



Dublin Airport North Runway

Relevant Action Application

Environmental Impact Assessment Report

Non-Technical Summary

December 2020

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Non-Technical Summary

This is a summary in non-technical language of the North Runway proposed Relevant Action Environmental Impact Assessment Report (EIAR). It is presented under the same chapter headings as the main EIAR. A summary of the residual effects is presented within this document.

1. Introduction

The Environmental Impact Assessment Report (EIAR) has been prepared on behalf of daa (hereafter referred to as 'the Applicant') to accompany an application for a proposed Relevant Action to amend and replace two planning conditions, namely conditions no. 3(d) and 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429, 'the North Runway Permission').

The proposed Relevant Action relates to the night-time use of the runway system at Dublin Airport. It involves the amendment of the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Permission, as well as proposing new noise mitigation measures. Conditions no. 3(d) and 5 have not yet come into effect or operation, as the construction of the North Runway on foot of the North Runway Permission is ongoing.

The proposed Relevant Action, if permitted, would be to remove the numerical cap on the number of flights permitted between the hours of 11pm and 7am daily that is due to come into effect in accordance with the North Runway Permission and to replace it with an annual night-time noise quota between the hours of 11.30pm and 6am and also to allow flights to take off from and/or land on the North Runway (Runway 10L 28R) for an additional 2 hours i.e. 2300 hrs to 2400hrs and 0600 hrs to 0700 hrs. Overall, this would allow for an increase in the number of flights taking off and/or landing at Dublin Airport between 2300 hrs and 0700 hrs over and above the number stipulated in condition no. 5 of the North Runway Permission, in accordance with the proposed annual night time noise quota.

The proposed relevant action does not seek any amendment of conditions of the North Runway 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 (mppa).

The planning application will be subject to an assessment by the Aircraft Noise Competent Authority in accordance with the Aircraft Noise (Dublin Airport) Regulations Act 2019 and Regulation (EU) No 598/2014. The planning application is accompanied by information provided for the purposes of such assessment.

2. Need for the Project

Dublin airport serves mostly short haul services (90% of flights) to points in the UK and Europe. Long haul services are mainly to North America, plus some services to the Middle East, Asia and Africa. The region which has seen the largest growth in passenger traffic since 2010 is 'Other International' this includes traffic to China, the rest of Asia, Middle East and Africa. Over the past eight years, the passenger traffic on these routes has increased by over 359%.

Demand for night flights between 23:00-07:00 is driven mainly by short haul services operated by aircraft based at Dublin Airport. In order to achieve the high levels of aircraft utilisation necessary for airline competitiveness, aircrafts in other areas would usually tend to operate with first departure between 06:00-07:00 and last arrival after 23:00.

The 1h time difference between Ireland and mainland Europe means that flights need to leave early (before 07:00) to arrive in time for business passengers to have a full working day at their destination. The geographical position

of Dublin Airport means that there is longer distance to travel to many European destinations than from other competing airports. This means that Dublin Airport requires longer operating days than competing European hubs. Similarly, Dublin Airport's proximity to North America compared to the rest of Europe means that transatlantic flights arrive earlier in Dublin than at other European airports.

The current night restrictions period is also unusual compared with many airports in that it includes a peak hour of demand at the airport (06:00-07:00). Therefore, the impact of the restriction on air traffic and potential future growth is significant.

The anticipated negative implications on aircraft operations of the operating restrictions that would apply with Condition 3d and 5 in place fall into the following categories:

Constrained traffic impacts at Dublin Airport

A study carried out by Mott MacDonald in 2020 created busy day schedules for the years 2022 and 2025 (when the 32m passenger level is likely to be reached). It modelled the impact of the North Runway operating restrictions (Conditions 3d and 5) and overall runway capacity on airline schedules. The assessed impact is a 43% reduction in current capacity between 11pm and 7am and a loss of 3.2% of total air traffic movements in the 24-hour period. The associated loss in passengers is 1.1m per year (-3.5%) and a cumulative loss over the 4-year period 2022-2025 of 4.3m passengers. It should be noted that this estimated impact is a conservative assessment as it assumes that airlines are willing and able to accept alternative slot times outside of the 23:00-07:00 night period, which would be commercially and/or operationally suboptimal.

Implications for achieving the objectives set in the National Aviation Policy

The Department of Transport, Tourism and Sport (DTTAS) published a National Aviation Policy (NAP) for Ireland in August 2015. The main goals of the NAP are:

- Enhance Ireland's connectivity
- Foster growth of aviation enterprise
- Maximise economic contribution of aviation sector

With regard to the second runway at Dublin Airport, the NAP specifically states that:

"The process to develop the second runway at Dublin Airport will commence, to ensure the infrastructure necessary for the airport's position as a secondary hub and operate to global markets without weight restrictions is available when needed".

Results from an assessment carried out by InterVISTAS found the operating restrictions on passenger traffic and air services at Dublin Airport, which would come into force when North Runway is operational, will contradict the aims and commitments of the NAP. The negative effects on both long haul and short haul flights would reduce the connectivity and competitiveness of Dublin Airport.

The assessment concluded that, the decreased traffic and air services result in a reduced economic contribution to the national economy.

Pre-COVID-19 levels of demand for night flights (23:00-07:00) is over 100/night, with 113/night associated with regularly scheduled services on a typical busy day in Summer 2019. This is far in excess of the proposed limit of 65 movements per night.

The need for night flights at Dublin Airport is driven by the need for airlines to achieve competitive levels of aircraft utilisation, flight connection connectivity, and to support timely air freight services into Ireland.

3. Characteristics of the Project

The proposed Relevant Action is seeking planning permission to amend condition 3 (d) and replace condition 5 attached to the North Runway Permission.

The net effect of the proposed relevant action would be to facilitate an increase in the number of flights permitted to take off from, or land at, Dublin Airport at night.

The two operating restrictions which the proposed Relevant Action seeks to amend and replace are Conditions 3(d) and 5 of the North Runway permission respectively.

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.'*

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.'*

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.

The relevant action also is to replace condition no. 5 of the North Runway 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.'*

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.

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.

The proposed Quota Count System

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 for aircraft with lower noise levels, higher values for noisier aircraft. The QC accumulates for each air traffic movement (ATM) against the Noise 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.

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

In addition to the above, a noise monitoring framework will be put in place at the airport to monitor, assess and report across a number of key noise metrics.

Construction Phase

The proposed Relevant Action will involve no construction works or changes to the consented physical infrastructure of North Runway or any other areas of the airport.

Operational Phase

The proposed Relevant Action involves amendment and replacement of the operating restrictions on the use of runway system at night, which would result in additional night flights above the number permitted under Condition 5 of the North Runway permission. The use of the runway system during the daytime will not change.

Main Scenarios Assessed

The assessment focusses on a comparison between the future permitted baseline (constrained) and the proposed (unconstrained) operational scenario relating to the amendment to Condition 3(d) and the replacement of Condition 5. The future years assessed across the technical topics include 2022 and 2025.

The existing baseline (2018), is evaluated as this provides an empirical description of the effects when the airport was close to 32mppa. 2018 is also the existing baseline year examined in detail in the noise chapters.

The year of opening is 2022, the year that North Runway is planned to be operational in; with the future assessment years defined as:

- 2022 – the year in which North Runway is expected to be operational
 - 2022 constrained / permitted; and
 - 2022 unconstrained / proposed
- 2025 – the first year 32 mppa is forecast to be reached with North Runway operations
 - 2025 constrained / permitted; and
 - 2025 unconstrained / proposed.

The year of predicted maximum environmental effects during operational phase will consider the year(s) of highest use of the runway system and associated emissions i.e the year when 32mppa will be reached but not exceeded (predicted to be 2025).

The table below (extracted from the Mott McDonald Report) sets out the forecasted Annual Traffic Movements (ATMs) and Annual Passengers (PAX) used for the purposes of the Relevant Action for the years 2022 and 2025 as shown:

Annual Traffic Impact – High Growth Case (Night Restriction constraints)

Annual Passengers (m)

Year	Unconstrained	Constrained	Difference
2018	31.5	31.5	0.0
2019	32.9	32.9	0.0
2020	8.2	8.2	0.0
2021	20.7	20.7	0.0
2022	29.6	28.7	-0.9
2023	30.4	29.3	-1.1
2024	31.2	30.1	-1.1
2025	32.0	30.9	-1.1

Annual ATMs (000s)

Year	Unconstrained	Constrained	Difference
2018	233	233	
2019	241	241	
2020			
2021			
2022	229	223	-5.8
2023	233	226	-7.1
2024	237	229	-7.8
2025	241	233	-7.8

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Permitted / Constrained Scenario

The permitted / constrained scenario assessed in the EIAR is that Conditions 3d and 5 are in place in the years 2022 and 2025.

Proposed / Unconstrained Scenario

The proposed / unconstrained scenario assessed in the EIAR is that the planning conditions imposed under the North Runway Permission are amended and replaced by the proposed Relevant Action and assessed for the years 2022 and 2025.

4. Reasonable Alternatives Considered

The EIA regulations require an outline of the main alternatives considered and reasons why the proposed Relevant Action has been selected. Six types of alternatives have been considered: do nothing, alternative locations, alternative layouts, alternative designs, alternative processes and alternative mitigation measures. The following provides a brief summary of the types of alternatives considered for the Proposed Relevant Action.

Do-Nothing scenario

The do-nothing scenario is the North Runway Permission i.e the permitted / constrained scenario. The North Runway Permission contains 31 planning conditions. Two of these planning conditions (Conditions 3(d) and 5) relate 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.

Since the North Runway Permission was granted, there was rapid growth in passenger numbers, and the current runway infrastructure was already at capacity at peak times in 2018 and 2019.

Notwithstanding the current situation with Covid-19, there is still a need to safeguard the return to growth in air traffic movements at the airport which means addressing the night-time operating restrictions attached to the North Runway permission.

In summary, in the constrained scenario (i.e the North Runway Permission), there is a forecasted 43% reduction in current capacity between 11pm and 7am and a 3.2% decrease in flights across a 24-hour period in 2025 and a significant reduction in available night time slots at the airport and associated impacts on air connectivity for Ireland.

Reasonable Alternative Locations

As the proposed Relevant Action relates only to a change in operating restrictions and does not comprise the delivery of any physical infrastructure or construction works, it was not relevant to consider reasonable alternative locations.

Reasonable Alternative Layouts

As the proposed Relevant Action relates only to a change in operating restrictions and does not comprise the delivery of any physical infrastructure or construction works, it was not relevant to consider reasonable alternative layouts.

Reasonable Alternative Designs

As the proposed Relevant Action relates only to a change in operating restrictions and does not comprise the delivery of any physical infrastructure or construction works it was not relevant to consider reasonable alternative designs.

Alternative flight path divergence were assessed, and these are included within the 'Alternative Processes' sub-section of EIAR Chapter 4: Reasonable Alternatives Considered.

Reasonable Alternative Processes

daa considered various options of alternative processes, these included:

- Permitted mode of operation: Alternative modes of operation.
- Alternative flight paths: Departing aircraft follow specific paths at take-off.
- Alternatives to restrictions: Alternative operating hours for the night-time period (permitted operations currently prevent the use of the North Runway between 23:00-07:00 hours).

An Aircraft Noise Regulation 598 Assessment was carried out which assessed 8 different runway use measures (scenarios) in detail for noise effects. As the Relevant Action does not propose to alter the operation of the runway system during the daytime, all the measures share a common runway use configuration between 07:00 and 22:59. The Aircraft Noise Regulation 598 Assessment identified that the scenario with the lowest number of people exposed to changes that potentially cause significant adverse effects caused by the change in noise levels is Scenario 2.

Scenario 2 consists of the following operational use measures:

- 06:00 to 23:59: 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. 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.
- 00:00 to 05:59: Movements preferred on the South Runway only (single runway).

Reasonable Alternative Mitigation Measures

Mitigation measures are discussed by each individual specialist topic throughout the EIAR and discussed in detail in the Dublin Airport North Runway, Regulation 598/2014 (Aircraft Noise Regulation) Forecast Without New Measures and Additional Measures Assessment Report (hereafter referred to as the Aircraft Noise Regulation 598 Assessment). The most effective mitigation has been proposed. These measures and the preferred option are outlined in detail in the EIAR Chapter 13: Aircraft Noise and Vibration.

5. Consultation

In 2016 daa commenced a process of consultation relating to proposals to address the restrictive night-time conditions 3d and 5. This was in anticipation of a planning process that would seek to amend the conditions. The overall approach to consultation and information sharing is related to the North Runway project and operation of the Dublin Airport runway system at night in its entirety. Due to the nature of the project, construction activity was ongoing at the same time that daa was consulting on changes to night-time operational conditions (Condition 3d and 5). Therefore, the overall consultation and stakeholder engagement process included elements relating to the construction of North Runway and proposals to change the operational conditions (3d and 5).

daa had always indicated its intent to seek a review of Condition 3d and 5 when the legislation enabling such a review was enacted. The early consultation on the project was in anticipation of such legislation. However, there was a significant delay in the introduction of the legislation giving effect to Regulation 598/2014 in national law, designating the Airport Noise Competent Authority, and amending planning legislation. This legislation, the Aircraft Noise (Dublin Airport) Regulation Act 2019, allows for the airport to apply for a Relevant Action to amend, revoke or replace operating restrictions.

The 2016 consultations made clear that daa would seek a review of Condition 3d and 5. The main focus of the consultations at that time was proposals on runway use and flight paths, and related effects (including noise) and mitigation measures. The feedback from these consultations where relevant has been taken on board when developing this Relevant Action application.

Consultation on proposals that daa would seek on changes to Condition 3d and 5 of the North Runway planning permission was undertaken in June and December 2016. The similarities between these proposals in 2016 and the proposed Relevant Action relate to the proposed use of the runway system at night time and that there are no proposals to change the day time operation. The similarities also relate to the proposals on the degree of divergence for departing aircraft from the North Runway as well as proposals on the eligibility threshold for any future night time insulation offers that might be incorporated into the final planning application, in this case, the proposed Relevant Action.

During that time daa also established a community engagement team which works closely with the wider Dublin Airport business to provide information of interest to local residents and other parties. In addition, a Community Liaison Group was established in accordance with Condition 28 of the An Bord Pleanála Decision to Grant Permission (PL06F.217429) with representation from Fingal County Council, daa and the St. Margaret's Community. Briefings and update on the North Runway project were provided to these groups.

The consultation approach at the time included a combined strategy involving direct face-to-face events with members of the public and other relevant stakeholders, a feedback facility to provide comments on the proposal as well as a broader social media base to promote engagement, provide information and keep communities informed.

Consultation Tools

A range of communications tools were employed for the North Runway project consultation process in order to raise levels of awareness of the project and to facilitate participation in the consultation process. Key components of that consultation are:

- Public consultation events.
- Meetings with a range of resident groups and individuals.
- Regular meetings with Dublin Airport Environmental Working Group (DAEWG), St. Margaret's Community Liaison Group, residents' associations, airport staff, airlines and businesses;
- Bimonthly drop-in clinics at various community locations at which local residents and interested parties can seek information regarding North Runway and other airport operations;
- Home visits to those local residents who are unable to attend consultations or drop-in clinics;
- A series of dedicated meetings and home visits with participants in the project's noise mitigation schemes;
- In collaboration with a local social services agency, undertook a roadshow in various North Dublin locations to promote the project's Local Employment Initiative (which won the Fingal Chamber Best Community Involvement award in 2019);
- Fully manned dedicated project freephone and email channels;
- A dedicated project webpage hosted on the Dublin Airport website, <https://www.dublinairport.com/corporate/north-runway>
- Up-to-date project information via a subscriber-based Project Update;
- Press releases and media coverage;
- Social media;
- Communication materials including leaflets, posters, brochures and display materials for consultation events.
- Mail-outs and briefings to Elected Representatives of Fingal County Council, Dublin City Council, Dail Eireann and Seanad Eireann;
- Mail-outs to key environmental stakeholders;
- Dedicated Red C Survey on flightpaths options and community funding as part of the consultation on Change to Permitted Operations and Flightpaths https://www.dublinairport.com/docs/default-source/resources/view-red-c-research-report.pdf?sfvrsn=2ab85915_2

A bespoke Virtual Reality Platform which provides virtual materials and information as would appear at a public event has been devised as a means of informing the public about this Relevant Action application once lodged. This was developed in order to continue meaningful engagement with local residents despite the current Covid crisis.

Stakeholder Engagement

daa has, and continues to engage with a variety of stakeholders, and will continue to manage effective relationships with a wide array of stakeholders. Successful delivery of the Relevant Action requires constructive consultation with several statutory and non-statutory bodies which include:

- The competent authority: Fingal County Council (FCC) and all its relevant departments, officers and representatives among which:
 - Planning Dept
 - Transportation Dept
 - Water Service Dept
 - Conservation Dept
 - Architecture Dept
 - Parks Dept
 - Environmental Services Dept
 - FCC Chief Executive
 - FCC Heritage Officer
 - FCC Director of Planning and Strategic Infrastructure
- Airport Stakeholders:
 - Irish Aviation Authority (IAA)
 - Commission for Aviation Regulation (CAR)
 - Airline Operators
- Public:
 - the Local community
 - Elected Representatives

6. Planning and Development Context

This section of the EIAR examines the relevant national, regional and local planning policies within which the proposed Relevant Action has been framed. It also sets out the planning history of the site.

Strategic Planning context

The Applicant has a number of obligations to fulfil with regard to the management of Dublin Airport. There are a list of principal objectives which relate to Section 23(1) of the 1998 Air Navigation and Transport Act.

In 2009, the Minister for Transport issued the following statutory direction:

"The desirability that Dublin Airport should have the terminal and runway facilities to promote direct international air links to key world markets, such as new and fast-developing markets in the Far East and the importance of ongoing and planned infrastructure development in this context."

In addition, the National Aviation Policy for Ireland (NAP) (DTTS, 2015) includes Action 4.5.1 which states the following:

"The process to develop the second runway at Dublin Airport will commence, to ensure the infrastructure necessary for the airport's position as a secondary hub and operate to global markets without weight restrictions is available when needed."

As such it is evident that the appropriate operation of North Runway is paramount, not only from a commercial point of view, but also from statutory and economic viewpoints.

Aircraft Noise (Dublin Airport) Regulation Act 2019 – Application of EU Regulation 598 – The Balanced Approach

The Aircraft Noise (Dublin Airport) Regulation Act 2019 amends the Planning and Development Acts 2000 to 2019 to cater for the situation where development at Dublin Airport may give rise to an aircraft noise problem and where an airport wishes to apply to revoke, amend or replace operating restrictions. The Aircraft Noise (Dublin Airport) Regulation Act 2019 implements EU Regulation 598/2014 (EU, 2014) on the establishment of rules and procedures with regard to the introduction of noise related operating restrictions at European Union Airports within the Balanced Approach.

National Planning Policy

Chapter 6: Planning and Development Context details the national and regional policy and states how the proposed Relevant Action will support the policies as well as comply with objectives contained within them. The National and regional policy provided within the chapter is as follows:

- National Aviation Policy 2015
- Project Ireland 2040: National Planning Framework
- National Development Plan 2018-2027
- National Tourism Policy 2015: 'People, Place and Policy: Growing Tourism to 2025
- Regional Spatial and Economic Strategy for the Eastern and Midland Region

Local Planning Policy

Due to the geographical location of the proposed Relevant Action, a range of local planning policy as well as the national and regional policy stated above is considered. The following local policy is important to the proposed Relevant Action as it needs to ensure that local policy objectives are taken into consideration and ensure that the proposed Relevant Action aligns with the strategy outlined for the local area. The local policy relevant to the proposed Relevant Action is detailed below:

- Fingal Development Plan 2017-2023
- Dublin Airport Local Area Plan
- Noise Action Plan for Dublin Airport (2019 – 2023)

7. Population and Human Health

Chapter 7: Population and Human Health, provides an assessment of the likely significant effects on population and human health as a result of the proposed Relevant Action.

The appraisal of likely significant effects has been conducted by reviewing the current socio-economic environment and the potential impact on this environment. This assessment focusses on impacts on:

- Amenity and local communities (effects on amenity uses of a site or of other areas in the vicinity); and
- Human health and well-being (to consider the impact of the proposed Relevant Action on the health and wellbeing of the communities).

A baseline community profile is used to establish an in-depth understanding of the population affected by the proposed Relevant Action, identifying potentially vulnerable groups. In order to gather information relating to employment, demographics, human health and local amenities, a robust study and site visit has been undertaken, as well as drawing on information from the following sources:

- Central Statistics Office (CSO);
- Fingal County Council; and
- The 2016 Pobal HP Deprivation Index for Small Areas (SA).

The amenity and local communities assessment considers the assessment findings from air quality, air noise and vibration, and the ground noise and vibration assessments.

Noise pollution can have a detrimental impact on human health, resulting in sleep disturbance, cardiovascular and psycho-physiological effects. Given the number of people assessed as being adversely residually significantly affected within Chapter 13. Air Noise and Vibration, the impact of the proposed Relevant Action on air quality, noise and neighbourhood amenity as a determinant of human health and well-being is assessed to be negative (-).

Amenity and Local Communities

The assessment on amenity and local communities is concerned with how the proposed Relevant Action potentially impacts on the ability of residents and users of community and recreational facilities to achieve enjoyment and/or quality of life.

With regards to air noise associated with the proposed Relevant Action, a package of existing and proposed sound insulation schemes is offered, and will continue to be offered as part of this application by Dublin Airport to deliver improvements in internal noise levels experienced by residential and community facilities. This assessment considers the residual significant effects after allowing for the benefit of the existing and proposed sound insulation schemes.

No residential receptors are expected to experience significant effects, either adverse or beneficial, using the 24-hour period metric.

Human Health and Well-being

The human health and well-being assessment includes impacts on the health of residents of properties and users of community resources in the study area.

There are no significant noise and vibration effects reported on schools and residential healthcare facilities. Whilst it is accepted that there may be some degree of annoyance from noise to users of open space and nature, this will be commonly for short periods of time when people are passing through the open spaces, and must be remembered that the proposed Relevant Action only relates to changes in operating of the airport at night time.

Community Fund

Dublin Airport will continue to provide support for community-based projects associated with sports and recreation, social inclusion and community development, health and well-being, culture and heritage, and environment and sustainability through the Dublin Airport Community Fund. Established in 2017, the €10 million Dublin Airport Community Fund will continue to provide up to €400,000 of investments annually over a 25-year period.

In addition to mitigation measures already in place at Dublin Airport, daa are also proposing a number of measures in relation to the air noise effects. Of relevance to population and human health is the proposal to provide eligible dwellings with a grant to pay for sound insulation works based on their night-time air noise level.

8. Major Accidents and Disasters

The major accidents and disasters chapter describes the findings of an assessment of the likely significant effects of the proposed Relevant Action associated with the risks arising from aircraft crash.

The risks associated with civil aviation are well-established on the basis of considerable operational experience worldwide over a substantial period of time. Whilst crashes may be considered rare, reference to the wider international accident record over an extended time period provides an effective basis for characterising this risk.

The Major Accidents and Disasters chapter assessed two main factors:

- Individual Risk: the annual probability of fatality for a hypothetical resident present at any given location relative to the runway threshold and flight path to and from it;
- Societal Risk: the annual probability of accidents causing any given number of fatalities in any particular area of development, taking account of the nature of the development, in particular the density of occupancy.

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The individual risks are characterised in terms of a set of risk contours, which represent the limit of the area subject to a defined level of risk. These can be seen on the figures contained within Chapter 7: Major Accidents and Disasters.

Risk contours for three different levels of risk are typically employed in the assessment of individual risk, as follows:

- A risk of 1 in 10,000 per annum, considered to be a relatively high risk and at the limit of what is considered to be an acceptable level of risk exposure for members of the public;
- A risk of 1 in 100,000 per annum, considered to be a risk that is of potential concern but one that can nevertheless be considered acceptable in return for the economic benefits derived from the activity giving rise to the risk, provided that the risk is managed so as to be as low as reasonably practicable; and
- A risk of 1 in a million per annum, considered to be a low risk that is a generally acceptable level of exposure for members of the public.

The assessment indicates that there is a third-party risk impact associated with the operations at Dublin Airport associated with both the proposed / constrained scenario and the proposed / unconstrained scenario. However, this risk is not exceptional when assessed against other risks associated with a wide range of activities that are undertaken in modern society. Whilst it is to be expected that there will be some additional risk associated with the proposed Relevant Action, the increase can be seen to be modest when set in the context of the increased level of activity that would be supported and the risk remains well within the level that is considered acceptable.

Airports direct a considerable amount of effort towards ensuring the safety of air transport operations, primarily from the perspective of the safety of passengers. These efforts similarly limit the risk to third parties on the ground. In that respect, risks are mitigated effectively by ensuring that aircraft accident rates are minimised such that they can be considered to be as low as reasonably practicable.

Further mitigation is provided by the location of flight paths which means that risk to third parties are low in the unlikely event of an aircraft accident. The majority of crashes can be expected to occur in unpopulated areas, given the runway and flight path layout with respect to areas of development. A comparison with other airports indicates that the residual risks associated with operations at Dublin Airport are relatively small when compared with those at some major airport locations.

There will be a relatively small increase in the residual risk impacts as a result of the proposed Relevant Action. However, the risk mitigation measures, the inherent safety associated with the runway and flightpath layout, and the mode of operation that will be employed, ensure that the residual risks are at a level generally considered acceptable.

9. Traffic and Transportation

An assessment of the potential traffic and transport impacts of the proposed Relevant Action) was undertaken.

A first principles trips generation exercise was undertaken to determine the change in vehicle trips on the surrounding road network caused by the Relevant Action, using

- Constrained and unconstrained flight schedules for 2022 and 2025;
- Established passenger lag times;
- Recorded passenger landside mode shares and vehicle occupancies; and
- Recorded origin/destination data for passengers travelling to the Airport.

The increase/decrease in traffic flows was compared to recorded existing traffic flows on the surrounding road network to determine the percentage increase/decrease caused by the Relevant Action.

The assessment indicated that:

- Over a 24-hour period, there is no net increase in vehicle trips caused by the Relevant Action. As such, the overall impact is such that it is considered to have a neutral effect.

- Broken down by hour, the Relevant Action will result in an increase in traffic flows on some adjacent roads, and a decrease on others. For the majority of adjacent road links, any increase in traffic flows caused by the Relevant Action, in 2022 and 2025, is estimated to be less than 5% of the recorded 2019 background traffic flows, and is therefore considered to have a slight effect; and
- In all of the instances where the estimated increase was estimated to be greater than 5%, the revised traffic flows resulting from the Relevant Action, in 2022 and 2025, were less than the recorded maximum traffic flows on those links during other time periods. As such, in these instances, the Relevant Action is considered to have a moderate effect.

It is considered that the Relevant Action will not result in any significant effect on the surrounding road network.

10. Air Quality

An air quality impact assessment has been undertaken to assess the impact of emissions from operation of the proposed Relevant Action on local air quality at nearby sensitive receptors primarily due to the proposed change in aircraft movements.

The assessment focuses on the impact and effect of changes to long-term and short-term concentrations of nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}), these are considered to be the pollutants of greatest concern from aircraft emissions. The concentrations are considered at nearby human health sensitive receptors. Consideration is also given to the potential for odour nuisance associated with aircraft operations.

The study area has been defined based on the International Civil Aviation Organisation (ICAO's) Airport Air Quality Manual taking into account a geographical area where there is a potential for a change in air quality with the proposed operations and the extent of the road transport network considered. The contribution of Airport sources beyond 1km is considered negligible.

Receptors considered in the detailed modelling study include a selection of residential properties and other sensitive locations such as schools and community facilities. A total of 52 existing receptors were modelled that may be affected by the operation of the runway system.

An assessment of air quality impacts has been undertaken and represents a worst-case scenario to represent the permitted / constrained and proposed / unconstrained total pollutant concentrations scenarios and in reality, total pollutant concentrations and impacts would be less than those reported.

The results of the assessment show that annual mean concentrations of all the pollutants are below the relevant Limit Values for all of the assessed receptor locations.

Concentration changes between the permitted / constrained and proposed / unconstrained scenario show residual effects to be of negligible magnitude and hence Not Significant. No additional mitigation measures are anticipated to be required during the operation of the Relevant Action.

11. Climate and Carbon

This Chapter assesses the likelihood of the significant effects on Greenhouse Gas (GHG) emissions as a result of the proposed Relevant Action.

The scope of the assessment includes the additional GHG emissions resulting from the change in air traffic movements during the landing and take-off (LTO) cycle phase for departing flights. The assessment also considers the additional surface access passenger journeys as a result of the Relevant Action.

The assessment considers various policies, standards and guidance which outline national and international ambitions and targets for reducing GHG emissions and demonstrate the need for effective GHG reduction measures to be built into future development.

In line with these ambitions and targets, this assessment evaluates the GHG impact of the Relevant Action in the context of the projected National Emissions Inventories for Ireland (EPA, 2019) to provide some context and scale in relation to Ireland's trajectory towards decarbonisation.

The GHG assessment study area considers all GHG emissions from fuel used by aircraft during the additional LTO and climb/cruise/descent (CCD) phases and from additional surface access passenger journeys as a result of the proposed Relevant Action.

The baseline for the GHG impact assessment is the North Runway Permission, i.e. the permitted / constrained scenario, assuming the proposed Relevant Action does not receive permission. The quantity of GHG emissions would therefore remain unchanged from the permitted / constrained scenario.

There are no specific criteria for determining the significance of GHG emissions. As such, the projected National Emissions Inventories for Ireland (EPA, 2019), as compiled by the EPA, have been used for the level of effect of GHG emissions as a result of the proposed Relevant Action on the global climate.

The variation in emissions between the Permitted/Constrained and Proposed/Unconstrained scenarios was compared against Ireland's projected total National Emissions Inventories and projected total Transport Emissions Inventories for each of the assessment years, and the transport emissions level required to meet Ireland's target of an aggregate reduction in carbon dioxide (CO₂) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors.

The assessment concludes that there will be unavoidable GHG emissions resulting from the operational phase of the proposed Relevant Action. However, none of the effects are of major significance as the GHG emissions associated with the proposed Relevant Action do not represent >1% of the projected National Emissions Inventory for either of the assessment years.

The significance of the GHG emissions impact of the Relevant Action considering the receptor's sensitivity (global climate) is anticipated to be minor, which is considered to be of low significance.

daa have an extensive carbon management programme in place and is also certified under Level 2 of the Airport Carbon Accreditation scheme and is planning to move to Level 3 of the scheme shortly. In addition existing international aviation schemes such as the EU Emission Trading Scheme and the International Civil Aviation Organisation (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) are in place.

12. Water (Drainage)

Chapter 12: Water (Drainage) provides baseline information in relation to water and assesses the potential impacts and effects of the proposed Relevant Action on the water environment.

North Runway is currently an active construction site operating within a Construction Environmental Management Plan. The study area for surface water receptors encompasses the airport where operational discharges for the airport continue to be controlled under extant trade effluent licence.

There are no sensitive water environment features within the Study Area, although the Cuckoo Stream flows west to east through the airport.

The proposed Relevant Action will result in no additional infrastructure, no changes to the design, construction, catchment area, hydrology, flow control, or approach to operation of pollution control of North Runway itself or any of the wider pollution control infrastructure at the airport.

The proposed Relevant Action will not alter the current operational drainage systems and de-icing operations at the airport. There are two separate and distinct drainage catchments related to de-icing. These are the runways/taxiways and the apron/stand areas.

The proposed Relevant Action would not have any effect upon the condition or status of the Cuckoo Stream under the Water Framework Directive (WFD).

The primary threat to water quality as a result of the operating system at the airport, has been identified as the application of de-icing chemicals following snow or frost events. It is anticipated however that the permitted North Runway drainage system, once constructed, is likely to represent an improvement on the current pollution management with its dedicated pollution control and attenuation system. This will be in place in both the permitted / constrained and proposed / unconstrained scenarios and the proposed Relevant Action does not affect this. The

additional aircraft de-icing needed for the increase in flights associated with the proposed / unconstrained scenario will continue to be carried out in the areas currently in use.

As the proposed Relevant Action will not result in any significant effects on surface water environment and drainage, there is no requirement for mitigation to be implemented. There are no residual significant effects on the surface water environment and drainage from the proposed Relevant Action.

13. Aircraft Noise and Vibration

Chapter 13: Aircraft Noise and Vibration assesses the air noise and vibration associated with flights into and out of Dublin Airport while airborne or using the runway system, including any start of roll or reverse thrust activities but excluding noise and vibration related to any other aircraft ground operations such as taxiing and when aircraft are on stands. The ground noise and vibration is assessed in Chapter 14: Ground Noise and Vibration.

Chapter 13 has considered future forecast scenarios for the selected years of 2022, when the North Runway is scheduled to open, and 2025, the first subsequent year when 32 mppa is expected to be reached; 2025 is therefore expected to constitute a worst case scenario for this Relevant Action application.

For each of the two selected years, there is a comparison of the Relevant Action scenario with three situations:

- The actual situation in 2018.
- The forecast situation in the corresponding future year, with the North Runway operational and the current conditions in place.
- The situation that was forecast for 2025 as part of the North Runway planning process in 2004-2007. This is included in order to show how aircraft technology has improved at a faster rate than forecast at that time.

Taking first the air noise vibration assessment, no significant effects were found as a result of the Relevant Action. The assessment found that in 2018, there were 4 dwellings which experienced noise levels in excess of the threshold which has the potential to cause vibration at least once per day. These are located to the south of Old Airport Road, near to the eastern end of the south runway. No dwellings exceed this threshold in any of the future scenarios. Therefore, there are no significant vibration effects are predicted.

Two primary assessment metrics for air noise have been considered, one relating to the overall situation (L_{den}) and the other just to the situation at night (L_{night}). For each of these metrics the number of people exposed to various noise levels have been determined for each assessment scenario. From these the number of people predicted to be 'highly annoyed' and the number predicted to be 'highly sleep disturbed' have been computed. The number of people 'highly sleep disturbed' and 'highly annoyed' has been predicted in accordance with the approach recommended by the World Health Organisation's Environmental Noise Guidelines 2018 as endorsed by the European Commission through Directive 2020/367.

An assessment of significant effects has also been carried out for the comparison with each of the three situations described above. This takes into account the change in noise level for individual receptors and their resulting noise exposure, which are both needed to determine whether a significant effect arises from the Relevant Action in an EIA context. For example, if a receptor experiences a high absolute noise level but no change due to the Relevant Action then this is not a significant effect.

There are a number of measures already in place at Dublin Airport that reduce or mitigate the noise effects of aircraft operations. These are detailed in Chapter 13: Air Noise and Vibration.

Section 13.6 of the EIAR provides a comprehensive assessment in which the effects during operation with the proposed Relevant Action in the opening year 2022 (L_{den} and L_{night} metric) and the likely worst-case year 2025 (L_{den} and L_{night} metric) are assessed.

After the assessment is carried out and the significant effects are identified, further mitigation measures which are being implemented by daa as part of the application are considered to calculate the residual significant effects for air noise on the scenarios assessed.

The additional mitigation measures daa are proposing are as follows:

- An annual night quota (ANQ) system to replace the limit of 65 flights per night;
- A preferential runway use system;
- A night noise insulation scheme; and
- A detailed framework for monitoring the noise performance of Dublin Airport.

After implementation of all the additional proposed mitigation, the following net residual significant effects on people in existing residential receptors who experience significant effects are as described for the different scenarios.

Proposed Relevant Action during the opening year 2022 compared with the 2018 Baseline

For the year of opening of North Runway, 2022, the residual effects of the Relevant Action scenario when compared to the 2018 Baseline are that some people experience significant beneficial effects, and others experience significant adverse effects. The overall result is a net significant beneficial effect for 15,791 people in terms of the L_{den} metric, and a net significant beneficial effect for 8,962 people in terms of the L_{night} metric.

Proposed Relevant Action during the opening year 2022 compared with 2022 Baseline

When compared with the 2022 Baseline, there is a net significant beneficial effect for 1,876 people in terms of the L_{den} metric and a net significant adverse effect for 10,670 people in terms of the L_{night} metric.

Proposed Relevant Action during the opening year 2022 vs 2025 consented scenario

When comparing to the 2025 consented scenario, there is a net significant beneficial effect for 14,039 people in terms of the L_{den} metric, and a net significant beneficial effect for 3,876 people in terms of the L_{night} metric.

Proposed Relevant Action during the worst-case year 2025 compared with the 2018 Baseline

Considering the likely worst-case future year, 2025, the residual effects of the Relevant Action scenario when compared to the 2018 Baseline are that some people experience significant beneficial effects, and others experience significant adverse effects. The overall result is a net significant beneficial effect for 16,750 people in terms of the L_{den} metric and a net significant beneficial effect for 9,002 people in terms of the L_{night} metric.

Proposed Relevant Action during the worst-case year 2025 compared with the 2025 Baseline

When comparing with the 2025 Baseline, there is a net significant beneficial effect for 2,100 people in terms of the L_{den} metric and a net significant adverse effect for 10,631 people in terms of the L_{night} metric.

Proposed Relevant Action during the worst-case year 2025 compared with the 2025 consented scenario

When comparing to the 2025 Consented scenario, there is a net significant beneficial effect for 14,035 people in terms of the L_{den} metric, and a net significant beneficial effect for 4,008 people in terms of the L_{night} metric.

In terms of absolute noise levels, there are number of people exposed to high or very high noise levels under each of the scenarios. These are summarised in the table below.

Summary of People Exposed to High Residual Noise Levels

Scenario	No. People Exposed to High or Very High Residual L_{den} Noise Level	No. People Exposed to High or Very High Residual L_{night} Noise Level
2018 Baseline	44	548
2022 Baseline	26	82
2025 Baseline	23	76
2025 Consented	89	203
2022 Relevant Action	32	62
2025 Relevant Action	32	62

Considering the L_{den} results, the number of people exposed to a high residual noise level is under 100 in all scenarios. The number of people so exposed in the Relevant Action scenarios is lower than in the 2018 Baseline or 2025 Consented scenarios, but higher than in the 2022 or 2025 Baseline scenarios.

Considering the L_{night} results, the number of people exposed to a high residual noise level is under 100 in most scenarios, with the exceptions being the 2018 Baseline and 2025 Consented scenarios. The number of people so exposed in the Relevant Action scenarios is lower than in any of the other scenarios, due in part to the proposed new sound insulation grant scheme.

Further details of the full air noise assessment are provided in Chapter 13: Air Noise and Vibration of the EIAR.

14. Ground Noise and Vibration

Chapter 14: Ground Noise and Vibration assesses the likely significant effects from ground noise as a result of the Relevant Action. Ground noise specifically includes noise associated with aircraft on the ground at Dublin Airport. This excludes any start of roll or reverse thrust activities, which are considered to be part of the air noise and covered in Chapter 13. The main aircraft ground operations include aircraft taxiing and aircraft using auxiliary power units (APUs) when on stands.

Aircraft ground activities do not typically produce any significant vibration effects at sensitive receptors outside of the airport site, and therefore the assessment of vibration due to aircraft ground operations has been scoped out of the EIAR.

This chapter has considered future forecast scenarios for the selected years of 2022, when the North Runway is scheduled to open, and 2025, the first subsequent year when 32 mppa is expected to be reached; 2025 is therefore expected to constitute a worst case scenario for this Relevant Action application.

For each of the two selected years, this chapter has compared the scenario with the Relevant Action with two situations:

- The actual situation in 2018.
- The forecast situation in the corresponding future year, with the North Runway operational and the current conditions in place.

The effects have been assessed first for the Relevant Action in isolation, and then for the cumulative effect of the Relevant Action and the Apron 5H application which is another development with a live planning application occurring at a similar time within the airport boundary.

Two primary assessment metrics have been considered, one relating to the overall situation (L_{den}) and one just the situation at night (L_{night}). For each of these metrics the number of people exposed to various noise levels have been determined for each assessment scenario. An assessment of significant effects has been carried out for the comparison with each of the two situations described above.

Section 14.6 of the EIAR provides a comprehensive assessment in which the effects during operation with the proposed Relevant Action during the opening year 2022 (L_{den} and L_{night} metric) and the worst-case year 2025 (L_{den} and L_{night} metric) and effects during operation with the proposed Relevant Action in combination with the Apron 5H application during the opening year 2022 (L_{den} and L_{night} metric) and the worst-case year 2025 (L_{den} and L_{night} metric) are assessed.

After the assessment is carried out and the significant effects are identified, further mitigation measures which are being implemented by daa as part of the application are considered to calculate the residual significant effects for ground noise on the scenarios assessed.

The additional mitigation measures daa are proposing as part of this application are a number of measures in relation to the air noise effects. Of these, the proposal for a night time sound insulation scheme such that dwellings will be eligible for a grant to pay for sound insulation will also reduce the effects associated with ground noise as well as air noise. No specific mitigation is proposed based on ground noise, however properties which benefit from this scheme based on their air noise level will also benefit from a reduction in the ground noise level.

After implementation of the additional proposed mitigation, the following residual significant effects on people in existing residential receptors are as described for the proposed Relevant Action including Apron 5H scenario.

Proposed Relevant Action including Apron 5H scenario during the opening year 2022 compared with the 2018 Baseline

Considering the year of opening of North Runway, 2022, the residual effects of the Relevant Action scenario when compared to the 2018 Baseline are that a small number of people experience significant effects. Specifically, the assessment finds a residual significant beneficial effect for 3 people in terms of the L_{night} metric and a significant adverse effect for 16 people in terms of the L_{den} metric.

Proposed Relevant Action including Apron 5H scenario during the opening year 2022 compared with the 2022 Baseline.

When comparing with the 2022 Baseline, there are no residual significant effects in terms of the L_{den} metric and a residual significant beneficial effect for 3 people and significant adverse effect for 12 people in terms of the L_{night} metric.

Proposed Relevant Action including Apron 5H scenario during the worst-case year 2025 compared with the 2018 Baseline

Considering the likely worst-case future year, 2025, the residual effects of Relevant Action scenario when compared to the 2018 Baseline are that a small number of people experience significant effects. Specifically, the assessment finds a residual significant beneficial effect for 3 people in terms of the L_{night} metric and a significant adverse effect for 22 people in terms of the L_{den} metric.

Proposed Relevant Action including Apron 5H scenario during the worst-case year 2025 compared with the 2025 Baseline.

When comparing with the 2025 Baseline, there are no residual significant effects in terms of the L_{den} metric and a residual significant beneficial effect for 3 people and significant adverse effect for 12 people in terms of the L_{night} metric.

After the implementation of all the additional mitigation proposed the residual noise levels for people exposed to high or very high residual noise levels across the different scenarios is as presented in the table below:

Summary of people exposed to High or Very High residual noise levels

Scenario	No. People Exposed to High or Very High Residual L_{den} Noise Level	No. People Exposed to High or Very High Residual L_{night} Noise Level
2018 Baseline	3	3
2022 Baseline	0	3
2025 Baseline	0	3
2022 Relevant Action	3	6
2025 Relevant Action	3	6
2022 Apron 5H	3	6
2025 Apron 5H	3	6

Considering the L_{den} results, the number of people exposed to a high residual noise level is 0 in the 2022 or 2025 Baseline scenarios, and 3 in all of the other scenarios.

Considering the L_{night} results, the number of people exposed to a high residual noise level is under 3 in the 2018, 2022 or 2025 Baseline scenarios, and 6 in the Relevant Action and Apron 5H scenarios.

15. Biodiversity, Flora and Fauna: Terrestrial Ecology

Chapter 15: Biodiversity (Terrestrial) provides baseline information in relation to biodiversity and assesses the potential impacts and effects of the proposed Relevant Action on land based ecological features.

As the proposed Relevant Action will result in no changes to the design or construction of the North Runway, there will be no changes to the construction impacts. As a result, construction phase assessment is scoped out.

During the ecological walkover survey carried out in March 2020, the Site was under construction. No evidence of any protected or notable species were identified during the survey and the main habitats present were 'artificial surfaces'.

There are seven SPAs within 15 km of North Runway. Of these, only Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA are over-flown by aircraft using Dublin Airport. The Cuckoo Stream, which flows west to east through the Site, discharges into Baldoyle Bay Estuary. The Cuckoo Stream is unlikely to have any important fisheries or invertebrate populations, due to its history of poor water quality.

A Wildlife Management Plan is implemented under licence at Dublin Airport. This prevents flocks of hazardous birds and/or other animals (e.g. Irish hare) from occurring in areas within which they could present a risk to aircraft.

Due to the implementation of the Wildlife Management Plan that is already in place at the airport, flocks of birds and other fauna species which be considered important are actively prevented from occurring in the vicinity of Dublin Airport. As well as this, the absence of semi-natural habitats present and any fauna species which may occur would be familiar to disturbance caused by intensive construction activities which are currently ongoing as part of the North runway permission. Any fauna species which occur in the surrounding area of North Runway will used to the presence of aircraft also. The Relevant Action will result in a negligible change in the potential magnitude of disturbance, resulting in only two extra hours of flights per day.

There are also no sensitive ecological features within the zone of influence of the proposed Relevant Action which will be subject to significant impacts.

As a result, there is no requirement for additional mitigation to be implemented as the residual effects on ecological receptors will be not significant.

16. Biodiversity (Aquatic)

The North Runway is currently under construction thus no semi-natural habitats are present which may be affected by the proposed Relevant Action (as the site has been dug up and/or is under hard-standing). Habitat in the surrounding area is largely limited to improved grassland and other agricultural land, dissected by species poor hedgerows and ditches.

There are seven Special Protection Areas (SPAs) within 15 km of North Runway. Of these, only Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA are over-flown by aircraft using Dublin Airport. The Malahide Estuary SAC and Malahide Estuary SPA are c. 4 km northeast of Dublin airport. Neither of these European sites is downstream of the application site (i.e. there is no hydrological connection between Dublin Airport and these sites). However, the Baldoyle Bay SPA, and Baldoyle Bay SAC which are located c. 6.5 km east of Dublin airport, are both downstream of the application site (i.e. there is a hydrological connection to them).

However, there are no changes to the drainage infrastructure of associated pollution control infrastructure on North Runway which drains to Sluice and Ward catchments as a result of the proposed Relevant Action. As a result, the proposed Relevant Action will not result in any aquatic biodiversity effects during operation

17. Landscape and Visual

As the proposed Relevant Action will result in no changes to the design or construction of the North Runway the only operational change will be as a result of the amendment of condition 3(d) and replacement of condition 5 resulting in a small variation in the times at which flights can depart and arrive into Dublin airport at night time.

The proposed Relevant Action will not result in a material change to Landscape and Visual amenity when comparing the permitted / constrained scenario and the proposed / unconstrained scenario. As a result, the proposed Relevant Action will not result in any new Landscape and Visual effects during operation beyond those already assessed and approved via the North Runway Permission.

18. Land and Soils

The proposed Relevant Action will result in an operational change as a result of the amendment of condition 3(d) and replacement of condition 5. This will result in a small variation in the number of and times at which flights can depart and arrive into Dublin Airport at night time.

It is assessed that the proposed Relevant Action will not result in any change to impacts on land and soils when comparing the permitted / constrained scenario and the proposed / unconstrained scenario. As a result, the proposed Relevant Action will not result in any new land and soils effects during operation. Further assessment is therefore not required.

19. Material Assets

The proposed Relevant Action will result in a small variation in the consumption of material assets during operation when compared against the permitted / constrained scenario. However, it is important to note that condition no. 3 of the Terminal 2 Planning Permission and condition no. 2 of the Terminal 1 Extension Planning Permission which state that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per

annum (mppa) is in place for both the permitted / constrained and proposed / unconstrained scenarios and so no material changes to material assets are likely to occur.

20. Cultural Heritage

The proposed Relevant Action will result in an operational change as a result of the amendment of condition 3(d) and replacement of condition 5. This will result in a small variation in the number of and times at which flights can depart and arrive into Dublin Airport at night time.

It is assessed that the proposed Relevant Action will not result in any change to impacts on cultural heritage assets when comparing the permitted / constrained scenario and the proposed / unconstrained scenario. As a result, the proposed Relevant Action will not result in any new Cultural Heritage effects during operation. Further assessment is therefore not required.

21. Interaction and Cumulative Impact

Chapter 21: Interaction and Cumulative Impact assesses the cumulative and in-combination effects associated with the proposed Relevant Action. These two types of environmental effects are defined as:

- In-combination Effects - Interrelationships that occur between the individual environmental effects of the proposed Relevant Action and the way that these effects have the potential to combine together to cause cumulative effects with one another at certain sensitive locations and lead to significant effects; and
- Cumulative Effects - The potential for effects of the proposed Relevant Action to combine with effects from other projects in the vicinity and lead to significant effects.

The 2014 EIA Directive was transposed into domestic law on the 1st September 2018 in the form of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which requires an in-combination and cumulative assessment to take place within the EIAR.

In-combination effects

The 'Residential property, Schools and Community Facilities' receptor group is highlighted in the assessment as having the potential to experience in-combination effects as a result of the proposed Relevant Action.

It was assessed that although the receptor groups may experience some form of in-combination effect the magnitude and likelihood of in-combination effect is such that the receptors will experience impacts that remain as assessed in the individual assessments, it is therefore assessed that the in-combination effects are unlikely to combine and result in any significant effects.

Cumulative effects

The cumulative effects assessment considers the effects of the proposed Relevant Action in combination with schemes within the surrounding area.

Due to the fact that there are no works proposed as part of the proposed Relevant Action and that the Relevant Action will only result in the amendment and replacement of operating restrictions it is assessed that schemes outside that of the airport boundary are not included in the assessment.

The nature of the impacts identified with the proposed Relevant Action are such that they relate very specifically to Dublin Airport and the operation of the runway system, and are not anticipated to interact with other developments beyond the airport boundary to form significant cumulative effects.

The cumulative assessment considers 33 schemes that are due to take place within the airport boundary, of these, only 4 schemes were considered to have the potential to form cumulative effects and were assessed further.

It is considered that the proposed Relevant Action will not result in any cumulative effects or in-combination effect interactions, this is mainly due to the nature of the proposed Relevant Action itself, which concerns operation at

night time only and does not make any changes to the design or construction of North Runway or the runway system at the airport. Any effects that have been identified are likely to remain not significant due to the mitigation already present within this EIAR and any mitigation present in the schemes identified as relevant for the purposes of the cumulative assessment.

22. Conclusion

The proposed Relevant Action is necessary in order to allow the airlines to achieve competitive levels of aircraft operation, ensure that the airport capacity can keep up with the growing demand, achieve the objectives set in the National Aviation Policy and prevent negative economic impacts on the local and national economy of Ireland.

The table below summarises the residual effects associated with all the environmental assessments that are presented within the EIAR.

Summary of residual effects from EIAR assessments

Environmental topic area	Receptor	Operational phase residual effect
Population and Human Health		
Population	Amenity and Local Communities	Moderate Adverse (Significant)
Human Health	Air Quality, Noise and Neighbourhood Amenity	Negative (-)
	Climate Change	Neutral (0)
Major Accidents and Disasters		
Risks to third parties arising from aircraft crash	Individual Risk	"slight" to "moderate" (not significant)
Risks to third parties arising from aircraft crash	Societal risks to third parties arising from aircraft crash	"moderate effects" category for all scenarios (not significant)
Traffic and Transportation	Users of the Highways Network	Negligible
Air Quality		
Changes in annual mean nitrogen dioxide (NO ₂) concentrations	All sensitive receptors	Negligible (Not significant)
Changes in annual mean Particulate Matter (PM ₁₀) concentrations	All sensitive receptors	Negligible (Not significant)
Changes in annual mean Particulate Matter (PM _{2.5}) concentrations	All sensitive receptors	Negligible (Not significant)
Changes in 98 th percentile of 1-hour mean odour concentrations	All sensitive receptors	Negligible (Not significant)
Climate and Carbon	GHG emissions	Minor (Not significant)

Water (Drainage)	Surface water environment and drainage	No effects (Not significant)
Air Noise and Vibration		
Changes in annual average overall noise level (L_{den})	Residential receptors	Varies depending on receptor location from significant beneficial to significant adverse, more significant beneficial than adverse
Changes in annual average night noise level (L_{night})	Residential receptors	Varies depending on receptor location from significant beneficial to profound adverse, more significant adverse than beneficial
Changes in annual average overall noise level (L_{den}) or night noise level (L_{night})	Other sensitive receptors	No significant effects
Changes in vibration levels due to airborne aircraft	All sensitive receptors	No significant effects
Ground Noise and Vibration		
Changes in annual average overall noise level (L_{den})	Residential receptors	No significant effects
Changes in annual average night noise level (L_{night})	Residential receptors	Significant adverse effects for 12 people, significant beneficial effects for 3 people
Changes in annual average overall noise level (L_{den}) or night noise level (L_{night})	Other sensitive receptors	No significant effects
Changes in vibration levels due to aircraft on the ground	All sensitive receptors	No effects (Not Significant)
Biodiversity (Terrestrial)		No effects (Not Significant)
Biodiversity (Aquatic)		No effects (Not Significant)
Landscape and Visual		No effects (Not Significant)
Land and Soils		No effects (Not Significant)
Material Assets		No effects (Not Significant)
Cultural Heritage		No effects (Not Significant)
Interaction and Cumulative Impact		
In-combination effects		Not significant
Cumulative effects		Not significant

As shown in the table above, the majority of the assessments find that the proposed Relevant Action will not result in significant effects, and where significant effects have been determined, additional mitigation measures have been suggested to reduce the effects where possible. In summary, the proposed Relevant Action is to amend condition 3(d) and replaced condition 5 of the North Runway Permission, with no change to the operating capacity of the terminals at Dublin Airport, and only a change to the hours of operation of the runways at night.

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