Dublin Airport North Runway
Relevant Action Application

Appropriate Assessment
Screening Report

daa

DublinAirport

December 2020

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Quality information

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1. Introduction

1.1 Background

1.1.1 The Site is defined as being located at Dublin Airport, Co. Dublin, in the townlands of Collinstown, Toberbunny, Commons, Cloghran, Corballis, Coultry, Portmellick, Harristown, Shanganhill, Sandyhill, Huntstown, Pickardstown, Dunbro, Millhead, Kingstown, Barberstown, Forrest Great, Forrest Little and Rock on a site of c. 580 ha. North Runway is currently under construction within the northern extent of the Airport.

1.1.2 Planning permission for the construction of a new 3,110 m long North Runway at Dublin Airport was granted (subject to planning conditions) in August 2007 (An Bord Pleanála Ref. PL06F.217429 and Fingal County Council Reg. Ref. F04A/1755). The Dublin Airport North Runway is currently under construction.

1.1.3 The North Runway Permission contains 31 planning conditions. Two of these planning conditions (Conditions 3(d) and 5) relates to operating restrictions on the use of the runways and overall number of permitted flights at night, and these are due to come into force once the North Runway is operational in 2022. In addition, Condition 4 of the North Runway Permission introduces a restriction on the use of the cross-wind runway (16/34). For avoidance of doubt there is no intention to apply to amend, review or revoke Condition 4.

1.1.4 The relevant action pursuant to Section 34C(a) is to amend condition no. 3(d) of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19). Condition 3(d) and the exceptions at the end of Condition 3 state the following:

'3(d). Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours.

except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.'

1.1.5 Permission is being sought to amend the above condition so that it reads:

'Runway 10L-28R shall not be used for take-off or landing between 0000 hours and 0559 hours

except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type.'

1.1.6 The net effect of the proposed change, if permitted, would change the normal operating hours of the North Runway from the 0700hrs to 2300 hrs to 0600 hrs to 0000 hrs.

1.1.7 The relevant action also is to replace condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19) which provides as follows:

'5. On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.

***Reason**: To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway.'*

1.1.8 With the following:

A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours of 2330hrs and 0600hrs.

1.1.9 Consideration is given in this document to the potential effects of the Proposed Relevant Action on European designated sites, which include Special Areas of Conservation (SAC) and Special Protection Areas (SPA), is required. This document therefore serves to provide the competent authority with the information needed to determine whether, on the basis of objective information, likely significant effects on any European site from the proposed Relevant Action can be excluded, considering the proposed Relevant Action individually and in-combination with other plans and projects.

1.2 Current runway operations

1.2.1 Dublin Airport currently has two operational runways: the main 10/28 runway (2,637m long) (hereafter referred to as 'South Runway') and a cross runway 16/34 (2,072m long). South Runway takes the majority of incoming and outgoing flights while the cross runway 16/34 operates during certain weather conditions and in some cases to reduce congestion for aircraft on the taxiway infrastructure during early morning peak hours departure periods and to allow maintenance works on the South runway.

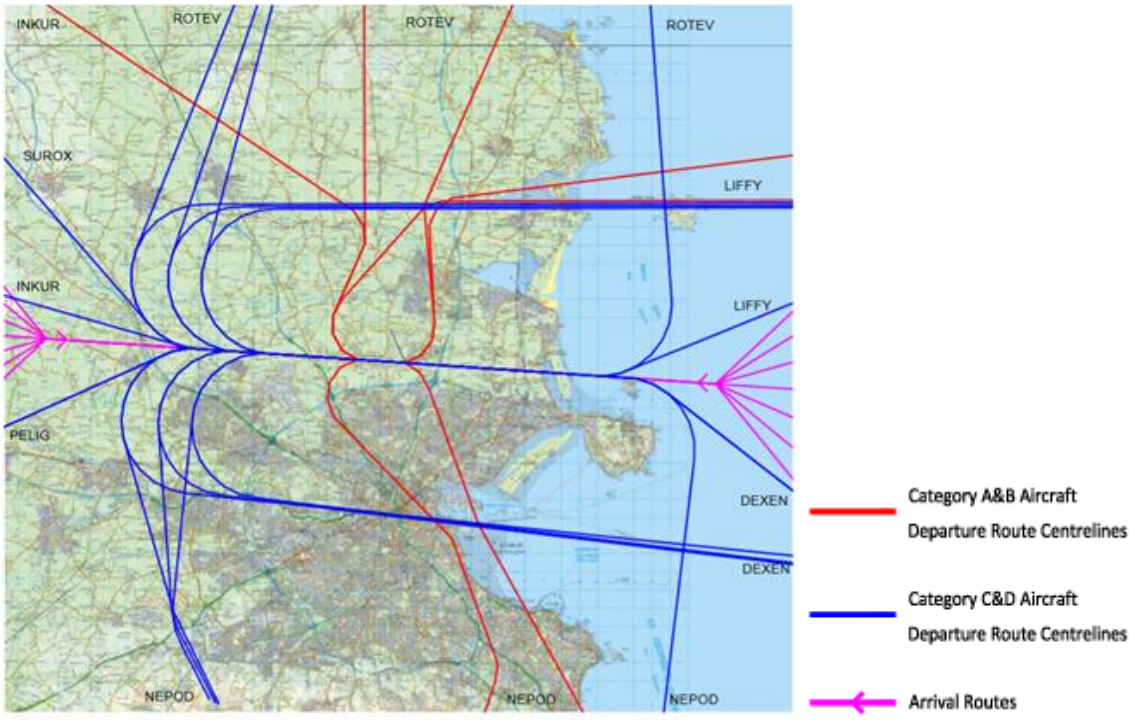
1.2.2 Dublin Airport operates 24 hours a day, seven days a week and for 364 days per year. The current landing and take-off routes vary with aircraft type and destination, as shown on Image 1, below.

1.2.3 The Irish Aviation Authority (IAA) is responsible for airspace design and management. Currently the airport has a total of eleven Standard Instrument Departure (SID) routes for westerly operations and ten for easterly operations, although in both cases a number are initially the same before separating some distance from the airport. As the point at which they separate is distant from Dublin Airport, the aircraft will have attained sufficient height to not cause significant noise levels on the ground. For noise modelling purposes a set of seven initial departure routes have been created from the western end and four initial departure routes from the eastern end, these are shown in blue on Image 1, below.

1.2.4 For Category C and D aircraft, which are jet aircraft, these routes have been supplemented for departures to the west by routes that turn earlier, although not as early as Category A and B aircraft (which have propellers and are defined in the paragraph below) routes. This is because after reaching an altitude of 3,000 feet (approximately 900 m), jet aircraft can be vectored onto their destination by air traffic control. Two additional 'Early Turn' routes were therefore created for each route with initial turns to the north, south, or east (i.e. the ROTEV, NEPOD, LIFFY and DEXEN routes shown on Image 1). Air traffic has been distributed equally between the three turning points, the two early turns and the SID, for each route.

1.2.5 Category A and B aircraft, which are predominantly turboprops such as the ATR 72, are not required to remain within the existing environmental corridors to the same extent as the larger jet aircraft types. They therefore commonly turn off the extended runway centreline to the north or south shortly after the end of the runway as agreed with the IAA.

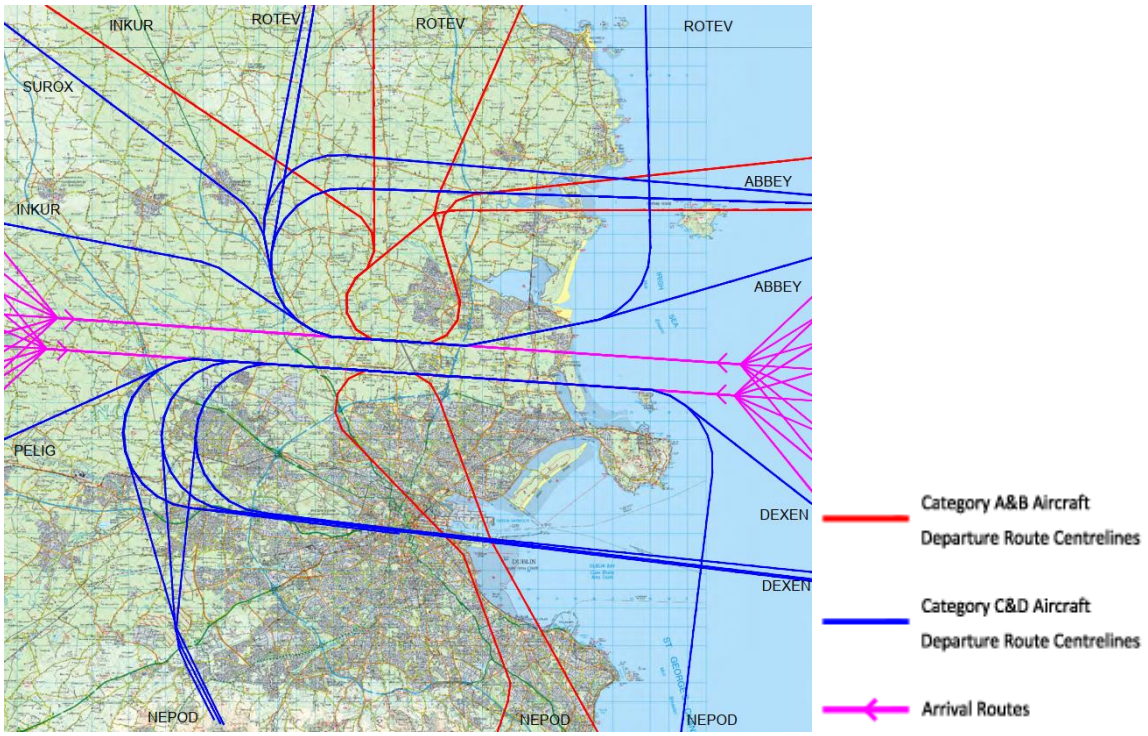
Image 1. Existing arrival and departure flight paths for Dublin Airport



1.3 Proposals under the Proposed Relevant Action

1.3.1 The proposed flight paths for aircraft arriving at and departing from Dublin Airport once North Runway is operational are shown on Image 2.

Image 2. Future arrival and departure flight paths from Dublin Airport



1.3.2 The proposed relevant action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system (i.e., conditions which are not specific to night-time use, namely conditions no. 3 (a), 3(b), 3(c) and 4 of the North Runway Planning Permission) or any amendment of permitted annual passenger capacity of the Terminals at Dublin Airport. Condition no. 3 of the Terminal 2 Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.220670) and condition no. 2 of the Terminal 1 Extension Planning Permission (Fingal County Council Reg. Ref. No. F06A/1843; ABP Ref. No. PL06F.223469) provide that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per annum.

1.3.3 The net effect of the proposed change, if permitted, would change the normal operating hours of the North Runway from the 0700hrs to 2300 hrs to 0600 hrs to 0000 hrs. Once North Runway is operational the parallel runway will predominately be operated in segregated mode, i.e. one runway for all arrivals, the other for all departures. However, in peak periods, the runways will operate in semi-mixed mode, i.e. one runway used for both arrivals and departures simultaneously and the other runway for arrivals or departures depending on the wind direction. It is not expected that full mixed mode would be required in the assessment years of 2022 and 2025 i.e. both runways used for arrivals and departure at the same time.

1.3.4 Condition 3 a-c states that;

On completion of construction of the runway hereby permitted, the runways at the airport shall be operated in accordance with the mode of operation – Option 7b – as detailed in the Environmental Impact Statement Addendum, Section 16 as received by the planning authority on the 9 th day of August, 2005 and shall provide that –

(a) the parallel runways (10R-28L and 10L-28R) shall be used in preference to the cross runway, 16-34,

(b) when winds are westerly, Runway 28L shall be preferred for arriving aircraft. Either Runway 28L or 28R shall be used for departing aircraft as determined by air traffic control,

(c) when winds are easterly, either Runway 10L or 10R as determined by air traffic control shall be preferred for arriving aircraft. Runway 10R shall be preferred for departing aircraft"

1.3.5 Permission is being sought to amend condition 3 (d) so that it reads:

'Runway 10L-28R shall not be used for take-off or landing between 0000 hours and 0559 hours

except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type.'

1.3.6 The net effect of the proposed change, if permitted, would change the normal operating hours of the North Runway from the 0700hrs to 2300 hrs to 0600 hrs to 0000 hrs.

1.3.7 Option 7b shall be achieved primarily by segregated mode of operation as follows and illustrated in Image 3:

When winds are westerly (approximately 70% of the time), Runway 28L shall be preferred for arriving aircraft. Runway 28R shall be used for departing aircraft.

When winds are easterly (approximately 30% of the time), Runway 10R shall be preferred for departing aircraft. Runway 10L shall be used for arriving aircraft.

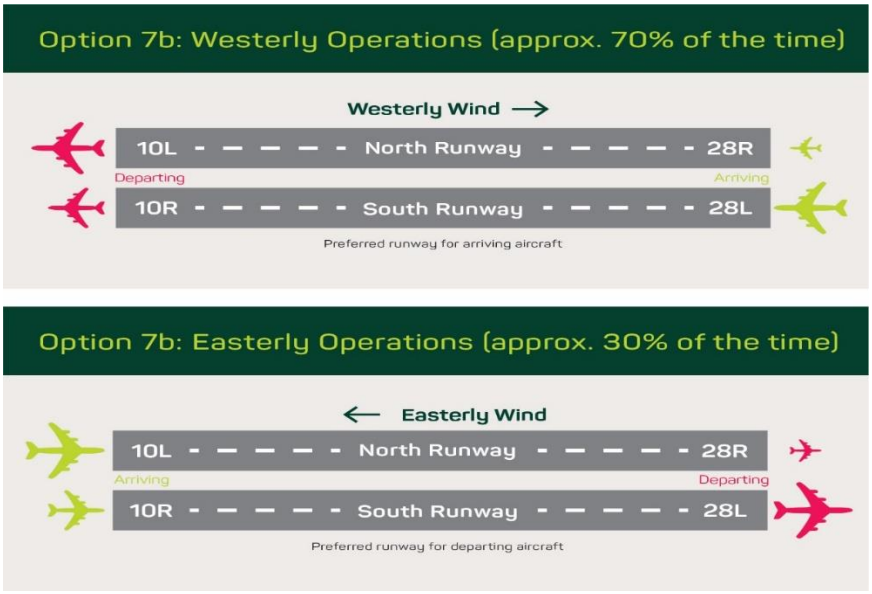


Image 3: Operating Mode 7b

1.3.8 The relevant action also is to replace condition no. 5 of the North Runway Planning Permission which provides as follows:

'5. On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.

***Reason**: To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway.'*

1.3.9 With the following:

A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours of 2330hrs and 0600hrs.

1.3.10 In addition to the proposed night time noise quota, the relevant action also proposes the following noise mitigation measures:

- A noise insulation grant scheme for eligible dwellings within specific night noise contours
- A detailed Noise Monitoring Framework to monitor the noise performance with results to be reported annually to the Aircraft Noise Competent Authority (ANCA), in compliance with the Aircraft Noise (Dublin Airport) Regulation Act 2019.

1.3.11 The proposed relevant action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system (i.e., conditions which are not specific to night time use, namely conditions no. 3 (a), 3(b), 3(c) and 4 of the North Runway Planning Permission) or any amendment of permitted annual passenger capacity of the Terminals at Dublin Airport.

1.3.12 Condition no. 3 of the Terminal 2 Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.220670) and condition no. 2 of the Terminal 1 Extension Planning Permission (Fingal County Council Reg. Ref. No. F06A/1843; ABP Ref. No. PL06F.223469) provide that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per annum.

1.3.13 A Quota Count (QC) system is designed to limit the overall amount of noise produced by aircraft using an airport based on an allowable Annual Noise Quota (ANQ) for a given time period. A QC value is assigned to each individual aircraft movement based on the certified noise level of that aircraft. Lower QC values are attributed to aircraft with lower noise levels, higher values to noisier aircraft. The QC accumulates for each air traffic movement (ATM) against the Annual Night Quota (ANQ) across the

chosen time period. As such, the system allows a greater number of quieter aircraft movements within a given quota thereby encouraging the use of quieter aircraft at the airport.

1.3.14 An Annual Night Quota (ANQ) has been developed for the period 23:30 to 06:00 (known as the Night Quota Period (NQP)) consistent with airports operating similar QC based systems. An ANQ of 7,990 is proposed to apply for each year from the opening of the North Runway to 2025 to facilitate growth back to pre-COVID-19 levels up to 32million passengers per annum (mppa). This total ANQ has been derived using a QC value of 0.49 per ATM and based on the number of forecast Air Traffic Movement (ATMs) in 2025. This represents a reduction in QC value per ATM from 2018 which was 0.52 per ATM. Details of the ANQ calculations and methodology are provided in the document, 'Dublin Airport, Developing a Proposed Night Quota System' by Anderson Acoustics, which forms part of the planning application package.

1.3.15 The proposed change from the night-time aircraft movement cap of 65 movements per night to the ANQ, will allow growth in overall air traffic movements at night whilst ensuring that the overall effects of aircraft noise do not exceed those in 2018 in accordance with the cNAO. This is the result of airlines updating the fleet operating at Dublin Airport to comprise more quieter aircraft.

1.3.16 In addition to the above, it is proposed that a noise monitoring framework will be put in place at the airport to monitor, assess and report across a number of key noise metrics and to demonstrate ongoing compliance with the Noise Abatement Objective (NAO) for the airport once it has been defined by ANCA.

1.4 Legislative context

1.4.1 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is more commonly known as 'the Habitats Directive', requires Member States of the European Union (EU) to take measures to maintain or restore, at favourable conservation status, natural habitats and wild species of fauna and flora of Community interest. The provisions of the Habitats Directive require that Member States designate SACs for habitats listed in Annex I and for species listed in Annex II. Similarly, Directive 2009/147/EC on the conservation of wild birds (more commonly known as 'the Birds Directive') provides a framework for the conservation and management of wild birds. It also requires Member States to identify and classify SPAs for rare or vulnerable species listed on Annex I of the Directive, as well as for all regularly occurring migratory species. The complete network of European sites is referred to as 'Natura 2000'.

1.4.2 Under article 6(3) of the Habitats Directive, any plan or project which is not directly connected with or necessary to the management of a European designated site, but would be likely to have a significant effect on such a site, either individually or in combination with other plans or projects, shall be subject to an 'Appropriate Assessment' (AA) of its implications for the SAC / SPA in view of the site's conservation objectives.

1.4.3 In the Republic of Ireland, the requirements of Article 6(3) are transposed into national law by Part 5 of the European Communities (Birds and Natural Habitats Regulations) 2011 (S.I. No. 477 of 2011)) (more commonly referred to as the 'Habitats Regulations') and Part XAB of the Planning and Development Act 2000.

1.4.4 The competent authority which is responsible for carrying out the appropriate assessment is the relevant planning authority for each plan or project.

1.4.5 Also of relevance to this screening is the Aircraft Noise (Dublin Airport) Regulation Act 2019 (hereafter referred to as the 'Aircraft Noise Act'). The Aircraft Noise Act implements EU Regulation 598/2014 on the establishment of rules and procedures with regard to the introduction of noise-related operation restrictions at Union airports. The Aircraft Noise Act amends the Planning and Development Act 2000 (as amended) (the 'PDA') by inserting a number of new sections in Part 3 of the PDA, which deals with control of development. These sections introduce a number of new measures for planning applications at Dublin Airport that may necessitate noise-related actions or that may require a new operating restriction. Section 34C of the PDA permits an applicant who is currently subject to a planning permission for development at the airport that includes an operating restriction (e.g. the North Runway Permission) to make an application under Section 34 of the PDA to revoke, amend, replace or take other action in respect of the operating restriction. The proposed Relevant Action is such an application, as it seeks to make changes to the operating restrictions imposed by the relevant planning conditions.

1.5 Overview of Appropriate Assessment process

1.5.1 The process required by Articles 6(3) and 6(4) of the Habitats Directive is stepwise and must be followed in sequence.

1.5.2 The first step in the sequence of tests is to establish whether an Appropriate Assessment is required. This is often referred to as Appropriate Assessment (or AA) screening. The purpose of AA screening is to determine, in view of best available scientific knowledge, whether a plan or project, either alone or in combination with other plans or projects, could have likely significant effects on a European designated site, in view of that site's conservation objectives. For this purpose and as a result of case law 'likely' means 'possible'. Only if there are likely significant effects is it necessary to proceed to the second step of 'Appropriate Assessment'.

1.5.3 Section 177(U) of the Planning and Development Act 2000 provides: 'The competent authority shall determine that an appropriate assessment of a … proposed development [in this case the Proposed Relevant Action] … is required if it cannot be excluded, on the basis of objective information, that the … proposed development [Proposed Relevant Action], individually or in combination with other plans or projects, will have a significant effect on a European site' [emphasis added].

1.5.4 This AA screening has been carried out taking account of rulings of the Court of Justice of the European Union (CJEU), in particular that of the case People Over Wind and Sweetman v Coillte Teoranta (C-323/17). The ruling of the CJEU in this case requires that any conclusion of 'no likely significant effect' on a European site must be made prior to any consideration of measures intended to avoid or reduce harmful effects of the relevant project or plan on European site In compliance with this case law, this AA Screening Report does not consider any mitigation measures intended to avoid or reduce harmful effects from the Proposed Relevant Action when determining whether the likelihood of significant effects on European sites can be excluded.

1.6 Sources of guidance

1.6.1 This Report has been prepared in accordance with the European Commission (EC) guidance document Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and the Department of the Environment, Heritage and Local Government (DoEHLG) and Guidance on the Appropriate Assessment of Plans and Projects in Ireland (DoEHLG, 2010).

1.6.2 In addition to the references above, the following relevant guidance was considered during the preparation of this report:

- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018); and,
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular Letter NPWS 1/10 & PSSP 2/10 (NPWS, 2010).

1.7 Purpose of this Report

1.7.1 This Appropriate Assessment Screening Report has been prepared to provide Fingal County Council with the information needed to assist them in carrying out the AA screening exercise. This is in line with Section 177U(3) of the Planning Acts which states that '*in carrying out screening for appropriate assessment of a proposed development a competent authority may request such information from the applicant as it may consider necessary to enable it to carry out that screening, and may consult with such persons as it considers appropriate*…'.

2. Identification of relevant European sites

2.1.1 There is no pre-defined guidance on the physical scope of an Appropriate Assessment. Consideration has therefore been given primarily to identified impact pathways and the source-pathway-receptor approach, rather than adopting an arbitrary 'zones' approach. The source-pathway-receptor approach is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for an effect to occur.

2.1.2 DoEHLG (2010) guidance states that European sites with the potential to be affected by a plan or project should be identified taking into consideration the potential for direct, indirect and/or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- all European sites within or immediately adjacent to the plan or project area;
- all European sites within the likely 'zone of impact' of the plan or project; and,
- adopting the Precautionary Principle, all European sites for which there is doubt as to whether or not such sites might be significantly affected.

2.1.3 The likely zone of impact (also referred to as the likely 'zone of influence') of a plan or project is the geographic extent over which significant ecological effects are likely to occur. The DoEHLG guidance document recommends a 15 km distance threshold for European designated sites from the boundary of a plan area. In the case of projects, the guidance acknowledges that the zone of influence must be devised on a case by case basis with reference to the following criteria: the nature, size / scale and location of the project, sensitivity of ecological features under consideration and cumulative effects. Sites more than 15 km from a project may therefore be relevant.

2.1.4 The nearest SAC to Dublin Airport is Malahide Estuary SAC (site code: 000205), located approximately 4 km north-east and designated for a number of coastal and estuarine habitats. The SAC is not designated for any Annex II species (or mobile species).

2.1.5 The proposals can have no possible direct effects on any SAC as they do not involve any change to the final layout of the North Runway nor do they propose any additional stands, piers or other infrastructure at the airport. In other words, construction of the North Runway will be as consented and the proposed Relevant Action will not require any additional land take or any changes to consented drainage from North Runway and/or the airport discharge systems. The proposed Relevant Action does not entail the carrying out of any works at all. Taking into consideration the distance of the Malahide Estuary SAC from the North Runway, there is no potential for the increased number of night-time flights to have any effect on the qualifying habitats. For these reasons, no further consideration is given to SACs and likely significant effects on SACs. It is concluded that, on the basis of objective information, likely significant effects on SACs from the proposed Relevant Action, both individually and in-combination with other plans and projects, can be excluded.

2.1.6 The remainder of this Appropriate Assessment screening therefore considers only Special Protection Areas.

2.1.7 Reviewing the proposed flight paths for Dublin Airport (see Image 2), aircraft using Dublin Airport North Runway and South Runway will over-fly, Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA when departing and/or landing. Flight paths will not pass over Malahide Estuary SPA, North Bull Island SPA or Howth Head Coast SPA, which are all otherwise within 15 km of Dublin Airport. The possibility of disturbance impacts on birds present within these three sites as a result of flights arriving or departing the airport can therefore be excluded.

2.1.8 The likely zone of influence of the Proposed Relevant Action used in this AA screening is therefore all Special Protection Areas over which aircraft arriving or departing North Runway will pass at heights of 10,000 feet or less.

2.1.9 The potential for likely significant effects (LSE) on the following European designated sites is therefore assessed as part of this AA screening exercise:

- Rogerstown Estuary SPA;
- Baldoyle Bay SPA;
- Ireland's Eye SPA;
- Lambay Island SPA; and,
- South Dublin Bay and River Tolka Estuary SPA.

2.1.10 Details for these sites are provided in Table 1.

Table 1. Special Protection Areas within the potential zone of influence of the Proposed Relevant Action

Site name (SPA)	Approximate distance from Dublin Airport North Runway	Summary of Special Conservation Interest(s)
Rogerstown Estuary (site code: 004015)	8 km north-east	• Non-breeding waterbirds and wetland habitats supporting waterbirds.
Baldoyle Bay (site code: 004016)	6.5 km east-south-east	• Non-breeding waterbirds and wetland habitats supporting waterbirds.
Ireland's Eye SPA (site code: 004117)		• Breeding seabirds.
Lambay Island (site code: 004069)	14.8 km north-east	• Breeding seabirds. • Non-breeding waterbirds.
South Dublin Bay and River Tolka Estuary SPA (004024)	8.1 km south-east	• Breeding seabirds. • Non-breeding waterbirds and wetland habitats supporting waterbirds.

2.1.11 A Wildlife Management Plan currently implemented by daa permits them to disturb and prevent birds from flocking at or immediately adjacent to North Runway, in the interests of public safety. It is therefore the case that significant numbers of SCI species will not occur in this area. Therefore, this AA screening has been carried out on the basis that significant numbers of SCI species of any of the European designated sites listed in Table 2 do not occur in these areas. Further details and discussion on this topic are given in Section 5.2.

2.2 Rogerstown Estuary SPA

2.2.1 Rogerstown Estuary receives water from the Ballyboghill River and Ballough River and has a wide salinity range, from near full seawater to near full freshwater. At low tide, extensive intertidal sand and mud flats are exposed and these provide the main food resource for the wintering (non-breeding) waterbirds that use the site.

2.2.2 A summary of the non-breeding SCI species of the Rogerstown Estuary SPA is given in Table 2.

Table 2. Special Conservation Interest species of the Rogerstown Estuary SPA

Species (common name)	Species (scientific name)	SPA population*	Latest assessed conservation condition (NPWS, 2013b)
Greylag goose	*Anser anser*	160 individuals, representing 1% or more of the total Irish population.	Highly Unfavourable
Light-bellied brent goose	*Branta bernicla hrota*	1,069 individuals, representing 1% or more of the biogeographic population.	Favourable
Shelduck	*Tadorna tadorna*	773 individuals, representing 1% or more of the total Irish population.	Favourable
Shoveler	*Anas clypeata*	59 individuals, representing 1% or more of the total Irish population.	Favourable
Oystercatcher	*Haematopus ostralegus*	1,345 individuals, representing 1% or more of the total Irish population.	Favourable
Ringed plover	*Charadrius hiaticula*	188 individuals, representing 1% or more of the total Irish population.	Favourable
Grey plover	*Pluvialis squatarola*	229 individuals, representing 1% or more of the total Irish population.	Intermediate Unfavourable
Knot	*Calidris canutus*	2,454 individuals, representing 1% or more of the total Irish population.	Highly Unfavourable
Dunlin	*Calidris alpina*	2,745 individuals, representing 1% or more of the total Irish population.	Favourable
Black-tailed godwit	*Limosa limosa*	195 individuals, representing 1% or more of the total Irish population.	Favourable
Redshank	*Tringa totanus*	490 individuals, representing 1% or more of the total Irish population.	Favourable
Wetland habitats and waterbirds	N/A	The wetland habitats are identified as being of conservation importance for non-breeding migratory waterbirds and are therefore considered to be an additional SCI.	N/A

* The population size given is the 5-year mean peak count for the period 1995/96 – 1999/2000.

2.2.3 The conservation objectives in relation to the SCI species of the Rogerstown Estuary SPA are:

- to maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for Rogerstown Estuary SPA:
  - to be favourable, the long-term population trend for each waterbird Special Conservation Interest species should be stable or increasing;
  - to be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation; and,
- to maintain the favourable conservation condition of the wetland habitat at Rogerstown Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise it:
  - to be favourable, the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 646 ha, other than that occurring from natural patterns of variation.

2.3 Baldoyle Bay SPA

2.3.1 Baldoyle Bay SPA is situated approximately 6.5 km east-south-east of Dublin Airport. The European site is relatively small and narrow in extent and is separated from the open sea by a large sand dune system. At low tide, large areas of intertidal flats are exposed, comprising mostly sands but with some mud in

the more sheltered parts of the estuary. In addition, areas of saltmarsh also occur in several parts of the site.

2.3.2 The non-breeding SCI species, and additional Special Conservation Interests, of Baldoyle Bay SPA are summarised in Table 3.

Table 3. Species Conservation Interest species of the Baldoyle SPA

Species (common name)	Species (scientific name)	SPA population*	Latest assessed conservation condition (NPWS, 2012)
Special Conservation Interest Species			
Light-bellied brent goose	*Branta bernicla hrota*	726 individuals, representing 1% or more of the biogeographic population.	Favourable
Ringed plover	*Charadrius hiaticula*	223 individuals, representing 1% or more of the total Irish population.	Intermediate Unfavourable
Bar-tailed godwit	*Limosa lapponica*	353 individuals, representing 1% or more of the total Irish population.	Highly Unfavourable
Additional Special Conservation Interests			
Shelduck	*Tadorna tadorna*	147 individuals, representing 1% or more of the total Irish population.	Favourable
Golden plover	*Pluvialis apricaria*	2,120 individuals, representing 1% or more of the total Irish population.	Unfavourable
Grey plover	*Pluvialis squatarola*	200 individuals, representing 1% or more of the total Irish population.	Unfavourable
Wetland habitat and waterbirds	N/A	The wetland habitats are identified as being of conservation importance for non-breeding migratory waterbirds and are therefore considered to be an additional SCI.	N/A

* The population size given is the 5-year mean peak count for the period 1995/96 – 1999/2000.

2.3.3 The conservation objectives in relation to the SCI species of the Baldoyle Bay SPA are:

- to maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for Baldoyle Bay SPA:
  - to be favourable, the long-term population trend for each waterbird Special Conservation Interest species should be stable or increasing;
  - to be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation; and,
- to maintain the favourable conservation condition of the wetland habitat at Baldoyle Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it:
  - to be favourable, the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 263 ha, other than that occurring from natural patterns of variation.

2.4 Ireland's Eye SPA

2.4.1 Ireland's Eye is an uninhabited island located approximately 1.5 km north of Howth in Co. Dublin, and approximately 11.2 km south-east of Dublin Airport. The Ireland's Eye SPA designation encompasses Ireland's Eye, Rowan Rocks, Thulla, Thulla Rocks, Carragreen Bay and a seaward extension of 200 m in the west and 500 m to the north and east. The island has large, near vertical cliffs, along its northern and eastern sides, with scattered exposures elsewhere. There is also a tall stack to the eastern side of the cliffs.

2.4.2 A summary of the breeding SCI species of the Ireland's Eye SPA is provided in Table 4.

Table 4. Special Conservation Interest species of the Ireland's Eye SPA

Species (common name)	Species (scientific name)	SPA population*
Cormorant	*Phalacrocorax carbo*	306 pairs
Herring gull	*Larus argentatus*	250 pairs
Kittiwake	*Rissa tridactyla*	941 pairs
Guillemot	*Uria aalge*	2,191 individuals
Razorbill	*Alca torda*	522 individuals

* The population size given is taken from the Natura 2000 Standard Data Form for the site.

2.4.3 The sole conservation objective in relation to Ireland's Eye SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of the designation.

2.5 Lambay Island SPA

2.5.1 Lambay Island lies approximately 4 km from the coast and rises to a height of 127 m above sea level. It is situated approximately 14.8 km from Dublin Airport. On the western side of the island, the land rises gently from a bedrock shoreline, while the northern, eastern and southern shores consist of steep cliffs ranging in height from 15 – 50 m. The cliffs are backed by vegetated slopes along most of their lengths, with a typical maritime plant community.

2.5.2 A summary of the breeding and non-breeding SCI species of the Lambay Island SPA is provided in Table 5.

Table 5. Special Conservation Interest species of the Lambay Island SPA

Species (common name)	Species (scientific name)	SPA population*
Fulmar	*Fulmarus glacialis*	635 pairs
Cormorant	*Phalacrocorax carbo*	675 pairs (breeding) and 29 individuals (non-breeding, winter)
Shag	*Phalacrocorax aristotelis*	1,122 (not stated whether pairs or individuals)
Greylag goose	*Anser anser*	311 individuals
Lesser black-backed gull	*Larus fuscus*	309 pairs
Herring gull	*Larus argentatus*	1,806 (not stated whether pairs or individuals)
Kittiwake	*Rissa tridactyla*	4,091 pairs
Guillemot	*Uria aalge*	59,824 individuals

* The population size given is taken from the Natura 2000 Standard Data Form for the site.

2.5.3 The conservation objectives in relation to the SCI species of the Lambay Island SPA are to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests.

2.5.4 The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and,
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

2.6 South Dublin Bay and River Tolka Estuary SPA

2.6.1 The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dún Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. The site is important for wintering waterfowl. Common and Arctic tern breed in Dublin Docks on manmade structures and south Dublin Bay is an important staging post for tern species. A summary of the SCI species of the SPA is given in Table 6.

Table 6. Special Conservation Interests of the South Dublin Bay and River Tolka Estuary SPA

Species	Baseline SPA population (1995/96 – 1999/2000)	Recent population estimates (2006/07 – 2010/11)	Conservation condition
Light-bellied brent goose [A046]	1,548	3,443	Favourable
Shelduck [A048]	1,259	913	Intermediate Unfavourable
Teal [A054]	953	921	Favourable
Pintail [A054]	233	156	Intermediate Unfavourable
Shoveler [A056]	141	123	Unfavourable
Oystercatcher [A130]	1,784	1,772	Favourable
Golden plover [A140]	2,033	1,094	Unfavourable
Grey plover [A141]	517	380	Unfavourable
Knot [A143]	2,837	3,542	Favourable
Sanderling [A144]	141	271	Favourable
Dunlin [A149]	4,146	3,734	Favourable
Black-tailed godwit [A156]	367	873	Favourable
Bar-tailed godwit [A157]	1,529	1,627	Favourable
Curlew [A160]	937	918	Favourable
Redshank [A162]	1,431	2,356	Favourable
Turnstone [A169]	157	238	Favourable
Black-headed gull [A179]	2,196	1,527	Unfavourable
Wetland and waterbirds [A999]	N/A	N/A	Not provided
All population data taken from the Conservation Objectives Supporting Document provided (NPWS, 2014).			

2.6.2 The conservation objectives in relation to the SCI species of the South Dublin Bay and River Tolka Estuary SPA are:

- to maintain the favourable conservation condition of the Special Conservation Interest species:
  - to be favourable, the long-term population trend for each waterbird Special Conservation Interest species should be stable or increasing;
  - to be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation; and,
- to maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it:
  - the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 ha, other than that occurring from natural variation.

3. Literature review

3.1.1 A literature review was carried out to investigate hearing in birds and the effects of noise and visual stimuli on birds. The review focussed primarily on scientific studies which investigated the effects of aircraft noise on non-breeding waterbirds (which are the SCI species ofRogerstown Estuary SPA, Baldoyle Bay SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA) and breeding seabirds (which are the SCI species of Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA). Where relevant, or where they provide useful additional information, other studies into noise disturbance of birds were also included in the literature review.

3.1.2 Noise and visual disturbance were the sole focus of the literature review as the other possible impacts (see Section 4) on SCI species of the relevant SPAs can be fully assessed in the absence of such an exercise.

3.2 Noise levels and bird hearing

3.2.1 Hearing in birds is not as well developed as in humans, in that most birds cannot hear as high or as low frequencies as humans. There are physiological reasons for this (summarised in Dooling and Popper (2007) and Beason (2004)). Additionally, the ability of birds to resolve similar frequencies is only about one-half to one-third that of humans within the range of peak sensitivity, which is similar to that of humans at 1 – 4 kHz (Beason, 2004).

3.2.2 Many of the studies referenced throughout this section use 'dB(A)' to measure sound levels. dB(A) is the sound level in decibels in the range of human hearing. Given that, as described above, bird's hearing is generally poorer than that of humans, it is appropriate to use dB(A) when conducting this AA screening as it represents a conservative approach to assessment, which is likely to slightly overestimate effects on birds.

3.2.3 By virtue of its logarithmic nature, the decibel (dB) scale covers many orders of magnitude of sound pressure within a relatively small numerical range, which can be counterintuitive to those not familiar with it. The following points may be helpful:

- a difference of less than 3 dB is often not perceived by humans and perhaps, given the general inferiority of bird hearing compared to human hearing, not by birds either;
- a difference of 10 dB is perceived as roughly a doubling or halving; and,
- without barriers and varying also according to other physical aspects of the environment, sound levels from point sources tend to decrease by about 6 dB with each doubling of distance.

3.2.4 It is important to note that visual stimuli tend to have greater disturbance effects on birds than noise stimuli alone (as stated in Cutts et al (2009)).

3.3 Non-breeding waterbirds

3.3.1 Although a number of studies into aircraft disturbance of non-breeding waterbirds were found by the literature review, the majority of these investigated the effects of low-flying light aircraft, military jets and helicopters. Cutts et al (2009), however, note that there appears to be a degree of habituation by waterfowl flocks on the Humber Estuary, England, to regular commercial aircraft flights to Humberside Airport. They state that birds showed no response to these flights, except when, on two occasions, they appeared to be 'spooked' by the shadow of an aircraft when its flightpath positioned the shadow over the mudflats of the estuary. It is worth re-iterating that for the majority of the non-breeding season, flights associated with the proposed Relevant Action will take place during the hours of darkness so there is no possibility of visual disturbance stimuli, including shadows from over-flying aircraft.

3.3.2 Hoang (2013) conducted a literature review of aircraft disturbance on shorebirds and seabirds. Of seven studies presented in the literature review which investigated effects on shorebirds (including several of the SCI species relevant to this AA screening), the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300 m above ground level, with lower level flights having relatively limited or no disturbance effects. It should be noted that all aircraft considered by this study were small planes or military jets.

3.3.3 Komenda-Zehnder et al (2003) performed 326 experimental flights over lakes in Switzerland to observe for behavioural responses by non-breeding waterbirds. They found that birds returned to a 'relaxed' behaviour (including preening, resting and feeding) within five minutes of the over-flights. Similar to the review of studies carried out by Hoang (2013), Komenda-Zehnder et al (2013) also found that planes flying at heights of 300 m above ground level did not result in any significant change in the behaviour of birds.

3.3.4 In a study carried out in the Dutch Wadden Sea, the numbers and behaviours of knots were found to be affected by over-flights of military jets, with fewer birds present on days with flights and the birds that were present being more restless and less approachable by humans (Koolhass et al, 1993). They also observed that 'light tourist airplanes' caused a more severe response in the birds than the military jets.

3.3.5 A substantial review of literature associated with the disturbance of waterbirds was produced for the Humber Industry Nature Conservation Association (INCA) by the University of Hull (Cutts et al, 2009). Although not specifically relating to aircraft, this report recommended that (with respect to waterbirds on mudflats), construction noise levels should be restricted to below 70 dB(A) because birds would habituate to regular noise below that level, but that sudden irregular noise above 50 dB(A) should be avoided. The University of Hull subsequently produced refined guidance in the Waterbird Disturbance Mitigation Toolkit (Cutts et al, 2013). It concluded that:

- high level disturbance effects are likely with continuous noise above 72 dB(A) or sudden noise above 60 dB(A);
- moderate level disturbance effects are likely with regular noise of 60 – 72 dB(A) or sudden noise of 55 – 60 dB(A); and,
- there is unlikely to be any response by waterbirds to any noises below 55 dB(A).

3.4 Breeding seabirds

3.4.1 Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA are designated for nesting seabirds and some of the studies described below are likely to be directly applicable to those sites. However, nesting birds are generally considered to be more sensitive to disturbance and the results of these investigations may provide a conservative assessment of how the non-breeding SCI birds may react to similar disturbance sources.

3.4.2 Dunnet (1977) carried out a study into the disturbance caused by aircraft (including fixed-wing planes and helicopters) passing over a cliff-nesting seabird colony in Aberdeenshire, Scotland. The species present included herring gull, kittiwake, guillemot and razorbill, all of which are SCI species of the Ireland's Eye SPA. The study found no evidence that aircraft passing at heights of 100 m or more above the cliff-top affected attendance of the birds, and whilst groups of kittiwakes took to the air in response to planes it was noted that they did so frequently through the course of the day for no obvious cause. Although this study did not measure sound levels, it is clear that aircraft passing 100 m above the cliff would have generated a much larger amount of noise than aircraft passing overhead at 300 m or higher into or out of Dublin Airport. Furthermore, these aircraft would certainly have also presented a visual disturbance stimulus and thus be expected to be more likely to elicit a response from the birds present.

3.4.3 A study of nesting herring gulls beside an airport (Burger, 1981) found that normal colony noise was 77 dB(A), and (in this case, where birds were habituated to normal jet aircraft) behavioural reactions (taking flight) only occurred when Concorde passed by, generating noise exceeding 101 dB(A). This is rather an extreme example, however, involving birds that were habituated to noise from nearby passenger jets at levels which were liable to have caused hearing damage, but is useful as a further demonstration that birds may tolerate high levels of constant or frequently-occurring noise.

3.4.4 In an Australian study of nesting terns (Brown, 1990), aircraft noise was simulated using speakers placed beside a colony which was not accustomed to aircraft. In doing so, visual disturbance stimuli were eliminated and there was no prior habituation. It found that playback of aircraft noise at 65 dB(A) had a minimal reaction, causing the majority of terns to 'scan' (cocking the head or turning it horizontally). At 70 dB(A), about half the terns engaged in 'alert' behaviour (extending the neck, making minor whole-body movements or wing tensing). 'Startle' (preparation to fly) and 'escape' (flying off) behaviours only affected a small proportion of the terns and were largely restricted to sound levels above 85 dB(A). An observation study of harlequin ducks *Histrionicus histrionicus* (Goudie and Jones, 2004) similarly found that behavioural changes increased substantially when sound from passing aircraft exceeded 80 dB(A).

However, this and other studies (e.g. Buxton *et al*, 2017) noted that whilst disturbance may not cause birds to take flight, less obvious stress-related behavioural changes can occur such as reduced courtship behaviour and increased time engaged in agonistic, disturbance or predator evasion behaviour, which may adversely affect survival.

3.4.5 A study conducted in Minnesota aimed to investigate the effects of an airport expansion on nearby nesting black-crowned night herons Nycticorax nycticorax, great blue herons Ardea herodias and great white egrets Ardea alba (Grubb, 1979). A singe engine propeller aircraft was flown over the nesting site of these species at heights between 490 – 2,620 m above ground level. The noise levels generated by the aircraft at these heights ranged from 61 – 88 dB(A), and were 9 dB(A) greater than the maximum existing aircraft noise levels. No reactions were observed in the birds in response to the test flights.

3.5 Summary of literature review

3.5.1 Bird hearing is, for most species, less developed than that of humans. Although noise can act in isolation to cause disturbance to both non-breeding and breeding birds, greater responses typically occur when there is also a visual stimulus.

3.5.2 There are very few studies into the effects of commercial aircraft on birds, with most investigations involving light aircraft, military jets and/or helicopters. The majority of studies have found that over-flights of fixed-wing aircraft do not result in disturbance to birds when these flights are 300 m or higher above the ground.

3.5.3 From the studies quoted, noise levels of around 60 dB(A) or lower appear unlikely to result in disturbance responses. Noises greater than 60 dB(A) have been shown to elicit disturbance responses in some studies, although others have shown that birds were not disturbed by noises ranging from 77 – 88 dB(A).

4. Receiving environment

4.1.1 The receiving environment relevant to this Appropriate Assessment screening have been established by AECOM through a desk-based study. This includes a review of the results of ornithological field survey carried out at Baldoyle Bay SPA and Rogerstown Estuary SPA between June 2016 and December 2017 and in April and May 2018, as described in more detail below. It should be noted that the receiving environment relevant to this assessment is that which will exist once Conditions 3(d) and 5 come into force. The relevant receiving environment is therefore not that which exists at the time of writing, during which period North Runway was under construction. However, the introduction of Condition 3(d) and 5 will not change in any way the receiving environment with respect of ecological features. This is because of: a) the Wildlife Management Plan implemented at Dublin Airport will still be implemented, meaning there will be no change to the numbers of birds present in the vicinity of North Runway and the runway system at the airport; and b) there is no evidence of flights over-flying Baldoyle Bay or Rogerstown Estuary having any effect on birds present within these sites (see further below) and the introduction of Conditions 3(d) and 5 will not change this situation.

4.1.2 The following documents and sources of information were used to establish the receiving environment:

- Dublin Airport North Runway Proposed Relevant Action: EIA Scoping Report (AECOM, 2020);
- North Runway Report: Consultation on Flight Paths and Change to Permitted Operations (daa, 2017);
- daa Consultation on Flight Paths and Change to Permitted Operations Information Booklet (daa, 2016);
- Environmental Protection Agency (EPA) maps website (https://gis.epa.ie/EPAMaps/);
- NPWS Protected Sites in Ireland website (https://www.npws.ie/protected-sites); and,
- Technical reports carried out on behalf of daa detailing the results of targeted ornithological survey conducted at Baldoyle Bay and Rogerstown Estuary.

4.1.3 These documents can all be found at https://www.dublinairport.com/corporate/north-runway.

4.2 Condition of relevant Special Conservation Interest features

4.2.1 Rogerstown Estuary SPA

4.2.2 As shown in Table 2, based on long-term population trends for Rogerstown Estuary SPA, it has been determined that the following SCI species are currently not achieving favourable conservation status:

- Highly Unfavourable – greylag goose and knot; and,
- Intermediate Unfavourable – grey plover.

4.2.3 As with the previous sites, walking with and without dogs is identified as one of the main pressures on waterbirds at Rogerstown Estuary (NPWS, 2013b). Aquaculture and fisheries activities also take place within the estuary. The Conservation Objectives Supporting Document notes that birds appear to have habituated to the noise produced by agricultural crop-scarers, with no response to these devices noted.

4.2.4 Baldoyle Bay SPA

4.2.5 As shown in Table 3, based on long-term population trends for Baldoyle Bay, it has been determined that the following SCI species are currently not achieving favourable conservation status:

- Highly Unfavourable – bar-tailed godwit;
- Unfavourable – golden plover and grey plover; and,
- Intermediate Unfavourable – ringed plover.

4.2.6 Although the Baldoyle Bay SPA Conservation Objectives Supporting Document (NPWS, 2012) states that "the air space over the site is one of the main routes for air traffic coming into and out of Dublin Airport", it does not identify that this is a pressure on the site nor that it has any role in affecting the conservation status of the SCI species. The document concludes that the primary source of disturbance is from walkers with or without dogs. Other potential pressures on the SPA include adjacent land use and activities associated with fishing and aquaculture.

4.2.7 Ireland's Eye SPA

4.2.8 No information on the conservation status of the SCI species of Ireland's Eye SPA is available from the NPWS website. There is similarly no information provided on pressures which may be exerting on the designation.

4.2.9 Lambay Island SPA

4.2.10 No information on the conservation status of the SCI species of Lambay Island SPA is available from the NPWS website. There is similarly no information provided on pressures which may be exerting on the designation.

4.2.11 South Dublin Bay and River Tolka Estuary SPA

4.2.12 As shown in Table 6, based on long-term population trends for South Dublin Bay and River Tolka Estuary SPA, it has been determined that the following SCI species are currently not achieving favourable conservation status:

- Unfavourable – shoveler, golden plover, grey plover and black-headed gull; and,
- Intermediate Unfavourable – shelduck and pintail.

4.2.13 Existing pressures on the SPA are described in the Conservation Objectives Supporting Document, published by NPWS (NPWS, 2014). This document identifies that Dublin Bay is subject to significant recreational pressure as a consequence of its proximity to a major population centre. Recreational activity in the form of walkers, both with and without dogs, is known to be widespread across the SPA and of a 'highly active level' in certain areas. A study carried out in the Irishtown area of south Dublin Bay (Phalan and Nairn, 2007) found that dogs off the leash accounted for nearly half of all disturbance events recorded. However, it also identified in NPWS (2014) that human recreational activities at coastal areas occur less frequently during winter months.

4.3 Field survey

4.3.1 Vantage Point (VP) surveys were conducted at Baldoyle Bay and Rogerstown Estuary SPAs, which are both beneath the flightpaths of aircraft coming in to and departing from Dublin Airport, between July 2016 and December 2017 and in April and May 2018. Surveys during this period covered the time when Dublin Airport was at its busiest (and before the reduction in flights caused by the Covid-19 pandemic) and therefore reflect a potential 'worst case' scenario in terms of the levels of disturbance which could be caused by over-flying aircraft. The aims of these surveys was to:

- observe disturbance events and behavioural changes of waterbirds in response to over-flying aircraft; and,
- determine whether or not over-flying aircraft disturb waterbirds at these designated sites.

4.3.2 A total of 252 hours of survey were conducted during the survey period, covering a range of weather conditions, tidal states and times of day. During the VP watches, surveyors recorded all disturbance events, noting the time, source of disturbance, species affected and the number of birds involved. The response of waterbirds was recorded on a scale of 0 – 3:

- 0 – no behavioural change;
- 1 – behavioural change (e.g. vigilance or alarm call) but no flight;
- 2 – flew but soon returned to the site; and,

- 3 – flew and abandoned the site.

4.3.3 In summary, a total of 184 disturbance events were identified during the surveys, with 89 at Rogerstown Estuary and 95 at Baldoyle Bay. These were caused by a variety of disturbance sources, primarily walkers and/or dogs, but also including aquaculture activities, ground-based transport and predators. A single disturbance event was noted in response to a low-flying Coastguard helicopter.

4.3.4 During the nineteen months of survey, comprising 228 hours of VP watch, no disturbance events caused by aircraft passing overhead on established flight paths to or from Dublin Airport were recorded.

5. Test of likely significant effects

5.1.1 For each of the designated sites considered as part of this screening exercise, the potential impacts of the proposed changes to operation of the North Runway under the proposed Relevant Action are considered below, with reference to the conservation objectives of each European site, to test for likely significant effects.

5.1.2 When carrying out the test of likely significant effects, cognisance was given to the ruling of the CJEU in November 2018 in the case of Holohan and Others v An Bord Pleanála (C-461/17). The conclusions of the Court in that case now require that during the course of Appropriate Assessment, consideration must be given to:

- likely significant effects on the qualifying habitats and/or species of a SAC / SPA, outside the boundary of the designated site, if these are relevant to the site meetings its conservation objectives; and,
- effects on non-qualifying habitats and/or species on which the qualifying habitats and/or species depend and which could result in Likely Significant Effects on the qualifying features.

5.1.3 This test of LSE is compliant with the requirements of the Holohan ruling with regards to biodiversity considerations.

5.2 Pollution impacts

5.2.1 As highlighted in Section 1.3 of this document, the Proposed Relevant Action proposes changes to the operation of the runway system. It does not include or require any change to North Runway in terms of its physical infrastructure nor does it propose any additional infrastructure at the airport. The Proposed Relevant Action will not, therefore, affect the consented North Runway drainage design which is currently under construction.

5.2.2 It can therefore be concluded that the Proposed Relevant Action will have no additional impacts in terms of pollution of the supporting wetland habitats of the relevant European designated sites.

5.2.3 It is therefore concluded that, on the basis of objective information, **likely significant effects on Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA from pollution-related impacts associated with the Proposed Relevant Action, both individually and in-combination with other plans and projects, can be excluded.**

5.3 Collision risk impacts

5.3.1 Bird strike incidences at Dublin Airport are recorded by daa. The data recorded between 2010 and 2018, inclusive, are shown in Table 7. 'External' bird strikes are those which take place outside of the boundary fence of Dublin Airport and can occur anywhere outside of this area. The most important information is therefore the number of 'Confirmed' bird strikes, which occur between birds and aircraft taking-off or landing.

Table 7. Bird strike information for Dublin Airport

	Number of strikes per year								
Type of strike	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Confirmed	83	57	68	59	60	71	56	60	61
External	12	4	13	5	9	11	6	15	13

5.3.2 More than 40 species were involved in these strikes, with the most commonly involved species being the very common and widely distributed woodpigeon *Columba palumbus*.

5.3.3 daa is required to maintain a safe aerodrome and has a detailed Wildlife Management Plan in place to manage the risk to aircraft operations from wildlife. As a result of this management, SCI waterbird species of the relevant European designated sites are not permitted to occur in significant numbers in the vicinity of the airport.

5.3.4 The implementation of the Wildlife Management Plan will continue following commissioning of North Runway. It will therefore continue to be the case that flocks of birds, including SCI species, will be prevented from forming on or near North Runway and the wider runway system, thereby substantially reducing the risk of bird strike.

5.3.5 The continuing implementation of the Wildlife Management Plan, serving to make it very unlikely that SCI species will be involved in aircraft strike, does not represent a change from baseline conditions. There will consequently be no impact to SCI species of the designated sites from the Proposed Relevant Action as conditions will remain as they currently exist under the Wildlife Management Plan.

5.3.6 It is concluded that, on the basis of objective information, **likely significant effects on Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA from bird strike impacts associated with the Proposed Relevant Action, both individually and in-combination with other plans and projects, can be excluded**.

5.4 Disturbance impacts

5.4.1 It is important to note that the arrival and departure flight path on the existing runway over the coast is already in existence and will not change as part of this proposal. The mode of operation being proposed for the runway system will result in the majority of night time operations continuing to use the existing runway where flights have overflown the same area for many years with only occasional use of the North Runway in the shoulder hours (23:00 to 00:00 and primarily between 06:00 and 07:00 in the morning)

5.4.2 **No disturbance events caused by over-flying aircraft were observed during 228 hours of field survey in Baldoyle Bay or Rogerstown Estuary**.

5.4.3 As the proposed Relevant Action is seeking to amend night-time operating restrictions between 23:00 – 07:00, aircraft movements in the night period during the non-breeding season (which is generally taken to be between September and February, inclusive), will take place after sunset and before sunrise (with the exception of the month during the month of September). In other words, they will take place during the hours of darkness. In September, sunrise times for Dublin range from approximately 06:30 at the beginning of the month, to approximately 07:30 by the end of the month. Consequently, there may be around one hour during which there is sufficient light for aircraft to be visible from the ground. This means that, for the majority of the winter period, the SCI species of the European designated sites are very unlikely to perceive a visual disturbance stimulus from over-flying aircraft, and noise is the only possible disturbance source.

5.4.4 Even outside of the non-breeding season, when daylength is such that there would be light for much of the period between 23:00 – 07:00, it is unclear whether birds would associate the noise from aircraft as being generated by them. With minimum flight heights above the Ireland's Eye SPA (for which breeding species are SCI) of approximately 1,000 m, it is possible that birds will perceive only the noise from over-flying aircraft and will not be affected by their presence as a visual stimulus.

5.4.5 Noise modelling carried out for the Proposed Relevant Action has predicted the number of aircraft events above 60 dB LAmax during an average summer night (between 23:00 – 07:00) at Baldoyle Bay and Ireland's Eye. As shown in Table 8, under the Proposed Relevant Action there would be a decrease in the number of events above 60 dB in 2022. By 2025 there would have been a slight increase. As reiterated above, under the 2018 baseline, there was no evidence of any disturbance of birds in Baldoyle Bay or Rogerstown Estuary as a result of over-flying aircraft. It can therefore be concluded that as there will be a negligible change in the receiving environment, there will continue to be no disturbance of birds using these European sites as a result of the Proposed Relevant Action.

Table 8. Number of aircraft events above 60 dB LAmax, average summer night (23:00 – 07:00)

Scenario	Baldoyle Bay	Ireland's Eye
2018	47.7	47.1
2022 (in absence of Proposed Relevant Action)	35.1	35.0
2022 (with Proposed Relevant Action)	46.9	46.7
2025 (in absence of Proposed Relevant Action)	35.1	34.8
2025 (with Proposed Relevant Action	49.6	49.3

5.4.6 At all other relevant SPAs, there would be fewer than ten aircraft events per night which exceed 60 dB LAmax.

5.4.7 As identified by the literature review, construction noise events above 72 db(A) has been shown to cause disturbance of non-breeding waterbirds. Noise modelling was therefore also carried out, as described above, to predict the number of night time aircraft events which would result in this level of noise at Baldoyle Bay and Ireland's Eye. The results are shown in Table 9. It can be seen that there are not expected to be any such events at Ireland's Eye and that at Baldoyle Bay, under the proposed Relevant Action it is expected that there would be fewer events than compared to the 2018 baseline.

Table 9. Number of aircraft events above 72 dB LAmax, average summer night (23:00 – 07:00)

Scenario	Baldoyle Bay	Ireland's Eye
2018	2.4	0
2022 (in absence of Proposed Relevant Action)	1.4	0
2022 (with Proposed Relevant Action)	1.6	0
2025 (in absence of Proposed Relevant Action)	1.4	0
2025 (with Proposed Relevant Action	1.6	0

5.4.8 On the basis of several evidence sources (as described in Section 3), it is not expected that an increase in the number of night-time flights would have any disturbance impact to the SCI species of the relevant European designated sites, for the following reasons:

- birds are more readily disturbed when a noise stimulus is accompanied by a visual source. As described in this Report, the majority of night-time flights will occur during the hours of darkness, meaning that there will be no visual stimulus associated with the noise generated by aircraft;
- commercial aircraft using Dublin Airport have not been identified in any of the Conservation Objectives Supporting Documents (published by NPWS) as being an existing pressure on the favourable conservation status of the SCI species of any of the designated sites. The assessments informing these documents have been made under existing conditions, which regularly includes more than 100 flights per night, relative to the 65-flight restriction imposed by Planning Condition 5; and,
- in 228 hours of targeted field survey at Baldoyle Bay SPA and Rogerstown Estuary SPA, there was no recorded incidence of disturbance being caused to waterbirds by commercial aircraft using Dublin Airport. It can therefore be concluded that birds using these sites are unaffected, potentially through habituation, to aircraft over-flights. As the proposed Relevant Action will not result in any material change to the existing conditions, it can therefore also be concluded that it will not cause any increase in disturbance of birds using these sites. It can be inferred that this would also apply to all other SPAs which are overflown by aircraft at similar heights to those above Baldoyle Bay Estuary SPA and Rogerstown Estuary SPA.

5.4.9 Therefore, with the Proposed Relevant Action resulting in no substantial change to existing baseline conditions, and on the basis of evidence provided by targeted field survey and literature review into aircraft disturbance of waterbirds, it can therefore be concluded that the proposals would not result in any disturbance to the SCI species of the relevant European designated sites.

5.4.10 It is concluded that, on the basis of objective information, **likely significant effects on Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA from bird disturbance impacts associated with the Proposed Relevant Action, both individually and in-combination with other plans and projects, can be excludedOther principal plans / projects that may act 'in combination'**

5.4.11 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018).

5.4.12 However, as explained in Section 2, should any of the elements of the source-pathway-receptor pathway model be missing, there can be no potential for an effect to occur. It has been concluded above that the Proposed Relevant Action will have no impact on the European designated sites considered as part of this AA screening. With no pathways identified, and this element of the source-pathway-receptor model missing, therefore, there is no possibility of in-combination effects to arise with other plans or projects.

5.4.13 It should be noted that this conclusion applies even when considering the proposals associated with any reasonably foreseeable developments at Dublin Airport. Although such development would be subject to its own Appropriate Assessment screening, there are no impacts arising from the Proposed Relevant Action and no way in which said development could render the effects of the proposed Relevant Action significant. Therefore, there can be no in-combination effects.

6. Conclusion

6.1.1 Likely Significant Effects on Special Areas of Conservation were screened out of assessment as the proposed Relevant Action does not propose any changes to the consented and under-construction layout of infrastructure associated with Dublin Airport North Runway nor does it propose any additional infrastructure at the airport. The nearest SAC to the North Runway is Malahide Estuary SAC, located approximately 4 km north-east and designated for a number of coastal and estuarine habitats. The SAC is not designated for any Annex II species (or mobile species). Taking into consideration the distance of the SAC from the North Runway, there is no potential for the increased number of night-time flights to have any effect on the qualifying habitats. For these reasons, this AA screening was therefore concerned with testing for LSE on Special Protection Areas only.

6.1.2 Five SPAs were identified within the likely zone of influence of the Proposed Relevant Action: Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA. The test of likely significant effects arising from the Proposed Relevant Action was therefore restricted to these five European sites.

6.1.3 Evidence gathered through literature review of published scientific studies and targeted ornithological field survey conducted at Baldoyle Bay and Rogerstown Estuary suggests that there will be no impacts on the SCI species of any of the relevant designated sites from the Proposed Relevant Action.

6.1.4 On the basis of this best scientific evidence, and as existing baseline conditions are directly comparable to the Proposed Relevant Action proposals (in terms of the number of night-time flights already operating on South Runway), it is concluded that there will be no impacts from the Proposed Relevant Action. There are therefore no Likely Significant Effects arising from Proposed Relevant Action, either alone or in combination with other plans or projects, which could prevent Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA, South Dublin Bay and River Tolka Estuary SPA or any other European designated site, from meeting their conservation objectives and/or favourable conservation status.

6.1.5 This AA screening therefore concludes that, on the basis of objective information, **likely significant effects on Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA from the Proposed Relevant Action, both individually and in-combination with other plans and projects, can be excluded. There is no requirement to proceed to the next step of Appropriate Assessment and that, subject to other requirements, the Proposed Relevant Action can be authorised**.

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