-2 km
		B	18:45-20:45	DUSK					Start 11 ⁰ C, 4/8 cloud, wind BF 4-5, dry, vis 1-2 km End 10 ⁰ C, 3/8 cloud, wind BF 4-5, dry, vis 1-2 km
June 23	09.06.23	B	04:45-06:45	DAWN	LS SP	4.43	4.4	04:40	Start 12 ⁰ C, 8/8 cloud, wind BF 2-3, dry, vis 1-2 km End 13 ⁰ C, 8/8 cloud, wind BF 2-3, dry, vis 1-2 km
		A	07:15-09:15	DAY					Start 15 ⁰ C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km End 17 ⁰ C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km
		B	09:45-11:45	DAY					Start 17 ⁰ C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km End 18 ⁰ C, 0/8 cloud, wind BF 3, dry, vis 1-2 km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
	28.06.23	A	14:45-16:45	DAY	BG DW	20:57	4.8	21:17	Start 22°C, 8/8 cloud, wind BF 2, dry, vis 5+km End 21°C, 8/8 cloud, wind BF 2, dry, vis 5+km
		B	17:15-19:15	DAY					Start 22°C, 7/8 cloud, wind BF 3, dry, vis 5+km End 22°C, 2/8 cloud, wind BF 3, dry, vis 5+km
		A	19:15-21:15	DUSK					Start 21°C, 3/8 cloud, wind BF 2, dry, vis 5+km End 18°C, 6/8 cloud, wind BF 2, dry, vis 5+km
July 23	11.07.23	A	04:50-06:50	DAWN	LS WH	06:36	4.4	04:51	Start 18°C, 3/8 cloud, wind BF 4, dry, vis 2-5 km End 18°C, 3/8 cloud, wind BF 4, dry, vis 2-5 km
		b	07:20-09:20	DAY					Start 19°C, 3/8 cloud, wind BF 4, dry, vis 2-5 km End 19°C, 8/8 cloud, wind BF 4, dry, vis 2-5 km
		A	09:50-11:50	DAY					Start 19°C, 8/8 cloud, wind BF 4, dry, vis 2-5 km End 20°C, 7/8 cloud, wind BF 4, dry, vis 2-5 km
	25.07.23	B	13:55-15:55	DAY	BG SC	16:48	4.4	20:53	Start 18°C, 7/8 cloud, wind BF 2, dry, vis 5+km End 18°C, 5/8 cloud, wind BF 2-3, light shower, vis 5+km
		A	16:25-18:25	DAY					Start 17°C, 6/8 cloud, wind BF 3, dry, vis 5+km End 17°C, 5/8 cloud, wind BF 3, dry, vis 5+km
		B	18:55-20:55	DUSK					Start 17°C, 7/8 cloud, wind BF 2, dry, vis 5+km End 16°C, 7/8 cloud, wind BF 1, dry, vis 5+km
Aug 23	10.08.23	B	05:32-07:32	DAWN	LS LG	06:58	4.0	05:32	Start 13°C, 0/8 cloud, wind BF 1, dry, vis 1-2 km End 16°C, 0/8 cloud, wind BF 1, dry, vis 1-2 km
		A	08:02-10:02	DAY					Start 16°C, 0/8 cloud, wind BF 2, dry, vis 1-2 km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
Sep 23	25.08.23								End 21°C, 0/8 cloud, wind BF 1, dry, vis 1-2 km
		B	10:32-12:32	DAY					Start 21°C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km End 21°C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km
		A	12:50-14:50	DAY	JY LS	16:52	4.4	19:59	Start 18°C, 7/8 cloud, wind BF 2-3, dry, vis 5+km End 19°C, 6/8 cloud, wind BF 2-3, dry, vis 5+km
		B	15:20-17:20	DAY					Start 21°C, 7/8 cloud, wind BF 2-3, dry, vis 1-2 km End 20°C, 6/8 cloud, wind BF 2-3, dry, vis 1-2 km
		A	17:50-19:50	DUSK					Start 19°C, 3/8 cloud, wind BF 2, dry, vis 5+km End 17°C, 2/8 cloud, wind BF 2, dry, vis 5+km
	07.09.23	B	12:30-14:30	DAY	BG LG	17:30	4.2	19:28	Start 26°C, 1/8 cloud, wind BF 2, dry, vis 2-3 km End 26°C, 1/8 cloud, wind BF 1-2, dry, vis 2-3 km
		A	15:00-17:00	DAY					Start 26°C, 1/8 cloud, wind BF 2, dry, vis 2-3 km End 24°C, 1/8 cloud, wind BF 2, dry, vis 2-3 km
		B	17:30-19:30	DUSK					Start 24°C, 1/8 cloud, wind BF 2, dry, vis 2-3 km End 21°C, 2/8 cloud, wind BF 1, dry, vis 2-3 km
		A	06:45-08:45	DAWN	BG LG	09:35	4.2	06:42	Start 16°C, 7/8 cloud, wind BF 2-3, dry, vis 2-3 km End 18°C, 6/8 cloud, wind BF 2-3, dry, vis 2-3 km
		B	09:15-11:15	DAY					Start 18°C, 6/8 cloud, wind BF 2-3, dry, vis 3-5 km End 21°C, 3/8 cloud, wind BF 3, dry, vis 3-5 km
		A	11:45-13:45	DAY					Start 21°C, 2/8 cloud, wind BF 3-4, dry, vis 3-5 km End 22°C, 2/8 cloud, wind BF 4, dry, vis 3-5 km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
Oct 23	10.10.23	B	07:00-09:00	DAWN	BG LG	09:37	4.0	07:09	Start 15°C, 4/8 cloud, wind BF 0, dry, vis 1+km End 17°C, 4/8 cloud, wind BF 0, dry, vis 1-2km
		A	09:30-11:30	DAY					Start 17°C, 3/8 cloud, wind BF 1-2, dry, vis 5+km End 22°C, 3/8 cloud, wind BF 3, dry, vis 5+km
		B	12:00-14:00	DAY					Start 23°C, 2/8 cloud, wind BF 3, dry, vis 3-5 km End 23°C, 2/8 cloud, wind BF 4-5, dry, vis 3-5 km
	27.10.23	A	10:40-12:40	DAY	JY LG	10:57	5.1	17:38	Start 13°C, 7/8 cloud, wind BF 2, dry, vis 5+km End 13°C, 6/8 cloud, wind BF 2, dry, vis 5+km
		B	13:10-15:10	DAY					Start 14°C, 7/8 cloud, wind BF 2, dry, vis 5+km End 14°C, 6/8 cloud, wind BF 2, dry, vis 5+km
		A	15:40-17:40	DUSK					Start 14°C, 5/8 cloud, wind BF 4, dry, vis 5+km End 11°C, 7/8 cloud, wind BF 3, dry, vis 5+km
Nov 23	15.11.23	A	07:05-09:05	DAWN	LS JB	12:04	4:01	07:11	Start 8°C, 0/8 cloud, wind BF 1-2, dry, vis 1-2 km End 9°C, 0/8 cloud, wind BF 1-2, dry, vis 1-2 km
		B	09:35-11:35	DAY					Start 9°C, 0/8 cloud, wind BF 2-3, dry, vis 1-2 km End 11°C, 1/8 cloud, wind BF 2-3, dry, vis 1-2 km
		A	12:05-14:05	DAY					Start 11°C, 1/8 cloud, wind BF 3-4, dry, vis 1-2 km End 12°C, 3/8 cloud, wind BF 3-4, dry, vis 1-2 km
	28.11.23	B	08:55-10:55	DAY	BG LG	11:42	5.72	15:52	Start 6°C, 1/8 cloud, wind BF 3, dry, vis 5+km End 6°C, 3/8 cloud, wind BF 3, dry, vis 3-5km
		A	11:25-13:25	DAY					Start 7°C, 3/8 cloud, wind BF 3-4, dry, vis 3-5 km End 7°C, 2/8 cloud, wind BF 3-4, dry, vis 3-5 km

Month	Date	VP	VP Duration	VP Type	Surveyors	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
		B	13:55-15:55	DUSK					Start 6°C, 2/8 cloud, wind BF 3-4, dry, vis 3-5 km End 5°C, 4/8 cloud, wind BF 1-2, dry, vis 3-5 km
Dec 23	12.12.23	A	08:45-10:45	DAY	BG LG	10:27	4.8	15:46	Start 12°C, 8/8 cloud, wind BF 3, heavy showers, vis 1-2 km End 12°C, 7/8 cloud, wind BF 3, dry, vis 3-5 km
		B	11:15-13:15	DAY					Start 12°C, 6/8 cloud, wind BF 3, dry, vis 3-5 km End 12°C, 8/8 cloud, wind BF 3, heavy rain, vis 3-5 km
		A	13:55-15:55	DUSK					Start 12°C, 8/8 cloud, wind BF 3, heavy rain, vis 3-5 km End 12°C, 8/8 cloud, wind BF 1, heavy rain, vis 3-5 km
	15.12.23	B	07:45-09:45	DAWN	BG JB	12:39	5.0	07:52	Start 6°C, 8/8 cloud, wind BF 0, dry, vis 3-5 km End 8°C, 8/8 cloud, wind BF 0, dry, vis 3-5 km
		A	10:15-12:15	DAY					Start 9°C, 8/8 cloud, wind BF 1, dry, vis 3-5 km End 11°C, 7/8 cloud, wind BF 0-1, dry, vis 3-5 km
		B	12:45-14:45	DAY					Start 10°C, 8/8 cloud, wind BF 1, dry, vis 3-5 km End 8°C, 7/8 cloud, wind BF 0-1, dry, vis 3-5 km
Jan 24	11.01.24	A	07:50-09:50	DAWN	LS LG	11:17	4.9	07:56	Start 1°C, 2/8 cloud, wind BF 2, dry, vis 3-5 km End 2°C, 3/8 cloud, wind BF 2, dry, vis 3-5 km
		B	10:20-12:20	DAY					Start 3°C, 1/8 cloud, wind BF 3, dry, vis 1-2 km End 4°C, 4/8 cloud, wind BF 3, dry, vis 1-2 km
		A	12:50-14:50	DAY					Start 6°C, 7/8 cloud, wind BF 3, dry, vis 3-5 km

Month	Date	VP	VP Duration	VP Type	Surveyor s	High Tide time	Tide height (m)	Sunrise / sunset	Weather conditions:
									End 6°C, 8/8 cloud, wind BF 3, dry, vis 3-5 km
	16.01.24	B	09:15 – 11:15	DAY	BG JT	15:12	4.95	16:16	Start 2°C, 0/8 cloud, wind BF 0, dry, vis 5+km End 3°C, 0/8 cloud, wind BF 1-2, dry, vis 5+km
		A	11:45 – 13:45	DAY					Start 3°C, 0/8 cloud, wind BF 1-2, dry, vis 5+km End 3°C, 0/8 cloud, wind BF 1-2, dry, vis 5+km
		B	14:15 – 16:16	DUSK					Start 1°C, 1/8 cloud, wind BF 1-2, dry, vis 5+km End 1°C, 1/8 cloud, wind BF 0, dry, vis 5+km

Annex 2.F.2 Assessment of Avian Collision Risk

Introduction

- 1.5.42 This Annex should be read in conjunction with **Application Document 6.2.3.2.G Appendix 3.2.G Overhead Line Mortality Monitoring Survey Report** and is intended to specifically assess the potential for bird mortality as a consequence of collisions with the new proposed section of Overhead Line (OHL) associated with the Kent Onshore Scheme.
- 1.5.43 The Survey Area in the context of the vantage point surveys, existing Richborough to Canterbury 400kV OHL corpse searches and assessment presented here, refers to the area where the proposed OHL in Kent will be located.
- 1.5.44 There is currently no statistical model available which provides a robust assessment of potential avian mortality from collision with OHL, with collisions usually site, season and species specific. It was therefore agreed with Natural England on 30th January 2024, not to undertake statistical modelling. Instead, this assessment of collision risk considers the levels and patterns of flight activity recorded during vantage point surveys in the context of the proposed alignment of the OHL and with regard to potential collision mortality impacts at a designated site or regional population scale. No modelling of predicted annual collisions and mortality has been made. The assessment is supported by targeted corpse searches of mortality events along the existing OHL located to the east and west of the proposed OHL route. Where surveys indicate potential conflicts then mitigation is proposed to address these concerns.
- 1.5.45 The assessment, therefore, considers the following:
- Recorded levels of flight activity, including the proportion of those occurring at a height where collision may be a risk; potential interaction with the proposed OHL route and factors influencing flight behaviour.
 - Annual levels of bird activity; species where there is a potential risk of collision, including consideration of avoidance factors and importance in the context of designated site and regional populations.
 - Mortality events associated with the existing OHL.
 - Measures to reduce the potential for collision risk.

Vantage Point Surveys

- 1.5.46 The vantage point survey was primarily focused on the proposed OHL route with vantage points positioned to view the proposed pylon and line locations north and south of the River Stour Canal, but flights and activity were also recorded beyond this area, primarily within fields beyond the proposed OHL route but also adjacent to the proposed Minster Converter Station and Substation site. (**See Application Document 6.4.3.2.F.1 Kent Vantage Point Survey Locations**).
- 1.5.47 The purpose of flight activity (vantage point) surveys is to record flight lines of bird species potentially sensitive to collision with infrastructure, to inform an assessment of collision risk with infrastructure, in this case the OHL. The survey methodology follows

that outlined within NatureScot guidance (NatureScot, 2017), with the direction of movement, height and activity of all target and secondary species recorded, in addition to details recorded on number, age, sex and behaviour of individual birds (where possible).

Target Species

- 1.5.48 The selection of target species was primarily based upon the qualifying species of the nearby internationally and nationally designated sites, which are:
- Thanet Coast Special Protection Area (SPA) and Ramsar – which overlap with the intertidal areas within the wider Kent Onshore scheme;
 - Stodmarsh SPA and Ramar – located approximately 8 km west; and
 - Sandwich Bay and Hacklinge Marshes Site of Special Scientific Interest (SSSI).
- 1.5.49 The designated sites' citations and qualifying species are detailed in the wintering (**Application Document 6.2.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2022-2023** and **Application Document 6.2.3.2.C Appendix 3.2.C Wintering Bird Survey Report 2023-2024**) and breeding bird (**Application Document 6.2.3.2.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.2.3.2.E Appendix 3.2.E Breeding Bird Survey Report 2024**) reports. A review of these designated sites resulted in a priority target species list for the vantage point survey, as follows:
- Golden Plover, Turnstone, Little Tern - qualifying species of the Thanet Coast SPA and Ramsar.
 - Ringed Plover, Greenshank, Red-throated Diver, Sanderling, Great Crested Grebe - 'note-worthy fauna' of the Thanet Coast SPA and Ramsar.
 - Bittern, Hen Harrier, Shoveler, Gadwall - qualifying species of the Stodmarsh SPA.
 - Species associated with nearby Sandwich Bay and Hacklinge Marshes SSSI, notably Dunlin, Oystercatcher, Curlew, Redshank, Grey Plover, Sanderling, Ringed Plover, Mallard, Shelduck, Brent Goose and Little Tern.
- 1.5.50 In addition to the species set out above the following were also selected as target species, where they are not already covered by the above criteria:
- Raptor and wader species listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and
 - All diver and grebe species, ducks, geese and swans, cormorants and herons.

Vantage Point Locations

- 1.5.51 Two vantage point (VP) locations were utilised, to allow the full extent of the proposed OHL to be covered, as shown in **Application Document 6.4.3.2.F.1 Kent Vantage Point Survey Locations**. These were referenced as VPA (western VP) and VPB (eastern VP).
- 1.5.52 These were positioned based on the land access available at the start of the survey (February 2023), and were located along the River Stour Canal to encompass the entire proposed OHL area within two 1 km, 180 degree viewsheds (referenced in this report as the 'primary viewshed'). These VPs were positioned within the access and topographical limitations of needing to be located on a Public Right of Way (PRoW).

- 1.5.53 Note, however, that birds were recorded whenever they were sighted beyond the 1km viewshed, with a 'secondary viewshed' of 2 km used as a reference as to when birds were leaving the Survey Area and cessation of flightline tracking could be considered.

Survey Programme, Duration and Timings

- 1.5.54 Six hours of survey visits were undertaken from each VP per month from February 2023 to January 2024, with each vantage point watch period comprising a maximum of two continuous hours with at least a 30-minute break between watches to assist surveyor concentration. This resulted in 72 hours of survey effort at each VP (144 hours total survey effort).
- 1.5.55 Survey visits were timed to coincide with the rising and high tide periods for the Thanet Coast and Sandwich Bay SPA /Ramsar, to record use of inland areas of birds from the nearby intertidal areas. Each VP survey visit included survey periods within the window two hours either side of high tide. Survey visits were also planned to encompass dusk and dawn periods, with each month's visits planned to encompass at least one dawn and one dusk period whenever possible (when tide timings and daylight allowed).

Height Bands

- 1.5.56 The following height bands were utilised during the VP survey when estimating the height of birds in flight:
- Band A – Below power line height (0 - <15 m);
 - Band B – Corresponding to broad power line height (15 m – 50 m); and
 - Band C - Above power line height' (>50 m).
- 1.5.57 The height bands were based upon potential OHL specifications provided by National Grid at the time of survey and also from review of criteria applied to the previous Richborough to Canterbury 400kV OHL assessment (National Grid, 2016) which is comparable and would connect to the proposed OHL for the Kent Onshore Scheme. While the use of pylons with heights between 40 m and 50 m were being considered at the time the survey started in 2023, the practical difficulty of judging a narrow 10m height band (i.e., 40-50 m) and likely limited difference in resulting collision risk, resulted in the use of a wider precautionary 15-50 m band which encompassed the potential height range of pylons being considered at the time.
- 1.5.58 As per NatureScot guidance, a bird's flight height is estimated at the time of detection and then at 15 second intervals thereafter, in tandem with recording of flight paths.

Corpse Searches

- 1.5.59 For full details of the corpse searches, including data analysis methods, please refer to **Application Document 6.2.3.2.G Appendix 3.2.G Overhead Line Mortality Monitoring Survey Report**.
- 1.5.60 An adapted version of the Scottish Natural Heritage (SNH) 2009 bird corpse search methodology (incorporating methods for bats (Scottish Natural Heritage, 2021) and the most recent SNH guidance on bird assessment for wind turbine mortality monitoring (Scottish Natural Heritage, 2017) was conducted across areas located in direct proximity to existing OHL within the Survey Area, south of the River Stour Canal.

- 1.5.61 This broadly entailed a walked transect near the existing OHL to record bird corpses that could be attributable to OHL collisions.
- 1.5.62 A control transect was also walked in fields located away from the existing OHL, approximately 500 m to the south. This was to provide data to account for any comparable background rates of corpse occurrence.
- 1.5.63 A three month survey period was conducted to target the winter period in January / February (the period when highest bird concentrations may occur in conjunction with periods of poor visibility and weather which may increase the risk of OHL collisions), then continuing into March / April for the spring migration season (where large numbers of migrant species could also conduct flights through the existing OHL, again increasing the risk of OHL collision).
- 1.5.64 Weekly or fortnightly searches (depending on access restrictions) were undertaken by suitably experienced and trained surveyors.
- 1.5.65 The survey visits commenced shortly after sunrise, to minimise opportunism for diurnal scavengers to remove corpses and maximise the chance of finding corpses as a result of nocturnal activity. The surveyors walked each transect within the pre-defined transect visually searching a minimum 5 m on each side of the transect centreline (though any visible signs between the two pairs of existing OHL or within 25 m were also investigated). An approximate one-hour search time is expected per transect. When a dead bird was encountered, the surveyor recorded the location of the corpse using a GPS device, to an accuracy of +/- 5 m.
- 1.5.66 Consideration was also given to surveyor efficiency and scavenger removal rates.

Assessment Parameters and Assumptions

- 1.5.67 Whilst there is currently no statistical model available which provides a robust assessment of potential mortality from collision with OHL, it is important to understand the numbers of individuals transiting through a 'risk height range' (broadly the electric cables of the OHL) and therefore potentially at risk from collision. Consideration is given to the likely rate of collision including criteria specific to individual species such as biometric data (e.g., average size, flight speed, flight style). As with analysis of collision risk for onshore wind farms, the data from the vantage point recording period (survey effort) has been extrapolated to provide an estimate of bird activity during a year, which in turn is used to generate an expected number of individuals transiting through the risk height range annually.
- 1.5.68 The 'risk height range' assessed within this report is the range of heights at which birds are at risk from collision with OHL suspended power lines. A number of broad criteria and assumptions informed by the OHL specifications have been applied and as such, provide an exaggerated worst-case scenario:
- Risk of collision zone encompasses the zone between the vertical upper and lower power line and the horizontal space between the two sets of parallel pylons. The risk height range is likely to be overly precautionary as it includes areas beneath the lower cables when accounting for cable 'sag' and empty spaces between sets of power lines. This results in a much larger window for collision than actually exists.
 - Risk of collision from the pylons themselves is excluded, as it is assumed that birds will visually detect and avoid these large structures.

- The distribution of flights is unaffected by the presence of pylons – so the density of bird flights is uniform across each span.
- The risk to each bird is independent of other birds – i.e., no account is taken of avoidance behaviour or the influence of leading birds altering the flight paths of an entire flock in a manner that increases or decreases risk of collision.

- 1.5.69 Broadly the risk height range' was assigned as 15 m-50 m based upon the assumed OHL specifications at the time.
- 1.5.70 Unlike determining collision risk for wind farms where the generally accepted assumption is that bird flight is random and as such any recorded flight could interact with a turbine, the short length of proposed OHL is a spur from an existing OHL, with the new OHL route crossing the River Stour. As such, it is this topographical feature which is likely to have the greatest influence on bird flights and this is supported by field observations. Therefore, a distinction in the dataset has been made between bird flights recorded as directly interacting with the proposed new OHL route, i.e., where birds are making flights through the route and those which don't interact with the route. A precautionary 200m buffer has also been applied to the proposed OHL route, to allow for any inaccuracies in the observer mapping of flights. As such, any flights which transit through the buffer have also been considered as flights which have the potential to interact with the proposed OHL and therefore, be at risk of collision.
- 1.5.71 It is important to note that in this assessment no modeling of the likely actual annual collisions has been undertaken. As such, no quantitative assessment of mortality can be provided and only the number of individuals potentially at risk is provided.

Analysis of Bird Survey Data

- 1.5.72 A total of 19 target species were recorded during vantage point surveys between February 2023 and January 2024.
- 1.5.73 The target species recorded, along with the number of flights recorded and total number of individuals involved is presented in Table A.2. From the total recorded flights, the proportion of the recorded flights occurring at risk height, i.e., between 15m – 50m (at any point of the recorded flight), from across the survey area, irrespective of direction and interaction with proposed OHL route is presented in Table A.2.

Table A.2 Species recorded, total number of flights and total number of individuals

Species	Number of Flights	Number of Individuals	Proportion (%) of recorded flights at risk height within the survey area
Cormorant	175	2,694	47
Curlew	3	5	100
Dunlin	1	5	100
Little Egret	14	14	64

Species	Number of Flights	Number of Individuals	Proportion (%) of recorded flights at risk height within the survey area
Gadwall	11	73	55
Greylag Goose	7	306	71
Grey Heron	47	48	49
Hobby	10	10	90
Lapwing	11	637	18
Mallard	120	354	59
Marsh Harrier	107	114	39
Mute Swan	21	90	24
Mediterranean Gull	2	13	0
Peregrine	14	15	93
Short-eared Owl	2	2	50
Shelduck	10	15	50
Teal	7	88	29
White-fronted Goose	1	43	0
Whimbrel	1	2	100

Factors influencing flight behaviour and activity

1.5.74 A range of factors can influence flight behaviour and therefore, the risk of bird collision. This includes landscape and topography, especially where river corridors and valleys which may funnel bird movements, as well higher value habitats such as wetlands which may attract high concentrations of individuals, are present. Therefore, to contextualise how birds were observed using the survey area and the types of flights that were made, with regard to potential risk of collision, a brief overview of the most frequently recorded target species, is provided in Table A.3.

Table A.3 Overview of target species usage of the survey area

Species	Usage of the survey area
Cormorant	One of the most frequently recorded species and while the largest flocks were recorded during the winter months (February, March and December 2023 and January 2024), flights of this species were recorded throughout the year as smaller groups and often within the at-risk height band. The largest single flock was of c. 450 birds (above risk

Species	Usage of the survey area
	<p>height) during December 2023, but several watches recorded several hundred birds on a single visit (as an aggregate of multiple flight lines). Many flights appeared to comprise local movements, following the River Stour Canal and existing OHL possibly as navigational aids. Anecdotal evidence from local bird surveyors suggests that cormorant movements are linked to a large roost at Stodmarsh.</p>
Marsh Harrier	Frequently recorded, usually as individual birds with some flights of long duration, including long periods within the at-risk height band, such as during display flights. Flights were recorded throughout the year, in almost every month. It was noted that marsh harrier flights included extended foraging and display adjacent to the existing OHL.
Mallard	Frequently recorded, generally as flights of individuals or small groups. While many flights were at low level and broadly following the River Stour Canal, many did occur within the at-risk height band.
Lapwing	<p>Several flights of birds at risk height (flocks of 31, 7 and 16) were recorded in December and January. Otherwise, occasional flocks of sometimes large numbers (including 26 birds during September, flocks of 120, 53 and 13 birds during November and 200, 100 and 70 in December) were recorded, but all as flights above the at-risk height band.</p> <p>A single recording of c. 90 birds during January 2024 represents the only recording of this species at ground level within the viewshed or immediate area.</p>
Greylag Goose	Large flocks of 133 and 95 birds were recorded in September and December, passing through the viewshed within the at-risk height band. Another large flock of 64 birds was recorded above risk height in November. The species otherwise was generally limited to being recorded beyond the viewshed or as flights of single birds.
Peregrine	The small number of flights attributed to this species include flights in the risk zone from birds perched on the existing OHL, with flights originating or ending on pylons. Relatively few flights were recorded. While appearing to use the pylons irregularly in summer, the species was consistently recorded using the pylons within secondary data during December and January. This indicates infrequent or seasonal use of the pylons as hunting perches.
Little Egret	Recorded occasionally as individual birds and more frequently during the summer months, but did include flights within the at-risk height band, between waterbodies or leaving the viewshed.
Mute Swan	A flight of ten birds was recorded during November at risk height but at distance from the proposed OHL. Generally, flights of this species were limited and comprised small numbers of birds flying below risk height. Flights originated from small groups (less than ten birds) settled in fields in proximity to the River Stour.

Species	Usage of the survey area
Other Species	A number of other species including Dunlin, Curlew, Whimbrel, Shelduck, Hobby and Short-eared Owl have single or few flights attributed to them and while including flights within the at-risk height band, the small number of birds or short flight times recorded mean that these species may be unlikely to generate collisions within an assessment. Flightlines of a few species (i.e., White-fronted Goose) were recorded above the at-risk height and so were not recorded at risk of collision.

Potential interactions with proposed OHL route

- 1.5.75 As set out in Table A.3, observations of flight behaviour indicate that for many of the species recorded, flight activity would appear to be closely aligned with direct flights along the River Stour corridor. These individuals are therefore likely to be transiting through the air space of the proposed OHL route, i.e., a zone in which there is the risk of collision. To explore the impact of this further, Table A.4 presents the flights at risk height and the proportion of these which are directly expected to potentially interact with the OHL route.

Table A.4 The number of birds recorded flying at risk height and the proportion of these with the potential to interact with the proposed OHL route

Species	Number of Flights	Number of Individuals	Proportion (%) of recorded flights at risk height within the survey area
Cormorant	83	576	89
Curlew	3	5	100
Dunlin	1	5	100
Little Egret	9	9	100
Gadwall	6	64	83
Greylag Goose	5	238	100
Grey Heron	23	24	96
Hobby	9	9	89
Lapwing	2	23	50
Mallard	71	237	92
Marsh Harrier	42	46	71

Species	Number of Flights	Number of Individuals	Proportion (%) of recorded flights at risk height within the survey area
Mute Swan	5	21	60
Mediterranean Gull	0	0	N/A
Peregrine	13	14	85
Short-eared Owl	1	1	100
Shelduck	5	6	100
Teal	2	45	100
White-fronted Goose	0	0	N/A
Whimbrel	1	2	100

Annual flight activity and potential interactions with proposed OHL route

- 1.5.76 The VP watches only represent a sample of flight activity. To understand the annual occurrence of birds making flights through the at risk zone and therefore the number of individuals potentially exposed annually to risk of collision, the number of flights recorded during vantage point surveys between February 2023 and January 2024 as at risk height and with the potential to interact with the proposed OHL route (see Table A.2) has been extrapolated to determine the number of individuals potentially at risk annually. To establish this, each target species was assessed against the status and occurrence months likely for each species in Kent as well as the patterns of occurrence recorded during the vantage point surveys.
- 1.5.77 It should be noted that this process has not accounted for fluctuations between months, i.e., no weighting has been applied to months with higher observed occurrence, but rather it has assumed the potential for equal occurrence across the period when present. For some species, such as Cormorant, where the species is considered as resident but showed markedly higher numbers of observations and individuals during the winter months, both a breeding and non-breeding figure is provided. The following text categorises each species and the extent to which the flight activity data has been scaled up.
- Resident species (Gadwall, Greylag Goose, Grey Heron, Mallard, Mute Swan, Peregrine, Raven, Shelduck): In the course of a year there is an average of 12.3 hours per day of time between sunrise and sunset. The sample of flight activity has been scaled up by the factor of $12.3 \times 365 / 72$ to give a measure of predicted flight activity per year.
 - Resident species with noticeable variation in recorded occurrence during breeding and non-breeding seasons (Cormorant, Little Egret, Marsh Harrier): In the course of the breeding season (April – September (six months)) there is an average of 14.8 hours per day of time between sunrise and sunset and in the course of the non-breeding season (October – March (six months)) there is an average of 9.7 hours

per day of time between sunrise and sunset. The sample of flight activity has been scaled up by the factor of $14.8 \times 183 / 36$ to give a measure of predicted flight activity during the breeding season and by the factor of $9.7 \times 182 / 36$ to give a measure of predicted flight activity during the non-breeding season.

- **Breeding Summer Migrant Species (Hobby, Mediterranean Gull):** In the course of the summer and passage periods when summer migrants are present (April – October (seven months)) there is an average of 14.2 hours per day of time between sunrise and sunset. The sample of flight activity has been scaled up by the factor of $14.2 \times 214 / 42$ to give a measure of predicted flight activity per season.
- **Non-breeding Species (Curlew, Dunlin, Lapwing, Short-eared Owl, Snipe, Teal, White-fronted Goose):** In the course of the winter and passage periods when winter migrants are present (September – April (eight months)) there is an average of 10.4 hours per day of time between sunrise and sunset. The sample of flight activity has been scaled up by the factor of $10.6 \times 238 / 48$ to give a measure of predicted flight activity per season.
- **Passage Migrant Species (Whimbrel):** In the course of the spring and autumn passage periods when passage migrants are present (August – October and April – June (six months)) there is an average of 13.9 hours per day of time between sunrise and sunset. The sample of flight activity has been scaled up by the factor of $13.9 \times 183 / 36$ to give a measure of predicted flight activity per season.

1.5.78 The use of the full period between sunrise and sunset is a precautionary approach because no allowance is made for periods of bad weather, particularly heavy rain, when bird activity is likely to be reduced.

1.5.79 Table A.5 sets out the estimated numbers of individuals potentially transiting through the proposed OHL route at risk height annually. These figures solely provide the number of individuals potentially at risk, with no accounting for avoidance or other factors which may result in a collision not occurring. Equally, in many cases the transits made could be attributed to the same individuals and no differentiation is made in the extrapolation to account for this.

Table A.5 Number of individuals making transits at risk height annually through the proposed OHL route, extrapolated from VP survey observations

Species	Number of flights recorded during surveys at risk height and with the potential to interact with the OHL route	Number of individuals recorded during surveys at risk height and with the potential to interact with the OHL route	Number of individuals transiting through the area annually
Cormorant	74	562	Breeding – 1,429 Non-breeding – 26,628
Curlew	3	5	263

Species	Number of flights recorded during surveys at risk height and with the potential to interact with the OHL route	Number of individuals recorded during surveys at risk height and with the potential to interact with the OHL route	Number of individuals transiting through the area annually
Dunlin	1	5	263
Little Egret	9	9	Breeding – 677 Non-breeding – 0
Gadwall	5	40	2,494
Greylag Goose	5	238	14,840
Grey Heron	22	23	1,434
Hobby	8	8	579
Lapwing	1	7	368
Mallard	65	214	13,344
Marsh Harrier	30	31	368
Mute Swan	3	9	561
Mediterranean Gull	0	0	0
Peregrine	11	12	748
Short-eared Owl	1	1	53
Shelduck	5	6	374
Teal	2	45	2,365
White-fronted Goose	0	0	0
Whimbrel	1	2	141

Avoidance and other factors reducing the likelihood of collision

- 1.5.80 Table A.5 presents an extrapolated number of individuals potentially transiting through the proposed OHL route at risk height annually. As there is no statistical model available to calculate how many of these individuals will actually collide with the OHL, no attempt at quantifying that is provided here. Therefore, these figures are highly precautionary.
- 1.5.81 In addition to calculating actual collisions, consideration has to be given to avoidance of the OHL in generating these annual rates of activity. In many cases avoidance behaviour is likely to occur, i.e., birds will see the OHL wires and take avoiding action to prevent collision or the profile of the flight taken by a particular species greatly reduces the likelihood of collision, e.g., meandering (quartering) flights by species such as Marsh

Harrier are far less likely to result in interaction with wires than faster direct flights made by large waterbird species. Indeed, many of the individuals involved in these flights are already having to navigate the existing 400kV OHL further east along the River Stour, which connects into the Richborough substation and to the west where it crosses again over the River Stour. Similarly, it may be the case that birds are displaced by the presence of new structures in the environment and avoid the site.

- 1.5.82 The vulnerability of bird species to collision is a combination of the exposure to collision risk, e.g., time spent flying at vulnerable heights and location of key sites in relation to the OHL, and the susceptibility of the species to collision, e.g., behavioural and morphological features and population abundance and density. Species with high manoeuvrability, low wing loading, good forward vision and generally don't fly in large flocks are at lower risk to collision. Therefore, larger waterbirds, e.g., swans and geese and larger raptors, e.g., eagles and vultures, are more likely to be at increased risk of collision. This risk can be increased further if OHL cross migration routes or flightpaths between roosting, foraging and breeding sites.
- 1.5.83 The corpse searches recorded nine fatalities attributed to collision with the existing OHL network within the Survey Area. This consisted of four Mute Swan, two Mallard, two Herring Gull and one unidentified large water bird (likely swan). The estimated mortality for the entire OHL route for a six-month winter and passage route is 34.375 birds (see **Application Document 6.2.3.2.G Appendix 3.2.G OHL Mortality Monitoring Survey Report**).
- 1.5.84 As there are no formally agreed avoidance rates for use of power lines a range of avoidance rates have been provided, starting with avoidance rates developed for estimating avoidance of wind turbines, e.g., (Scottish Natural Heritage, 2018). For the Richborough Connection Project a range of avoidance rates were considered, with a worst-case 98% being applied for swans and geese, although this was acknowledged in the assessment as being overly precautionary and therefore, too low (SNH 2018 consider a 99.5% avoidance rate appropriate). It is considered, based on the observations of birds in the field and presence of existing OHL in the immediate landscape that an avoidance rate of 99.9% may be more realistic for the majority of species. Given, these collision rates are derived for windfarms where there is a greater risk of collision for many species from the moving turbine blades in a 'swept area' which creates a relatively large area of airspace where collision could occur, as opposed to the static lines which occupy a very narrow area of airspace. This is supported by the corpse search results, which recorded a limited number of species involved in mortality events arising from collision with the existing network of OHL. Mute Swan appears to be the species which may be more susceptible to collision in the Survey Area and this reflects observations at other sites around the United Kingdom, where swan species have been found to be prone to collision with OHL where they are located in or close to wetlands/waterbodies. However, for completeness and taking a precautionary approach, a range of avoidance rates are considered.

- 1.5.85 Table A.6 sets out the potential number of individuals transiting through the proposed OHL route with a number of different avoidance rate scenarios. Designated sites and regional population figures are also provided. Note, that no modelling of actual collisions has been attempted.

Table A.6 Number of individuals potentially transiting through the proposed OHL route, different avoidance rate scenarios and designated site and regional populations

Species	Number of individual s potentially transiting through the proposed OHL route	98% Avoidanc e rate	99% avoidanc e rate	99.5% avoidanc e rate	99.9% avoidanc e rate ¹	Thanet Coast SPA/Rams ar site qualifying species	Stodmarsh SPA/Rams ar site qualifying species ²	Sandwic h Bay and Hackling e Marshes SSSI ³	Kent Breeding Populations ⁴	National non-breeding populations ⁵
Cormorant	Breeding – 1,429	28.58 532.56	14.29 266.28	7.15 133.14	1.43 26.63	846 ⁶	2,300 ⁷	-	200-250 prs	62,000

¹ Current populations for waterbirds are taken from WeBS data for Pegwell Bay. These totals don't provide complete coverage of the SPA/Ramsar, but represent the key qualifying species for the designated sites relevant to the scheme and survey area.

² Current populations for waterbirds are taken from WeBS data for Pegwell Bay. These totals don't provide complete coverage of the SSSI, but represent the key qualifying species for the designated site relevant to the scheme and survey area.

³ Current populations for waterbirds are taken from WeBS data for Pegwell Bay. These totals don't provide complete coverage of the SSSI, but represent the key qualifying species for the designated site relevant to the scheme and survey area.

⁴ As presented in Kent Ornithological Society (2015) Kent Breeding Bird Atlas 2008-13.

⁵ Population estimates for non-breeding birds in Kent are not available so national (Great Britain) non-breeding populations as provided in Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. British Birds 113: 69-104, are presented.

⁶ Although not a qualifying species the current population occurring in Pegwell Bay exceeds the 1% threshold for national importance based on current 5 year peak mean 2018/19-2022/23 given by WeBS.

⁷ Although not a qualifying species the current population occurring at Stodmarsh exceeds the 1% threshold for international importance.

Species	Number of individual s potentially transiting through the proposed OHL route	98% Avoidanc e rate	99% avoidanc e rate	99.5% avoidanc e rate	99.9% avoidanc e rate ¹	Thanet Coast SPA/Rams ar site qualifying species	Stodmarsh SPA/Rams ar site qualifying species ²	Sandwic h Bay and Hackling e Marshes SSSI ³	Kent Breeding Populations ⁴	National non-breeding populations ⁵
	Non-breeding – 26,628									
Curlew	263	5.26	2.63	1.32	0.26	-	-	450	-	120,000
Dunlin	263	5.26	2.63	1.32	0.26	-	-	848	-	345,000
Little Egret	Breeding – 677 Non-breeding – 0	13.54 N/A	6.77	3.39	0.68	-	-	-	100-150 prs	11,500
Gadwall	2,494	49.88	24.94	12.47	2.49	-	102	-	150-200 prs	31,000
Greylag Goose	14,840	296.8	148.4	74.2	14.84	-	-	-	700-1,000 prs	230,000
Grey Heron	1,434	28.68	14.34	7.17	1.43	-	-	-	250-320 prs	45,000
Hobby	579	11.58	5.79	2.90	0.58	-	-	-	250-350 prs	-
Lapwing	368	7.36	3.68	1.84	0.37	-	378	-	980-1,200 prs	620,000

Species	Number of individual s potentially transiting through the proposed OHL route	98% Avoidance rate	99% avoidance rate	99.5% avoidance rate	99.9% avoidance rate ¹	Thanet Coast SPA/Ramsar site qualifying species	Stodmarsh SPA/Ramsar site qualifying species ²	Sandwich Bay and Hackling Marshes SSSI ³	Kent Breeding Populations ⁴	National non-breeding populations ⁵
Mallard	13,344	266.88	133.44	66.72	13.34	-	290	77	3,000-5,000 prs	665,000
Marsh Harrier	Breeding – 1,129 Non-breeding – 785	22.58 15.7	11.29 7.85	5.65 3.93	1.13 0.79	-	-	-	80-100 breeding females	-
Mute Swan	561	11.22	5.61	2.81	0.56	-	-	-	300-400 prs	50,500
Mediterranean Gull	0	N/A	N/A	N/A	N/A	142 ⁸	-	-	300-500 prs	4,000
Peregrine	748	14.96	7.48	3.74	0.75	-	-	-	30-40 prs	-
Short-eared Owl	53	1.06	0.53	0.27	0.05	-	-	-	0-5 prs	-
Shelduck	374	7.48	3.74	1.87	0.37	-	-	145	300-450 prs	47,000
Teal	2,365	47.3	23.65	11.83	2.37	-	-	-	0-10 prs	430,000

⁸ Although not a qualifying species the current population occurring in Pegwell Bay exceeds the 1% threshold for national importance based on current 5 year peak mean 2018/19-2022/23 given by WeBS.

Species	Number of individual s potentially transiting through the proposed OHL route	98% Avoidanc e rate	99% avoidanc e rate	99.5% avoidanc e rate	99.9% avoidanc e rate ¹	Thanet Coast SPA/Rams ar site qualifying species	Stodmarsh SPA/Rams ar site qualifying species ²	Sandwic h Bay and Hackling e Marshes SSSI ³	Kent Breeding Populations ⁴	National non-breeding populations ⁵
White-fronted Goose	0	N/A	N/A	N/A	N/A	-	2	-		13,500
Whimbrel	141	2.82	1.41	0.71	0.14	-	-	-		38

Assessment of Collision Risk

1.5.86

For the majority of the species listed in Table A.6, when applying an avoidance rate of 99.9%, which is supported by the results of corpse searches along the existing OHL network, this results in fewer than one individual potentially colliding with the proposed OHL annually. Even for species where the extrapolated number of transits through the at risk zone generates a potential collision event that exceeds one individual per year, such as Cormorant, Greylag Goose and Mallard, given the caveats in generating the extrapolated annual transits and absence of modelling for predicted collisions, these annual figures are low in comparison to regional populations. Obviously, if more precautionary collision rates are considered the potential number of individuals at risk increases. However, it is important to note that for the following reasons, even using a more precautionary avoidance rate factor, this do not mean that each of these individuals will actually make direct contact with the wire and the actual number of collisions resulting in mortality is likely to be far lower:

- No modelling of actual collisions has been undertaken, therefore, this assessment has been made on the assumption that all the airspace within the risk height zone will result in a potential collision. However, when consideration is given to the substantial spacing between the wires (at least 8 m) (wider than the wing span of the larger species, e.g., Mute Swan (up to 2.4 m) and Cormorant (up to 1.6 m)), the allowance made for sag in the central portion of the risk height zone and the precautionary use of a 15 m to 50 m at risk height recording band, of the numbers of individuals transiting through the at risk zone as presented in Table A.6, the proportion which will actually make contact with a wire, is far lower than that presented in Table A.6. Therefore, it is reasonable to assume that for all species, the annual risk of actual collision (and subsequent mortality) will be far fewer than annual figures presented against all avoidance rates.
- The avoidance rates presented in Table A.6 are based on collision with onshore wind farms. The risk profile associated with OHL differs from that of turbine blades. There are no moving parts (resulting in a relatively large 'swept area' or potential collision zone) associated with OHL and so the window of risk for collision is a lot narrower. Again, this factor is likely to reduce the actual number of potential collisions resulting in mortality presented in Table A.6 further. As a result of this the range of species potentially at elevated risk from collision is reduced, with only species with poor manoeuvrability, high wing loading and poor forward vision likely to be susceptible. This significantly reduces the risk for species such as Marsh Harrier and Peregrine, which are both highly manoeuvrable and/or make meandering flights.
- Field based observations from surveys on site also suggest that for many species, e.g., Marsh Harrier and Peregrine, that regularly forage within the Survey Area and in the vicinity of the existing OHL, there is a level of habituation to existing structures, with Peregrine regularly recorded on the pylon towers and making flights in and around the existing lines and Marsh Harrier regularly making flights through fields containing both tower and overhead wires. In addition, it is also worth noting that birds making flights through the proposed OHL route already have to interact with and amend their flight behaviour to avoid existing OHL both to the south of the River Stour corridor and east along the River Stour where the existing 400kV OHL connects into the Richborough substation and to west along the River Stour. Indeed, for species such as Cormorant, observations of flights regularly recorded the species passing over the existing OHL.

- Recorded mortality from corpse searches along the existing OHL network in the Survey Area was only noted for a limited number of species. Notably, many of the species recorded as making a large number of flights through the risk zone, where not among those species recorded as collision events, e.g., Cormorant, Greylag Goose and other duck species, beyond Mallard. There were also no corpses found of raptors such as Marsh Harrier and Peregrine, which supports the conclusion that collisions are rare for these species.

1.5.87 Irrespective of the highly precautionary figures set out in Table A.6, for the reasons set out above, collision is likely to be a rare event which does not pose a significant risk to populations either associated with designated sites or important at a regional level (i.e., in Kent).

Additional Mitigation Options

1.5.88 Irrespective of the above conclusions and notwithstanding the risk of collision being negligible, where the proposed OHL route crosses the River Stour, the deployment of bird deflectors will provide an extra layer of visibility, particularly in poor weather conditions. This commitment is secured through **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**.

1.5.89 Fitting power lines with devices to make them more visible to flying birds is widely used to mitigate bird collisions. A wide range of wire marking devices has been used, generally falling into three basic designs: spiral devices which wrap around the wire (and may act to reduce line vibration as well as making power lines more visible to birds), hanging devices which are suspended from the wire with fixed or swinging plates or flappers; and spheres (also known as aviation balls).

1.5.90 It is considered that in the context of the Proposed Project and species involved, that hanging deflectors, especially those with fluorescent markings offer the best solution, to making the lines visible in adverse weather or low light conditions.

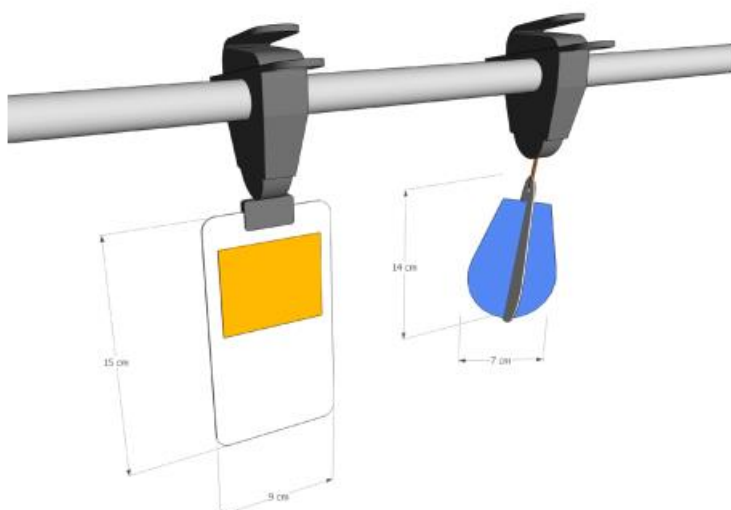


Plate A.1 Example of hanging bird deflectors (EirGrid, 2016)

Annex 2.F.3 Detailed Survey Data

Table A.7 Semi-detailed summary of flightline database (excluding individual flight interval data)

Date	VP Location	VP Duration	Dawn/Day/Dusk	Surveyor1	Surveyor2	Flightline Ref.	24hr Time	Species	No. of birds	Risk Height at any interval in flight?(15-50)		Total Flight Time (mins)
21.02.23	A	11:05-13:05	DAY	MW	LS	A	NR	MR	1	No		01:27
21.02.23	A	11:05-13:05	DAY	MW	LS	B	NR	CA	6	No		02:16
21.02.23	A	11:05-13:05	DAY	MW	LS	C	NR	CA	1	No		01:50
21.02.23	A	11:05-13:05	DAY	MW	LS	D	NR	MR	1	Yes		00:45
21.02.23	A	11:05-13:05	DAY	MW	LS	E	NR	MR	1	No		01:10
21.02.23	A	11:05-13:05	DAY	MW	LS	F	NR	MR	1	No		00:50
21.02.23	A	11:05-13:05	DAY	MW	LS	G	NR	MR	1	Yes		03:33
21.02.23	A	11:05-13:05	DAY	MW	LS	H	NR	MR	1	Yes		02:00
21.02.23	A	11:05-13:05	DAY	MW	LS	I	NR	MR	1	Yes		06:45
21.02.23	A	11:05-13:05	DAY	MW	LS	J	NR	CA	24	Yes		04:30
21.02.23	A	11:05-13:05	DAY	MW	LS	K	NR	MR	1	Yes		09:25
21.02.23	A	11:05-13:05	DAY	MW	LS	L	NR	MR	1	No		08:45
21.02.23	A	11:05-13:05	DAY	MW	LS	M	NR	MR	1	Yes		06:15
21.02.23	B	13:50-14:50	DAY	MW	LS	A	NR	CA	3	Yes		01:43
21.02.23	B	13:50-14:50	DAY	MW	LS	B	NR	CA	1	No		01:46
21.02.23	B	13:50-14:50	DAY	MW	LS	C	NR	CA	1	No		01:30
21.02.23	B	13:50-14:50	DAY	MW	LS	D	NR	CA	4	No		02:47
21.02.23	A	15:20-17:20	DUSK	MW	LS	A	NR	CA	3	Yes		02:20
21.02.23	A	15:20-17:20	DUSK	MW	LS	B	NR	CA	4	No		01:10
21.02.23	A	15:20-17:20	DUSK	MW	LS	C	NR	CA	21	No		02:28
21.02.23	A	15:20-17:20	DUSK	MW	LS	D	NR	CA	14	Yes		03:54
21.02.23	A	15:20-17:20	DUSK	MW	LS	E	NR	CA	17	No		02:36
21.02.23	A	15:20-17:20	DUSK	MW	LS	F	NR	MA	2	No		00:32
21.02.23	A	15:20-17:20	DUSK	MW	LS	G	NR	CA	15	Yes		02:56
21.02.23	A	15:20-17:20	DUSK	MW	LS	H	NR	H	1	Yes		01:33
21.02.23	A	15:20-17:20	DUSK	MW	LS	I	NR	MA	2	No		01:10
21.02.23	A	15:20-17:20	DUSK	MW	LS	J	NR	CA	1	No		00:33
21.02.23	A	15:20-17:20	DUSK	MW	LS	K	NR	MA	2	No		00:44
21.02.23	A	15:20-17:20	DUSK	MW	LS	M	NR	CA	16	Yes		03:38
21.02.23	A	15:20-17:20	DUSK	MW	LS	N	NR	CA	1	No		00:33
21.02.23	A	15:20-17:20	DUSK	MW	LS	O	NR	CA	4	No		01:10
21.02.23	A	15:20-17:20	DUSK	MW	LS	P	NR	MA	2	Yes		00:55
21.02.23	A	15:20-17:20	DUSK	MW	LS	Q	NR	CA	1	No		01:32
21.02.23	A	15:20-17:20	DUSK	MW	LS	R	NR	CA	1	Yes		01:46
21.02.23	A	15:20-17:20	DUSK	MW	LS	S	NR	CA	1	No		01:44
28.02.23	B	09:35-11:35	DAY	MW	JT	A	09:43	MR	1	No		00:32
28.02.23	B	09:35-11:35	DAY	MW	JT	B	09:47	CA	1	No		01:34
28.02.23	B	09:35-11:35	DAY	MW	JT	C	09:51	MA	1	Yes		00:39
28.02.23	B	09:35-11:35	DAY	MW	JT	D	09:58	CA	4	No		03:35
28.02.23	B	09:35-11:35	DAY	MW	JT	E	10:01	MA	2	Yes		01:02
28.02.23	B	09:35-11:35	DAY	MW	JT	F	10:10	CA	1	Yes		01:04
28.02.23	B	09:35-11:35	DAY	MW	JT	G	10:15	MA	2	Yes		01:25
28.02.23	B	09:35-11:35	DAY	MW	JT	H	10:22	CA	6	No		05:50
28.02.23	B	09:35-11:35	DAY	MW	JT	I	10:38	T.	1	No		00:20
28.02.23	B	09:35-11:35	DAY	MW	JT	J	10:42	MR	1	Yes		01:30
28.02.23	B	09:35-11:35	DAY	MW	JT	K	10:45	CA	1	No		02:15
28.02.23	B	09:35-11:35	DAY	MW	JT	L	10:51	MR	1	Yes		02:10
28.02.23	B	09:35-11:35	DAY	MW	JT	M	10:55	MR	1	Yes		00:45

28.02.23	B	09:35-11:35	DAY	MW	JT	N	11:02	CA	2	Yes	01:40
28.02.23	B	09:35-11:35	DAY	MW	JT	O	11:10	CA	3	Yes	03:05
28.02.23	B	09:35-11:35	DAY	MW	JT	P	11:15	MA	2	Yes	00:25
28.02.23	B	09:35-11:35	DAY	MW	JT	Q	11:18	MS	4	No	00:46
28.02.23	B	09:35-11:35	DAY	MW	JT	R	11:21	H.	1	Yes	01:02
28.02.23	B	09:35-11:35	DAY	MW	JT	S	NR	H.	1	Yes	00:25
28.02.23	B	09:35-11:35	DAY	MW	JT	T	NR	CA	1	Yes	02:15
28.02.23	A	12:05-14:05	DAY	MW	JT	A	12:08	CA	4	Yes	02:00
28.02.23	A	12:05-14:05	DAY	MW	JT	B	12:20	MR	1	Yes	01:20
28.02.23	A	12:05-14:05	DAY	MW	JT	C	12:39	MR	1	No	00:35
28.02.23	A	12:05-14:05	DAY	MW	JT	D	12:49	CA	1	Yes	02:05
28.02.23	A	12:05-14:05	DAY	MW	JT	E	12:52	CA	1	Yes	01:30
28.02.23	A	12:05-14:05	DAY	MW	JT	F	12:55	CA	1	Yes	02:00
28.02.23	A	12:05-14:05	DAY	MW	JT	G	12:59	MR	1	No	01:10
28.02.23	A	12:05-14:05	DAY	MW	JT	H	13:10	MA	2	Yes	00:44
28.02.23	A	12:05-14:05	DAY	MW	JT	I	13:31	CA	1	Yes	01:30
28.02.23	A	12:05-14:05	DAY	MW	JT	J	13:34	CA	1	Yes	02:20
28.02.23	A	12:05-14:05	DAY	MW	JT	K	13:59	MA	5	Yes	01:45
28.02.23	A	12:05-14:05	DAY	MW	JT	L	13:59	MA	2	Yes	00:51
28.02.23	A	12:05-14:05	DAY	MW	JT	M	14:01	MR	1	No	00:15
28.02.23	B	15:25-17:25	DUSK	MW	JT	A	15:30	CA	7	Yes	02:15
28.02.23	B	15:25-17:25	DUSK	MW	JT	B	15:35	CA	18	No	02:00
28.02.23	B	15:25-17:25	DUSK	MW	JT	C	15:37	CA	6	Yes	01:15
28.02.23	B	15:25-17:25	DUSK	MW	JT	D	15:39	CA	28	Yes	01:45
28.02.23	B	15:25-17:25	DUSK	MW	JT	E	15:46	CA	49	Yes	03:10
28.02.23	B	15:25-17:25	DUSK	MW	JT	F	15:50	CA	9	Yes	01:00
28.02.23	B	15:25-17:25	DUSK	MW	JT	G	15:52	CA	5	No	02:53
28.02.23	B	15:25-17:25	DUSK	MW	JT	H	15:54	CA	10	Yes	02:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	I	15:57	CA	67	Yes	02:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	J	16:00	CA	44	Yes	03:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	K	16:03	CA	11	Yes	02:35
28.02.23	B	15:25-17:25	DUSK	MW	JT	L	16:05	CA	60	No	01:05
28.02.23	B	15:25-17:25	DUSK	MW	JT	M	16:10	CA	9	Yes	01:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	N	16:28	MA	5	Yes	01:20
28.02.23	B	15:25-17:25	DUSK	MW	JT	O	16:30	CA	3	Yes	00:58
28.02.23	B	15:25-17:25	DUSK	MW	JT	P	16:36	MA	2	Yes	00:45
28.02.23	B	15:25-17:25	DUSK	MW	JT	Q	16:37	MR	1	No	01:07
28.02.23	B	15:25-17:25	DUSK	MW	JT	R	16:39	MR	1	Yes	01:05
28.02.23	B	15:25-17:25	DUSK	MW	JT	S	16:50	MA	2	Yes	01:10
28.02.23	B	15:25-17:25	DUSK	MW	JT	T	16:55	MA	2	Yes	00:55
28.02.23	B	15:25-17:25	DUSK	MW	JT	U	17:00	MA	2	No	00:45
28.02.23	B	15:25-17:25	DUSK	MW	JT	V	17:03	MA	2	Yes	01:50
28.02.23	B	15:25-17:25	DUSK	MW	JT	W	NR	CA	8	No	02:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	X	17:12	CA	1	No	01:35
28.02.23	B	15:25-17:25	DUSK	MW	JT	Y	NR	MA	2	Yes	01:30
28.02.23	B	15:25-17:25	DUSK	MW	JT	Z	NR	MA	2	Yes	01:50
03.03.23	B	11:40-12:40	DAY	LS	NS	A	12:12	CA	1	No	02:03
03.03.23	B	11:40-12:40	DAY	LS	NS	B	12:26	CA	1	No	02:22
03.03.23	B	11:40-12:40	DAY	LS	NS	C	12:38	MA	2	No	00:15
03.03.23	B	11:40-12:40	DAY	LS	NS	D	12:40	CA	1	Yes	00:45

17.03.23	A	06:25-08:25	DAWN	MW	JY	A	06:40	MA	1	Yes	00:26
17.03.23	A	06:25-08:25	DAWN	MW	JY	B	06:50	CA	1	Yes	02:30
17.03.23	A	06:25-08:25	DAWN	MW	JY	C	06:54	MA	2	Yes	01:30
17.03.23	A	06:25-08:25	DAWN	MW	JY	D	06:35	CA	1	Yes	02:35
17.03.23	A	06:25-08:25	DAWN	MW	JY	E	07:04	MA	2	No	00:20
17.03.23	A	06:25-08:25	DAWN	MW	JY	F	07:10	T.	2	Yes	00:35
17.03.23	A	06:25-08:25	DAWN	MW	JY	G	07:14	CA	1	Yes	02:02
17.03.23	A	06:25-08:25	DAWN	MW	JY	H	07:20	MA	2	Yes	01:00
17.03.23	A	06:25-08:25	DAWN	MW	JY	I	07:31	MR	1	No	02:45
17.03.23	A	06:25-08:25	DAWN	MW	JY	J	07:35	SU	1	Yes	01:48
17.03.23	A	06:25-08:25	DAWN	MW	JY	K	07:37	MA	3	Yes	01:20
17.03.23	A	06:25-08:25	DAWN	MW	JY	L	07:42	MA	1	No	00:25
17.03.23	A	06:25-08:25	DAWN	MW	JY	M	07:51	MA	2	No	00:32
17.03.23	A	06:25-08:25	DAWN	MW	JY	N	07:53	H.	1	No	00:23
17.03.23	A	06:25-08:25	DAWN	MW	JY	O	07:55	MA	1	Yes	00:50
17.03.23	A	06:25-08:25	DAWN	MW	JY	P	08:03	H.	1	Yes	02:55
17.03.23	A	06:25-08:25	DAWN	MW	JY	Q	08:05	H.	1	No	02:00
17.03.23	A	06:25-08:25	DAWN	MW	JY	R	08:10	MR	1	No	00:06
17.03.23	A	06:25-08:25	DAWN	MW	JY	S	08:08	PE	1	Yes	00:16
17.03.23	A	06:25-08:25	DAWN	MW	JY	T	08:10	PE	1	Yes	00:44
17.03.23	A	06:25-08:25	DAWN	MW	JY	U	08:11	MA	1	Yes	00:27
17.03.23	A	06:25-08:25	DAWN	MW	JY	V	08:15	MR	1	Yes	02:31
17.03.23	A	06:25-08:25	DAWN	MW	JY	W	08:19	MA	2	No	00:32
17.03.23	A	06:25-08:25	DAWN	MW	JY	X	08:23	MA	2	No	00:25
17.03.23	A	06:25-08:25	DAWN	MW	JY	Y	08:24	MR	1	Yes	01:45
17.03.23	B	10:05-12:05	DAY	MW	JY	A	10:10	H.	1	Yes	01:30
17.03.23	B	10:05-12:05	DAY	MW	JY	B	10:12	CA	1	No	00:47
17.03.23	B	10:05-12:05	DAY	MW	JY	C	10:24	MA	1	No	00:25
17.03.23	B	10:05-12:05	DAY	MW	JY	D	10:26	MA	1	Yes	00:45
17.03.23	B	10:05-12:05	DAY	MW	JY	E	10:30	MA	2	Yes	00:15
17.03.23	B	10:05-12:05	DAY	MW	JY	F	10:35	CA	2	No	00:30
17.03.23	B	10:05-12:05	DAY	MW	JY	G	10:45	MA	2	Yes	00:35
17.03.23	B	10:05-12:05	DAY	MW	JY	H	10:47	MA	1	Yes	00:50
17.03.23	B	10:05-12:05	DAY	MW	JY	I	10:50	H.	2	Yes	02:00
17.03.23	B	10:05-12:05	DAY	MW	JY	J	10:57	H.	1	No	01:15
17.03.23	B	10:05-12:05	DAY	MW	JY	K	11:10	MA	2	Yes	00:30
17.03.23	B	10:05-12:05	DAY	MW	JY	L	11:23	MA	1	Yes	00:35
17.03.23	B	10:05-12:05	DAY	MW	JY	M	11:37	H.	1	No	00:50
17.03.23	B	10:05-12:05	DAY	MW	JY	N	11:40	MR	1	No	00:06
17.03.23	B	10:05-12:05	DAY	MW	JY	O	11:46	MR	1	Yes	01:35
17.03.23	B	10:05-12:05	DAY	MW	JY	P	11:48	PE	2	Yes	03:00
17.03.23	B	10:05-12:05	DAY	MW	JY	Q	11:55	CA	1	Yes	02:00
17.03.23	A	12:40-14:40	DAY	MW	JY	A	12:50	MA	1	No	00:13
17.03.23	A	12:40-14:40	DAY	MW	JY	B	12:57	MA	1	Yes	01:25
17.03.23	A	12:40-14:40	DAY	MW	JY	C	13:07	CA	1	No	03:00
17.03.23	A	12:40-14:40	DAY	MW	JY	D	13:17	MA	2	No	00:27
17.03.23	A	12:40-14:40	DAY	MW	JY	E	13:21	CA	1	No	01:51
17.03.23	A	12:40-14:40	DAY	MW	JY	F	13:50	MR	1	No	01:04
17.03.23	A	12:40-14:40	DAY	MW	JY	G	14:10	CA	1	No	02:09
17.03.23	A	12:40-14:40	DAY	MW	JY	H	14:15	MA	2	Yes	00:29

17.03.23	A	12:40-14:40	DAY	MW	JY	I	14:17	MA	2	No	00:33
17.03.23	A	12:40-14:40	DAY	MW	JY	J	14:29	MR	1	Yes	03:15
17.03.23	A	12:40-14:40	DAY	MW	JY	K	14:36	CA	1	Yes	03:11
28.03.23	B	12:14-14:14	DAY	LS	JY	A	12:23	MR	1	No	00:18
28.03.23	B	12:14-14:14	DAY	LS	JY	B	12:29	MA	1	No	00:32
28.03.23	B	12:14-14:14	DAY	LS	JY	C	12:29	MR	1	No	00:16
28.03.23	B	12:14-14:14	DAY	LS	JY	D	12:41	MR	1	No	01:05
28.03.23	B	12:14-14:14	DAY	LS	JY	E	12:47	CA	1	Yes	01:36
28.03.23	B	12:14-14:14	DAY	LS	JY	F	12:51	MA	2	No	00:28
28.03.23	B	12:14-14:14	DAY	LS	JY	G	12:54	MA	1	No	00:26
28.03.23	B	12:14-14:14	DAY	LS	JY	H	13:06	MA	2	No	00:21
28.03.23	B	12:14-14:14	DAY	LS	JY	I	13:11	MA	1	Yes	03:37
28.03.23	B	12:14-14:14	DAY	LS	JY	J	13:23	MR	1	Yes	09:02
28.03.23	B	12:14-14:14	DAY	LS	JY	K	13:00	CA	1	Yes	00:53
28.03.23	B	12:14-14:14	DAY	LS	JY	L	14:12	T.	12	No	00:49
28.03.23	A	15:20-17:20	DAY	LS	JY	A	15:45	CA	2	No	01:35
28.03.23	A	15:20-17:20	DAY	LS	JY	C	16:03	CA	14	No	02:40
28.03.23	A	15:20-17:20	DAY	LS	JY	D	16:16	CA	2	No	01:40
28.03.23	A	15:20-17:20	DAY	LS	JY	E	16:19	MA	2	Yes	01:16
28.03.23	A	15:20-17:20	DAY	LS	JY	F	16:31	MA	2	Yes	01:35
28.03.23	A	15:20-17:20	DAY	LS	JY	G	16:34	MA	3	Yes	00:31
28.03.23	A	15:20-17:20	DAY	LS	JY	H	16:36	CA	1	No	00:52
28.03.23	A	15:20-17:20	DAY	LS	JY	I	16:50	CA	20	No	03:08
28.03.23	A	15:20-17:20	DAY	LS	JY	J	17:04	CA	1	No	01:36
28.03.23	A	15:20-17:20	DAY	LS	JY	K	17:17	MA	11	No	01:04
28.03.23	B	17:50-19:50	DUSK	LS	JY	A	17:50	MS	2	No	00:46
28.03.23	B	17:50-19:50	DUSK	LS	JY	B	17:54	CA	2	Yes	02:05
28.03.23	B	17:50-19:50	DUSK	LS	JY	C	17:56	CA	1	No	00:31
28.03.23	B	17:50-19:50	DUSK	LS	JY	D	18:04	MA	3	No	00:16
28.03.23	B	17:50-19:50	DUSK	LS	JY	E	18:05	MA	5	No	00:45
28.03.23	B	17:50-19:50	DUSK	LS	JY	F	18:09	MA	3	No	00:32
28.03.23	B	17:50-19:50	DUSK	LS	JY	G	18:12	MA	2	Yes	00:47
28.03.23	B	17:50-19:50	DUSK	LS	JY	H	18:41	MR	1	No	00:41
28.03.23	B	17:50-19:50	DUSK	LS	JY	I	18:43	CA	5	Yes	02:33
28.03.23	B	17:50-19:50	DUSK	LS	JY	J	18:47	MR	1	No	00:56
28.03.23	B	17:50-19:50	DUSK	LS	JY	K	18:51	MA	1	No	00:18
28.03.23	B	17:50-19:50	DUSK	LS	JY	L	19:18	MA	3	Yes	01:13
28.03.23	B	17:50-19:50	DUSK	LS	JY	M	19:30	MR	1	Yes	01:51
14.04.23	B	06:00-08:00	DAWN	LS	BG	A	06:08	CU	2	Yes	01:52
14.04.23	B	06:00-08:00	DAWN	LS	BG	B	06:10	CA	1	No	00:33
14.04.23	B	06:00-08:00	DAWN	LS	BG	C	06:22	MA	3	Yes	00:31
14.04.23	B	06:00-08:00	DAWN	LS	BG	D	06:22	MA	2	Yes	00:34
14.04.23	B	06:00-08:00	DAWN	LS	BG	E	06:43	CA	1	Yes	00:40
14.04.23	B	06:00-08:00	DAWN	LS	BG	F	06:52	MS	2	Yes	01:41
14.04.23	B	06:00-08:00	DAWN	LS	BG	G	07:00	SU	2	Yes	01:01
14.04.23	B	06:00-08:00	DAWN	LS	BG	H	07:26	T.	4	No	00:54
14.04.23	B	06:00-08:00	DAWN	LS	BG	I	07:34	H.	1	Yes	01:25
14.04.23	B	06:00-08:00	DAWN	LS	BG	J	07:36	MS	1	Yes	01:05
14.04.23	B	06:00-08:00	DAWN	LS	BG	K	07:43	MA	2	Yes	00:54
14.04.23	A	08:30-10:30	DAY	LS	BG	A	08:45	MR	1	Yes	02:30

14.04.23	A	08:30-10:30	DAY	LS	BG	B	08:56	CA	1	Yes	01:20
14.04.23	A	08:30-10:30	DAY	LS	BG	C	08:59	SU	2	No	00:45
14.04.23	A	08:30-10:30	DAY	LS	BG	D	08:59	GA	2	No	00:50
14.04.23	A	08:30-10:30	DAY	LS	BG	E	08:59	CA	1	Yes	00:50
14.04.23	A	08:30-10:30	DAY	LS	BG	F	09:11	BZ	2	Yes	02:40
14.04.23	A	08:30-10:30	DAY	LS	BG	G	09:30	BZ	1	Yes	01:10
14.04.23	A	08:30-10:30	DAY	LS	BG	H	09:33	SU	2	No	00:27
14.04.23	A	08:30-10:30	DAY	LS	BG	I	09:46	MA	3	Yes	00:40
14.04.23	A	08:30-10:30	DAY	LS	BG	J	09:54	MR	1	No	01:27
14.04.23	A	08:30-10:30	DAY	LS	BG	K	09:58	H.	1	No	00:42
14.04.23	A	08:30-10:30	DAY	LS	BG	L	10:20	MA	1	Yes	00:30
14.04.23	B	11:00-13:00	DAY	LS	BG	A	11:13	MR	1	No	02:36
14.04.23	B	11:00-13:00	DAY	LS	BG	B	11:49	MR	1	Yes	04:49
14.04.23	B	11:00-13:00	DAY	LS	BG	C	11:56	MR	1	Yes	01:12
14.04.23	B	11:00-13:00	DAY	LS	BG	D	12:00	MR	1	Yes	01:27
14.04.23	B	11:00-13:00	DAY	LS	BG	E	12:08	MA	2	Yes	00:57
14.04.23	B	11:00-13:00	DAY	LS	BG	F	12:10	H.	1	No	00:30
14.04.23	B	11:00-13:00	DAY	LS	BG	G	12:29	MR	1	No	00:28
28.04.23	A	13:15-15:15	DAY	BG	DW	A	13:19	H.	1	No	00:50
28.04.23	A	13:15-15:15	DAY	BG	DW	B	13:19	MS	1	No	00:40
28.04.23	A	13:15-15:15	DAY	BG	DW	C	13:20	H.	1	Yes	01:00
28.04.23	A	13:15-15:15	DAY	BG	DW	D	13:25	MR	1	No	00:10
28.04.23	A	13:15-15:15	DAY	BG	DW	E	13:31	HY	1	Yes	00:55
28.04.23	A	13:15-15:15	DAY	BG	DW	F	13:38	WM	2	Yes	01:00
28.04.23	A	13:15-15:15	DAY	BG	DW	G	13:46	MR	1	No	00:24
28.04.23	A	13:15-15:15	DAY	BG	DW	H	13:49	HY	1	Yes	00:40
28.04.23	A	13:15-15:15	DAY	BG	DW	I	13:54	GJ	2	Yes	00:32
28.04.23	A	13:15-15:15	DAY	BG	DW	J	13:55	CA	1	Yes	00:40
28.04.23	A	13:15-15:15	DAY	BG	DW	K	14:00	CA	1	No	00:20
28.04.23	A	13:15-15:15	DAY	BG	DW	L	14:05	MA	1	No	00:20
28.04.23	A	13:15-15:15	DAY	BG	DW	M	14:06	MA	1	Yes	00:40
28.04.23	A	13:15-15:15	DAY	BG	DW	N	14:16	CA	1	Yes	00:40
28.04.23	A	13:15-15:15	DAY	BG	DW	O	14:28	H.	1	No	00:29
28.04.23	A	13:15-15:15	DAY	BG	DW	P	14:40	MA	1	Yes	00:20
28.04.23	A	13:15-15:15	DAY	BG	DW	Q	14:59	MR	1	No	01:02
28.04.23	A	13:15-15:15	DAY	BG	DW	R	15:01	MR	1	No	00:44
28.04.23	A	13:15-15:15	DAY	BG	DW	S	15:05	MA	2	No	00:35
28.04.23	A	13:15-15:15	DAY	BG	DW	T	15:10	SU	1	Yes	00:35
28.04.23	A	13:15-15:15	DAY	BG	DW	U	15:12	BZ	1	Yes	01:27
28.04.23	A	13:15-15:15	DAY	BG	DW	V	15:12	BZ	1	Yes	01:42
28.04.23	B	15:45-17:45	DAY	BG	DW	A	15:55	MA	1	No	00:20
28.04.23	B	15:45-17:45	DAY	BG	DW	B	15:55	MA	2	No	00:53
28.04.23	B	15:45-17:45	DAY	BG	DW	C	16:00	BZ	1	Yes	01:34
28.04.23	B	15:45-17:45	DAY	BG	DW	D	16:05	MA	1	No	00:35
28.04.23	B	15:45-17:45	DAY	BG	DW	E	16:07	MA	1	Yes	01:20
28.04.23	B	15:45-17:45	DAY	BG	DW	F	16:20	CA	1	No	00:34
28.04.23	B	15:45-17:45	DAY	BG	DW	G	16:24	BZ	1	No	01:21
28.04.23	B	15:45-17:45	DAY	BG	DW	H	16:54	MA	2	No	00:20
28.04.23	B	15:45-17:45	DAY	BG	DW	I	17:00	BZ	1	No	00:15
28.04.23	B	15:45-17:45	DAY	BG	DW	J	17:11	MA	2	No	00:20

28.04.23	B	15:45-17:45	DAY	BG	DW	K	17:13	H.	1	Yes	00:33
28.04.23	B	15:45-17:45	DAY	BG	DW	L	17:22	BZ	1	Yes	01:12
28.04.23	B	15:45-17:45	DAY	BG	DW	M	17:33	MA	1	No	00:15
28.04.23	A	16:15-18:15	DUSK	BG	DW	A	18:16	MA	2	Yes	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	B	18:30	MA	2	Yes	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	C	18:33	SH	1	Yes	00:15
28.04.23	A	16:15-18:15	DUSK	BG	DW	D	18:44	CA	1	No	00:45
28.04.23	A	16:15-18:15	DUSK	BG	DW	E	19:00	H.	1	No	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	F	19:13	MA	1	No	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	G	19:15	SU	1	Yes	00:15
28.04.23	A	16:15-18:15	DUSK	BG	DW	H	19:20	SN	1	No	00:15
28.04.23	A	16:15-18:15	DUSK	BG	DW	I	19:23	MR	1	No	00:45
28.04.23	A	16:15-18:15	DUSK	BG	DW	J	19:25	MA	1	Yes	00:15
28.04.23	A	16:15-18:15	DUSK	BG	DW	K	19:27	MA	1	No	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	L	19:36	MR	1	No	02:00
28.04.23	A	16:15-18:15	DUSK	BG	DW	M	19:40	MA	3	Yes	00:45
28.04.23	A	16:15-18:15	DUSK	BG	DW	N	19:44	H.	1	Yes	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	O	19:48	H.	1	Yes	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	P	20:03	H.	1	Yes	00:30
28.04.23	A	16:15-18:15	DUSK	BG	DW	Q	20:05	MS	1	No	00:45
28.04.23	A	16:15-18:15	DUSK	BG	DW	R	20:08	MS	1	No	01:00
12.05.23	A	05:35-07:35	DAWN	LS	DW	A	06:05	ET	1	Yes	01:02
12.05.23	A	05:35-07:35	DAWN	LS	DW	B	06:12	MA	1	No	00:32
12.05.23	A	05:35-07:35	DAWN	LS	DW	C	06:13	CA	2	Yes	01:12
12.05.23	A	05:35-07:35	DAWN	LS	DW	D	06:23	CA	1	No	00:53
12.05.23	A	05:35-07:35	DAWN	LS	DW	E	06:34	H.	1	Yes	00:56
12.05.23	A	05:35-07:35	DAWN	LS	DW	F	06:41	MA	1	Yes	00:40
12.05.23	A	05:35-07:35	DAWN	LS	DW	G	06:44	ET	1	Yes	00:54
12.05.23	A	05:35-07:35	DAWN	LS	DW	H	07:02	CA	1	Yes	01:42
12.05.23	A	05:35-07:35	DAWN	LS	DW	I	07:05	MR	1	Yes	02:35
12.05.23	B	08:05-10:05	DAY	LS	DW	A	08:18	H.	1	Yes	01:19
12.05.23	B	08:05-10:05	DAY	LS	DW	B	08:25	MA	1	Yes	00:54
12.05.23	B	08:05-10:05	DAY	LS	DW	C	09:08	MA	1	Yes	00:35
12.05.23	B	08:05-10:05	DAY	LS	DW	D	09:10	MA	1	No	00:28
12.05.23	B	08:05-10:05	DAY	LS	DW	E	09:54	H.	1	Yes	00:47
12.05.23	B	08:05-10:05	DAY	LS	DW	F	09:57	H.	1	No	00:25
12.05.23	A	10:35-12:35	DAY	LS	DW	A	10:35	CA	2	Yes	00:03
12.05.23	A	10:35-12:35	DAY	LS	DW	B	11:10	SU	1	No	00:15
12.05.23	A	10:35-12:35	DAY	LS	DW	C	11:17	MR	1	No	01:30
12.05.23	A	10:35-12:35	DAY	LS	DW	D	11:22	MA	2	No	00:20
12.05.23	A	10:35-12:35	DAY	LS	DW	E	11:25	MA	2	No	01:00
12.05.23	A	10:35-12:35	DAY	LS	DW	F	11:48	CA	1	Yes	01:45
12.05.23	A	10:35-12:35	DAY	LS	DW	G	11:50	MA	2	No	00:50
12.05.23	A	10:35-12:35	DAY	LS	DW	H	11:56	MA	3	Yes	00:45
12.05.23	A	10:35-12:35	DAY	LS	DW	I	11:58	SU	2	No	00:20
29.05.23	B	13:45-15:45	DAY	BG	WH	A	13:50	MR	1	Yes	02:00
29.05.23	B	13:45-15:45	DAY	BG	WH	B	14:05	MA	2	No	00:20
29.05.23	B	13:45-15:45	DAY	BG	WH	C	14:12	BZ	1	Yes	00:49
29.05.23	B	13:45-15:45	DAY	BG	WH	D	14:33	BZ	1	Yes	01:20
29.05.23	B	13:45-15:45	DAY	BG	WH	E	14:36	MA	4	Yes	00:50

29.05.23	B	13:45-15:45	DAY	BG	WH	F	14:36	K.	1	No	00:40
29.05.23	B	13:45-15:45	DAY	BG	WH	G	14:40	MA	3	Yes	00:40
29.05.23	B	13:45-15:45	DAY	BG	WH	H	14:44	BZ	1	Yes	07:15
29.05.23	B	13:45-15:45	DAY	BG	WH	I	15:15	BZ	1	Yes	08:10
29.05.23	B	13:45-15:45	DAY	BG	WH	J	15:20	K.	1	Yes	01:20
29.05.23	B	13:45-15:45	DAY	BG	WH	K	15:36	BZ	1	Yes	02:48
29.05.23	A	16:15-18:15	DAY	BG	WH	A	16:20	K.	1	Yes	02:20
29.05.23	A	16:15-18:15	DAY	BG	WH	B	16:40	BZ	1	No	02:30
29.05.23	A	16:15-18:15	DAY	BG	WH	C	16:45	K.	1	Yes	01:01
29.05.23	A	16:15-18:15	DAY	BG	WH	D	16:45	MR	1	Yes	00:33
29.05.23	A	16:15-18:15	DAY	BG	WH	E	16:50	K.	1	Yes	04:06
29.05.23	A	16:15-18:15	DAY	BG	WH	F	16:56	BZ	1	Yes	01:04
29.05.23	A	16:15-18:15	DAY	BG	WH	G	17:10	K.	1	Yes	01:46
29.05.23	A	16:15-18:15	DAY	BG	WH	H	17:18	H.	1	No	00:48
29.05.23	A	16:15-18:15	DAY	BG	WH	I	17:18	MR	2	Yes	10:14
29.05.23	A	16:15-18:15	DAY	BG	WH	J	17:36	MR	1	Yes	01:59
29.05.23	A	16:15-18:15	DAY	BG	WH	K	17:45	MR	1	Yes	04:17
29.05.23	A	16:15-18:15	DAY	BG	WH	L	17:53	MR	1	Yes	00:46
29.05.23	A	16:15-18:15	DAY	BG	WH	M	18:00	BZ	1	Yes	01:00
29.05.23	B	18:45-20:45	DUSK	BG	WH	A	18:56	ET	1	Yes	00:18
29.05.23	B	18:45-20:45	DUSK	BG	WH	B	19:01	MA	6	Yes	00:50
29.05.23	B	18:45-20:45	DUSK	BG	WH	C	19:03	MR	1	Yes	00:55
29.05.23	B	18:45-20:45	DUSK	BG	WH	D	19:24	MA	6	Yes	00:46
29.05.23	B	18:45-20:45	DUSK	BG	WH	E	19:28	K.	1	Yes	01:15
29.05.23	B	18:45-20:45	DUSK	BG	WH	F	19:35	K.	1	Yes	05:10
29.05.23	B	18:45-20:45	DUSK	BG	WH	G	19:51	MR	1	Yes	03:25
29.05.23	B	18:45-20:45	DUSK	BG	WH	H	19:52	MR	1	Yes	01:25
29.05.23	B	18:45-20:45	DUSK	BG	WH	I	19:58	MR	1	Yes	01:16
29.05.23	B	18:45-20:45	DUSK	BG	WH	J	20:17	MR	1	Yes	01:28
09.06.23	B	04:45-06:45	DAWN	LS	SP	A	05:34	ET	1	Yes	01:10
09.06.23	B	04:45-06:45	DAWN	LS	SP	B	06:14	MA	2	No	00:32
09.06.23	B	04:45-06:45	DAWN	LS	SP	C	06:24	CA	1	Yes	00:51
09.06.23	B	04:45-06:45	DAWN	LS	SP	D	06:31	MA	1	No	00:07
09.06.23	B	04:45-06:45	DAWN	LS	SP	E	06:33	MA	2	No	00:28
09.06.23	A	07:15-09:15	DAY	LS	SP	A	07:20	ET	1	Yes	00:54
09.06.23	A	07:15-09:15	DAY	LS	SP	B	07:42	ET	1	Yes	01:04
09.06.23	A	07:15-09:15	DAY	LS	SP	C	08:13	H.	1	Yes	01:22
09.06.23	A	07:15-09:15	DAY	LS	SP	D	08:20	ET	1	Yes	01:15
09.06.23	A	07:15-09:15	DAY	LS	SP	E	08:35	MA	1	No	00:51
09.06.23	A	07:15-09:15	DAY	LS	SP	F	08:39	ET	1	Yes	00:29
09.06.23	A	07:15-09:15	DAY	LS	SP	G	08:40	H.	1	Yes	01:29
09.06.23	A	07:15-09:15	DAY	LS	SP	H	08:50	ET	1	Yes	00:32
09.06.23	A	07:15-09:15	DAY	LS	SP	I	08:52	ET	1	No	00:47
09.06.23	A	07:15-09:15	DAY	LS	SP	J	09:13	ET	1	No	00:23
09.06.23	B	09:45-11:45	DAY	LS	SP	A	09:48	MA	1	Yes	00:35
09.06.23	B	09:45-11:45	DAY	LS	SP	B	10:45	MR	2	No	02:34
09.06.23	B	09:45-11:45	DAY	LS	SP	C	11:41	CA	1	Yes	01:19
09.06.23	B	09:45-11:45	DAY	LS	SP	D	11:45	CA	1	Yes	00:49
28.06.23	A	14:45-16:45	DAY	BG	DW	A	14:45	K.	1	Yes	02:36
28.06.23	A	14:45-16:45	DAY	BG	DW	B	15:02	MR	1	No	01:50

28.06.23	A	14:45-16:45	DAY	BG	DW	C	15:13	MA	2	Yes	00:17
28.06.23	A	14:45-16:45	DAY	BG	DW	D	15:15	PE	1	Yes	00:20
28.06.23	A	14:45-16:45	DAY	BG	DW	E	15:17	K.	1	Yes	00:30
28.06.23	A	14:45-16:45	DAY	BG	DW	F	15:32	MR	1	No	00:32
28.06.23	A	14:45-16:45	DAY	BG	DW	G	15:36	ET	1	No	00:23
28.06.23	A	14:45-16:45	DAY	BG	DW	H	15:50	K.	1	Yes	00:55
28.06.23	A	14:45-16:45	DAY	BG	DW	I	15:53	H.	1	Yes	00:35
28.06.23	A	14:45-16:45	DAY	BG	DW	K	16:17	K.	1	Yes	04:03
28.06.23	A	14:45-16:45	DAY	BG	DW	L	16:34	CA	1	Yes	00:13
28.06.23	B	17:15-19:15	DAY	BG	DW	A	17:28	PE	1	Yes	00:10
28.06.23	B	17:15-19:15	DAY	BG	DW	B	18:30	MR	1	No	03:30
28.06.23	B	17:15-19:15	DAY	BG	DW	C	18:39	H.	1	No	00:30
28.06.23	B	17:15-19:15	DAY	BG	DW	D	18:40	H.	1	No	00:20
28.06.23	B	17:15-19:15	DAY	BG	DW	E	18:52	CA	4	No	01:30
28.06.23	A	19:15-21:15	DUSK	BG	DW	A	19:34	MR	1	No	00:15
28.06.23	A	19:15-21:15	DUSK	BG	DW	B	20:03	K.	1	No	01:00
28.06.23	A	19:15-21:15	DUSK	BG	DW	C	20:15	K.	1	Yes	01:15
28.06.23	A	19:15-21:15	DUSK	BG	DW	D	20:43	MA	2	Yes	00:18
28.06.23	A	19:15-21:15	DUSK	BG	DW	E	20:59	MR	1	Yes	01:40
11.07.23	A	04:50-06:50	DAWN	LS	WH	A	06:20	BZ	1	Yes	01:35
11.07.23	B	07:20-09:20	DAY	LS	WH	A	07:24	K.	1	Yes	02:16
11.07.23	B	07:20-09:20	DAY	LS	WH	B	08:55	H.	1	No	00:30
11.07.23	A	09:50-11:50	DAY	LS	WH	A	10:10	CA	1	Yes	01:10
11.07.23	A	09:50-11:50	DAY	LS	WH	B	11:18	H.	1	Yes	00:45
11.07.23	A	09:50-11:50	DAY	LS	WH	C	11:41	HY	1	Yes	00:52
25.07.23	B	13:55-15:55	DAY	BG	SC	A	14:01	K.	1	No	00:15
25.07.23	B	13:55-15:55	DAY	BG	SC	B	14:37	SU	2	No	00:35
25.07.23	B	13:55-15:55	DAY	BG	SC	C	14:53	H	1	No	00:25
25.07.23	B	13:55-15:55	DAY	BG	SC	D	15:21	K.	1	No	00:35
25.07.23	B	13:55-15:55	DAY	BG	SC	E	15:32	MU	5	No	01:15
25.07.23	B	13:55-15:55	DAY	BG	SC	F	15:36	H	1	No	00:25
25.07.23	B	13:55-15:55	DAY	BG	SC	G	15:42	SH	1	Yes	00:15
25.07.23	A	16:25-18:25	DAY	BG	SC	A	16:31	K.	1	No	01:00
25.07.23	A	16:25-18:25	DAY	BG	SC	B	16:43	K.	1	No	01:00
25.07.23	A	16:25-18:25	DAY	BG	SC	C	16:43	K.	1	No	01:20
25.07.23	A	16:25-18:25	DAY	BG	SC	D	17:00	H	1	No	00:23
25.07.23	A	16:25-18:25	DAY	BG	SC	E	17:23	H	1	No	00:30
25.07.23	A	16:25-18:25	DAY	BG	SC	F	17:38	K.	1	No	00:18
25.07.23	A	16:25-18:25	DAY	BG	SC	G	18:18	MR	1	No	00:20
25.07.23	B	18:55-20:55	DUSK	BG	SC	A	19:02	CA	1	No	00:39
25.07.23	B	18:55-20:55	DUSK	BG	SC	B	19:19	H	1	No	00:10
25.07.23	B	18:55-20:55	DUSK	BG	SC	C	19:44	K.	1	No	00:15
25.07.23	B	18:55-20:55	DUSK	BG	SC	D	20:24	RN	1	Yes	00:23
10.08.23	B	05:32-07:32	DAWN	LS	LG	A	06:28	GA	26	Yes	00:41
10.08.23	B	05:32-07:32	DAWN	LS	LG	B	06:43	MA	1	No	00:21
10.08.23	B	05:32-07:32	DAWN	LS	LG	C	06:47	CA	1	Yes	00:29
10.08.23	B	05:32-07:32	DAWN	LS	LG	D	07:06	GA	24	Yes	00:36
10.08.23	B	05:32-07:32	DAWN	LS	LG	E	07:30	GA	9	Yes	00:25
10.08.23	A	08:20-10:02	DAY	LS	LG	A	08:35	H	1	Yes	01:15
10.08.23	A	08:20-10:02	DAY	LS	LG	B	09:15	CA	1	No	00:45

10.08.23	B	10:32-12:32	DAY	LS	LG	A	11:20	H.	1	Yes	00:45
10.08.23	B	10:32-12:32	DAY	LS	LG	B	12:11	CA	1	Yes	00:15
25.08.23	A	12:50-14:50	DAY	JY	LS	A	13:15	BZ	1	Yes	03:30
25.08.23	A	12:50-14:50	DAY	JY	LS	B	13:26	BZ/SH	1	No	03:30
25.08.23	A	12:50-14:50	DAY	JY	LS	C	13:57	BZ	1	No	01:12
25.08.23	A	12:50-14:50	DAY	JY	LS	D	14:10	BZ	1	No	02:15
25.08.23	A	12:50-14:50	DAY	JY	LS	E	14:14	HY	1	No	01:43
25.08.23	A	12:50-14:50	DAY	JY	LS	F	14:26	HY	1	Yes	00:38
25.08.23	A	12:50-14:50	DAY	JY	LS	G	14:37	HY	1	Yes	01:13
25.08.23	A	12:50-14:50	DAY	JY	LS	H	14:49	BZ	1	No	01:14
25.08.23	B	15:20-17:20	DAY	JY	LS	A	15:45	BZ	2	Yes	02:51
25.08.23	B	15:20-17:20	DAY	JY	LS	B	15:55	MR	1	No	03:09
25.08.23	B	15:20-17:20	DAY	JY	LS	C	16:34	BZ	1	Yes	02:02
25.08.23	B	15:20-17:20	DAY	JY	LS	D	16:37	H	1	No	00:25
25.08.23	B	15:20-17:20	DAY	JY	LS	E	16:44	MR	1	No	00:21
25.08.23	B	15:20-17:20	DAY	JY	LS	F	17:16	K.	2	No	00:43
25.08.23	A	17:50-19:50	DUSK	JY	LS	A	18:29	MA	1	Yes	01:09
25.08.23	A	17:50-19:50	DUSK	JY	LS	B	19:23	MR	2	Yes	01:49
25.08.23	A	17:50-19:50	DUSK	JY	LS	C	19:40	MA	11	Yes	01:36
25.08.23	A	17:50-19:50	DUSK	JY	LS	D	19:47	MA	12	No	01:17
25.08.23	A	17:50-19:50	DUSK	JY	LS	E	19:50	MA	2	Yes	01:05
07.09.23	B	12:30-14:30	DAY	BG	LG	A	12:42	K.	1	Yes	01:25
07.09.23	B	12:30-14:30	DAY	BG	LG	B	12:43	BZ	2	No	03:00
07.09.23	B	12:30-14:30	DAY	BG	LG	C	12:53	MA	6	Yes	00:35
07.09.23	B	12:30-14:30	DAY	BG	LG	D	13:08	CM	15	Yes	00:40
07.09.23	B	12:30-14:30	DAY	BG	LG	E	13:35	MU	8	No	01:10
07.09.23	B	12:30-14:30	DAY	BG	LG	F	14:05	CA	1	No	00:20
07.09.23	B	12:30-14:30	DAY	BG	LG	G	14:13	PE	1	Yes	00:15
07.09.23	A	15:00-17:00	DAY	BG	LG	A	16:02	BZ	1	Yes	02:14
07.09.23	A	15:00-17:00	DAY	BG	LG	B	16:11	K.	1	Yes	03:02
07.09.23	A	15:00-17:00	DAY	BG	LG	C	16:20	MR	1	No	00:45
07.09.23	A	15:00-17:00	DAY	BG	LG	D	16:30	HY	1	Yes	00:30
07.09.23	A	15:00-17:00	DAY	BG	LG	E	16:52	BZ	1	Yes	03:10
07.09.23	A	15:00-17:00	DAY	BG	LG	F	16:57	BZ	1	Yes	01:24
07.09.23	B	17:30-19:30	DUSK	BG	LG	A	18:35	MA	4	Yes	00:20
07.09.23	B	17:30-19:30	DUSK	BG	LG	B	18:45	PE	1	Yes	00:30
07.09.23	B	17:30-19:30	DUSK	BG	LG	C	18:55	MR	1	No	01:10
07.09.23	B	17:30-19:30	DUSK	BG	LG	D	19:05	MA	12	No	00:25
07.09.23	B	17:30-19:30	DUSK	BG	LG	E	19:28	H	1	Yes	01:24
07.09.23	B	17:30-19:30	DUSK	BG	LG	F	19:28	MA	15	Yes	00:20
26.09.23	A	06:45-08:45	DAWN	BG	LG	A	06:45	GJ	133	Yes	01:00
26.09.23	A	06:45-08:45	DAWN	BG	LG	B	07:05	K.	1	Yes	03:50
26.09.23	A	06:45-08:45	DAWN	BG	LG	C	07:12	MR	1	No	00:55
26.09.23	A	06:45-08:45	DAWN	BG	LG	D	07:13	MR	1	No	00:45
26.09.23	A	06:45-08:45	DAWN	BG	LG	E	07:25	K.	1	Yes	00:20
26.09.23	A	06:45-08:45	DAWN	BG	LG	F	07:42	K.	1	No	01:20
26.09.23	A	06:45-08:45	DAWN	BG	LG	G	07:48	BZ	1	No	00:20
26.09.23	A	06:45-08:45	DAWN	BG	LG	H	08:02	H	1	No	00:23
26.09.23	A	06:45-08:45	DAWN	BG	LG	I	08:25	MA	47	Yes	00:35
26.09.23	A	06:45-08:45	DAWN	BG	LG	J	08:28	CA	1	Yes	00:20

26.09.23	A	06:45-08:45	DAWN	BG	LG	K	08:33	CA	1	Yes	00:27
26.09.23	A	06:45-08:45	DAWN	BG	LG	L	08:40	L.	26	No	00:50
26.09.23	A	06:45-08:45	DAWN	BG	LG	M	08:44	MR	1	Yes	00:35
26.09.23	A	06:45-08:45	DAWN	BG	LG	N	08:44	GA	1	No	00:15
26.09.23	B	09:15-11:15	DAY	BG	LG	A	09:45	HY	1	Yes	00:15
26.09.23	B	09:15-11:15	DAY	BG	LG	B	09:49	H.	1	No	00:55
26.09.23	B	09:15-11:15	DAY	BG	LG	C	09:54	K.	1	Yes	04:11
26.09.23	B	09:15-11:15	DAY	BG	LG	D	09:58	K.	1	Yes	02:18
26.09.23	B	09:15-11:15	DAY	BG	LG	E	10:14	MR	1	No	02:52
26.09.23	B	09:15-11:15	DAY	BG	LG	F	10:23	MA	3	Yes	00:15
26.09.23	B	09:15-11:15	DAY	BG	LG	G	10:29	HY	1	Yes	00:27
26.09.23	B	09:15-11:15	DAY	BG	LG	H	10:33	CA	1	No	01:20
26.09.23	B	09:15-11:15	DAY	BG	LG	I	10:36	K.	1	Yes	01:06
26.09.23	B	09:15-11:15	DAY	BG	LG	J	10:42	PE	1	Yes	00:15
26.09.23	A	11:45-13:45	DAY	BG	LG	A	12:37	BZ	4	No	04:30
26.09.23	A	11:45-13:45	DAY	BG	LG	B	12:58	HY	1	Yes	00:30
26.09.23	A	11:45-13:45	DAY	BG	LG	C	13:17	BZ	4	Yes	04:00
26.09.23	A	11:45-13:45	DAY	BG	LG	D	13:33	K.	1	Yes	00:47
26.09.23	A	11:45-13:45	DAY	BG	LG	E	13:38	BZ	1	Yes	02:13
26.09.23	A	11:45-13:45	DAY	BG	LG	F	13:44	RN	1	No	00:20
10.10.23	B	07:00-09:00	DAWN	BG	LG	A	07:19	K.	1	Yes	00:39
10.10.23	B	07:00-09:00	DAWN	BG	LG	B	07:35	K.	1	Yes	03:50
10.10.23	B	07:00-09:00	DAWN	BG	LG	C	07:50	MA	16	Yes	01:30
10.10.23	B	07:00-09:00	DAWN	BG	LG	D	08:01	CA	1	No	00:35
10.10.23	B	07:00-09:00	DAWN	BG	LG	E	08:17	MA	2	Yes	00:20
10.10.23	A	09:30-11:30	DAY	BG	LG	A	10:01	H.	1	Yes	01:00
10.10.23	A	09:30-11:30	DAY	BG	LG	B	10:12	BZ	1	No	00:15
10.10.23	A	09:30-11:30	DAY	BG	LG	C	10:22	CA	2	Yes	00:25
10.10.23	A	09:30-11:30	DAY	BG	LG	D	10:24	MR	1	No	00:15
10.10.23	A	09:30-11:30	DAY	BG	LG	E	10:35	MS	3	No	00:16
10.10.23	A	09:30-11:30	DAY	BG	LG	F	10:41	CA	1	Yes	00:20
10.10.23	A	09:30-11:30	DAY	BG	LG	G	10:40	K.	1	Yes	01:35
10.10.23	A	09:30-11:30	DAY	BG	LG	H	11:07	K.	1	Yes	00:20
10.10.23	B	12:00-14:00	DAY	BG	LG	A	12:20	K.	2	Yes	00:20
10.10.23	B	12:00-14:00	DAY	BG	LG	B	12:28	MS	5	Yes	01:00
10.10.23	B	12:00-14:00	DAY	BG	LG	C	12:36	K.	2	Yes	01:30
10.10.23	B	12:00-14:00	DAY	BG	LG	D	13:34	K.	1	No	00:11
10.10.23	B	12:00-14:00	DAY	BG	LG	E	13:53	BZ	3	Yes	00:36
27.10.23	A	10:40-12:40	DAY	JY	LG	A	11:04	MR	1	Yes	01:30
27.10.23	A	10:40-12:40	DAY	JY	LG	B	11:24	MR	1	No	00:50
27.10.23	A	10:40-12:40	DAY	JY	LG	C	11:30	CA	1	No	00:50
27.10.23	A	10:40-12:40	DAY	JY	LG	D	11:41	K.	1	Yes	00:43
27.10.23	A	10:40-12:40	DAY	JY	LG	E	11:56	MR	1	Yes	02:30
27.10.23	A	10:40-12:40	DAY	JY	LG	F	12:03	BZ	1	No	00:19
27.10.23	A	10:40-12:40	DAY	JY	LG	G	12:17	K.	1	Yes	01:30
27.10.23	A	10:40-12:40	DAY	JY	LG	H	12:29	CA	1	Yes	00:31
27.10.23	B	13:10-15:10	DAY	JY	LG	A	13:14	BZ	1	No	00:28
27.10.23	B	13:10-15:10	DAY	JY	LG	B1	13:16	BZ	2	Yes	02:23
27.10.23	B	13:10-15:10	DAY	JY	LG	B2	13:16	SH	1	Yes	02:23
27.10.23	B	13:10-15:10	DAY	JY	LG	B3	13:16	K.	1	Yes	02:23

27.10.23	B	13:10-15:10	DAY	JY	LG	C	13:21	K.	2	Yes	01:06
27.10.23	B	13:10-15:10	DAY	JY	LG	D	13:40	K.	1	Yes	00:46
27.10.23	B	13:10-15:10	DAY	JY	LG	E	13:51	CA	2	No	00:24
27.10.23	B	13:10-15:10	DAY	JY	LG	F	13:54	BZ	2	No	01:08
27.10.23	B	13:10-15:10	DAY	JY	LG	G	13:56	MR	1	No	00:30
27.10.23	B	13:10-15:10	DAY	JY	LG	H	13:57	PE	1	No	00:29
27.10.23	B	13:10-15:10	DAY	JY	LG	I	14:04	PE	1	Yes	00:51
27.10.23	B	13:10-15:10	DAY	JY	LG	J	14:06	CA	1	Yes	00:33
27.10.23	B	13:10-15:10	DAY	JY	LG	K	14:18	BZ	1	Yes	00:30
27.10.23	B	13:10-15:10	DAY	JY	LG	L	14:29	CA	1	Yes	00:30
27.10.23	B	13:10-15:10	DAY	JY	LG	M	14:37	K.	3	Yes	00:27
27.10.23	A	15:40-17:40	DUSK	JY	LG	A	15:58	SE	1	No	00:26
27.10.23	A	15:40-17:40	DUSK	JY	LG	B	16:03	MR	1	No	01:06
27.10.23	A	15:40-17:40	DUSK	JY	LG	C	16:10	MR	1	No	01:21
27.10.23	A	15:40-17:40	DUSK	JY	LG	D	16:15	K.	1	Yes	01:33
27.10.23	A	15:40-17:40	DUSK	JY	LG	E	16:19	MS	3	No	00:34
27.10.23	A	15:40-17:40	DUSK	JY	LG	F	16:34	MA	4	No	01:06
27.10.23	A	15:40-17:40	DUSK	JY	LG	G	16:50	MA	4	Yes	01:16
27.10.23	A	15:40-17:40	DUSK	JY	LG	H	17:07	CA	1	No	00:19
27.10.23	A	15:40-17:40	DUSK	JY	LG	I	17:11	CA	4	Yes	00:49
27.10.23	A	15:40-17:40	DUSK	JY	LG	J	17:27	MR	1	No	00:51
27.10.23	A	15:40-17:40	DUSK	JY	LG	K	17:33	SE	1	Yes	00:30
27.10.23	A	15:40-17:40	DUSK	JY	LG	L	17:37	GJ	5	Yes	00:27
15.11.23	A	07:05-09:05	DAWN	LS	JB	A	07:21	CA	1	Yes	00:21
15.11.23	A	07:05-09:05	DAWN	LS	JB	B	07:26	CA	1	Yes	00:15
15.11.23	A	07:05-09:05	DAWN	LS	JB	C	07:27	MS	3	Yes	00:54
15.11.23	A	07:05-09:05	DAWN	LS	JB	D	07:34	MR	1	Yes	01:57
15.11.23	A	07:05-09:05	DAWN	LS	JB	E	07:41	MS	8	No	00:40
15.11.23	A	07:05-09:05	DAWN	LS	JB	F	07:43	MS	5	No	01:35
15.11.23	A	07:05-09:05	DAWN	LS	JB	G	08:00	MR	2	Yes	00:31
15.11.23	A	07:05-09:05	DAWN	LS	JB	H	08:00	CA	1	Yes	00:51
15.11.23	A	07:05-09:05	DAWN	LS	JB	I	08:00	MS	19	No	00:35
15.11.23	A	07:05-09:05	DAWN	LS	JB	J	08:31	CA	1	Yes	00:40
15.11.23	A	07:05-09:05	DAWN	LS	JB	K	08:46	CA	1	Yes	00:51
15.11.23	B	09:35-11:35	DAY	LS	JB	A	09:47	MS	10	Yes	01:13
15.11.23	B	09:35-11:35	DAY	LS	JB	B	09:58	CU	2	Yes	00:43
15.11.23	B	09:35-11:35	DAY	LS	JB	C	10:17	MR	1	No	01:16
15.11.23	B	09:35-11:35	DAY	LS	JB	D	10:34	MR	1	Yes	00:52
15.11.23	B	09:35-11:35	DAY	LS	JB	E	11:14	GA	2	No	00:17
15.11.23	A	12:05-14:05	DAY	LS	JB	A	13:13	CA	6	Yes	02:51
15.11.23	A	12:05-14:05	DAY	LS	JB	B	13:18	CA	1	No	00:26
15.11.23	A	12:05-14:05	DAY	LS	JB	C	13:25	L.	14	No	03:05
15.11.23	A	12:05-14:05	DAY	LS	JB	D	13:38	CA	1	No	00:16
15.11.23	A	12:05-14:05	DAY	LS	JB	E	13:44	CA	21	No	02:35
15.11.23	A	12:05-14:05	DAY	LS	JB	F	13:49	MR	1	No	02:52
15.11.23	A	12:05-14:05	DAY	LS	JB	G	13:54	SH	1	No	00:17
15.11.23	A	12:05-14:05	DAY	LS	JB	H	14:00	GA	2	No	00:21
15.11.23	A	12:05-14:05	DAY	LS	JB	I	14:03	GA	2	Yes	00:37
28.11.23	B	08:55-10:55	DAY	BG	LG	A	09:52	L.	53	No	00:30
28.11.23	B	08:55-10:55	DAY	BG	LG	B	10:01	CA	8	No	00:40

28.11.23	B	08:55-10:55	DAY	BG	LG	C	10:13	K.	1	No	00:14
28.11.23	B	08:55-10:55	DAY	BG	LG	D	10:32	L.	120	No	00:48
28.11.23	B	08:55-10:55	DAY	BG	LG	E	10:47	PE	1	Yes	00:35
28.11.23	B	08:55-10:55	DAY	BG	LG	F	10:52	MR	1	No	00:42
28.11.23	B	08:55-10:55	DAY	BG	LG	G	10:54	CA	2	No	00:15
28.11.23	B	08:55-10:55	DAY	BG	LG	H	10:55	CA	5	Yes	00:30
28.11.23	A	11:25-13:25	DAY	BG	LG	A	11:50	MR	1	No	00:35
28.11.23	A	11:25-13:25	DAY	BG	LG	B	12:05	CA	1	No	00:25
28.11.23	A	11:25-13:25	DAY	BG	LG	C	12:33	MS	2	No	00:15
28.11.23	A	11:25-13:25	DAY	BG	LG	D	13:23	MR	1	No	00:51
28.11.23	B	13:55-15:55	DUSK	BG	LG	A	14:21	K.	1	No	00:07
28.11.23	B	13:55-15:55	DUSK	BG	LG	B	14:28	K.	1	Yes	01:10
28.11.23	B	13:55-15:55	DUSK	BG	LG	C	15:43	MA	3	No	00:40
28.11.23	B	13:55-15:55	DUSK	BG	LG	D	16:06	GJ	64	No	00:50
12.12.23	A	08:45-10:45	DAY	BG	LG	A	08:47	K.	1	Yes	00:55
12.12.23	A	08:45-10:45	DAY	BG	LG	B	09:02	MS	2	No	00:42
12.12.23	A	08:45-10:45	DAY	BG	LG	C	09:11	MR	1	No	00:44
12.12.23	A	08:45-10:45	DAY	BG	LG	D	09:12	ET	1	No	00:20
12.12.23	A	08:45-10:45	DAY	BG	LG	E	09:48	L.	100	No	01:10
12.12.23	A	08:45-10:45	DAY	BG	LG	F	09:50	CA	2	Yes	01:06
12.12.23	A	08:45-10:45	DAY	BG	LG	G	10:30	CA	1	Yes	01:15
12.12.23	A	08:45-10:45	DAY	BG	LG	H	10:37	CA	1	Yes	00:25
12.12.23	B	11:15-13:15	DAY	BG	LG	A	11:28	MA	1	No	01:00
12.12.23	B	11:15-13:15	DAY	BG	LG	B	12:16	CA	83	No	03:37
12.12.23	A	13:55-15:55	DUSK	BG	LG	A	13:55	GJ	95	Yes	00:45
12.12.23	A	13:55-15:55	DUSK	BG	LG	B	14:00	CA	155	Yes	00:50
12.12.23	A	13:55-15:55	DUSK	BG	LG	C	14:12	T.	43	Yes	00:25
12.12.23	A	13:55-15:55	DUSK	BG	LG	D	14:14	CA	6	No	00:20
12.12.23	A	13:55-15:55	DUSK	BG	LG	E	14:15	CA	160	No	02:04
12.12.23	A	13:55-15:55	DUSK	BG	LG	F	14:19	CA	125	No	02:23
12.12.23	A	13:55-15:55	DUSK	BG	LG	G	14:36	L.	31	No	00:25
12.12.23	A	13:55-15:55	DUSK	BG	LG	H	14:47	CA	7	Yes	00:40
15.12.23	B	07:45-09:45	DAWN	BG	JB	A	08:03	CA	83	No	01:55
15.12.23	B	07:45-09:45	DAWN	BG	JB	B	08:04	T.	8	No	00:10
15.12.23	B	07:45-09:45	DAWN	BG	JB	C	08:06	GJ	4	No	00:40
15.12.23	B	07:45-09:45	DAWN	BG	JB	D	08:12	CA	450	No	02:50
15.12.23	B	07:45-09:45	DAWN	BG	JB	E	08:13	CA	13	No	01:03
15.12.23	B	07:45-09:45	DAWN	BG	JB	F	08:26	PE	1	Yes	00:35
15.12.23	B	07:45-09:45	DAWN	BG	JB	G	08:31	MS	13	No	00:15
15.12.23	B	07:45-09:45	DAWN	BG	JB	H	NR	MR	1	No	00:12
15.12.23	B	07:45-09:45	DAWN	BG	JB	I	08:44	PE	1	Yes	00:08
15.12.23	B	07:45-09:45	DAWN	BG	JB	J	08:51	MS	3	No	02:50
15.12.23	B	07:45-09:45	DAWN	BG	JB	K	09:08	T.	18	No	00:12
15.12.23	B	07:45-09:45	DAWN	BG	JB	L	09:10	MR	1	No	00:58
15.12.23	B	07:45-09:45	DAWN	BG	JB	M	09:34	CA	1	No	00:30
15.12.23	B	07:45-09:45	DAWN	BG	JB	N	09:38	MR	1	No	02:05
15.12.23	B	07:45-09:45	DAWN	BG	JB	O	09:43	MS	1	No	00:40
15.12.23	A	10:15-12:15	DAY	BG	JB	A	10:22	WG	43	No	00:40
15.12.23	A	10:15-12:15	DAY	BG	JB	B	10:29	CA	1	Yes	00:21
15.12.23	A	10:15-12:15	DAY	BG	JB	C	10:31	SN	5	Yes	00:15

15.12.23	A	10:15-12:15	DAY	BG	JB	D	10:38	SN	1	No	00:43
15.12.23	A	10:15-12:15	DAY	BG	JB	E	10:46	GJ	3	Yes	00:30
15.12.23	A	10:15-12:15	DAY	BG	JB	F	11:08	CA	21	No	00:35
15.12.23	A	10:15-12:15	DAY	BG	JB	G	11:10	CA	36	No	00:40
15.12.23	A	10:15-12:15	DAY	BG	JB	H	11:17	CA	6	No	00:35
15.12.23	A	10:15-12:15	DAY	BG	JB	I	11:48	CA	35	No	01:20
15.12.23	A	10:15-12:15	DAY	BG	JB	J	12:15	MR	1	No	00:32
15.12.23	B	12:45-14:45	DAY	BG	JB	A	13:00	L.	70	No	00:45
15.12.23	B	12:45-14:45	DAY	BG	JB	B	13:02	MR	2	No	01:26
15.12.23	B	12:45-14:45	DAY	BG	JB	C	14:23	L.	200	No	00:45
15.12.23	B	12:45-14:45	DAY	BG	JB	D	13:50	MR	1	No	01:09
15.12.23	B	12:45-14:45	DAY	BG	JB	E	13:52	CA	3	No	01:20
15.12.23	B	12:45-14:45	DAY	BG	JB	F	14:00	CA	4	No	01:10
15.12.23	B	12:45-14:45	DAY	BG	JB	G	14:01	CA	19	No	01:30
15.12.23	B	12:45-14:45	DAY	BG	JB	H	14:03	CA	108	No	01:15
15.12.23	B	12:45-14:45	DAY	BG	JB	I	14:07	CA	181	No	02:10
15.12.23	B	12:45-14:45	DAY	BG	JB	J	14:07	CA	38	No	01:30
15.12.23	B	12:45-14:45	DAY	BG	JB	K	14:10	CA	44	No	01:15
15.12.23	B	12:45-14:45	DAY	BG	JB	L	14:12	CA	21	No	01:30
15.12.23	B	12:45-14:45	DAY	BG	JB	M	14:13	CA	23	No	02:00
15.12.23	B	12:45-14:45	DAY	BG	JB	N	14:17	CA	68	No	01:40
15.12.23	B	12:45-14:45	DAY	BG	JB	O	14:20	CA	5	No	01:21
15.12.23	B	12:45-14:45	DAY	BG	JB	P	14:35	MR	2	No	00:35
15.12.23	B	12:45-14:45	DAY	BG	JB	Q	14:36	CA	45	No	01:30
15.12.23	B	12:45-14:45	DAY	BG	JB	R	14:38	CA	35	No	01:47
15.12.23	B	12:45-14:45	DAY	BG	JB	S	NR	CA	23	No	01:18
15.12.23	B	12:45-14:45	DAY	BG	JB	T	14:45	CA	13	No	01:20
11.01.24	A	07:50-09:50	DAWN	LS	LG	A	08:12	CA	3	Yes	01:00
11.01.24	A	07:50-09:50	DAWN	LS	LG	B	08:23	CU	1	Yes	00:30
11.01.24	A	07:50-09:50	DAWN	LS	LG	C	08:27	CA	1	Yes	00:58
11.01.24	A	07:50-09:50	DAWN	LS	LG	D	08:31	MR	1	No	01:10
11.01.24	A	07:50-09:50	DAWN	LS	LG	E	08:41	L.	7	Yes	01:17
11.01.24	A	07:50-09:50	DAWN	LS	LG	F	08:52	MR	1	No	00:39
11.01.24	A	07:50-09:50	DAWN	LS	LG	G	09:27	CA	1	Yes	00:55
11.01.24	A	07:50-09:50	DAWN	LS	LG	H	09:31	L.	16	Yes	00:35
11.01.24	A	07:50-09:50	DAWN	LS	LG	I	09:31	CA	1	Yes	00:46
11.01.24	B	10:20-12:20	DAY	LS	LG	A	10:45	SU	1	Yes	00:41
11.01.24	B	10:20-12:20	DAY	LS	LG	B	10:52	K.	1	Yes	00:30
11.01.24	B	10:20-12:20	DAY	LS	LG	C	10:58	CA	1	Yes	00:57
11.01.24	B	10:20-12:20	DAY	LS	LG	D	11:10	DN	5	Yes	00:36
11.01.24	B	10:20-12:20	DAY	LS	LG	E	11:22	L.	90+	No	00:20
11.01.24	B	10:20-12:20	DAY	LS	LG	F	11:44	MA	2	Yes	00:58
11.01.24	B	10:20-12:20	DAY	LS	LG	G	11:46	CA	1	Yes	01:20
11.01.24	A	12:50-14:50	DAY	LS	LG	A	13:00	GA	1	Yes	00:48
11.01.24	A	12:50-14:50	DAY	LS	LG	B	13:14	CA	1	Yes	00:57
11.01.24	A	12:50-14:50	DAY	LS	LG	C	13:14	K.	1	Yes	00:35
11.01.24	A	12:50-14:50	DAY	LS	LG	D	13:25	CA	1	No	01:05
11.01.24	A	12:50-14:50	DAY	LS	LG	E	14:15	CA	6	No	01:30
11.01.24	A	12:50-14:50	DAY	LS	LG	F	14:24	MS	1	No	01:24
16.01.24	B	09:15-11:15	DAY	BG	JT	A	09:25	PE	1	Yes	00:07

16.01.24	B	09:15-11:15	DAY	BG	JT	B	09:41	SH	1	Yes	00:10
16.01.24	B	09:15-11:15	DAY	BG	JT	C	09:44	H.	1	No	00:30
16.01.24	B	09:15-11:15	DAY	BG	JT	D	09:50	GA	2	No	00:27
16.01.24	B	09:15-11:15	DAY	BG	JT	E	10:23	SN	1	Yes	00:15
16.01.24	B	09:15-11:15	DAY	BG	JT	F	10:53	K.	1	Yes	03:40
16.01.24	B	09:15-11:15	DAY	BG	JT	G	11:10	K.	1	No	00:24
16.01.24	A	11:45-13:45	DAY	BG	JT	A	12:10	CA	1	No	00:20
16.01.24	A	11:45-13:45	DAY	BG	JT	B	12:35	GA	2	Yes	00:36
16.01.24	A	11:45-13:45	DAY	BG	JT	C	12:50	H.	1	No	00:20
16.01.24	A	11:45-13:45	DAY	BG	JT	D	12:55	ET	1	No	00:15
16.01.24	A	11:45-13:45	DAY	BG	JT	E	13:07	MR	1	No	00:20
16.01.24	A	11:45-13:45	DAY	BG	JT	F	13:42	MR	1	No	00:35
16.01.24	B	14:15-16:15	DUSK	BG	JT	A	14:50	CA	85	No	02:24
16.01.24	B	14:15-16:15	DUSK	BG	JT	B	14:50	CA	45	No	02:24
16.01.24	B	14:15-16:15	DUSK	BG	JT	C	14:53	CA	4	Yes	01:36
16.01.24	B	14:15-16:15	DUSK	BG	JT	D	14:55	CA	6	No	01:20
16.01.24	B	14:15-16:15	DUSK	BG	JT	E	15:07	CA	10	No	01:30
16.01.24	B	14:15-16:15	DUSK	BG	JT	F	15:13	MR	1	No	00:57
16.01.24	B	14:15-16:15	DUSK	BG	JT	G	15:14	CA	23	No	01:02
16.01.24	B	14:15-16:15	DUSK	BG	JT	H	15:27	CA	24	No	01:30
16.01.24	B	14:15-16:15	DUSK	BG	JT	I	16:01	MR	2	Yes	01:56

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