An tÚdarás Inniúil um Thorann Aerárthaí

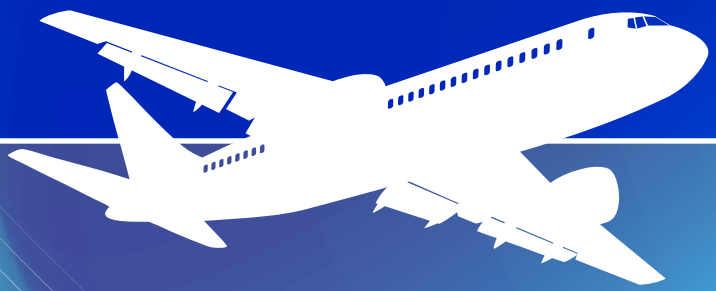
Aircraft Noise Competent Authority

ANCA

Noise Abatement Objective and Draft Regulatory Decision relating to Aircraft Noise Management at Dublin Airport:

Strategic Environmental Assessment - Draft Environmental Report

November 11th 2021



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Aircraft Noise Competent Authority

The services of Noise Consultants Ltd were retained by ANCA to support the work of the authority by undertaking technical assessments and providing expert advice in the areas of acoustics, aviation, and environmental assessments.

Noise CONSULTANTS

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Non-Technical Summary

1. Introduction

A noise problem was identified at Dublin Airport following assessment of planning application F20A/0668 made by Dublin Airport Authority (daa) on 18 December 2020, which sought to relax two of the Dublin Airport North Runway Planning Permission conditions related to use of the Airport at night. In line with the requirements of EU Regulation 598/2014 and the Aircraft Noise (Dublin Airport) Regulation Act 2019, the Airport Noise Competent Authority (ANCA) proceeded to define a Noise Abatement Objective (NAO) to address the problem and carry out a detailed noise assessment, before making a draft Regulatory Decision (RD).

The NAO and the RD set a framework for future applications for planning permission at the Airport, and as such can be considered a plan in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (2004). The specific purpose of Strategic Environmental Assessment (SEA) is to ensure that early consideration is given to environmental aspects when a plan or programme is in development. Following production of an SEA Screening Report, on 15 April 2021, ANCA made a Screening Determination that SEA applies to the NAO and RD. ANCA subsequently produced an SEA Scoping Report to set out the proposed scope of the detailed environmental assessment; this was issued to the Environmental Authorities on 6 May 2021. ANCA has now prepared this Draft Environmental Report which details the SEA that has been undertaken on the NAO and draft RD for Dublin Airport.

Separately, but concurrently, to the SEA, ANCA has also carried out an Appropriate Assessment (AA) of the NAO and RD, in line with the requirements of the European Communities (Birds and Natural Habitats) Regulations (2011). Following production of an AA Screening Report, on 18 August 2021, ANCA made a Screening Decision that AA applies to the NAO and RD. A Natura Impact Statement has therefore been produced to identify potential impacts on European sites as a result of implementing the NAO and RD.

ANCA will publish the NAO, the draft RD, a related report , the SEA Draft Environmental Report and the AA Natura Impact Statement together for public consultation.

2. Outline of the Plan

The plan addressed through this SEA Draft Environmental Report has two components: the NAO (focused on noise outcomes) and the RD (focused on noise mitigation measures and

operating restrictions which seek to secure the noise outcomes set by the NAO). The proposed contents of the NAO and RD are set out in the following two tables.

Table N1: Key components of the NAO

Element	
Part 1: Policy Objective	*Limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night, as part of the sustainable development of Dublin Airport.*
Part 2: Explaining the Objective	*Noise from Dublin Airport should be limited and reduced in line with principles of sustainable development. As Dublin Airport grows, the long-term adverse effects on human health and quality of life should progressively reduce over the lifetime of this NAO. The Balanced Approach will be used to ensure that cost-effective, practicable and sustainable measures are implemented to achieve this objective.*
Part 3: Measurable Criteria	*The NAO will be primarily measured through the number of people 'highly sleep disturbed' and 'highly annoyed' in accordance with the approach recommended by the World Health Organisation's Environmental Noise Guidelines (WHO, 2018) as endorsed by the European Commission through Directive 2020/367, taking into account noise exposure from 45 dB L_{den} and 40 dB L_{night}. These metrics describe those chronically disturbed by aircraft noise.* *These metrics help articulate the effect of aircraft noise on health and quality of life. The following will also be used to help identify where noise exposure results in the populations experiencing the harmful effects. These are the number of people exposed to aircraft noise above:* • *55 dB L_{night} (a level of night-time noise exposure described by the WHO as representing a clear risk to health)* • *65 dB L_{den} (where a large proportion of those living around Dublin Airport can be considered 'highly annoyed')* *In order to measure performance, these metrics shall be completed using a noise model prepared in accordance with the methodology described in Directive 2015/996 (European Civil Aviation Conference (ECAC) Doc.29 4th Edition or as amended). The noise model shall be validated using local noise and track keeping performance data from Dublin Airport's systems.* *The calculation of the number of people exposed to aircraft noise shall have regard for the most recent population data available and assessed against the population exposed to aircraft noise in 2019.*

Part 4: Expected Outcomes	*In the context of its recovery from the global pandemic, noise exposure from Dublin Airport is expected to increase up to 2025. Whilst the resultant health effects are expected to be lower than those which occurred prior to the pandemic and in the years 2018 and 2019, these effects should then reduce over the medium to long-term, to improve the noise situation at Dublin Airport whilst allowing for the sustainable growth. ANCA therefore expects the following outcomes to be achieved through this NAO as set against the measures described below.* *The number of people highly sleep disturbed and highly annoyed shall reduce so that:* • *The number of people highly sleep disturbed and highly annoyed in 2030 shall reduce by 30% compared to 2019;* • *The number of people highly sleep disturbed and highly annoyed in 2035 shall reduce by 40% compared to 2019;* • *The number of people highly sleep disturbed and highly annoyed in 2040 shall reduce by 50% compared to 2019; and* • *The number of people exposed to aircraft noise above 55 dB L_{night} and 65 dB L_{den} shall be reduced compared to 2019.*
Part 5: Monitoring	*Monitoring of the NAO will be informed by annual reports which will be reviewed by ANCA as part of its obligations under the Act of 2019.*

Table N2: Proposed content of the RD

Condition	*Proposed RD wording*
1	*The existing operating restriction, Condition 5, of the North Runway Planning Permission (FCC Reg. Ref: F04A/1755; ABP Ref: PL06F.217429) reading as:* *'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 23:00 and 07:00) 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.'* *shall be revoked and replaced with an annual noise quota scheme operating restriction as follows:* *'The airport shall be subject to a Noise Quota Scheme (NQS) with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 (local time) with noise-related*

	limits on the aircraft permitted to operate at night. The annual noise scheme shall be applied as detailed in Schedule A.'
2	*The existing operating restriction imposed by Condition 3(d) and the exceptions at the end of Condition 3 of the North Parallel Runway Planning Permission (FCC Reg. Ref: F04A/1755; ABP Ref: PL06F.217429) reading:* *'3(d). Runway 10L-28R shall not be used for take-off or landing between 23:00 and 07:00. 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.'* *shall be amended as follows:* *'Runway 10L/28R shall not be used for take-off or landing between 00:00 and 06:00 (local time) 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.'*
3	*A voluntary residential sound insulation grant scheme (RSIGS) for residential dwellings shall be provided for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour and experience a 'very significant' effect. Dwellings exposed to levels at or above 55 dB L_{night} shall be reviewed every two years commencing in 2027 and if applicable be made eligible for the scheme. This scheme shall not apply to properties where works were undertaken under the existing Residential Noise Insulation Scheme (RNIS) or Home Sound Insulation Programme (HSIP) or to properties where a planning application was lodged after 09th December 2019, the date being the adoption of Variation No. 1 to the Fingal Development Plan 2017 – 2023 incorporating policies relating to development within Aircraft Noise Zones.*

The NAO and RD have been developed in the context of a number of other national and local plans which relate to growth in passenger numbers and aircraft movements at Dublin Airport, and/or objectives for environmental protection which may impact on this. These plans support the continued sustainable growth of Dublin Airport, as well as timely delivery of required infrastructure to facilitate such growth, with ambitions for the Airport to reach 40 million passengers per annum (mppa) alongside 265,000 ATMs by 2030, rising to 54 mppa alongside 365,000 ATMs by 2050. At the same time, these plans include environmental protection objectives such as reducing by 30% the share of people chronically disturbed by transport noise; ensuring the Airport becomes 'net zero carbon' by 2050; the need for technology improvements in aircraft and engine design to help combat aviation emissions and improve

energy efficiency; and protecting natural landscape features and the climate from impacts associated with airport expansion.

3. How the Assessment was Undertaken

The impacts of the NAO and RD must be described relative to an identified baseline scenario, which describes how matters would develop in the absence of the NAO and RD. For the purposes of this Draft Environmental Report, the 'future baseline' assumes that daa will seek to grow the airport in line with existing policy, i.e. beyond the current 32 mppa cap. daa has provided annual passenger forecasts for the period 2019-2040, which enables comparison between this future baseline (Scenario A/C) and the 'assessment case' in which Conditions 3(d) and 5 are amended (Scenario B), the latter enabling an additional 4.6 mppa by 2040 (all of which would use the Airport at night).

Consideration of reasonable and realistic alternatives is a key feature of the SEA process. Through assessing the environmental performance of alternative options as they emerge, it is possible to influence the overall sustainability of the evolving NAO and RD, as well as the selection of the preferred alternative. The alternatives that ANCA has been considering for the NAO and RD are set out in the table below.

Table N3: NAO and RD alternatives considered in the assessment

No.	*Description*
1	*An NAO which seeks to "Limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night, as part of the sustainable development of Dublin Airport", with specific outcomes set for 2030, 2035 and 2040.*
2	*An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, but does not set specific outcome reductions (as per the planning application).*
3	*An NAO which seeks to limit the long-term adverse effects of aircraft noise on health and quality of life, but not reduce it.*
4	*An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, with a specific outcome set only for 2040.*
5	*An NAO which seeks to limit and reduce aircraft noise, but does not link this to health outcomes.*

i	*A change to Condition 5 which would remove the numerical cap on the number of night-time flights and replace it with an annual night-time noise quota of 7990 between the hours of 23:30 and 06:00 (i.e. with no constraints during 23:00 to 23:30 and 06:00 to 07:00).*
ii	*A change to Condition 5 that mimics the above, but with additional noise-related limits on the types of aircraft permitted to operate at night.*
iii	*A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00.*
iv	*A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 with noise-related limits on the aircraft permitted to operate at night.*
v	*No change to Condition 3(d), but assuming the Condition 5 restriction of 65 flights per night is lifted. This is runway use pattern P11.*
vi	*A change to Condition 3(d) which prohibits the use of North Runway for landings and take-offs only between the hours of 00:00 and 06:00, enabling use of both runways during 23:00 to 00:00 and 06:00 to 07:00 (with all landings to be from the east, and all take-offs to the west). This is runway use pattern P02.*
vii	*As per runway use pattern P02, but with variations to the timings, e.g. preventing the use of North Runway between 23:00 and 06:00, or between 23:30 and 05:00. These are runway use patterns P03, P07, P12 and P13 (night-time hours vary across the patterns, though all are shorter than the Condition 3(d) hours of 23:00 to 07:00).*
viii	*Removal of the Condition 3(d) prohibition on the use of North Runway for landings and take-offs at night, enabling both runways to be used. These are runway use patterns P04, P05, P06, P08, P09 and P10, which differ from each other in terms of the factors that determine which of the two runways is used, e.g. depending on destination or using one for arrivals and the other for departures, or whether daa is free to choose (though all effectively result in both runways having roughly equal night-time traffic).*
ix	*A voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB Lnight contour, and for all homes experiencing a 'very significant' effect in the first full year when the Relevant Action comes into operation (i.e. 2022).*
x	*A voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB Lnight contour and for all those experiencing a 'very significant' effect in 2025 (i.e. the worst year for noise).*

SEA objectives, targets and indicators must be established in order to clearly assess environmental impacts of a proposed plan or programme (including the selected alternatives). The SEA objectives used in the assessment are listed below:

- *Air Quality - Minimise emissions of pollutants to air associated with aircraft.*
- *Biodiversity - Safeguard terrestrial, aquatic and marine biodiversity, particularly EU and nationally designated sites and protected species.*
- *Carbon and Climate Change - Minimise contribution to climate change by adopting mitigation measures.*
- *Cultural Heritage - Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact.*
- *Landscape and Visual - Protect and maintain the special qualities of the landscape character and views.*
- *Noise and Vibration - Avoid or reduce the harmful effects, including annoyance, due to long-term exposure to noise, especially at night.*
- *Population and Health - Protect amenity and health of local residents from effects of noise, pollution or loss of privacy.*

4. Current State of the Environment Including Characteristics, Problems and Evolution

The relevant environmental baseline for each of the scoped-in environmental aspects is set out in the table below. Note that the area potentially affected by the NAO and RD relates only to aircraft and associated outcomes (e.g. from overflying) within the vicinity of Dublin Airport, as ground operations and land-based development are outside of ANCA's remit.

Table N4: Summary of relevant environmental baseline

	Key policy context / environmental protection objectives	*Current state of the environment including characteristics and problems*	*Likely evolution of the environment without implementation of the NAO and RD*
Air Quality	*EU directives set the baseline for air quality monitoring and emission reduction.* *Nationally, the Government is preparing a National Clean Air Strategy to promote clean air policies for transport amongst other sectors.* *Locally, the Fingal Development Plan (FDP) seeks to preserve good air quality and improve poor air quality (policy AQ02), whilst ensuring that every development proposal around the Airport should consider air quality (Objective DA18).*	*Air pollution is the single largest environmental health risk in Europe. The key negative air quality issues in Ireland are emissions from domestic solid fuel burning, transport emissions within urban areas and ammonia emissions from agriculture.* *Many areas in Dublin, particularly those close to busy roads, feature nitrogen dioxide levels above EU annual limits, though particulate matter emissions are generally within EU annual limits.* *Air quality around Dublin Airport is affected by the operation of airport and related developments, including new access infrastructure. Data collected by daa since implementation of the air quality monitoring programme in 2011 has been generally found to be well within the limit values mandated in the Air Quality Standards Regulations, though are close to the limit at the Airport bus depot.*	*Current projections estimate that Ireland will be compliant with 2020 and 2030 reduction commitments for particulate matter, and with 2030 reduction commitments for nitrogen dioxide. This is based on full implementation of the Climate Action Plan (2019). Further measures may also be required.* *The EPA suggests that additional measures are needed to address air quality issues in Ireland as a whole, and Dublin specifically. The EPA recommends the urgent publication and rollout of actions as part of the forthcoming National Clean Air Strategy, ideally underpinned by WHO clean air quality guideline values as specific targets.*
Biodiversity	*EU policy is driven by the Habitats Directive and the Birds Directive and aims to conserve natural habitats and naturally occurring bird species as they occur in the wild.* *Nationally, Ireland's National Biodiversity Plan provides a framework to restore biodiversity and prevent further losses,*	*The EPA state that Ireland has less diverse plants, insect and animal populations than mainland Europe, however its peatland habitats are of EU importance and its aquatic systems and wetlands also support internationally important bird, fish and invertebrate populations. 430 conservation areas and 154 protection areas exist in Ireland. Most assessed habitats have an unfavourable status and*	*Nationally, existing biodiversity is likely to decline further without if no action is taken. In 2021, the RSPB indicated that the number of endangered Irish bird species has increased by 46% in less than 10 years.* *Protecting ecological value whilst allowing for growth will become a key environmental challenge. However, species decline can be*

	whilst the National Planning Framework (NPF) aims to enhance existing conservation status and improve management of protected areas and species. *Locally, the FDP includes measures to protect designated sites and species, ecological corridors and stepping stone habitats. The Dublin Airport Local Area Plan (LAP) requires compensation for loss of habitat. Proposed developments must adhere to the Fingal Heritage Plan 2018-2023, the Fingal Biodiversity Plan 2010-2015 and subsequent relevant plans.*	*around half show ongoing decline. Over 25% of native bird species are now on the red list.* *Within the 15km Zone of Influence around the Airport, there are 8 wild bird protection areas (SPAs) and 10 habitat conservation areas (SACs). Five of the SPAs are currently overflown by aircraft, however, a study of wetland birds at these sites indicated that they do not react to passing aircraft.* *20 proposed Natural Heritage Areas (NHAs) are located in the vicinity of the airport. Landscape around the airport has limited biodiversity value.* *De-icing operations at the airport are the primary threat to local water quality. Emergency fuel dumping could also harm local watercourses, however this is unlikely.*	*reversed under appropriate conditions and awareness of environmental issues is increasing, particularly amongst the young.* *Safeguarding wildlife for future generations is a key national priority.*
Carbon and Climate Change	*The Climate Action and Low Carbon Development (Amendment) Act 2021 puts Ireland on a legally binding path to net-zero emissions by 2050, and to a 51% reduction in emissions by the end of this decade.* *The National Adaptation Plan indicates that aviation emissions must be limited in line with European and global emissions trading and offsetting initiatives. The National Policy Position on Climate Action and Low Carbon Development seeks to reduce carbon emissions within the transport sector by at least 80% by 2050,*	*Ireland's greenhouse gas emissions increased by 10.1% from 1990 to 2019. Transport is the second largest contributing sector behind agriculture. Emissions from transport showed the greatest overall increase over this period, at 136.9%, with road transport increasing by 142.4%. Transport emissions are currently 15.4% below the 2007 peak levels, primarily due to the economic downturn, improving vehicle fuel efficiency, increased use of biofuels and significant recent decreases in fuel tourism. However, economic growth has driven recorded increases in transport emissions for five out of the last seven years (prior to the pandemic).*	*Projections indicate that full implementation of the Climate Action Plan (2019) will result in up to 25% reduction of 2020 greenhouse gas emissions by 2030. Systemic change will be necessary for Ireland to become climate neutral and climate resilient.* *Projections indicate that transport emissions will decrease by 11.6% over the period 2021-2030, under existing measures, and by 38.6% with additional measures (e.g. 936,000 electric vehicles being on the road by 2030).*

	in comparison to 1990 levels. The National Climate Action Plan seeks a 30% reduction in carbon emissions between 2021 and 2030 and for the achievement of net zero carbon emissions by 2050. Within the transport sector, this includes encouraging the usage of biofuels and increasing carbon tax. *On a local level, the Transport Strategy for Greater Dublin emphasises the need to reduce dependence on carbon emitting fuels. Fingal and Dublin Councils' 'Change Action Plan 2019-2024' reports both set out actions to reduce greenhouse gas emissions across the transport sector, and the FDP seeks to limit aviation greenhouse gas emissions. The Dublin Airport LAP dictates the need for a carbon reduction strategy to support any major expansion of Dublin Airport.*	*Aviation emissions from international flights peaked in 2007, but have since begun to reduce. Emissions from domestic flights have also been falling steadily since the mid-2000s.* *In terms of climate change impacts, Ireland has experienced several extreme weather events in recent years, including flooding, droughts and the first recorded strong East Atlantic hurricane to reach Ireland, ex-Hurricane Ophelia in 2017. Between 2014 and 2018, local authorities spent approximately €101 million responding to extreme weather events.*	*The predicted impact of improved aircraft technology will be improved fuel efficiency between 2010 and 2040, which would result in an 8.5% reduction of fuel consumption and carbon dioxide emissions over the period, despite an expected 82% increase in passenger traffic.* *The UK's roadmap to decarbonise aviation suggests that reduction in carbon emissions between 2019 and 2030 on a per flight basis is unlikely, however a 3.3% reduction by 2035 and a 10.9% reduction by 2040 (vs 2019) may be possible. This will be due to technological advances, such as the introduction of electric hybrid aircraft.* *The EPA's State of the Environment Report (2020) indicates that mid-century mean annual temperatures are projected to increase by up to 1.6°C. Heat wave events, dry periods and heavy rain are all expected to increase by mid-century, challenging building performance and increasing disruption.*
Cultural Heritage	*Heritage Ireland 2030 will be Ireland's national heritage plan (expected to be published in 2021) and will comprise a framework to guide the heritage sector over the next decade. The NPF similarly seeks to enhance and protect built*	*The county of Fingal is rich in archaeological and historical sites. Numerous designated heritage assets are present around Dublin Airport. Four protected structures are located within the airport boundary, and a number of archaeological sites and features are present in areas beyond the Airport boundary. These include two historic graveyards*	*The FDP describes protection, enhancement and promotion of the County's archaeological and architectural heritage as a key environmental challenge. No existing conflicts with legislative objectives governing archaeological and*

	heritage assets, natural and cultural heritage. *At a local level, the FDP seeks to ensure sensitive development design around Protected Structures and historic landscapes, whilst the Fingal Heritage Plan aims to conserve and protect heritage at a strategic and local level and increase awareness.* *The Dublin Airport LAP sets out assessment objectives for development proposals at the Airport, to conserve local archaeology and architectural heritage. Objective CH6 seeks to support appropriate and sympathetic provision of noise insulation to St. Margaret's Church.*	*and various protected structures. A number of Architectural Conservation Areas (ACAs) are present in the wider Fingal area.*	*architectural heritage have been identified in the vicinity of the Airport.*
Landscape and Visual	*The National Landscape Strategy for Ireland aims to manage change whilst protecting and enhancing the landscape. Also at a national level, the NPF aims to protect and promote the sense of place, culture, quality, character and distinctiveness of the Irish rural landscape, and to strengthen the value of greenbelts and green spaces at a regional and city level.* *At a local level, the FDP contains a number of policies relating to the*	*Ireland's landscape forms an important part of the nation's cultural and natural identity, and contributes to the wellbeing of the economy (e.g. the tourism industry), society and environment.* *The closest designated landscapes to Dublin Airport are High Amenity Areas located in Swords, along the coast and at Blanchardstown. Highly Sensitive Landscapes are located at Kinsaley, all along the coast and near Sheephill. Special Amenity Area Orders are present at Howth, Ireland's Eye and at the Liffey Valley near Palmerston.* *Dublin Airport is located within the Airport and Swords landscape character area, where increasing*	*The FDP (2017) describes management of the County's varied landscapes as a key environmental challenge.* *However, whilst new developments have resulted in changes to the visual appearance of landscape around the Airport, this has not conflicted with legislative objectives governing landscape and visual appearance (FCC, 2019).*

	protection of landscape and visual amenity.	*industrial activity is beginning to encroach on agricultural land. The landscape of Dublin Airport is relatively flat and entirely artificial in character, containing managed grassland. Outside the airfield lie agricultural grasslands and arable land, whilst enclosure is provided by hedgerows and treelines. Nearby open space, e.g. at St. Margaret's, is not used for significant levels of amenity. Local views are dominated by structures and development associated with the operational Airport.*	
Noise and Vibration	*The WHO Environmental Noise Guideline sets out recommendations for protection of human health from environmental noise. In relation to aviation, guidelines strongly recommend reducing average daytime noise levels below 45 decibels and night-time noise levels below 40 decibels. It also links long-term noise exposure to associated health effects.* *At a national level, the NPF seeks to proactively manage noise where significant health and quality of life impacts are likely.* *At a local level, the FDP encourages aircraft-related development and operation procedures at the airport consider all measures to mitigate against potential negative impacts of aircraft noise, whilst the Dublin Airport LAP designates airport noise zones to protect*	*Aircraft noise is the major issue the vicinity of Dublin Airport and under its flightpaths. Noise from aircraft is produced both on the ground and in the air. The Noise Action Plan indicates that the number of people exposed to night-time noise levels greater than 50 decibels increased from 1,200 in 2011 to 6,200 in 2016, due to both an increase in airport activity over this period, and increased population around the airport from new development. Further increases have occurred recently; the number of people exposed to night-time noise levels of over 50 decibels increased to 12,317 in 2018, and to 13,838 in 2019.*	*The EPA notes that, from a human health and wellbeing perspective, proactive management of noise will be key. Noise mitigation operational procedures are set out in the Dublin Airport Noise Management Plan, which aims to ensure that aircraft are operated safely and with noise reduced as far as practicable in areas surrounding the airport. The airport also has insulation and voluntary purchase schemes, which seek to protect those experiencing elevated aircraft noise levels.* *Given the planned growth and changes in operating procedures (subject to the appropriate consents) proposed by daa, without the NAO and RD, potential exists for airport noise to be managed ineffectively.*

	amenity and mitigate potential impacts of airport growth. The Noise Action Plan for Dublin Airport sets out 13 actions to avoid, prevent and reduce the effects of long term exposure to aircraft noise, including health and quality of life.		
Population and Health	*The Healthy Ireland Framework and the NPF note that health and wellbeing (including heart and respiratory diseases, mental health, obesity and other injuries) are affected by spatial planning relating to the physical environment in which people live and work. The NPF seeks to provide improved quality of life for all citizens.* *At a local level, the Fingal Economic and Community Plan and the FDP aim to promote wellbeing and quality of life. The FDP acknowledges that poor air quality, light pollution and noise pollution can be detrimental to health, and promotes appropriate land use patterns in the vicinity of Dublin Airport to minimise exposure to undesirable noise levels. It also aims to ensure that growth at Dublin Airport considers potential negative impacts on local residential areas and sustainability. The Dublin Airport LAP seeks continued communication between the Airport and neighbouring communities to protect amenity and*	*There is a rising level of urbanisation and population growth in Ireland, coupled with an increasing public health burden of obesity and physical inactivity. Health challenges from urbanisation include exposure to excessive noise and poor air quality. Air pollution from transport is dominated by nitrogen emissions, with nitrogen dioxide being particularly harmful from a health perspective.* *Noise can have a significant and disruptive effect on everyday life and it has been identified by the WHO as the second greatest environmental cause of health problems, after air quality. Environmental noise has been linked with negative health outcomes including cardiovascular disease, cognitive impairment, sleep disturbance, annoyance and psycho-physiological effects. Noise in the vicinity of Dublin airport is affecting a larger number of people than in previous years, due to increases in both noise and residential development surrounding the airport. Overall, data suggests that 115,738 people were highly annoyed by noise from Dublin airport in 2019, and that 47,045 people were considered highly sleep disturbed.*	*The EPA states that strong health-centred urban design, policies and planning, prioritising a modal shift away from the current high dependence on private motor vehicles, are vital for Ireland's transition to more compact urban living, as well as for reducing air and noise pollution.* *Although aircraft have become quieter due to increasingly stringent regulations, noise and other health impacts on the local population could continue to increase as the airport grows and further development occurs around the airport.*

	mitigate potential impacts of growth in the interests of long-term sustainability.		

5. Assessment of Likely Significant Effects on the Environment

This assessment is based on the assessment case compared to the future baseline, which results in an additional 4.6 million night-time passengers flying each year by 2040. The predicted impacts of the NAO and the RD on the environment is summarized below.

The increase in passenger numbers and associated night-time ATMs facilitated by the RD is likely to cause minor negative effects on air quality (specifically for settlements located directly under the flightpaths within 2km of the Airport); biodiversity (due to more overflying of protected sites and species, though existing research suggests that the birds for which nearby Natura 2000 sites are designated are habituated to overflying); carbon and climate change; noise and vibration; and population and health (due to more frequent noise episodes at night impacting on sleep).

The specified components of the NAO seek to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, including through encouraging a switch to quieter and more efficient aircraft, and these are expected to have beneficial effects on each of these environmental aspects. However, though not within ANCA's remit, daa could choose to deliver the expected outcomes of the NAO (i.e. reductions in the number of people adversely affected by noise) by increasing the angle of ascent to get higher in the air more quickly, and/or changing airspace design to overfly less densely populated areas. Though these latter effects are indirect and uncertain, they could result in additional adverse impacts on air quality (though emissions from additional burnt fuel would affect a smaller area); biodiversity (through overflying of sites not previously overflown); and carbon and climate change.

In terms of other impacts relating specifically to the RD, amending Condition 3(d) to enable use of North Runway during the period 23:00 to 00:00 and 06:00 to 07:00, with all landings to be from the east, and all take-offs to the west (i.e. runway use pattern P02) is expected to have additional minor negative effects on biodiversity (due to the increase in noise over Malahide Estuary SPA / SAC and Feltrim Hill pNHA), and population and health (due to the increase in noise over settlements including Ridgewood, Kilbrook, The Ward Cross, Coolquay, Mooreside and Rathlittle). Having said that, it should be noted that the alternative runway use patterns simply redistribute spatially the noise associated with the lifting of Condition 5. Runway use pattern P02 therefore, whilst causing an increase in noise for the people and species residing in the aforementioned locations, also causes a decrease in noise over Baldoyle Bay SPA / SAC / pNHA, Ireland's Eye SPA / SAC / pNHA, and settlements such as Ratoath and Dunshaughnlin.

There are also a number of interrelationships between the environmental aspects that have been addressed throughout the assessment of the NAO and RD. For example, a deterioration in air quality has the potential to lead to impacts on biodiversity (especially pollution-sensitive habitats associated with SACs) and human health. For the NAO and RD, this is only relevant

for locations directly beneath the flight paths within 2km of the Airport, and thus air pollution is not considered to be an issue for biodiversity or human health in this case. An increase in noise also has the potential to lead to impacts on several of the other environmental aspects, as has been the focus of this assessment. For the NAO and RD, this increase in noise is expected to occur only at night, and so impacts on human health are of greatest concern; impacts on biodiversity have been deemed to be insignificant; whilst impacts on the use of cultural heritage and landscape assets and their settings are considered negligible.

The comparison of effects of each of the alternatives for the NAO and RD on each of the environmental aspects is shown in the following table.

Table N5: Summary assessment of the alternative options for the NAO and RD

	Environmental aspects						
Alternative being assessed	*Air Quality*	*Biodiversity*	*Carbon and Climate*	*Cultural Heritage*	*Landscape and Visual*	*Noise and Vibration*	*Population and Health*
Alternatives to the NAO							
1) An NAO which seeks to "Limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night, as part of the sustainable development of Dublin Airport", with specific outcomes set for 2030, 2035 and 2040.	+/-	+/-	-	0	0	+/-	+/-
2) An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, but does not set specific outcome reductions (as per the planning application).	-	-	-	0	0	-	-
3) An NAO which seeks to limit the long-term adverse effects of aircraft noise on health and quality of life, but not reduce it.	-	-	-	0	0	-	-
4) An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, with a specific outcome set only for 2040.	+/-	-	-	0	0	+/-	+/-
5) An NAO which seeks to limit and reduce aircraft noise, but does not link this to health outcomes.	+/-	+/-	-	0	0	+/-	-
Alternatives to Condition 5 (i.e. a limit of 65 flights per night between the hours of 23:00 and 07:00)							
i) A change to Condition 5 which would remove the numerical cap on the number of night-time flights and replace it with an annual night-time noise quota of 7990 between the hours of 23:30 and 06:00 (i.e. with no constraints during 23:00 to 23:30 and 06:00 to 07:00).	-	-	-	0	0	- -	- -
ii) A change to Condition 5 that mimics the above, but with additional noise-related limits on the types of aircraft permitted to operate at night.	-	0	-	0	0	-	-
iii) A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00.	0	-	-	0	0	-	-
iv) A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 with noise-related limits on the aircraft permitted to operate at night.	0	0	-	0	0	0	0
Alternatives to Condition 3(d) (i.e. prohibiting the use of North Runway for landings and take-offs between the hours of 23:00 and 07:00)							
v) No change to Condition 3(d), but assuming the Condition 5 restriction of 65 flights per night is lifted. This is runway use pattern P11.	0	0	-	0	0	-	-

vi) A change to Condition 3(d) which prohibits the use of North Runway for landings and take-offs only between the hours of 00:00 and 06:00, enabling use of both runways during 23:00 to 00:00 and 06:00 to 07:00 (with all landings to be from the east, and all take-offs to the west). This is runway use pattern P02.	*0*	+/-	-	*0*	*0*	+/-	+/-
vii) As per runway use pattern P02, but with variations to the timings, e.g. preventing the use of North Runway between 23:00 and 06:00, or between 23:30 and 05:00. These are runway use patterns P03, P07, P12 and P13 (night-time hours vary across the patterns, though all are shorter than the Condition 3(d) hours of 23:00 to 07:00).	*0*	+/-	-	*0*	*0*	+/-	+/-
viii) Removal of the Condition 3(d) prohibition on the use of North Runway for landings and take-offs at night, enabling both runways to be used. These are runway use patterns P04, P05, P06, P08, P09 and P10, which differ from each other in terms of the factors that determine which of the two runways is used, e.g. depending on destination or using one for arrivals and the other for departures, or whether daa is free to choose (though all effectively result in both runways having roughly equal night-time traffic).	*0*	+/-	-	*0*	*0*	+/-	+/-
Other alternative measures being considered by ANCA to address noise impacts associated with the daa planning application							
ix) A voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB Lnight contour, and for all homes experiencing a 'very significant' effect in the first full year when the Relevant Action comes into operation (i.e. 2022).	*0*	*0*	*0*	*0*	*0*	+	+
x) A voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB Lnight contour and for all those experiencing a 'very significant' effect in 2025 (i.e. the worst year for noise).	*0*	*0*	*0*	*0*	*0*	+	++

The assessment of the NAO alternatives revealed that the policy objective and outcomes proposed by daa through the planning application (i.e. Alternative (2)) would be likely to have an adverse effect on most of the environmental aspects, due to its lack of specific outcome reductions. Indeed, with no measurable requirement to reduce noise or health impacts beyond current levels, it was felt that WHO guideline values for noise and health would unlikely be met, and furthermore that passenger numbers and ATMs may increase further after 2030 (subject to planning permission), putting air quality, biodiversity and climate at additional risk. Alternative (3) would be similarly adverse, whilst the very long-term targets of Alternative (4) would make them difficult to achieve, and would likely result in impacts for the majority of environmental aspects worsening before they get better. Alternative (5) would be disadvantageous to human health, though the effects on environmental aspects would be the same as Alternative (1), i.e. mixed minor adverse and minor beneficial.

The best realistic alternative was therefore considered to be Alternative (1), with a specific short-term, health-based outcome reduction of 30% set for 2030 (mimicking EC guidance), with further, more stringent outcome reductions of 40% and 50% set for 2035 and 2040 respectively. These latter outcome reductions go beyond EC guidance, yet are considered to be achievable, and will incentivise further initiatives and measures to reduce noise at Dublin Airport (including efficiency measures that will have broader environmental benefits). The best NAO alternative in SEA terms is therefore also the preferred alternative identified by ANCA through application of the balanced approach.

The assessment of the RD alternatives similarly revealed that the proposed amendments to Condition 5 put forward by daa through the planning application (i.e. Alternative (i)) would be likely to have an adverse effect on most of the environmental aspects, due to its lack of operational constraints during the period 23:00 to 23:30 and 06:00 to 07:00. In particular, their proposal does not cover the same 8-hour night-time period as defined in EU noise policy and against which the NAO has been set. Alternatives (ii) and (iii) would be better for biodiversity and air quality respectively (with impacts reduced to negligible levels), whilst both would offer a reduction in adverse effects on noise and health compared to Alternative (i). The alternative with the most positive impacts (or rather, the least detrimental) across the environmental aspects is Alternative (iv), as not only would the proposed noise quota operate throughout the 8 hours of the night, but there would be additional noise-related limits on the types of aircraft permitted to operate at night. The preferred alternative to Condition 5 identified by ANCA is therefore also the best alternative in SEA terms.

The alternatives to Condition 3(d) are represented in terms of runway use patterns, and all involve the lifting of the Condition 5 restriction on numbers of flights at night. Alternative (v) (i.e. runway use pattern P11) simply restates the existing Condition 3(d), which would result in all of the additional night-time ATMs associated with lifting Condition 5 occurring on the South

Runway. As a result, all areas currently affected by night-time ATMs and associated aircraft noise and health impacts would experience a proportional increase in these effects with other environmental aspects experiencing negligible effects. However, ANCA's review of the information provided in the planning application indicates that overall health outcomes are likely to improve by using both the north and South Runways at night. ANCA also recognises daa's view that use of the North Runway is necessary as part of meeting demand. It is concluded by ANCA that Condition 3(d) should be revised alongside replacing Condition 5.

Revising Condition 3(d) effectively means prescribing a form of night-time runway preference or prescribing scheduled use of the north or South Runways over a certain period of the night. All of the alternative runway use patterns considered by ANCA involve the same amount of noise overall, just redistributed depending on which runway is being used and how. Consequently, it is not possible to state which of the runway use patterns is better or worse overall, as all will involve noise improvements (and thus human health and biodiversity improvements) in some locations, and deteriorations in others. Nevertheless, as the runway use patterns associated with Alternatives (vi) and (vii) involve revisions to the timings of North Runway restrictions, whereas the runway use patterns associated with Alternative (viii) involves the removal of North Runway timing restrictions, the former could be said to provide receptors potentially affected by aircraft noise with more certainty over respite from noise.

Alternative (vi) (i.e. runway use pattern 2) is the proposal put forward by daa in the planning application, and is also the preferred alternative of ANCA. This is because it permits the operation of the runways in a manner which reduces the impacts on those newly affected by aircraft night-time noise, whilst providing certainty to communities as to how they will be affected by night-time operations from the North Runway, while also providing continuity with the day-time operating pattern set down by Conditions 3(a)-(c) of the North Runway Planning Permission. The SEA has identified the impact of Alternative (vi) on environmental aspects to be generally very similar to that of the other runway use patterns/Alternatives, and thus there is no preference from an environmental perspective.

Finally, the two alternatives considered by ANCA in relation to the proposed voluntary residential sound insulation grant scheme for residential dwellings differ only in their impacts on human health, with Alternative (x), as proposed by ANCA, being more beneficial than Alternative (ix) proposed by daa. There are no other impacts from an environmental perspective, and so Alternative (x) is the preferred alternative.

6. Measures to Prevent, Reduce, Offset and Monitor Significant Environmental Effects

Overall, the assessment of the NAO and RD revealed that there would be no significant adverse environmental effects as a result of implementing the preferred alternatives, i.e. Alternative (1)

for the NAO and Alternatives (iv), (vi) and (x) for the RD. ANCA will monitor the effectiveness of these measures with regard noise through the requirements of the NAO.

By its very nature, implementation of the NAO is to ensure that any growth or other changes at Dublin Airport that have the potential to affect the noise environment (specifically by causing a noise problem) do so in a managed way and in line with specific limits that have been set. This will mean that there will be a drive toward having both a most efficient fleet and efficient operations at the Airport. Though the NAO and RD do not prescribe a particular fleet mix, it will be necessary for daa to undertake such efficiency measures if they are to achieve the levels of growth anticipated in existing policy in compliance with the noise and health outcomes of the NAO, and adopting such measures will also help mitigate the predicted increase in air and carbon emissions, and possible disturbance to wildlife, associated with the additional night flights.

However, conversely driving aircraft noise efficiencies can have the effect of increasing the potential for other environmental effects. For example, routing aircraft over less densely populated areas can mean that new receptors including important biodiversity sites and landscape and heritage assets are impacted. Furthermore, certain operational measures, for example steeper ascents, can result in more fuel burn as a result of requiring increased thrust, thereby increasing carbon (and other pollutant) emissions.

For the above reasons, and to ensure that appropriate decisions are made as the Airport plans future growth in line with the requirements of the NAO, there will need to be detailed consideration of the exact form of measures that are proposed including operational measures proposed, any changes to airspace and even the types of aircraft that operate. All this will need to be captured and considered in an alternatives assessment undertaken as part of an Environmental Impact Assessment (EIA) that would be associated with a planning application for growth.

The NAO requires that the monitoring data relating specifically to the Airport's performance against the NAO itself should be provided to ANCA in an Annual Report. The contents of this are detailed in Schedule A (Part 4) of the draft RD, and include:

- *The number of people exposed to aircraft noise above 55 dB L_{night} and 65 dB L_{den};*
- *The number of people highly sleep disturbed and highly annoyed;*
- *Any residential properties that have benefits and are eligible for and yet to benefit from the Airport's noise insulation schemes;*
- *Key Statistics with respect to aircraft operations, such as aircraft movements, use of the Noise Quota Scheme, movements by aircraft type, passenger numbers, aircraft destinations, flight routings and runway use;*

- *Summaries from noise monitoring terminals for the Airport;*
- *Details of all noise modelling undertaken in support of the Noise Performance Reporting;*
- *A summary of complaints records; and*
- *Details of any anticipated changes or developments that may affect noise at the Airport.*

7. Next Steps

This Draft Environmental Report will be made available for public consultation alongside the NAO, draft RD, the RD Report, and the Natura Impact Statement, and will additionally be forwarded to each Environmental Authority. It will be available for consultation for a period of 14 weeks.

A Final Environmental Report will then be produced accounting for the submissions made during the public consultation (including those from the Environmental Authorities). Following adoption of the NAO and RD, a SEA Statement will be produced, setting out information on the decision, including how environmental considerations and consultation responses have been integrated into the NAO and RD.

1 Introduction

Background to Aircraft Noise Management at Dublin Airport

Aircraft Noise Regulation

1.1 *Regulation (EU) 598/2014 (hereinafter referred to as 'Regulation 598') requires Ireland and other EU Member States to appoint a Competent Authority to regulate the noise situation at certain airports. Regulation 598 applies to airports with more than 50,000 civil aircraft movements per calendar year. Dublin Airport is the only airport in Ireland meeting this threshold. Fingal County Council (FCC) have been designated as the Competent Authority for the purposes of aircraft noise regulation at Dublin Airport. FCC have, to fulfil their function with regard noise management, created an independent division, the Aircraft Noise Competent Authority (ANCA), which discharges FCC's functions under Regulation 598 and the Aircraft Noise (Dublin Airport) Regulation Act 2019 (hereinafter referred to as the '2019 Act').*

1.2 *Under Regulation 598, ANCA must ensure that the noise situation at Dublin Airport is assessed in accordance with the Environmental Noise Directive (Directive 2002/49/EC) and by the adoption of the Balanced Approach. Regulation 598 requires ANCA to apply the Balanced Approach at those airports where a noise problem has been identified. The Balanced Approach is a policy of the International Civil Aviation Organization (ICAO), which has provided detailed guidance in ICAO Doc 9829, Guidance on the Balanced Approach to Aircraft Noise Management. Under Regulation 598, the Balanced Approach is applied where a noise problem at an airport has been identified. According to the ICAO guidance, it involves analysing various measures available to reduce noise which can be classified into four principal elements as follows:*

- *Noise at Source;*
- *Land-use Planning Management;*
- *Noise Abatement Operational Procedures;*
- *Operating Restrictions.*

1.3 *In addition to those elements specified in ICAO, Regulation 598 also requires ANCA, in the context of the Balanced Approach, to define a Noise Abatement Objective (NAO) for the airport, identify the measures available to reduce the noise impact, and evaluate thoroughly the cost-effectiveness of the noise mitigation measures. ANCA must then select the applicable noise mitigation measures without detriment to public safety and taking into account environmental sustainability (including interdependencies between noise and emissions), public interest in the development prospects of the airport, and consultation with stakeholders*

in a transparent way. At the end of this process, ANCA must specify the noise mitigation measures and ensure they are implemented.

1.4 *The 2019 Act gives further effect to Regulation 598 in Ireland. It provides for ANCA to discharge its functions under Regulation 598 on its own initiative or in response to any planning application by Dublin Airport Authority (daa) relating to (1) "any noise problem that would arise from the carrying out of the development as proposed" (Section 34B) or (2) "any noise problem that would arise from taking [a] relevant action as proposed" (Section 34C), whereby the 'relevant action' consists exclusively of the revocation, amendment or replacement of an operating restriction, with or without the introduction of new noise mitigation measures. ANCA discharges its functions under Regulation 598 and the 2019 Act by, among other things, making a 'regulatory decision' (hereinafter referred to as 'the RD').*

How Regulation 598 will apply to the daa planning application

1.5 *daa have made, on 18/12/20, a planning application (F20A/0668) (hereinafter referred to as the 'planning application') to FCC which proposes to amend Condition 3(d) and replace Condition 5 of Planning Permission Reg. Ref. No. F04A/1755 (ABP Ref. No. PL06F.217429) as amended by Fingal County Council F19A/0023 (ABP Ref. No. ABP-305289-19) (hereinafter referred to as the 'Dublin Airport North Runway Planning Permission') that was granted in 2007 to provide for new operating procedures. Specifically, these Conditions restrict the way the Airport can be operated during the night-time (23:00-07:00) after the construction of the new North Runway, including particularly by not allowing use of the North Runway, and by restricting the number of air traffic movements (ATMs), that are allowed during this period.*

1.6 *Section 34C of the Planning and Development Act 2000, which was introduced by the 2019 Act, deals with planning applications that seek only to modify noise-related operating restrictions. Such operating restrictions are regulated by EU legislation on aircraft noise (i.e. Regulation 598). In seeking to modify such operating restrictions, daa can seek to have noise mitigation measures imposed in place of or in addition to operating restrictions. Section 34C requires the planning authority to refer such applications to ANCA, which must apply the Balanced Approach to the data and proposals made by daa.*

1.7 *Pursuant to Section 34C, the planning authority has referred the planning application to ANCA and has consulted with ANCA in relation to any noise problem that could arise from the planning application. ANCA has explored this through its report 'Ascertaining a Noise Problem at Dublin Airport', concluding that "the proposed development may significantly influence the evolving noise climate at Dublin Airport to the extent that presents a noise problem that requires detailed assessment." The following reasons were given:*

- *"The Application proposes an increase in aircraft activity at night, when referenced against the situation that would otherwise pertain, which may result in higher levels of human exposure to aircraft noise."*
- *"The Application proposes a situation where some people will experience elevated levels of night-time noise exposure for the first time which may be considered harmful to human health."*
- *"The EIAR accompanying the Application indicates that the proposed Relevant Action will give rise to significant adverse night-time noise effects. This indicates that the noise effects of the Proposed Development are a material consideration. Mitigation in the form of a night-time noise insulation scheme is proposed by the Application. The provision of such mitigation is an indicator that the Proposed Development may give rise to a Noise Problem."*

1.8 *A noise problem arising from the planning application has consequently been declared by ANCA, through delegated authority from the Chief Executive of FCC (CE Order: ANCA/002/2021).*

1.9 *ANCA can require daa to carry out such assessments and give to it such information or plans arising from such assessments, or to give to it such other information or plans as it may reasonably require for the purposes of making the RD. ANCA must also give notice to the planning authority and daa of the noise mitigation measures and operating restrictions it intends to provide for in the RD before adopting the RD. The planning authority and daa may then make comments and observations and make counterproposals. ANCA must take those into account and apply the Balanced Approach to the counterproposals.*

1.10 *ANCA must then publish a draft RD and an underlying report for public consultation. The underlying report must include a summary of the data examined, the NAO, the noise mitigation measures considered, an evaluation of their cost-effectiveness, a summary of how ANCA applied the Balanced Approach, the alternative measures that have been considered, the noise mitigation measures and operating restrictions actually proposed, the reasons for those measures, any relevant technical information in that regard, and a non-technical summary of the foregoing. ANCA must take account of all submissions and observations made in that public consultation and revise the draft RD and underlying report if necessary, before making the final RD.*

1.11 *The RD can impose the operating restrictions and noise mitigations measures sought by daa, or it can impose other operating restrictions and noise mitigation measures. There is no requirement for the RD to mirror exactly the proposals made in the planning application. If ANCA believe that the RD needs to, for example, consider alternative options or cover a wider breadth of operating procedures to that proposed within the planning application they have the*

ability to do so. Equally, if ANCA believe it to be appropriate, they can extend the RD to consider more than simply the proposals made in the application, for example to be extended so that a wider range of noise related measures and/or forecasts are considered.

1.12 *When ANCA makes the final RD post-consultation, the planning authority will then consider the planning merits of the application, including Environmental Impact Assessment (EIA) and Appropriate Assessment if required. The planning authority must then incorporate the RD in any planning permission granted and, if necessary, revoke, replace or amend the conditions of any previous planning permission to make it consistent with the RD.*

1.13 *In this way, Section 34C gives effect to the provisions of Regulation 598 which applies to operating restrictions, such as Conditions 3(d) and 5 of the Dublin Airport Northern Runway Planning Permission, that were pre-existing when the Regulation was introduced. Article 14 of Regulation 598 provides that those operating restrictions shall remain in force until a CA, like ANCA, decides to revise them in accordance with the Regulation.*

1.14 *The decision of the planning authority incorporating the RD may be appealed to An Bord Pleanála by the parties normally entitled to make such appeals, as well as by any party who made a submission or observation in the public consultation on the draft RD.*

1.15 *If the RD introduces a new operating restriction, it must be notified to the European Commission and other Member States. The European Commission may review whether the Balanced Approach was properly applied in imposing the operating restriction.*

Need for Strategic Environmental Assessment

1.16 *Directive 2001/42/EC (hereinafter referred to as the SEA Directive) requires Member States to ensure that certain plans and programmes are subject to a requirement for Strategic Environmental Assessment ('SEA'). Statutory Instrument (S.I.) No. 435/2004 - European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (2004) (hereinafter referred to as the SEA Regulations) transpose this Directive into Irish legislation.*

1.17 *In terms of the requirement to carry out environmental assessment, the SEA Regulations state:*

> *'9. (1) Subject to sub-article (2), an environmental assessment shall be carried out for all plans and programmes (a) which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications and tourism, and which set the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive, or (b) which are not directly connected with or necessary to the management of a European site but, either individually or in combination with other plans, are likely to have a significant effect on any such site.*

(2) A plan or programme referred to in sub-article (1) which determines the use of a small area at local level or a minor modification to a plan or programme referred to in sub-article (1) shall require an environmental assessment only where the competent authority determines that it is likely to have significant effects on the environment and, for this purpose, the competent authority shall make any necessary determination.

(3) A competent authority shall determine whether plans and programmes other than those referred to in sub-article (1), which set the framework for future development consent of projects, are likely to have significant effects on the environment.'

1.18 *A 'development consent' in Irish law includes a planning permission for projects listed in Annexes I and II to the EIA Directive.*

1.19 *The RD that will be made in response to the planning application relates to transport. Even though the RD will be incorporated into an individual planning permission, it may impose operating restrictions and mitigation measures that will determine whether or not future planning applications for development consent at the airport potentially give rise to the potential for a noise problem. It thereby guides the decisions that ANCA and the planning authority will make on those future applications. It also results from an assessment against an NAO; it cannot be more restrictive than necessary to achieve the NAO. Accordingly, the NAO and RD may set the framework for future development consent of projects listed in Annexes I and II to the EIA Directive, including changes or extensions to airfields and airports with a basic runway length of 2,100 metres or more. The 'Plan' addressed through this SEA Draft Environmental Report therefore comprises the NAO and the RD, as two interlinked components, the NAO setting a framework for the RD, which in turn sets the framework for future applications for planning permission at the airport. Together, the NAO and RD set a framework for sustainable growth at Dublin Airport.*

1.20 *The specific purpose of SEA is to ensure that early consideration is given to environmental aspects when a plan or programme is in development. However, a plan or programme that determines the use of a small area at local level or a minor modification to a plan or programme only requires SEA if implementation of the plan or programme is considered likely to lead to significant environmental effects. Determining whether significant effects are considered to be likely, and therefore whether SEA applies, is completed through a process known as Screening.*

1.21 *ANCA, in its role as CA, was required to make a Screening Determination on whether SEA applies. On 15 April 2021, having regard information provided in the SEA Screening Report, and submissions and observations provided by the prescribed Environmental Authorities, ANCA determined that there is potential for likely significant environmental effects to occur as a result of implementing the NAO and RD.*

1.22 *With ANCA having determined that the NAO and RD requires SEA, an SEA Scoping Report was subsequently produced to set out the proposed scope of the detailed environmental assessment and to facilitate consultation with the prescribed Environmental Authorities in that regard. The outcomes of the Scoping stage are summarised in Chapter 3.*

Purpose of this Report

1.23 *Pursuant to the SEA Regulations, the SEA Process Checklist (EPA, 2008) / SEA Pack (Updated 2020), and submissions made by the Environmental Authorities at the Scoping stage, this Draft Environmental Report includes the following information:*

a) *an outline of the contents and main objectives of the plan or programme, or modification to a plan or programme, and relationship with other relevant plans or programmes – Chapter 2;*

b) *the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme, or modification to a plan or programme – Chapter 4;*

c) *the environmental characteristics of areas likely to be significantly affected – Chapter 4;*

d) *any existing environmental problems which are relevant to the plan or programme, or modification to a plan or programme, including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive – Chapter 4;*

e) *the environmental protection objectives, established at international, European Union or national level, which are relevant to the plan or programme, or modification to a plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation – Chapter 2;*

f) *the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors – Chapter 5;*

g) *the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme, or modification to a plan or programme, – Chapter 6;*

h) *an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical*

deficiencies or lack of know-how) encountered in compiling the required information – Chapter 3;

i) a description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan or programme, or modification to a plan or programme – Chapter 6;

j) a non-technical summary of the information provided under the above headings – beginning of this Report.

1.24 Consultation, through provision of this Draft Environmental Report, will be undertaken with the Environmental Authorities (listed below) and with the public.

- *The Environmental Protection Agency (EPA);*
- *The Minister for Agriculture, Food and the Marine;*
- *The Minister for Environment, Climate and Communications;*
- *The Minister of Housing, Local Government and Heritage.*

Related Environmental Assessments

1.25 Statutory Instrument (S.I.) No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations (2011), which transposes the EU Habitats Directive (92/43/EEC) into Irish law, requires that 'Appropriate Assessment' (AA) be carried out where a plan is likely to have a significant impact on a European site. European sites are commonly referred to as Natura 2000 sites and include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). Each of these sites is designated because of their specific biodiversity value: for SPAs this is because of their value for wild birds; for SACs, it is because of the important habitats and species that they support. AA is required if it cannot be excluded, on the basis of objective scientific information following screening, that the plan, individually or in combination with other plans or projects, will have a significant effect on a European site. As with SEA, in determining this, a Screening exercise is undertaken to establish whether the potential for such exists.

1.26 AA Screening was therefore undertaken broadly concurrently, but separately, to SEA Scoping. ANCA, in its role as CA, was required to make a Screening Decision on whether AA applies. On 18th August 2021, having regard to the information provided in the AA Screening Report, ANCA determined that there is potential for impacts on European sites to occur as a result of implementing the NAO and RD.

1.27 A Natura Impact Statement has therefore been produced; again, broadly concurrently, but separately, to this SEA Draft Environmental Report. ANCA will publish the NAO, the draft RD, a report underlying the draft RD, the SEA Draft Environmental Report and the AA Natura Impact

Statement together for public consultation. The process of aircraft noise regulation through the 2019 Act is summarised alongside the SEA and AA processes in Figure 1.1 below.

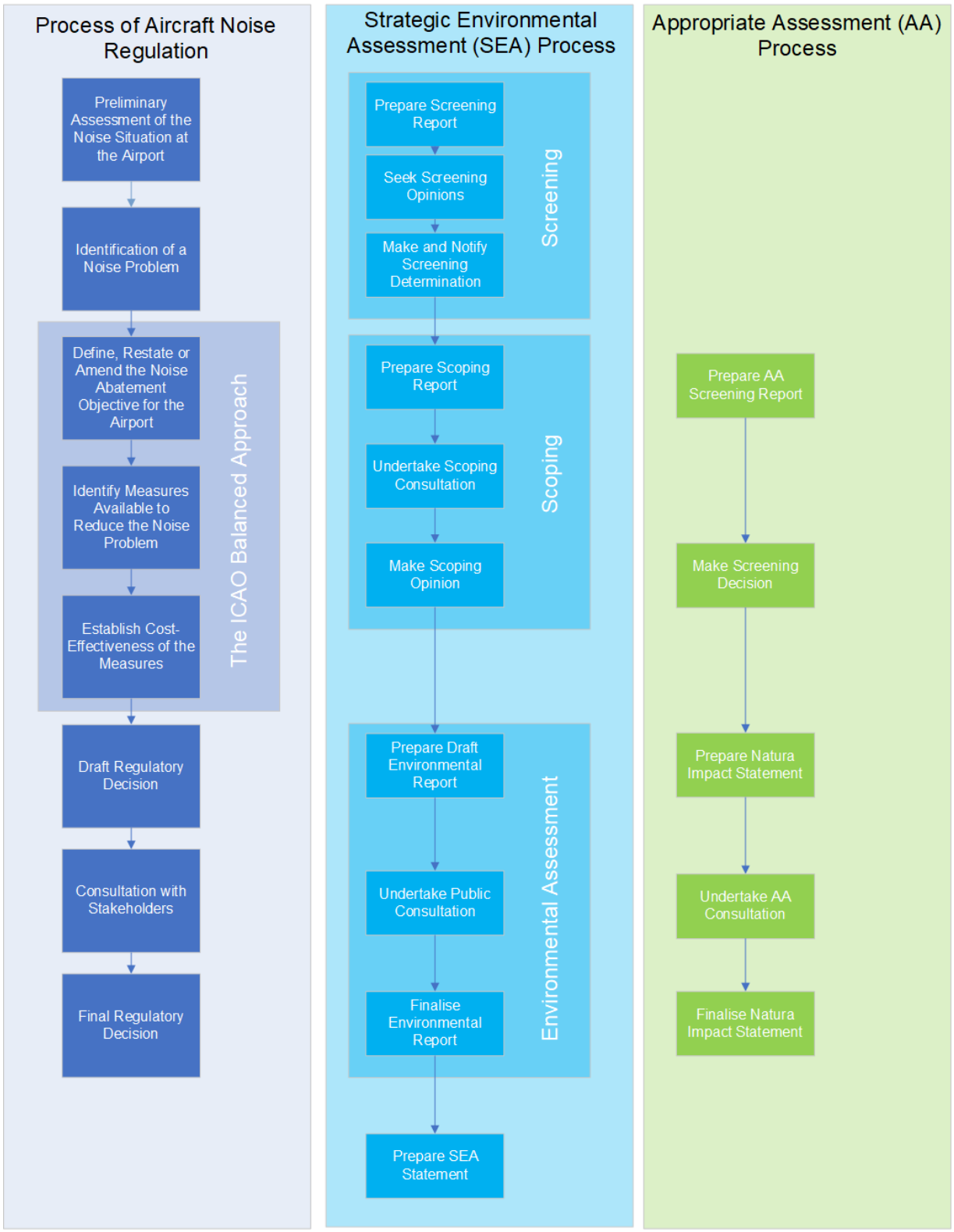


Figure 1.1: The concurrent processes of Aircraft Noise Regulation, SEA and AA

1.28 *Separately to the SEA and AA being carried out for the NAO and RD, the planning application submitted by daa has also undergone both EIA and AA Screening. The planning authority must have regard to the EIA Report and AA Screening Report submitted by daa when deciding whether permission should be granted for the development. ANCA may take account of the EIA Report and AA Screening Report submitted by daa in the drafting of the NAO and RD, however, these were prepared for a different statutory purpose of the planning application, rather than the processes undertaken by ANCA in setting the NAO or making the RD. Accordingly, those reports will contain information that is not relevant to ANCA's process and may lack information that is relevant to ANCA's processes.*

Consultant Team

1.29 *This Report has been prepared by Logika Consultants Ltd. ('Logika'), part of the Noise Consultants Ltd. Consultant Team engaged to provide expert support to ANCA in setting the NAO and making the RD. Specifically Logika are responsible for providing SEA and AA input to the NAO and RD process.*

1.30 *The individuals involved in the production of this Report are Helen Davies and Toby Gibbs. Their relevant qualifications and experience are set out below.*

Helen Davies, BSc (Hons) MSc PhD CEnv MIEMA ACIEEM

1.31 *Helen is a Chartered Environmentalist and Full Member of the Institute of Environmental Assessment and Management, with a PhD in environmental economics. She has over 13 years' experience in environmental consultancy, specialising in conducting SEA and AA of local, regional, national and multi-national plans throughout the UK and Ireland. This includes SEA of Ireland's Forestry Programme, which identified potential detrimental impacts on biodiversity, soil and cultural heritage related to afforestation and felling, requiring specific mitigation measures to address as well as project level AA and EIA where appropriate (e.g. where effects were uncertain at the Plan level). Helen also undertook SEA of the Regional Operational Programmes for the two regions of Ireland, and of two international programmes – the EU Programme for Peace and Reconciliation between Ireland and Northern Ireland, and the European Territorial Co-operation Cross Border Programme between Ireland, Northern Ireland and Scotland. Within Northern Ireland, Helen has undertaken SEA of the Strategic Planning Policy Statement, the Investment for Growth and Jobs Programme, and the Rural Development Programme. Elsewhere in the UK she has undertaken SEA of numerous local authority transport plans, local plans, and area action plans.*

Toby Gibbs, BSc (Hons) CEnv MCIEEM

1.32 *Toby is a Chartered Environmentalist and a Full Member of the Chartered Institute of Ecology and Environmental Management. He has more than 22 years' experience in the environmental*

sector and is a specialist in the environmental impacts of aviation activities having worked on many aviation projects, and with experience in the UK, Europe, Africa and the Middle East. Project highlights include being engaged to provide environmental support to the development of Heathrow Airport's expansion proposals including contributing significantly to the evidence provided to the Airports Commission and leading the team engaged to produce the environmental assessments required to support the consenting application for a third runway. He was also the Project Director for the EIA associated with the ending of the Cranford Agreement at the Airport and provided written evidence to the Public Inquiry. He was also the Director responsible for the EIA that formed part of the consenting application for the reopening of Manston Airport in Kent.

1.33 *Outside of the UK he performed the role of Environmental Director for the expansion works at Jomo Kenyatta International Airport in Kenya and completed a special advisory role for the New Lisbon Airport EIA. He also provided expert advice to countries in Eastern Europe and West Asia as they sought to bring in environmental legislation to regulate the impacts of aviation activities. Toby is the British Aviation Group's Sustainability Working Group Chair, recognition of his knowledge of the environmental and ecological issues that are associated with aviation activities.*

2 Outline of the Plan and Relationship with Other Plans and Objectives

Site Location

2.1 *As stated in the National Aviation Policy, Dublin Airport has the potential to become an established secondary hub of European significance, with routes to over 200 different destinations, served by nearly 50 airlines. In 2019 a total of 32.9 million passengers used the Airport and its 241,000 ATMs. Dublin Airport is currently served by one main runway (South Runway) and a further cross runway which is used less frequently. Following the 'Dublin Airport North Runway Planning Permission', a second main runway (North Runway) is expected to become operational in 2022. The Airport has two terminals, operates 24 hours a day, and for 364 days a year. As with all major airports, it relies on considerable additional infrastructure including an extensive bus network and car parking facilities.*

2.2 *Dublin Airport is located on the east coast of Ireland, see Figure 2.1, in Collinstown, in County Dublin in the administrative area of FCC. It lies approximately 7km north of Dublin City Centre, and between the City and the Airport lies mostly development. The area north of the Airport is also mainly developed all the way to the conurbation of Swords which lies approximately 3km to the north. In an easterly direction from the Airport is found a mixture of farmland and other open space, with scattered development all the way to the coast and the settlement of Portmarnock which lies approximately 5km from the Airport itself. West of the Airport is characterised by being mainly undeveloped and comprising mostly farmland and other forms of open space.*

2.3 *The Airport is accessed by the M1 motorway, which provides access from Dublin itself and from areas to the north as far as Belfast in Northern Ireland. The M50 Dublin ring road connects with the M1, and from this there are road connections to the rest of Ireland.*

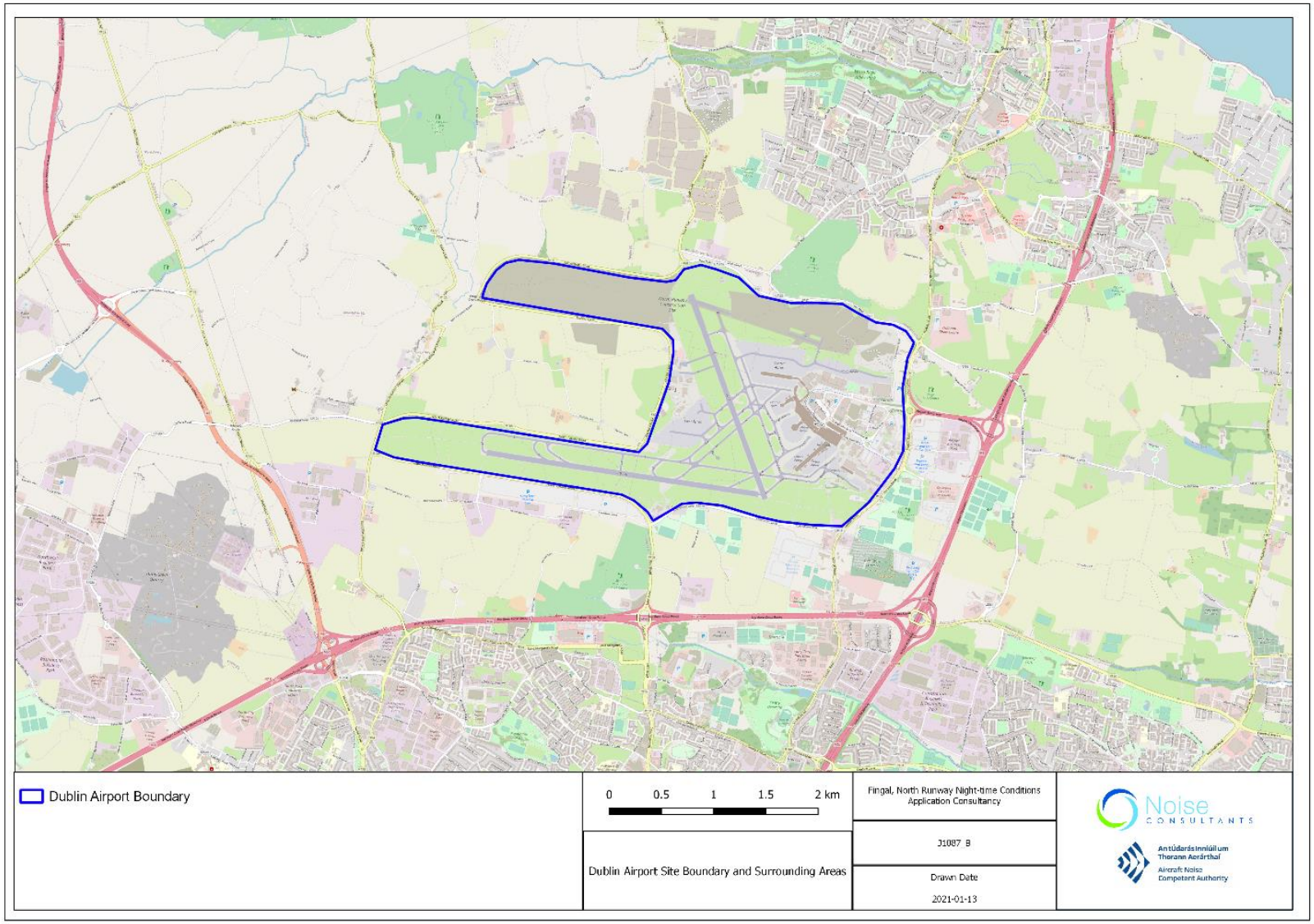


Figure 2.1: Dublin Airport site location

Contents and Main Objectives of the Plan

2.4 *As stated in the previous chapter, where ANCA identifies a noise problem at Dublin Airport, an NAO must be defined in order to apply the Balanced Approach, including identification of the measures available to reduce the noise impact, and the cost-effectiveness of these measures. The noise problem that will be triggered by the development proposed in the planning application must then be assessed in the context of the NAO, culminating in ANCA making an RD. The 'Plan' addressed through this SEA Draft Environmental Report therefore has two components: the NAO (focused on noise outcomes) and the RD (focused on noise mitigation measures and if necessary, operating restrictions which seek to secure the noise outcomes set by the NAO). ANCA is preparing the NAO and RD as two separate outputs of an interlinked process. These are described separately below.*

The Noise Abatement Objective

2.5 *As set out in the NAO Report (2021), the purpose of an NAO is to set the level of ambition for a noise management regime that secures both environmental improvement and a sustainable transport network. An NAO should also aim to address multiple stakeholder interests, ideally around a common purpose. Different interest groups are however likely to have their own principal expectations for the NAO. These are that it should:*

- *Provide opportunities for sustainable growth whilst protecting the health of those affected;*
- *Provide a level of certainty by setting realistic outcomes and expectations of change;*
- *Ensure the desired outcomes are measurable, and the metrics used are evidence based and credible with stakeholders;*
- *Recognise the balance between the needs of different stakeholder groups;*
- *Use clear accessible language.*

2.6 *In order to meet these expectations, ANCA has sought to develop a NAO in manner where which:*

- *Aligns with wider regional and national noise, sustainability and economic policies;*
- *Provides flexibility in how the desired outcomes are to be achieved and does not seek to prescribe the approach;*
- *Is consistent with the requirements of the in Regulation 598/2014 and the 2019 Act;*
- *Includes measurable and achievable outcomes, having regard for human and environmental health, against which progress can be assessed, and provides*

expectations and opportunities for all stakeholders. The NAO therefore needs to be 'data-driven' and informed not just by the noise situation today but how the noise climate may evolve into the future;

- *Incentivises the development and uptake of new technology at Dublin Airport;*
- *Allows for consistency in undertaking the requirements of the Regulation 598/2014 and Noise Action Planning processes, particularly where there are multiple authorities involved;*
- *Allows for measurable criteria to be used to assess progress.*

2.7 *It will be necessary for Dublin Airport to demonstrate its compliance with the NAO. This will need to be informed and presented in a manner that allows ANCA and any other interested stakeholder to understand whether Dublin Airport is complying with the NAO. The noise situation at Dublin Airport must be subject to review against the NAO.*

2.8 *ANCA's powers and obligations to define an NAO arise from Regulation 598 and, while they are exercised in parallel with the planning process in this instance, the NAO is not constrained by the terms of the planning application. Having regard for the above expectations, the NAO can usefully be a plan for the decisions that are needed to manage the aircraft noise aspects of future aircraft operations at Dublin Airport beyond the scope of the current planning application. ANCA consider that the NAO should describe an outlook or set of noise outcomes over a period of time having regard for wider European, national and regional plans relating to Dublin Airport and aircraft noise. The NAO will therefore sit above both the present daa planning application and future planning applications, and is designed to complement other published policies which present scenarios for the sustainable development of Dublin Airport to a 40 mppa operation in 2030 and a c.55 mppa operation from 2050.*

2.9 *In this context, the NAO can guide noise management and the measures needed as part of meeting these policies in compliance with the Balanced Approach, Regulation 598/2014 and the 2019 Act. The NAO will therefore seek to define noise outcomes that would govern the implementation of activities associated with planning applications made for the future growth provided for in existing policies, be that an increase in ATMs/passenger numbers and/or any associated infrastructure works. ANCA would therefore set a long-term NAO that anticipates that growth and does not need to be revised incrementally as Dublin Airport grows in accordance with existing policies.*

2.10 *Any such growth could however, only occur if these outcomes are met and would require planning permission and, where applicable, formal EIA and AA processes. In that case the NAO will set a noise management framework for future decisions on applications for planning permission, but the planning authority could grant or refuse permission within that framework*

if found to be unacceptable to the planning authority for other reasons. Consequently, only impacts resulting from the management of aircraft noise will be assessed through the SEA, as ANCA cannot influence any other aspect of Dublin Airport's growth and operation. Other impacts will be addressed through SEA, EIA and AA of other plans and projects.

2.11 *In terms of structuring the NAO, a policy objective is necessary to encapsulate the level of ambition being set by the NAO, supported by measurable criteria and expected outcomes. ANCA therefore proposes that there will be five key components to the NAO. These components are likely to be as described in Table 2.1 below.*

Table 2.1: Key components of the NAO

Element	
Part 1: Policy Objective	*Limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night, as part of the sustainable development of Dublin Airport.*
Part 2: Explaining the Objective	*Noise from Dublin Airport should be limited and reduced in line with principles of sustainable development. As Dublin Airport grows, the long-term adverse effects on human health and quality of life should progressively reduce over the lifetime of this NAO. The Balanced Approach will be used to ensure that cost-effective, practicable and sustainable measures are implemented to achieve this objective.*
Part 3: Measurable Criteria	*The NAO will be primarily measured through the number of people 'highly sleep disturbed' and 'highly annoyed' in accordance with the approach recommended by the World Health Organisation's Environmental Noise Guidelines (WHO, 2018) as endorsed by the European Commission through Directive 2020/367, taking into account noise exposure from 45 dB L_{den} and 40 dB L_{night}. These metrics describe those chronically disturbed by aircraft noise.* *These metrics help articulate the effect of aircraft noise on health and quality of life. The following will also be used to help identify where noise exposure results in the populations experiencing the harmful effects. These are the number of people exposed to aircraft noise above:* • *55 dB L_{night} (a level of night-time noise exposure described by the WHO as representing a clear risk to health)* • *65 dB L_{den} (where a large proportion of those living around Dublin Airport can be considered 'highly annoyed')* *In order to measure performance, these metrics shall be completed using a noise model prepared in accordance with the methodology described in Directive 2015/996 (European Civil Aviation Conference (ECAC) Doc.29 4th Edition or as*

	amended). The noise model shall be validated using local noise and track keeping performance data from Dublin Airport's systems. *The calculation of the number of people exposed to aircraft noise shall have regard for the most recent population data available and assessed against the population exposed to aircraft noise in 2019.*
Part 4: Expected Outcomes	*In the context of its recovery from the global pandemic, noise exposure from Dublin Airport is expected to increase up to 2025. Whilst the resultant health effects are expected to be lower than those which occurred prior to the pandemic and in the years 2018 and 2019, these effects should then reduce over the medium to long-term, to improve the noise situation at Dublin Airport whilst allowing for the sustainable growth. ANCA therefore expects the following outcomes to be achieved through this NAO as set against the measures described below.* *The number of people highly sleep disturbed and highly annoyed shall reduce so that:* • *The number of people highly sleep disturbed and highly annoyed in 2030 shall reduce by 30% compared to 2019;* • *The number of people highly sleep disturbed and highly annoyed in 2035 shall reduce by 40% compared to 2019;* • *The number of people highly sleep disturbed and highly annoyed in 2040 shall reduce by 50% compared to 2019; and* • *The number of people exposed to aircraft noise above 55 dB L_{night} and 65 dB L_{den} shall be reduced compared to 2019.*
Part 5: Monitoring	*Monitoring of the NAO will be informed by annual reports which will be reviewed by ANCA as part of its obligations under the Act of 2019.*

2.12 *Importantly the NAO will not set the level of passengers or ATMs that could use or operate from Dublin Airport. What it does do is set the noise outcomes that need to be achieved.*

The (Draft) Regulatory Decision

2.13 *The Dublin Airport North Runway Planning Permission is a ten year permission to allow development of a new North Runway at Dublin Airport by daa. Extension of the duration of the permission was granted in 2017 (F04A/1755 E1). This project is currently under construction with, according to the daa application, a scheduled opening date of 2022.*

2.14 *The planning permission associated with the second runway was subject to 31 planning Conditions. The recent planning application made by daa proposes to have two of these replaced by different operating procedures. The two Conditions in question are:*

- *Condition 3(d) which prohibits the use of North Runway for landings and take-offs between the hours of 23:00 and 07:00.*
- *Condition 5 which states that, on completion of construction of the new runway, the average number of night-time aircraft movements at the airport shall not exceed 65 per night (between 23:00 and 07:00) when measured over the 92 day modelling period.*

2.15 *daa seek, through a Section 34C application, to take a 'Relevant Action[1]' to revoke and replace these operating restrictions. The proposals would allow for scheduled North Runway operations between the hours of 06:00-06:59 and 23:00-23:30 to occur, and for the restriction to an average of 65 night-aircraft movements at the airport to be lifted[2]. In its place, daa has proposed a set of noise-related operating restrictions, specifically in the form of a noise quota count[3]\ and mitigation measures, namely a noise insulation retrofit scheme for affected dwellings.*

2.16 *ANCA has exclusive competence to impose, revoke, replace, or amend the terms of, an operating restriction.*

2.17 *Having applied the Balanced Approach to the noise problem identified on 10th February 2021, ANCA proposes to, in the context of Section 34C(10) of the Act of 2000, make an RD. ANCA proposes to direct the planning authority to include the following conditions in their decision (if any) to grant application F20A/0668. These have regard to the objectives and outcomes of the NAO as defined by ANCA and ANCA considers that they are not more restrictive than is necessary to achieve the NAO.*

[1] Under Section 34C a relevant action refers to: the revoking of an operating restriction; the amendment of an operating restriction; or the replacement of an operating restriction with another

[2] Pre-COVID-19 levels of demand for night flights (23:00-07:00) was over 100/night, with 113/night associated with regularly scheduled services on a typical busy day in Summer 2019.

[3] The noise quota count works like a 'noise budget' that Dublin Airport would have to operate within. Aircraft are allocated a number of points at production relating to the amount of noise they make. These points are called their quota count. The noisier the plane, the higher the quota count. As planes take off and land at the airport at night-time, their quota count contributes to the total that is permitted for Dublin Airport.

Table 2.2: Proposed content of the RD

Condition	*Proposed RD wording*
1	*The existing operating restriction, Condition 5, of the North Runway Planning Permission (FCC Reg. Ref: F04A/1755; ABP Ref: PL06F.217429) reading as:* *'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 23:00 and 07:00) 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.'* *shall be revoked and replaced with an annual noise quota scheme operating restriction as follows:* *'The airport shall be subject to a Noise Quota Scheme (NQS) with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 (local time) with noise-related limits on the aircraft permitted to operate at night. The annual noise scheme shall be applied as detailed in Schedule A.'*
2	*The existing operating restriction imposed by Condition 3(d) and the exceptions at the end of Condition 3 of the North Parallel Runway Planning Permission (FCC Reg. Ref: F04A/1755; ABP Ref: PL06F.217429) reading:* *'3(d). Runway 10L-28R shall not be used for take-off or landing between 23:00 and 07:00. 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.'* *shall be amended as follows:* *'Runway 10L/28R shall not be used for take-off or landing between 00:00 and 06:00 (local time) 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.'*
3	*A voluntary residential sound insulation grant scheme (RSIGS) for residential dwellings shall be provided for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour and experience a 'very significant' effect. Dwellings exposed to levels at or above 55 dB L_{night} shall be reviewed every two years commencing in 2027 and if applicable be made eligible for the scheme. This scheme shall not apply to properties where works were undertaken under the existing Residential Noise Insulation Scheme (RNIS) or Home Sound Insulation Programme (HSIP) or to properties where a planning application was lodged after 09th December 2019, the*

	date being the adoption of Variation No. 1 to the Fingal Development Plan 2017 – 2023 incorporating policies relating to development within Aircraft Noise Zones.

Relationship with other Plans and Environmental Protection Objectives

2.18 *A review of relevant policy has been undertaken in relation to Dublin Airport to establish foreseeable developments, including passenger numbers and aircraft movement growth, as well as any objectives for environmental protection which may impact on this. The following plans have been reviewed from which the key themes identified are discussed below.*

- *Zero Pollution Action Plan (European Commission, 2021)*
- *National Aviation Policy for Ireland (Department of Transport, Tourism and Sport (DTTAS), 2015)*
- *Ireland's Action Plan for Aviation Emissions Reduction (DTTAS, 2019)*
- *Review of Future Capacity Needs at Ireland's State airports (DTTAS, 2018)*
- *National Policy Statement on Airport Charges Regulation (DTTAS, 2017)*
- *National Planning Framework – Project Ireland 2040 (Government of Ireland, 2018)*
- *National Development Plan 2018-2027 (Government of Ireland, 2018)*
- *State of Ireland's Environment Report (EPA, 2020)*
- *Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031 (Eastern & Midland Regional Assembly, 2019)*
- *Transport Strategy for the Greater Dublin Area 2016-2035 (National Transport Authority, 2016)*
- *South Fingal Transport Study (FCC, 2019)*
- *Fingal Development Plan 2017-2023 (FCC, 2017, updated 2019)*
- *Meath County Development Plan 2013-2019 (Meath County Council, 2013)*
- *Dublin Airport Local Area Plan (FCC, 2020)*
- *Dublin Airport Central Masterplan (FCC, 2016)*
- *Dublin Airport Noise Action Plan 2019-2023 (FCC, 2018)*

Growth

2.19 *The majority of the policies reviewed discuss the sustainable growth of Dublin Airport, supporting its:*

- *growth as a vibrant secondary hub airport (by means of the second runway);*
- *the build out of the second runway and the development of Dublin as a secondary hub airport;*
- *continued development of the airport in the national interest; and*
- *releasing of its potential that arises from the significant investment in the new runway.*

2.20 *Local and national policy discusses this in the context of:*

- *reviewing capacity constraints every 5 years;*
- *incremental terminal expansion to 40mppa (by 2030) and a third terminal beyond that;*
- *capacity constraints being expected beyond 400,000 ATMs;*
- *growth of the airport to 55mppa by 2040 as part of the Airport's masterplan through third terminal (from 2031 target);*
- *a baseline scenario of the Airport reaching 54mppa alongside 365,000 ATMs in 2050;*
- *the Airport operating at its maximum sustainable potential through the required facilities and infrastructure.*

2.21 *In particular, the strategic aims set out in the Dublin Airport Local Area Plan (LAP) include supporting the continued sustainable growth of Dublin Airport, as well as timely delivery of required infrastructure to facilitate airport growth. Achieving the 40 mppa threshold (by 2030) is dependent on the following key infrastructure:*

- *Improved surface access;*
- *Expanded terminal capacity by way of reconfiguration and augmentation of existing facilities (at T1 and T2);*
- *Completion of the North Runway; and*
- *Additional aircraft parking stands supported by accompanying boarding gate and aircraft piers, particularly in the context of growing the hub function of the Airport.*

2.22 *A summary of the growth aspirations cited in the above-mentioned plans is presented in Table 2.3 below.*

Table 2.3: Growth aspirations for Dublin Airport as set out in other plans

Year	*Passenger numbers*	*ATMs*	*Related infrastructure*	*Plans where cited*
2030	*36 mppa (downside)* *40 mppa (baseline)* *42 mppa (upside)*	*250,000 (downside)* *265,000 (baseline)* *280,000 (upside)*	*T1 and T2 augmentation*	*Dublin Airport LAP (FCC, 2020)*
2040	*55 mppa*	*-*	*Above + Third Terminal*	*Dublin Airport Central Masterplan (FCC, 2016)* *South Fingal Transport Study (FCC, 2019)*
2050	*49 mppa (downside)* *54 mppa (baseline)* *61 mppa (upside)*	*329,000 (downside)* *365,000 (baseline)* *409,000 (upside)*	*Above + Third Terminal*	*Review of Future Capacity Needs at Ireland's State airports (DTTAS, 2018)* *Dublin Airport LAP (FCC, 2020)*

2.23 *The future levels of passenger throughput and air traffic described by these plans exceed the peak levels of activity reported by Dublin Airport in 2019, which saw 238,000 ATMs and 32.9 million passengers. They also exceed the cap of 32 mppa which is associated with the second runway planning permission.*

Environmental objectives

2.24 *Whilst the above-mentioned plans support growth at Dublin Airport, they also highlight the need for environmental performance. In the context of noise, the plans highlight the:*

- *application of Regulation 598/2014 regarding the imposition of noise-related operating restrictions;*
- *need for effective land-use planning;*
- *promotion of new technology in aircraft and engine design to address noise and emissions;*
- *consideration of impacts on local residential areas;*
- *use of measures such as Continuous Descent Approaches to reduce noise.*

2.25 *In the case of the European Commission's Zero Pollution Action Plan (2021), this overarching EU policy sets clear targets with respect to reducing the number of people chronically disturbed by transport noise. As part of this Action Plan, Target 2 states that:*

"By 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise [from a 2017 baseline]."

2.26 *The above-mentioned plans also have regard for other environmental considerations in relation to the airport, namely carbon and emissions. The plans stipulate:*

- *that the airport should become 'carbon neutral' by 2020 and 'net zero carbon' by 2050;*
- *the need for technology improvements in aircraft and engine design to help combat aviation emissions and improve energy efficiency;*
- *protection of natural landscape features, such as rivers, and the climate from impacts associated with airport expansion.*

2.27 *Plans including the NPF, RSES and climate related plans also have more general environmental protection objectives beyond those related to airport development or air noise management. These are set out in the policy sub-sections for each of the environmental aspects within Chapter 4. For example, the NPF states:*

"National Policy Objective 52: The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital."

"National Policy Objective 54: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions."

"National Policy Objective 59: Enhance the conservation status and improve the management of protected areas and protected species by: Implementing relevant EU Directives to protect Ireland's environment and wildlife …"

2.28 *Furthermore, the State of Environment Report identifies thirteen 'Key Messages for Ireland'. Which are relevant for delivering Ireland's long-term sustainable development and environmental protection goals. These are as follows:*

- *National Policy Position for Ireland's Environment - Recognition of the need for an integrated policy position given the many interlinkages and dependencies.*
- *Full Implementation of existing environmental legislation and review of governance/coordination on environmental protection across public bodies.*

- *Promote the benefits of a clean environment for health and wellbeing.*
- *Systemic change is needed for Ireland to become climate neutral and a climate resilient society and economy.*
- *WHO clean air quality guideline values to be adopted within the Clear Air Strategy as specific targets to achieve.*
- *Safeguard nature and wild places as a national priority to preserve its legacy for future generations.*
- *Improve the water environment and tackle water pollution water quality locally at a water catchment level.*
- *Reduce human induced pressures on the marine environment.*
- *Move away rapidly from extensive use of fossil fuels to the use of clean energy systems.*
- *An agriculture and food sector that demonstrates validated performance around producing food with a low environmental footprint.*
- *Drinking water and wastewater infrastructure must meet the needs of our society.*
- *Move to a less wasteful and circular economy where the priority is waste prevention, reuse, repair and recycle.*
- *Promote integrated land mapping approaches to support decision making on sustainable land use.*

2.29 *In the SEA accompanying the Dublin Airport LAP (FCC, 2019) three growth scenarios were assessed :*

- *Growth Scenario A 'Baseline': 40 mppa and 265,000 ATMs by 2030; 54 mppa and 365,000 ATMs by 2050;*
- *Growth Scenario B 'Downside': 36 mppa and 250,000 ATMs by 2030; 49 mppa and 329,000 ATMs by 2050;*
- *Growth Scenario C 'Upside': 42 mppa and 280,000 ATMs by 2030; 61 mppa and 409,000 ATMs by 2050.*

2.30 *All three growth scenarios were considered likely to improve the status of the SEA Objectives to a moderate degree, on the basis that higher level plans already provide for the growth of airport passenger traffic, and facilitating this at Dublin Airport "would help to avoid the need to develop more sensitive, less well-serviced lands elsewhere in the County and beyond and would contribute towards sustainable development".*

2.31 *Nevertheless, all three growth scenarios were also considered to have potential conflict with the status of the SEA Objectives, to a lesser degree for the 'Downside' scenario, to a moderate degree for the 'Baseline' scenario, and to a greater degree for the 'Upside' scenario. The construction of airport and supporting infrastructure and facilities to enable such growth was predicted to lead to effects on biodiversity and flora and fauna, human health, soil, ground and surface and ground water, climate adaptation, material assets, cultural heritage and landscape. In addition, the need to operate the airport and supporting infrastructure at higher capacities and frequencies was predicted to lead to the following impacts:*

- *Increases in greenhouse gas emissions, including from aviation and surface access, leading to increased potential conflicts with local, national and European environmental objectives aiming to reduce greenhouse gas emissions;*
- *Increases in the emissions of nitrogen dioxide and particulate matter to air, especially adjacent to main roads around the airport and at the bus depot at the airport, Ireland's busiest bus depot;*
- *Increases in the frequency of noise emissions, including from aircraft;*
- *Increases in emissions to water – including from run-off and treated waste water.*

2.32 *Mitigation measures set out in the SEA for adoption through the Dublin Airport LAP include:*

- *Providing for specific proposals, including sustainable mobility, to reduce carbon and other emissions to air associated with surface access;*
- *Requiring proposals for carbon reduction to be addressed in planning applications including proposals for clean energy;*
- *Supporting the transition towards a net zero target by 2050;*
- *Proposing a variation to the Noise Zones set out in the Fingal Development Plan 2017-2023 to facilitate the mitigation of potential effects of aircraft noise on human health and well-being.*

How the NAO and RD relate to these plans and environmental objectives

2.33 *The plans listed above outline policies that promote growth and/or changes in operations at the Airport, whilst environmental objectives are also set out in many of them. The proposals within the NAO and RD ensure that whatever growth occurs (driven by and in line with existing policy) is carried out in a sustainable manner, particularly with regards to reducing noise and associated health impacts. The NAO and RD are therefore complementary to and in accordance with the existing plans, and not in any way additional, other than providing more detail on aircraft noise reduction measures than the other plans. Figure 2.2 shows the links*

and key inter-relationships of the NAO and RD with other key relevant national, regional, sectoral and environmental plans.

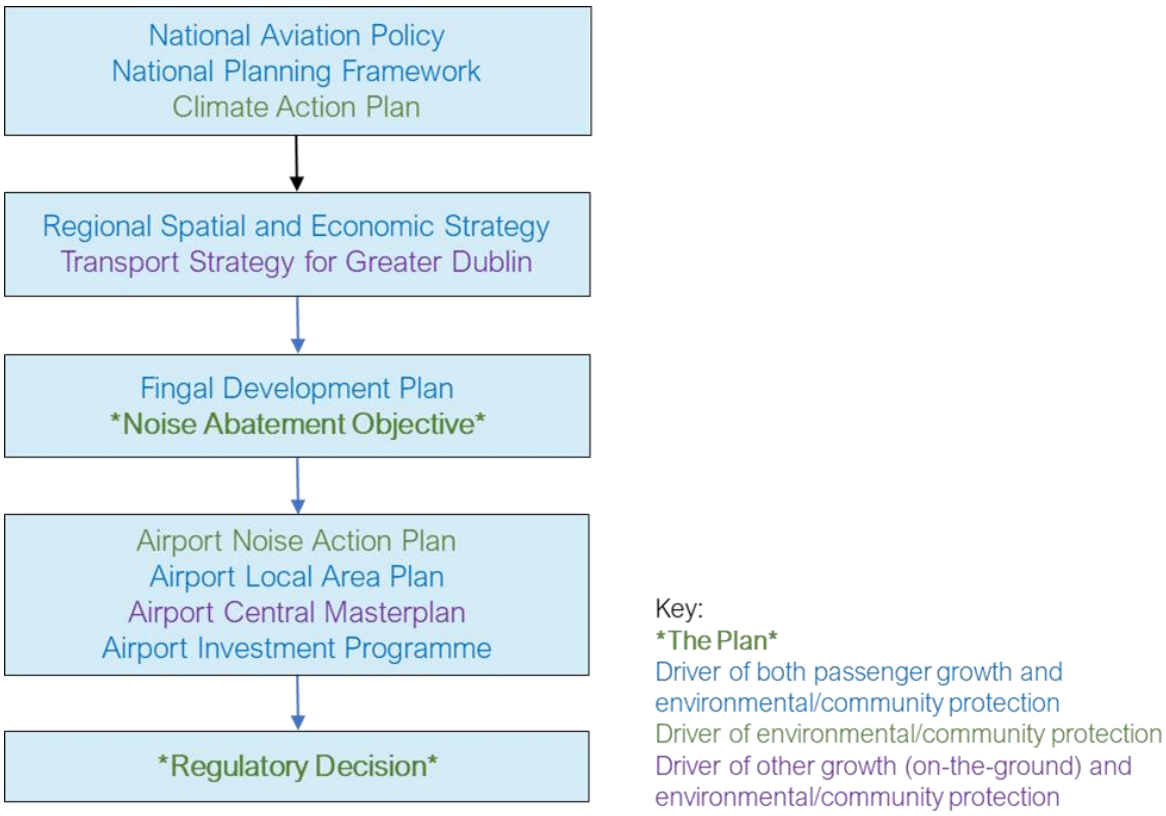


Figure 2.2: Relationship between the NAO, RD and other Plans

3 How the Assessment was Undertaken, Including Alternatives and Difficulties

3.1 *This chapter provides more detail on the SEA process, including the scope of the SEA and how Scoping consultation responses have been taken into account; the alternatives delivery options considered for both the NAO and RD; and the methodology for undertaking the environmental assessment of the NAO and RD, including each of the alternatives. The methodology includes the future baseline and assessment case (i.e. what is being assessed); the SEA objectives, indicators and targets (the assessment framework), and the significance criteria used.*

Scope of the SEA

3.2 *The Dublin Airport LAP identifies a number of infrastructural constraints to growth, including limitations in the road network for passengers travelling to and from the airport. At a certain point, those infrastructural constraints will have to be addressed with appropriate road and/or rail development if the Airport is to grow. While the NAO and RD will provide for a noise management regime that will allow the airport to grow, they only provide for a noise management framework and are neutral on whether that growth actually occurs. Therefore, they do not constrain the planning authority or An Bord Pleanála in any way in making whatever decision they consider appropriate on any application for that further development necessary to deliver growth. Therefore, any such development (e.g. relating to a new terminal or road/rail development) will have to be subject to EIA and AA (or screening for EIA and AA) and planning scrutiny on its own terms and its impacts will be fully assessed and considered at that stage.*

3.3 *Given the above, and that ANCA's remit is confined to aircraft noise (as revealed in Chapters 1 and 2), this SEA Draft Environmental Report deals only with the direct and indirect impacts relating to the management of aircraft noise.*

3.4 *Of the environmental factors listed in Schedule 2 of the SEA Regulations, the table below notes which have been scoped out and which have been scoped in to undergo Environmental Assessment, with reasons provided.*

Table 3.1: Scoping in/out of environmental factors

Environmental aspect (factor)	*Scope*	*Reason for scoping in/out*
Air Quality (Air)	*In*	*Changes in aircraft operational procedures might affect fuel burn and therefore the level of air pollutants emitted. There could also be an increase in airborne emissions as a result of any noise*

		management measures that facilitate an increase in passenger numbers and ATMs
Biodiversity (Biodiversity, Flora and Fauna)	*In*	*Increases in noise and deteriorating air quality could arise as a result of new or additional overflying, and/or overflying more frequently whether in the day and/or night, impacting on sensitive receptors including designated sites or species afforded legal protection. Increases in emergency fuel dumping or de-icing activities could also theoretically pose a problem via surface water pathways to designated sites, but are unlikely to have a significant impact.*
Carbon and Climate Change (Climatic Factors)	*In*	*Changes in aircraft operational procedures might affect fuel burn and therefore the level of carbon emissions. There is also potential for climate change effects, including particularly increases in carbon emissions, to arise as a result of any increase in flights or type of aircraft being used. Furthermore, many of the effects associated with aviation will, over time, be reversible should the operations halt, but carbon emissions could take a considerable time before their effect is no longer felt.*
Cultural Heritage (Cultural Heritage including Architecture and Archaeological Heritage)	*In*	*It is possible that important cultural heritage assets could be affected as a result of the NAO and RD, whether this be as a result of new or additional overflying, or because of changes in the time of day and night that they are being overflown.*
Geology, Soils and Land Use (Soil)	*Out*	*Geology, soils and land use are unlikely to be affected by changes in aircraft activities resulting from implementation of the NAO and RD.*
Landscape and Visual (Landscape)	*In*	*There is potential for impacts on landscape, specifically whether important landscape assets including particularly those that are protected by legislation, are likely to experience new or increased effects from overflying, including impacts on their tranquillity.*
Material Assets (Material Assets)	*Out*	*Material assets are unlikely to be affected by changes in aircraft activities resulting from implementation of the NAO and RD.*

Noise and Vibration (n/a)	*In*	*Noise effects are likely to occur from the NAO and RD, as a result of possible increases in, and changes to timings, in overflying – particularly at night. The overarching aim of the NAO and RD is to manage, reduce and mitigate the impacts of aircraft noise, though depending on the number and location of ATMs, the impact on this environmental aspect could be positive or negative.*
Population and Health (Population and Human Health)	*In*	*There is potential for positive effects on the population including for example, because of a result of an improved economic situation as a result of needing to serve additional passengers and associated flights, though changes in times of flights from day to night could potentially have a negative effect on ground services and facilities.* *However, human health may be negatively impacted by the NAO and RD if changes to aircraft operations increase fuel burn and therefore the level of air pollutants emitted, whilst additional airborne emissions could also result from any increase in ATMs.* *Similarly, noise pollution could potentially occur as a result of changes, including increases in, and changes to timings, in overflying, although the NAO and RD seek to reduce impacts of noise on human health.*
Water and Hydrology (Water)	*Out*	*Water and hydrology are unlikely to be affected by changes in aircraft activities. Possible increases in emergency fuel dumping associated with an increase in ATMs could theoretically pose a problem via surface water pathways to watercourses and coastal sites, but the jettisoning of fuel is extremely rare, and is typically undertaken in a controlled manner in an appropriately selected area at a sufficient altitude to allow for vaporisation and dispersion before reaching ground level.* *De-icing operations at the airport could also potentially impact on local water quality, however, surface water run-off at the Airport is continuously monitored via online Total Organic Carbon analysers. If non-compliance with permitted discharge levels is detected, the water is automatically diverted to the polluted water holding tank, with failsafe mechanisms to ensure that there is no accidental release.*

How Scoping Consultation Responses Have Been Taken into Account

3.5 The scope of the assessment and level of detail included in this Draft Environmental Report also takes account of the results of consultation with the relevant prescribed bodies. The Scoping Report was issued to the Environmental Authorities on 6 May 2021 and included the following information:

- *Details of the geographical area involved including a referenced and scaled map of the area;*
- *An outline description of the NAO and RD including its intended lifespan;*
- *The likely scale, nature and extent of the area affected by the proposed NAO and RD during the lifespan of the NAO and RD (in broad terms);*
- *Details of the legislation and planning policy that applies;*
- *Alternatives that have been or will be considered, potentially including reference to the options also detailed;*
- *The predicted 'scoped in' significant effects of the NAO and RD and those that are proposed to be 'scoped out' with justification for why they are scoped out;*
- *An overview of the approach that will be taken to assemble further baseline data to support the SEA and the methodology that will be used to assess significance.*

3.6 The EPA provided a consultation response to the Scoping Report on 28 May 2021 (Appendix 1). In it they highlighted a series of considerations for the SEA Draft Environmental Report stage, outlined under the following headings:

- *Sustainable Development Goals & Key Actions for Ireland (including transition to a low carbon climate resilient economy and society)*
- *Scope of the SEA*
- *Integration of SEA and Plan*
- *Monitoring, Review & Reporting*
- *Integration with other key Plans and Programmes*
- *Data & Knowledge Gaps*
- *Available Guidance & Resources*
- *Environmental Authorities*

3.7 The key points from the EPA consultation response are summarised in Table 3.2 below, along with a note on how this Draft Environmental Report accounts for the responses received.

Table 3.2: Key points from the EPA consultation response

ID	*Summary of response*	*How response accounted for*
1	*There is a need for government departments to take action to address thirteen 'key issues' as set out in the State of Environment Report (EPA, 2020), whilst other challenges and recommendations should also be accounted for in the NAO and RD.*	*Key issues and recommendations of relevance to the NAO and RD (i.e. particularly those relating to health, climate, air quality and nature) have been reported in the SEA baseline (Ch.4) and considered in the assessment through the SEA objectives (Tables 3.3 and 5.1). Potential adverse effects on climate, air quality and nature have been highlighted (Ch.5) and measures suggested for mitigating them (Ch.6).*
2	*The relevant objectives and policy commitments of the NPF, the RSES, and national and local climate plans should be aligned with and considered.*	*Relevant policy for each of the environmental aspects (including climate) is reported in the SEA baseline (Ch.4) and considered in the assessment through the SEA objectives (Tables 3.3 and 5.1).*
3	*The NAO, RD and the SEA should be clear on the scope and remit of the NAO and RD, including measures that will be implemented directly through the NAO and RD, and others that will be implemented by existing/future plans or projects.*	*ANCA's remit and the scope of the NAO and RD have been clearly explained in paras 3.2-3.3, with measures that will be implemented directly described in Ch.2 and assessed in Ch.5, with mitigation measures proposed in Ch.6. Measures outside of ANCA's control or implemented via other plans/projects are discussed again in Ch.5 due to their potential for impact, and recommendations to address them again proposed in Ch.6.*
4	*The key findings of the SEA (and AA), including significant effects, mitigation, monitoring and other recommendations should be integrated into the NAO and RD.*	*Summary tables outlining the key findings and recommendations have been included in the Non-Technical Summary of this Draft Environmental Report, for ease of integration into and implementation through the NAO*

		and RD. Specifically, this is addressed through the RD Report in Section 6.7.
5	*The Environmental Report should propose monitoring of positive, negative and cumulative effects, specifying the frequency, responsibilities and reporting requirements of the monitoring.*	*Environmental monitoring measures and procedures are described in Ch.6.*
6	*The NAO and RD should include a commitment to implement the environmental monitoring programme and associated reporting.*	*Part 5 of the NAO deals specifically with monitoring of noise measures and associated health effects.*
7	*The NAO, RD and SEA should include schematics to show links with other key relevant national, regional, sectoral and environmental plans.*	*A schematic is provided in Figure 2.2. Links with other key relevant national, regional, sectoral and environmental plans are described in section 4 of the NAO Report, and section 3.1 of the RD Report.*
8	*The NAO and RD should identify any significant data and knowledge gaps and include commitments to help address these.*	*Assumptions made regarding the data underpinning the SEA, and the residual unknowns in terms of operational aspects over which ANCA has no control, are set out at the end of this Chapter. The data provided is sufficient to identify the direct and indirect impacts on the environment of the NAO and RD. The NAO and RD remove barriers to some of the growth already anticipated in existing policy and planning authority and competent authority for airspace design and management are in a position to assess the operational aspects of that growth if daa brings forward proposals in that regard.*
9	*SEA guidance and resources (including Environmental Sensitivity, SEA, WFD and AA spatial webtools) are available through the EPA's website.*	*Guidance has been referred to where appropriate in this Report, particularly Ch.3, whilst resources and spatial data have been utilised for the SEA baseline in Ch.4.*

10	*Consultation should be undertaken with the five prescribed environmental authorities.*	*Consultation with the listed authorities has been undertaken at the Scoping Stage and also in the public consultation on the NAO and RD.*

3.8 The Department of Agriculture, Food and the Marine (DAFM) also provided a consultation response to the Scoping Report, on 4 June 2021 (Appendix 2), outlined under the following headings:

- *Relevant Legislation, Plans and Policies*
- *Issues for consideration*
- *Potential Impacts on Sea-Fisheries and Aquaculture*
- *Sources of Marine Data*
- *Who to Consult With*

3.9 The consultation response from DAFM has been taken into account by ANCA. This Draft Environmental Report has concluded that impacts on sea-fisheries, aquaculture or the water-based marine environment can be scoped out because they are not expected to occur. However, effects on statutory nature conservation sites located on the coast (in terms of the effects of overflying on disturbance of seabirds) is considered in both this SEA and the AA.

Consideration of Alternatives

3.10 Consideration of reasonable alternatives is a key feature of the SEA process as defined by the SEA Directive and the SEA Regulations. These have been considered by means of a three step process, as set out in the Guidance on Alternatives in SEA (EPA, 2015):

1. *Alternatives identification and development – this is set out below;*
2. *Alternatives assessment and comparison – this is discussed later in this chapter, and undertaken in Chapter 5;*
3. *Alternatives selection and documentation – this is set out in Chapter 5.*

3.11 In practical terms, realistic alternative mechanisms for delivering the objectives of the NAO and RD are identified, and an assessment of the impacts of each of these options, or combination of options, against the SEA objectives.

3.12 Through assessing the environmental performance of alternative options as they emerge, it is possible to influence the overall sustainability of the evolving NAO and RD, as well as the selection of the preferred alternative.

Alternatives identification and development

3.13 *The Guidance on Alternatives in SEA (EPA, 2015) recognises that it is not for the SEA to decide on the options to be considered. Instead the SEA should focus on the alternative delivery options actually considered in the preparation of the NAO and RD. These should be identified by ANCA as the body responsible for drafting the NAO and RD. Furthermore, the SEA will focus only on the realistic and reasonable alternatives that emerge during the drafting of the NAO and RD, and will explain why other alternatives are not considered to be 'realistic' or 'reasonable' and will not, therefore, be subjected to assessment and consultation.*[4]

3.14 *The SEA Scoping Report presented three alternative approaches to developing the NAO, relating to the extent to which the scale and timeframe of the NAO follow the daa planning application, or other published policies which present aspirations for the sustainable development of Dublin Airport. These were as follows:*

1) *The NAO is developed in the context of the daa planning application, based on the same timeframes (up to 2025) and the same overarching restrictions (i.e. the 32 million mppa passenger cap).*

2) *The NAO is developed in the context of the daa planning application, with the same overarching restrictions (i.e. the 32 mppa passenger cap), but taking a longer term perspective, e.g. up to 2030, 2040, or even 2050.*

3) *The NAO is developed as an overarching plan or policy that sits above both this and future planning applications, designed to complement other published policies which present scenarios for the sustainable development of Dublin Airport to a 40 mppa operation in 2030 and a c.55 mppa operation from 2050, through further terminal development and infrastructure.*

3.15 *ANCA has since examined these alternative approaches to defining the NAO, and as stated in para. 2.8 of this report, rather than defining a narrow NAO that responds only to the planning application made by daa, ANCA has chosen to develop an NAO which is broader in its remit. This is because, by reacting to a specific planning application, the first two options are not sufficiently strategic or forward looking and will need to be revised if further applications for planning permission are brought forward to advance existing policy. Published national, regional and local policy set an ambition for the Airport to grow significantly beyond the current 32 mppa cap in the short to medium term, and therefore (1) and (2) are not realistic options to "provide a level of certainty by setting realistic outcomes and/or expectations of change", nor*

[4] In the context of the Guidance on Alternatives in SEA (EPA, 2015) a 'realistic' alternative is capable of achieving the plan/programme objectives, whilst a 'reasonable' alternative takes account of the environmental and socio-economic baseline and trends, as well as legal requirements including those of the Habitats Directive.

to "provide opportunities for sustainable growth" (as per the expectations for an NAO set out in para 2.5). In addition, particularly option (1) is unlikely to allow enough time for significant reductions or improvement in noise and health impacts or enough flexibility to balance the needs of different stakeholder groups, as the existing restriction of 32 mppa will cap growth without regard to the improving noise performance of the aircraft contributing to that growth. The first two options also fail to meet the purpose and objectives that ANCA has set for the NAO, i.e. to set the level of ambition for a noise management regime that secures both environmental improvement and a sustainable transport network. Consequently, options (1) and (2) are not considered to be 'realistic' in SEA terms, and have therefore been discounted from the assessment.

3.16 *The realistic alternatives that ANCA has been considering for the NAO (i.e. alternative policy objectives) include:*

1) *As per Table 2.1, an NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, and sets specific outcome reductions of 30% by 2030, 40% by 2035, and 50% by 2040.*

2) *An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, but does not set specific outcomes (as per the candidate NAO submitted with the Application).*

3) *An NAO which seeks to limit the long-term adverse effects of aircraft noise on health and quality of life, but not reduce it.*

4) *An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, with a specific outcome reduction (of 50%) set only for 2040.*

5) *An NAO which seeks to limit and reduce aircraft noise, but does not link this to health outcomes.*

3.17 *These alternatives have been taken forwards to the assessment of alternatives presented in Chapter 5.*

3.18 *Whilst the NAO is focused on noise outcomes, the RD is focused on noise mitigation measures and operating restrictions which seek to secure the noise outcomes set by the NAO. Specifically, the RD is concerned with identifying whether daa's proposals, or possible alternative measures, are suitable as replacements for Conditions 3(d) and 5 in terms of their noise impacts (along with their cost-effectiveness) and ensuring that they are no more restrictive than necessary to achieve the NAO.*

3.19 *For the RD, ANCA has considered a number of alternative approaches to Conditions 3(d) and 5 for addressing noise in the context of the NAO. These are loosely based on the 'reasonable alternative processes' considered by daa through the EIA of the planning application (namely alternative modes of operation, alternative flight paths, and alternatives to restrictions on operating hours, with eight feasible preferential runway use measures being considered). Compared to the current Conditions 3(d) and 5, the realistic alternatives for the RD being considered through this SEA are described below.*

3.20 *Alternatives to existing operating restriction, Condition 5, which states that, on completion of construction of the new runway, the average number of night-time aircraft movements at the Airport shall not exceed 65 per night (between 23:00 and 07:00) when measured over the 92 day modelling period, are:*

i) The change to Condition 5 requested by daa, which would remove the numerical cap on the number of night-time flights and replace it with an annual night-time noise quota of 7990 between the hours of 23:30 and 06:00 (i.e. with no constraints during 23:00 to 23:30 and 06:00 to 07:00).

ii) A change to Condition 5 that mimics the daa request, but with additional noise-related limits on the types of aircraft permitted to operate at night.

iii) A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00.

iv) The change to Condition 5 set out in Table 2.2, i.e. that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 with noise-related limits on the aircraft permitted to operate at night.

3.21 *Alternatives to the existing operating restriction Condition 3(d) (i.e. runway use pattern P01), which prohibits the use of North Runway for landings and take-offs between the hours of 23:00 and 07:00, except in various cases of necessity, are described below.*

v) As per Condition 3(d) above, but assuming the Condition 5 restriction of 65 flights per night is lifted. This is runway use pattern P11.

vi) The revision to Condition 3(d) requested by daa and as set out in Table 2.2, which prohibits the use of North Runway for landings and take-offs between the hours of 00:00 and 06:00, except in various cases of necessity or where North Runway is required for a specific aircraft type. Both runways may therefore be used during the shoulder periods of 23:00 to 00:00 and 06:00 to 07:00, however all landings will be from the east, and all take-offs will be to the west. This alternative, runway use pattern P02, assumes that Condition 5 is lifted.

vii) *As per runway use pattern P02, but with variations to the timings, e.g. preventing the use of North Runway between 23:00 and 06:00, or between 23:30 and 05:00. These are runway use patterns P03, P07, P12 and P13 (night-time hours vary across the patterns, though all are shorter than the Condition 3(d) hours of 23:00 to 07:00).*

viii) *Removal of the Condition 3(d) prohibition on the use of North Runway for landings and take-offs at night, enable both runways to be used. These are runway use patterns P04, P05, P06, P08, P09 and P10, which differ from each other in terms of the factors that determine which of the two runways is used, e.g. depending on destination or using one for arrivals and the other for departures, or whether daa is free to choose (though all effectively result in both runways having roughly equal night-time traffic). These patterns also assume that Condition 5 is lifted.*

3.22 *ANCA is also considering two alternative voluntary residential sound insulation grant schemes for residential dwellings affected at night, as the two sound insulation schemes currently in place at Dublin Airport describe eligibility based only on 16-hour daytime noise exposure contours (LA_{eq},16hr):*

ix) *As proposed by daa, a voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour, and for all homes experiencing a 'very significant' effect in the first full year when the Relevant Action comes into operation (i.e. 2022).*

x) *As set out in Table 2.2, a voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour and for all those experiencing a 'very significant' effect in 2025 (i.e. the worst year for noise).*

3.23 *These alternatives have been taken forwards to the assessment of alternatives presented in Chapter 5.*

Future Baseline and Assessment Case

3.24 *The impacts of the NAO and RD must be described relative to an identified baseline scenario, which describes how matters would develop in the absence of the NAO and RD. For the purposes of this Draft Environmental Report, the future baseline assumes that daa will seek to grow the airport in line with existing policy. This differs from the future baseline suggested in the SEA Scoping Report which was that the passenger cap of 32 mppa would apply*

indefinitely[5]*. However, as set out in the various adopted and Government-approved plans listed in para 2.18, the national, regional and local policy direction for the future of Dublin Airport is to increase passenger numbers to c.40 mppa in 2030, and c.54 mppa from 2050, through further terminal development and infrastructure. That growth, though requiring a new planning application to lift the 32 mppa cap, is supported by existing plans and policy and is therefore considered likely to occur. As such, this Draft Environmental Report adopts a baseline that assumes that growth occurs in line with existing policy.*

3.25 *daa has provided annual passenger forecasts under four different scenarios over the period 2019-2040, as shown below in Table 3.3. Under Scenario B, the existing conditions 3(d) and 5 remain in place, but the likely increasing of passenger numbers beyond the 32 mppa cap, as part of policy directed growth, is allowed to occur. This therefore reflects the 'future baseline' for the purposes of the SEA (i.e. without implementation of the current planning application, NAO and RD).*

3.26 *Note that daa's forecast under this Scenario of 36.3 mppa in 2030 falls shy of the policy ambition of c.40 mppa, and would also be unlikely to reach c.54 mppa from 2050 (the latter unconfirmed as daa forecasts reach only to 2040). daa states that this is due to being unable to sufficiently increase passenger growth, particularly during the early morning 'rush hour', without planning conditions 3(d) and 5 being amended.*

Table 3.3: Annual passengers (mppa) for 2019-2040 under different scenarios

Year	*Scenario A/C - amend 3(d) and 5 - no 32 mppa cap => Assessment case*	*Scenario B - with 3(d) and 5 - no 32 mppa cap => Future baseline*	*Scenario D - amend 3(d) and 5 - with 32 mppa cap*	*Scenario E - with 3(d) and 5 - with 32 mppa cap*
2019	*32.9*	*32.9*	*32.9*	*32.9*
2020	*7.4*	*7.4*	*7.4*	*7.4*
2021	*7.9*	*7.9*	*7.9*	*7.9*
2022	*21.0*	*19.6*	*21.0*	*19.6*
2023	*26.7*	*24.9*	*26.7*	*24.9*
2024	*31.2*	*29.3*	*30.8*	*29.3*

[5] The 32 mppa passenger cap is required by Condition 3 of daa's 'Terminal 2' planning application F06A/1248 and An Bord Pleanála 06F.220670, and Condition 2 of daa's 'Extension to Terminal 1' planning application F06A/1843 and An Bord Pleanála 06F.223469.

2025	*32.3*	*30.4*	*32.0*	*30.4*
2026	*34.0*	*31.6*	*32.0*	*31.2*
2027	*35.6*	*32.8*	*32.0*	*32.0*
2028	*37.0*	*33.9*	*32.0*	*32.0*
2029	*38.4*	*35.1*	*32.0*	*32.0*
2030	*39.6*	*36.3*	*32.0*	*32.0*
2031	*40.5*	*37.0*	*32.0*	*32.0*
2032	*41.3*	*37.6*	*32.0*	*32.0*
2033	*42.1*	*38.2*	*32.0*	*32.0*
2034	*42.7*	*38.9*	*32.0*	*32.0*
2035	*43.4*	*39.5*	*32.0*	*32.0*
2036	*44.0*	*40.0*	*32.0*	*32.0*
2037	*44.7*	*40.5*	*32.0*	*32.0*
2038	*45.3*	*41.0*	*32.0*	*32.0*
2039	*46.0*	*41.5*	*32.0*	*32.0*
2040	*46.6*	*42.0*	*32.0*	*32.0*

3.27 In contrast, under Scenario A/C, the existing conditions 3(d) and 5 are amended to account for implementation of the current planning application, NAO and RD (with policy directed growth of passenger numbers beyond the 32 mppa cap again allowed to occur). This therefore reflects the 'assessment case' for the purposes of the SEA. It can be seen from the assessment case that an indirect impact of the NAO and RD will be an increase in mppa of 4.6m over the future baseline (albeit one in which the noise impacts are limited and reducing). That indirect impact is therefore considered in this Draft Environmental Report.

3.28 The passenger numbers of the future baseline are compared with those of the assessment case in Table 3.4 below.

Table 3.4: Increase in passenger numbers for 2019-2040 between the future baseline and the assessment case

Year	*Scenario A/C - amend 3(d) and 5 - no 32 mppa cap => Assessment case*	*Scenario B - with 3(d) and 5 - no 32 mppa cap => Future baseline*	*Increase in passenger numbers between the future baseline and the assessment case (Scenario A/C – Scenario B)*	
	mppa	*mppa*	*mppa*	*%*
2019	*32.9*	*32.9*	*0.0*	*-*
2020	*7.4*	*7.4*	*0.0*	*-*
2021	*7.9*	*7.9*	*0.0*	*-*
2022	*21.0*	*19.6*	*1.4*	*7.1%*
2023	*26.7*	*24.9*	*1.8*	*7.2%*
2024	*31.2*	*29.3*	*1.9*	*6.5%*
2025	*32.3*	*30.4*	*1.9*	*6.3%*
2026	*34.0*	*31.6*	*2.4*	*7.6%*
2027	*35.6*	*32.8*	*2.8*	*8.5%*
2028	*37.0*	*33.9*	*3.1*	*9.1%*
2029	*38.4*	*35.1*	*3.3*	*9.4%*
2030	*39.6*	*36.3*	*3.3*	*9.1%*
2031	*40.5*	*37.0*	*3.5*	*9.5%*
2032	*41.3*	*37.6*	*3.7*	*9.8%*
2033	*42.1*	*38.2*	*3.9*	*10.2%*
2034	*42.7*	*38.9*	*3.8*	*9.8%*
2035	*43.4*	*39.5*	*3.9*	*9.9%*
2036	*44.0*	*40.0*	*4.0*	*10.0%*
2037	*44.7*	*40.5*	*4.2*	*10.4%*
2038	*45.3*	*41.0*	*4.3*	*10.5%*
2039	*46.0*	*41.5*	*4.5*	*10.8%*
2040	*46.6*	*42.0*	*4.6*	*11.0%*

3.29 *It is not just passenger numbers (and associated ATMs) that are relevant to compare between the future baseline and the assessment case. The modernisation and improvement of aircraft, e.g. in terms of updated engine technology is also relevant, as this will occur (with associated improvements in noise, air pollution and carbon emissions) even without the NAO in place. Such considerations are therefore accounted for within the future baseline to ensure a realistic assessment of the impact of the NAO and RD.*

The Assessment Framework

3.30 *The EPA SEA guidance document (EPA, 2018) states that objectives, targets and indicators must be established in order to clearly assess environmental impacts of a proposed plan or programme (including the selected alternatives). The guidance further states:*

> *"Objectives and targets set aims and thresholds which should be taken into consideration to effectively assess the impact of proposed plans on the environment. Indicators are used to illustrate and communicate this environmental impact in a simple and effective manner."*

3.31 *The SEA objectives, targets and indicators have been developed for each scoped-in environmental aspect using the SEA baseline (including current problems and relevant environmental objectives as set out in existing policy) presented in Chapter 4. These are set out in Table 3.5 below.*

Table 3.5: SEA objectives, targets and indicators

Environmental aspect	*Objectives*	*Targets*	*Indicators*
Air Quality	*Minimise emissions of pollutants to air associated with aircraft*	*Compliance with air quality legislation and WHO guidelines, in line with the forthcoming National Clean Air Strategy and EPA recommendations*	*Identified breaches of air quality limits and guideline values*
Biodiversity	*Safeguard terrestrial, aquatic and marine biodiversity, particularly EU and nationally designated sites and protected species, in line with EU Directives, the NPF and the FDP*	*No significant effect on designated sites, including the conservation status of the qualifying habitat types and species of the SPAs and SACs, and compliance with conservation objectives*	*Maintained (or improved) conservation status of the qualifying habitats and species*
Carbon and Climate Change	*Minimise contribution to climate change by adopting mitigation measures*	*Ensure that Ireland can meet its carbon emissions reduction targets for aviation, in line with the NAP, NPF, Climate Action Plan and Dublin Airport LAP*	*Change in carbon emissions from aircraft*
Cultural Heritage	*Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact, in line with the NPF and Dublin Airport LAP*	*No significant effect on designated heritage assets*	*Maintained status of the assets*
Landscape and Visual	*Protect and maintain the special qualities of the landscape character and views, in line*	*No significant effect on designated landscapes*	*Maintained status of the sites*

	with the National Landscape Strategy and FDP		
Noise and Vibration	*Avoid or reduce the harmful effects, including annoyance, due to long-term exposure to noise, especially at night, in line with WHO guidelines, the NPF, the Noise Action Plan for Dublin Airport, and EPA recommendations*	*No significant increase in number of people who are 'highly annoyed'* *No significant increase in number of people who are 'highly sleep-disturbed'* *Adoption of practical and sustainable noise mitigation measures*	*Change in number of people exposed to noise levels ≥ 45 dBA L_{den}* *Change in number of people exposed to noise levels ≥ 40 dBA L_{night}* *Rate of compliance with mitigation measures implemented*
Population and Health	*Protect amenity and health of local residents from effects of noise, pollution or loss of privacy, in line with the FDP and Dublin Airport LAP*	*Compliance with air quality legislation and WHO guidelines* *Compliance with WHO guidelines on noise*	*Identified breaches of air quality limits and guideline values* *Population exposed to aircraft noise with reference to WHO noise guidelines and associated health endpoints*

3.32 *Based on the above objectives, targets and indicators, the methodology for assessing the likely impact of the NAO and RD on each of the environmental aspects/SEA objectives is given in Table 3.6. The assessment outcomes are presented in Chapter 5.*

Table 3.6: Methodology for assessing impacts of the NAO and RD

Environmental aspect	*Methodology*
Air Quality	*Review the likelihood of air quality legislation and WHO air quality guidelines being complied with*
Biodiversity	*Review the likelihood of significant effects on designated sites, including the conservation status of the qualifying habitat types and species of the SPAs and SACs, and compliance with conservation objectives*
Carbon and Climate Change	*Review the likelihood of Ireland meeting its carbon emissions reduction targets for aviation*
Cultural Heritage	*Review the likelihood of significant effects on designated heritage assets*
Landscape and Visual	*Review the likelihood of significant effects on designated landscapes*
Noise and Vibration	*Review likelihood of WHO guidelines on noise being complied with*
Population and Health	*Review likelihood of air quality legislation and WHO air quality and noise guidelines being complied with*

3.33 *Where negative effects are predicted through the assessment, measures to avoid, reduce or mitigate the effects have been proposed; these are set out in Chapter 6, alongside recommendations made for measures that will need to be developed in more detail at later planning stages.*

Alternatives assessment and comparison

3.34 *The proposed alternative approaches to the management of noise for both the NAO and the RD are presented in Chapter 5 in a matrix format, using the coding shown in Table 3.7 below*

to identify significance, along with an accompanying narrative description of the assessment findings. The matrix facilitates easy comparison of the different alternatives and their predicted effects on each of the environmental aspects. Chapter 5 also tells the story of why the preferred alternatives were selected; however, ANCA is under no obligation to select the alternative which performs the best environmentally.

Table 3.7: Key to likely significant effects

Key to likely significant effects	
Potential for significant positive effects	++
Potential for minor positive effects	+
Negligible or no effect	0
Potential for both positive and negative effects	+/-
Potential for minor negative effects	-
Potential for significant negative effects	- -

3.35 *In order to compare the likely impacts of the different runway use patterns (i.e. the alternatives to the existing operating restriction Condition 3(d)), the assessment uses the same noise contour maps that have been used in the noise assessment underpinning development of the NAO and RD. These maps indicate where and how much additional noise exposure will occur (at night) in 2025 as a result of implementing each of the alternative runway use patterns compared to the runway use pattern P01 (where Conditions 3(d) and 5 are still in place).*

3.36 *The year 2025 has been used for the noise contour maps because, as set out in section 6.6.7 of the RD Report, the data provided by daa shows that for all runway use patterns, noise exposure is forecast to increase over the period 2022 to 2025 before beginning to reduce over the forecast period to 2040. Noise exposure levels are therefore at their highest in 2025. Furthermore, as shown in Table 3.3, 2025 is also the year where daa is forecasting that the Airport returns to 32 mppa (i.e. the passenger cap) with the relevant action. ANCA has therefore made 2025 the focus for the noise assessment and the cost-effectiveness analysis. Accordingly, the comparison of the alternatives for Condition 3(d) uses noise contour maps for 2025.*

Difficulties Encountered in Compiling the Required Information

3.37 *The SEA Regulations require that limitations, assumptions and uncertainties that have impacted on the assessment should be described. In addition, the Guidance on Alternatives in*

SEA (EPA, 2015) suggest that any significant constraints to generating alternatives, and any data gaps and technical limitations/deficiencies affecting the development and assessment of alternatives, be reported.

3.38 *The NAO, RD and the assessments of these, including the noise assessment, cost-effectiveness assessment, the SEA and the AA have been produced based in part on data provided by daa. This includes the forecasted passenger numbers for the different scenarios set out in Table 3.3 of this Report, which have been used to define the future baseline and assessment case for the SEA. All forecasts are by their nature subject to uncertainty.*

3.39 *The assessments are also dependent on information provided by daa on flight paths, fleet mix and departure procedures, e.g. for developing the noise contour maps used in the noise assessment and in the SEA of the alternative options for the RD. However, ANCA has no control over how Dublin Airport operates in terms of flight paths, fleet mix and departure procedures (beyond the overarching measures to reduce noise and health impacts as set out through the NAO and RD) The assessment of the impacts of those aspects of Dublin Airport's operation is a matter for daa and the competent authorities for airspace management and design.*

4 Current State of the Environment Including Characteristics, Problems and Evolution

4.1 Schedule 2 of the 2004 Regulations specifies that the Environmental Report must contain the following information in respect of baseline conditions:

"(b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.

(c) The environmental characteristics of areas likely to be significantly affected.

(d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive."

4.2 For each of the scoped-in environmental aspects listed in Table 3.1, this chapter describes the relevant environmental baseline. As revealed in Chapters 1 and 2, ANCA's remit is focussed on aircraft noise and the purpose of the NAO is to define the aircraft noise outcomes that must be achieved at Dublin Airport and the purpose of the RD is to introduce any noise mitigation measures or operating restrictions required to achieve the NAO . The area potentially affected by the NAO and RD therefore relates only to aircraft and associated outcomes (e.g. from overflying) within the vicinity of Dublin Airport, as ground operations and land-based development are outside of ANCA's remit. For each environmental aspect, a Zone of Influence (ZoI) has been identified which relates to the possible impacts of overflying, and baseline data gathered relates to that ZoI.

4.3 Information for this chapter has been obtained from the 'State of the Environment Report – Ireland's Environment 2020' (EPA, 2020); the EIA and AA Screening reports relating to the daa planning application F20A/0668 (AECOM, 2020); the SEA and AA reports relating to the FDP and the Dublin Airport LAP (published by FCC in 2017 and 2019 respectively); Government websites such as those of the EPA (including the EPA's web-based mapping tools) and National Parks & Wildlife Service (NPWS); and other documents as referenced below.

Air Quality

Key policy context

4.4 EU directives set baseline standards for monitoring air quality and reducing emissions in Ireland. The National Emission Ceilings (NEC) Directive (2016) set emissions reduction commitments for 2020 and 2030, based on a reduction from 2005 emissions, for the five main air pollutants. The NEC Directive also requires that Member States, including Ireland, draw up a National Air Pollution Control Programme (NAPCP) to help implement air quality plans established under the Ambient Air Quality Directives (2008/50/EC and 2004/107/EC). The

Ambient Air Quality Directives set standards for 13 air quality pollutants that have an impact on human health and vegetation. When a Member State exceeds a limit value for a pollutant, it is required to prepare an air quality plan detailing the measures that the Member State will take to bring the pollutant levels back under the limit value.

4.5 *The Department of the Environment, Climate and Communications (DECC) has responsibility for ensuring that Ireland meets its air quality obligations under EU/international legislation and agreements. DECC is preparing a National Clean Air Strategy (NCAS) as part of a wider NAPCP, to promote clean air policies (relating to transport, energy, home heating and agriculture) to enhance and protect the quality of Ireland's air.*

4.6 *Also at a national level, NPO 64 of the NPF (2018) seeks to "Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions."*

4.7 *At a local level, the Dublin Regional Air Quality Management Plan 2009-2012 (2009; yet to be updated) contains objectives for the four local authorities in the area to:*

- *"Improve coordination of our efforts and build on the good work to date;*
- *Mainstream air quality management into all major policy areas;*
- *Strengthen evidence based decision making by improving how we share information on air quality;*
- *Lead by example with measures related to local authority activities that will reduce emissions;*
- *Identify and prioritise tackling main potential threats to air quality; and*
- *Provide clear time-bound criteria for the achievement of objectives."*

4.8 *The FDP (2017) contains one policy exclusively on air quality. It seeks, through Objective AQ02, to "implement the recommendations of the Dublin Regional Air Quality Management Plan (or any subsequent plan) and any other relevant policy documents and legislation in order to preserve good air quality where it exists or aim to improve air quality where it is unsatisfactory." In relation to the Airport specifically, Objective DA18 seeks to "ensure that every development proposal in the environs of the Airport takes account of the current and predicted changes in air quality, greenhouse emissions and local environmental conditions". Other policies are likely to impact on air quality indirectly, for example policies encouraging the use of sustainable transport.*

4.9 *The Dublin Airport LAP (2020) also sets out a number of objectives for air quality, drawn directly from the FDP. For example, Objective AQ02 of the LAP is identical to AQ02 from the FDP, whilst Objective AQ03 of the LAP is identical to DA18 from the FDP. In addition, Objective AQ05 of the LAP states a requirement to: "Undertake a review of existing air quality monitoring (and associated appropriate remedial action in the case of breaches) within and surrounding the Airport (including changes in Particulate Matter (PM) at relevant locations). Where relevant, such a review should identify additional monitoring proposals, remedial actions and implementation systems".*

Current state of the environment including characteristics and problems

4.10 *According to the European Environment Agency (EEA, 2020), air pollution is the single largest environmental health risk in Europe. Latest figures for Ireland from the EEA attribute in excess of 1300 premature deaths annually to poor air quality. The EPA (2020) suggests there are three key issues that have a negative impact on air quality in Ireland: emissions from the burning of solid fuels in homes, transport emissions from vehicles in urban areas and ammonia emissions from agriculture. As a result, the EPA (2020) reports there are higher-than-acceptable levels of nitrogen dioxide (NO_2) in the nation's cities, particulate matter (PM) levels throughout the country, and ozone during summertime.*

4.11 *Nitrogen oxide (NO_X) emissions are linked to fuel combustion in transport, home heating and power stations and nitrogen (fertiliser and manures) in agriculture. According to the EPA (2020), Ireland exceeded the emission ceiling in 2010 but was compliant in all subsequent years up to and including 2018 (the latest year for which data is available). The Dublin Regional Air Quality Management Plan (2009) revealed an exceedance of the annual mean air quality standard for NO_2 within the Dublin region in 2009. The EPA has modelled concentrations of NO_2 beyond monitoring stations across Dublin more recently, detailing them in a report entitled Urban Environmental Indicators: Nitrogen Dioxide Levels in Dublin (EPA, 2019). The report found that based on air quality indicative monitoring and modelling predictions, many areas across Dublin, in particular those close to busy roads, were above the EU NO_2 annual limit value of 40 $\mu g/m^3$. The modelled concentrations of NO_2 were highest around the M50 motorway, along certain city centre streets, and around the entrance and exit of the Dublin Port tunnel. Away from busy roads, the modelling showed that levels of NO_2 are low. To reduce levels of NO_2 in Dublin, and to comply with the Ambient Air Quality Directives, the region's local authorities will need to prepare and implement an updated Air Quality Plan. The EPA (2020) expects measures to include promoting the use of public transport, cycling and walking, and restricting more polluting vehicles from central areas.*

4.12 *Particulate matter (PM) consists of very small particles (PM_{10} and $PM_{2.5}$) suspended in air, with impacts on respiratory and cardiovascular health. In Ireland the dominant sources of PM are from solid fuels used in home heating in winter, the transport sector, and agricultural activities.*

The annual averages have remained within the annual limit values of the EU standard, however, in recent years there have been breaches of the WHO annual guideline values for both PM_{10} and $PM_{2.5}$ in Ireland's larger towns (EPA, 2020). Similarly, whilst remaining within the EU limits, 14 traffic monitoring sites across Dublin and Cork exceeded the WHO air quality daily guideline value for PM_{10} in 2019. The EPA (2020) reveals that levels of PM from the burning of solid fuels is a concern nationwide, but particularly in cities such as Dublin because of the cumulative effects of multiple sources of the pollutant and the large numbers of people exposed. Air quality considerations will therefore need to be integrated into planning decisions at national and local levels. As the EPA (2020) suggests, this should include considering transport options when planning large housing developments.

4.13 *The two main factors impacting on air quality in the vicinity of Dublin Airport relate to operational impacts of the airport, and the construction impacts arising from development including supporting access infrastructure that caters for improved access to the airport. The daa carries out ambient air monitoring at Dublin Airport and in adjacent communities through its air monitoring stations, the results of which are published on its website. These monitoring stations are located as follows, all located within a relatively close distance to the Airport where roads may be indirectly affected by air traffic. The ZoI for air quality impacts has been set for air traffic, and extends to a distance that encompasses aircraft in the landing and take-off zone and to an altitude of 3,000 ft (up to 15km).*

Figure 4.1: daa air monitoring stations in the vicinity of Dublin Airport

4.14 *Onsite and offsite data collected since implementation of the air quality monitoring programme in 2011 has been generally found to be well within the limit values mandated in the Air Quality Standards Regulations. Onsite concentrations are measured at the automatic station at Dublin Airport. In Q1 2020 (before the full effects of the pandemic were felt), the daily average concentrations were 20 µg/m^3 for NO_2 and 15 µg/m^3 for PM_{10} – both well below the limit values of 40 µg/m³, and also below the more stringent WHO guideline value of 20 µg/m^3 for PM_{10}. Throughout 2019 the figures were higher (reaching an average of 36 µg/m^3 for NO_2 in Q1 due to earth works construction activity in the vicinity of the monitoring station), but still within legal limits.*

4.15 *Offsite, the highest concentrations of NO_2 tend to be recorded adjacent to main roads around the airport, close to the vehicular emission source. However, the daa's Air Quality Monitoring Reports from Q1 and Q2 2019 reveal that the bus depot at the airport (new sampling point A11) exceeded the annual mean limit value of 40 µg/m³ for NO_2 by some margin. In consultation with the EPA, it was determined that the location of sampling point A11 did not meet criteria set out through EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (CAFE), so it was moved to an alternative location at the bus depot. Since then, the annual mean values have been below the limit value of 40 µg/m³ at all 11 offsite monitoring locations, though remain highest at the bus depot, reaching 39.41 µg/m³ in Q1 2020.*

Likely evolution of the environment without implementation of the NAO and RD

4.16 *The NEC Directive sets out national emission reduction commitments for five important air pollutants, applicable from 2020 to 2029 and from 2030 onwards. As noted by the EPA (2020), future trends in PM2.5 emissions depend largely on solid fuel combustion in the residential sector, but current projections estimate that Ireland will be compliant with 2020 and 2030 reduction commitments. In terms of NO_2, the EPA's current projections show Ireland's emissions exceeding the reduction commitment for 2020. Projections estimate compliance with the 2030 emission reduction ceiling on the basis of full implementation of the Climate Action Plan (2019), but suggest further measures may be required beyond this.*

4.17 *Regarding ammonia emissions from agriculture, the EPA (2020) states that projections for future years up to 2030 show Ireland exceeding the reduction commitments for every year if further measures are not put in place. For NMVOC emissions, current projections estimate that Ireland will meet its reduction commitment for 2020, but will exceed the 2030 reduction commitment. Current projections for SO_2 emissions estimate that Ireland will be compliant with the 2020 and 2030 reduction commitments.*

4.18 *Overall, the EPA (2020) suggests that additional measures are needed to address air quality issues in Ireland as a whole, and Dublin specifically. The EPA (2020) recommends the urgent publication and rollout of actions as part of the forthcoming National Clean Air Strategy, ideally*

underpinned by WHO clean air quality guideline values as specific targets, as these are more stringent than the limits set in European legislation for particulate matter (though not for NO_2).

Biodiversity

Key policy context

4.19 *EU policy is driven by EU Directives seeking to conserve natural habitats and wild flora and fauna (the Habitats Directive 92/43/EEC), and all species of naturally occurring birds in their wild state (the Birds Directive 2009/147/EC).*

4.20 *At a national level, Ireland's National Biodiversity Plan 2017 – 2021 sets out strategic objectives, targets and actions to conserve and restore Ireland's biodiversity and to prevent and reduce the loss of biodiversity in Ireland and globally. In particular it seeks:*

- *To mainstream biodiversity in the decision-making process across all sectors;*
- *To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity;*
- *To increase awareness and appreciation of biodiversity and ecosystems services; and*
- *To conserve and restore biodiversity and ecosystem services in the wider countryside.*

4.21 *Furthermore, the NPF (2018) seeks to "Enhance the conservation status and improve the management of protected areas and protected species" by, amongst other things "Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans" (NPO 59).*

4.22 *At a local level, the FDP (2017) contains a suite of policies relating to biodiversity, for example protecting designated sites and protected species from adverse effects relating to development (Objective NH17); and protecting the functions of ecological corridors and stepping stone habitats (Objective NH23).*

4.23 *A new Fingal Biodiversity Action Plan is currently under preparation. The existing Fingal Biodiversity Action Plan 2010-2015 meanwhile seeks:*

- *To maintain, and where practicable enhance, the wildlife and habitats that give Fingal its character and natural diversity.*
- *To ensure that (inter)national targets for sites, species and habitats are translated into effective action at local level.*
- *To develop effective partnerships to ensure that programmes for biodiversity conservation are maintained in the long-term.*

- *To raise public awareness and encourage involvement in biodiversity action by the wider community.*
- *To increase our knowledge and understanding of biodiversity through ecological research.*
- *To ensure the full integration of biodiversity into FCC's policies and programmes as part of sustainable development in Fingal.*

4.24 *The Dublin Airport LAP (2020) also sets out several objectives for natural heritage. Objectives NH01 and NH02 require any development proposal resulting in a significant loss of wildlife habitat to mitigate and/or compensate for this loss within the LAP area wherever possible. Objective NH03 states: "All development proposals shall have regard to the Fingal Heritage Plan 2018-2023 and the Fingal Biodiversity Plan 2010-2015 and any subsequent plan(s) where appropriate."*

Current state of the environment including characteristics and problems

4.25 *As stated by the EPA (2020) in the report 'State of the Environment Report – Ireland's Environment 2020', although Ireland naturally has a less diverse population of plants, insects and animals than mainland Europe, its peatland habitats are of EU importance, whilst its aquatic systems and wetlands also support populations of birds, fish and invertebrates that are of international importance. There are 430 Special Areas of Conservation (SACs) and 154 Special Protection Areas (SPAs) in Ireland, designated for their internationally important habitats/species and wild birds.*

4.26 *However, the current status of Ireland's 59 protected natural habitats and 60 protected species naturally occurring in Ireland is not good. Most habitats assessed in Ireland have an unfavourable status and almost half show ongoing declines, including marine, peatland, grassland and woodland habitats (EPA, 2020). The EPA has further revealed that progress towards many of Ireland's national biodiversity targets is partially effective but too slow, suggesting that a 'transformational change' is needed if Ireland is to achieve the vision outlined in the National Biodiversity Action Plan 2017-2021. Furthermore, the fourth assessment of Birds of Conservation Concern in Ireland (Birdwatch Ireland & RSPB, 2021) reveals that Irish birds are more endangered than ever before, with more than a quarter, or 54 species, now on the red list.*

4.27 *As set out in the Natura Impact Statement produced alongside this Draft Environmental Report, a precautionary 15km ZoI is proposed for departing aircraft from the Airport. This should ensure that both the potential for high level and moderate level noise and air quality effects (occurring continuously) will be undertaken. In addition, a 15km ZoI is also considered appropriate for arrivals.*

4.28 *Within the 15km ZoI of the Airport, there are 18 sites designated for their internationally important biodiversity value. These include eight SPAs designated for their wild birds, and ten SACs designated for their habitats. The nearest European Sites are Malahide Estuary SAC and SPA located c. 3km to the north-east, and Baldoyle Bay SAC and SPA located c. 5km to the east, both downstream of the Plan area. These are shown in Figure 4.2.*

4.29 *Of the eight SPAs, five (Rogerstown Estuary SPA, Baldoyle Bay SPA, Ireland's Eye SPA, Lambay Island SPA and South Dublin Bay and River Tolka Estuary SPA) appear to be currently over-flown by aircraft using Dublin Airport. The species of conservation importance (SCI) at these five sites are all waterbirds. As part of the AA Screening undertaken for daa's planning application (F20A/0668), a total of 228 hours of vantage point survey were carried out within Baldoyle Bay and Rogerstown Estuary between June 2016 and December 2018. The AA Screening Report (AECOM, 2020) reveals that, during this period, despite an almost continuous stream of air traffic overhead, at no time was a reaction by any wetland bird(s) to passing aircraft recorded.*

4.30 *Of the SACs, Malahide Estuary SAC is the closest to Dublin Airport. There is a hydrological connection between the two via tributaries of the Ward River which rise in the north-west of the Plan area, and discharge, via the Broadmeadow River, into the Broadmeadow Estuary near Swords. Baldoyle Bay SAC also has hydrological connections to the Airport, via the Cuckoo Stream, and tributaries of the Sluice River. The AA Screening Report accompanying the daa's planning application (AECOM, 2020) reveals that the primary threat to water quality as a result of operations at Dublin Airport has, at least in the recent past, been identified as the application of de-icing chemicals following snow or frost events (AECOM, 2020). Emergency fuel dumping could also theoretically pose a problem via surface water pathways to Baldoyle Bay and Malahide Estuary. However, as stated in the EIA Report (AECOM, 2020), previous incidents have involved relatively minor leakages, and any dumping would typically be undertaken in a controlled manner in an appropriately selected area away from watercourses and/or at a sufficient altitude to allow for vaporisation and dispersion before reaching ground level.*

4.31 *Natural Heritage Areas (NHAs) are areas considered important for the habitats present or which hold species of plants and animals whose habitat needs protection, and are the basic designation for wildlife in Ireland. In addition, there are 630 proposed NHAs (pNHAs) across Ireland, which were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats, and recognition of their ecological value is required by Planning and Licencing Authorities. Figure 4.2 above shows 20 pNHAs within the vicinity of Dublin Airport, though no NHAs. The closest to the Airport are Santry Demesne pNHA, 1.3km to the south, and Feltrim Hill pNHA, 2.0km to the northeast.*

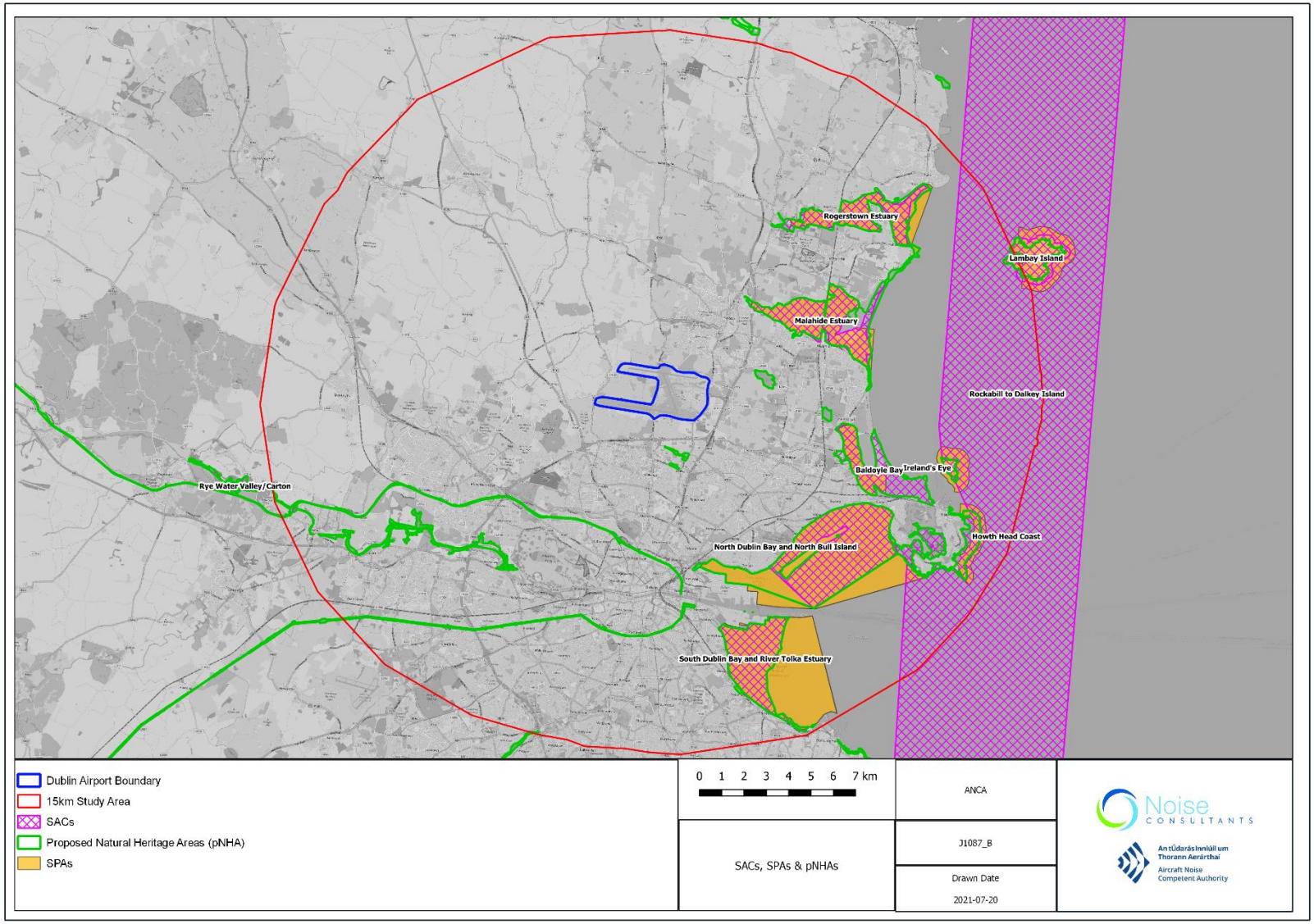


Figure 4.2: Designated biodiversity sites in the vicinity of Dublin Airport

4.32 *The land comprising Dublin Airport is entirely artificial in character, comprising existing roads, car parks, buildings and landscape planting. There are a number of treelines, hedgerows and some small areas of amenity grassland, all of which are of limited value for biodiversity (FCC, 2019). Habitats in the area immediately surrounding Dublin Airport comprise improved grassland and other agricultural land, dissected by species poor hedgerows and ditches (AECOM, 2020). 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.*

Likely evolution of the environment without implementation of the NAO and RD

4.33 *At a national level, the EPA (2020) suggests that continuing with a 'business-as-usual approach' will mean that nature and wild places will continue to fragment and biodiversity will continue to decline. Furthermore, despite numerous positive initiatives, trends are going in the wrong direction. For example, Birdwatch Ireland and RSPB (2021) showed that the number of Irish birds on the endangered list has increased by 46% in less than a decade. At a more local level, the FDP (2017) describes "Protecting the ecological integrity of European (Natura 2000) sites, the Special Amenity Areas and the Dublin Bay Biosphere Reserve, while allowing for ongoing growth and development" as a key environmental challenge.*

4.34 *Nevertheless, the EPA (2020) reveals that species declines can be reversed, that nature can bounce back under the right conditions, and that awareness of biodiversity issues, particularly amongst young people, is increasing. As such, the EPA recommends safeguarding nature and wild places for future generations as a national priority.*

Carbon and Climate Change

Key policy context

4.35 *The new Climate Action and Low Carbon Development (Amendment) Act 2021 puts Ireland on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change; sectoral emissions ceilings will be set in due course.*

4.36 *There are numerous national plans of relevance to carbon and climate change in Ireland. The NAP describes greenhouse gas (GHG) emissions as a key issue in relation to aviation and states that while fuel efficiency has increased significantly in recent decades (70% increase in the last 40 years), these improvements are being offset by a rapid increase in activity. Furthermore, the NAP recognises that aviation emissions will need to be limited in the future in line with European and global emissions trading/ offsetting initiatives.*

4.37 *The NPF (2018), through NPO 54 seeks to "Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions." The associated NDP emphasises the need for "investment to support the achievement of climate action objectives and discourage investment in high-carbon technologies".*

4.38 *The National Policy Position on Climate Action and Low Carbon Development (2015) outlines a requirement for relevant bodies to, "in the performance of [their] functions, have regard to […] the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State". The policy position provides a high-level policy direction for the adoption and implementation by Government of plans to enable the State to move to a low carbon economy by 2050. Specifically, it suggests the road-mapping and policy development process will be guided by a long-term vision based on 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 National Policy Position draft 2020 amendment introduces Ireland's 5 yearly carbon budgets, to start in 2021, along with a requirement for a climate neutral economy by 2050, and an expectation for local authorities to develop Climate Action Plans.*

4.39 *The objective of Ireland's national Climate Action Plan (2019) is to enable Ireland to meet its EU targets to reduce its carbon emissions by 30% between 2021 and 2030 and lay the foundations for achieving net zero carbon emissions by 2050. The Plan outlines 180 actions that need to be taken across all the key sectors. Specifically in relation to the transport sector, key actions include encouraging the uptake of biofuels, among others. Non transport-specific targets include increasing carbon tax. This Plan is expected to be updated in Autumn 2021.*

4.40 *Regarding adaptation to climate change, the National Adaptation Framework (2018) sets out the need for a number of sectoral adaptation plans. The one for transport will set policy on adaptation strategies for transport, helping to build adaptive capacity within the sector's administrative structures, and assisting organisations to better understand the implications of climate change for Ireland and how it may impact on transport infrastructure and services at a national, regional and local level.*

4.41 *In terms of local planning policy, the Transport Strategy for Greater Dublin emphasises Ireland's need to "radically reduce dependence on carbon-emitting fuels in the transport sector". The FDP (2017) similarly describes the need to "minimise the County's contribution to climate change", with particular reference to the transport sector. For example, Objective MT25 and MT34 seek to develop a new Metro North and create bus connectivity respectively that address the needs of the Swords-Airport-City Centre corridor, taking into account environmental sensitivities. On climate change more generally, Objective DA20 seeks to:*

"Take account of the global and local impacts of aviation as well as the likelihood of international action to limit greenhouse gas emissions from aviation through action at the International Civil Aviation Organisation ICAO as mandated in the Kyoto Protocol when evaluating any proposals to significantly increase the use of Dublin Airport."

4.42 *Meanwhile, the Dublin City Development Plan (2016) explains that Dublin City has set an ambitious target of a 20% reduction in GHG emissions compared with 1990 levels for the whole city and a 33% reduction for the Council's own energy by 2020, and the EU Mayors Adapt Initiative has agreed to reduce carbon dioxide emissions by at least 40% by 2030. In 2019, Fingal and Dublin Councils each published their 'Change Action Plan 2019-2024'. These set out a range of actions to reduce GHG emissions across five key areas - Energy and Buildings, Transport, Flood Resilience, Nature-Based Solutions and Resource Management.*

4.43 *The Dublin Airport LAP (2020) seeks to pursue climate mitigation in line with global and national targets and support the transition towards a low carbon economy by seeking to reduce CO2 emissions at the Airport. Specific objectives to facilitate actions contained in the Climate Action Plan 2019 are incorporated, including proposals relating to surface access and renewable energy. For example, Objective CA02 states that "Major applications for aviation related expansion at Dublin Airport shall be supported by a carbon reduction strategy to include mitigation measures for implementation as part of development proposals."*

Current state of the environment including characteristics and problems

4.44 *Emissions of GHG by humans come from various sectors including transport, agriculture, energy industries, manufacturing combustion, industrial processes, residential developments, commercial services developments, waste management processes and fluorinated gases equipment (such as refrigeration and fire protection systems). As revealed in the EPA's 'State of the Environment Report (2020), Ireland's GHG emissions increased by 10.1% from 1990 to 2019, up to 59.9 Mt CO_2 eq. Agriculture is the single largest contributor to the overall emissions, at 35.3%. Transport, energy industries and the residential sector are the next largest contributors, at 20.3%, 15.8% and 10.9%, respectively.*

4.45 *GHG emissions from transport showed the greatest overall increase over the period 1990-2019, at 136.9%, with road transport increasing by 142.4%. Transport emissions are currently 15.4% below the 2007 peak levels, primarily because of the economic downturn, improving vehicle fuel efficiency as a result of changes to the vehicle registration tax, the increase in use of biofuels and significant decreases in fuel tourism in recent years. However, more recently, increases in transport emissions have been recorded for five out of the last seven years (prior to the pandemic) as the economy has grown and transport movements have increased.*

4.46 *With regard to emissions from aviation, the European Commission has identified that aviation is one of the fastest growing sources of GHG emissions (EC, 2019). Direct emissions from*

aviation account for about 3% of the EU's total GHG emissions, and about 4% of Ireland's (representing a fairly constant 20% of Ireland's transport emissions since 1990). Ireland's Action Plan for Aviation Emissions Reduction (2019) reveals that the level of aviation emissions from international flights peaked in 2007, with 3,083 kt of CO_2 emitted by Irish airlines following a steady increase from the level in 1996 (1,067 kt of CO_2). Since then it has reduced to 2,251 kt of CO_2 (most recent available information is for 2014). Similarly, the same report reveals that emissions from domestic flights have also been falling steadily since the mid-2000s, with the figure in 2016 (9.8 kt of CO_2) representing about 0.1% of overall transport emissions in Ireland.

4.47 *In terms of climate change impacts, Ireland has experienced several extreme weather events in recent years, including flooding, droughts and ex-Hurricane Ophelia in 2017, which was the first strong East Atlantic hurricane on record ever to reach Ireland. These events reveal the cost of extreme weather events and the vulnerabilities of society and the economy. For example, between 2014 and 2018 local authorities spent approximately €101 million responding to extreme weather events, such as Storm Darwin in 2014, ex-Hurricane Ophelia in 2017 and Storm Emma and Storm Eleanor in 2018.*

Likely evolution of the environment without implementation of the NAO and RD

4.48 *According to the EPA (2020), the latest projections show that full implementation of additional policies and measures, outlined in the Climate Action Plan (2019), will result in a reduction in Ireland's total GHG emissions by up to 25% by 2030 compared with 2020 levels. However, the EPA also calls for systemic change if Ireland is to become climate neutral and a climate resilient society and economy. In particular, the scale and pace of GHG emissions reductions must accelerate (EPA, 2020). Reducing emissions requires far-reaching transformative change across the whole economy, including in agriculture, energy, transport, waste, land use, food, buildings and industry, and particularly a rapid move away from extensive use of fossil fuels.*

4.49 *For transport emissions, projections over the period 2021-2030 show these decreasing by 11.6% with existing measures, and by 38.6% with additional measures (e.g. 936,000 electric vehicles being on the road by 2030). Looking specifically at aviation, Ireland's Action Plan for Aviation Emissions Reduction (2019) identifies that overall, without any intervention, it is expected that emissions will grow significantly in the future. However, the predicted impact of improved aircraft technology is a 24% improvement in fuel efficiency between 2010 and 2040. This would result in an overall 8.5% reduction of fuel consumption and CO_2 emissions over the period, despite an 82% increase in passenger traffic.*

4.50 *Meanwhile, the UK's roadmap to decarbonise aviation (Sustainable Aviation, 2020) suggests that taking both growth (an increase in ATMs of 24% between 2019 and 2040) and additional measures into account, no reduction in carbon emissions between 2019 and 2030 on a per flight basis is likely, with a 3.3% reduction by 2035 and 10.9% reduction by 2040 (vs 2019).*

The improvement is largely due to key technological advances such as electric hybrid aircraft and substantial production and use of sustainable aviation fuels, though these are not expected until 2035 onwards.

4.51 *In terms of climate change impacts, the EPA's State of the Environment Report (2020) reveals that mid-century mean annual temperatures are projected to increase by 1.0-1.6°C depending on the emissions trajectory. Heat wave events, dry periods and heavy precipitation events are all expected to increase by mid-century and this will have a direct impact on public health and mortality. There is also the possibility that the intensity of individual storms may increase. Building performance will be challenged by a changing climate, whilst infrastructure (e.g. electricity, water, communications, transport) are likely to be affected by an increase in disruptive events.*

Cultural Heritage

Key policy context

4.52 *Heritage Ireland 2030 is to be Ireland's new national heritage plan (expected to be published in 2021). It will be a coherent, comprehensive and inspiring framework of values, principles, strategic priorities and actions to guide and inform the heritage sector over the next decade. Also seeking to support cultural heritage at a national level is the NPF (2018). In particular, NPO 17 seeks to "enhance, integrate and protect the special physical, social, economic and cultural value of built heritage assets through appropriate and sensitive use now and for future generations", whilst NPO 60 seeks to "conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance."*

4.53 *At a local level, the FDP (2017) contains a number of policies on cultural heritage, the overarching one being Objective CH01 which seeks to "Support the implementation of the Fingal Heritage Plan in relation to the promotion and protection of Fingal's Cultural Heritage." Other policies go into more detail on the need for protection of archaeological sites, monuments, artefacts and shipwrecks. For example, Objectives CH20 and CH25 seek to ensure that any development affecting a Protected Structure and/or its setting, or a historic designed landscape, is sensitively sited and designed. There is also the Fingal Heritage Plan 2018 – 2023 (2018) which aims to conserve and protect heritage at a strategic and local level, as well as increase awareness.*

4.54 *The Dublin Airport LAP (2020) sets out objectives to be applied in assessing development proposals at the Airport in relation to conserving the archaeology and architectural heritage present within the LAP and surrounding areas (Objectives AR01 and AH02). There are additional objectives with regards to the St. Margaret's Special Policy Area, for example Objective CH6 which seeks to "Support the appropriate and sympathetic provision of noise insulation to St. Margaret's Church in consultation with relevant church and heritage bodies."*

Current state of the environment including characteristics and problems

4.55 *Archaeological sites and monuments vary greatly in form and date; examples include earthworks of different types and periods, (e.g. early historic ringforts and prehistoric burial mounds), megalithic tombs from the Prehistoric period, medieval buildings, urban archaeological deposits and underwater features. Such structures, sites, features and objects are listed in the national Record of Monuments and Places (formerly the Sites and Monuments Record) – a statutory audit of archaeological monuments established under Section 12 of the National Monuments (Amendment) Act 1994. Meanwhile, protected structures are architectural heritage sites defined in the Planning and Development Act 2000 (as Amended) as structures, or parts of structures that are of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view. Each local authority holds a local Record of Protected Structures. In addition, the National Inventory of Architectural Heritage records many buildings of architectural significance that have yet to be afforded protected status.*

4.56 *The FDP (2017) reveals that the county of Fingal is rich in archaeological and historical sites. Numerous designated heritage assets are present within a 15km ZoI of Dublin Airport, defined based on potential noise and visual impacts from overflying. Figure 4.3 below shows nationally mapped assets from the Record of Monuments and Places and the National Inventory of Architectural Heritage within this ZoI. A number of heritage assets are present within the Airport boundary itself; those listed on the Record of Monuments and Places include:*

- *Ringfort, Cloghran (north-east part of site) – This structure was partly demolished in 1822 and cleared away in 1873. The area has been incorporated into an extension to the recently constructed runway at Dublin Airport. Not visible at ground level.*
- *Castle site, Corballis (east part of site) – There are no remains of the castle at this location and the site is under buildings within Dublin Airport. Not visible at ground level.*
- *Holy Well, Toberbunnny (south-east part of site) – An unenclosed pool close to Cuckoo Stream, this has been incorporated into a golf course. It is said to have been a station well in former times. The site is no longer venerated.*
- *Inn, Pickardstown (centre part of site) – This is a two-storey, four bay building of post-1700 date.*
- *Enclosure, Harristown (south-west part of site) – This may be a levelled ringfort and it is now located under the runway. Not visible at ground level.*
- *Dwelling site, Harristown (southwest part of site) – Harristown House probably occupied this site that is now part of the runway. Not visible at ground level.*

- *Enclosure, Sandyhill (west part of site) – A sub-circular enclosure visible as a crop mark on an aerial photograph located within a relatively flat open field. No visible remains.*
- *Enclosure, Sandyhill (west part of site) – A circular enclosure visible as a crop mark on an aerial photograph. Located at low point within field with quite stark undulations. No visible remains.*
- *Ringfort, Shanganhill (south-west part of site) – A circular enclosure visible as a crop mark on an aerial photograph. Located at low point within field with quite stark undulations. No visible remains.*

4.57 *In terms of structures listed on FCC's Record of Protected Structures (not mapped), there are four located within the Airport boundary:*

- *Castlemoate House, Swords Road, Cloghran (north-east part of site);*
- *Old Central Terminal Building, Dublin Airport, Collinstown (north-east part of site);*
- *Windmill (in ruins), R122 Road, Millhead (west part of site); and*
- *Church of Our Lady Queen of Heaven, Dublin Airport, Corballis (west part of site).*

4.58 *The SEA of the Dublin Airport LAP (FCC, 2019) reveals that there are also a number of archaeological sites and features in areas beyond the Airport boundary, in areas such as St. Margaret's, Dunsoghly, Dubber and Cloghran. There are two historic graveyards in close proximity to the Airport, one at St. Margaret's and one at Dardistown. In addition, there are various Protected Structures in locations surrounding the Airport, whilst in the wider Fingal area there are a number of Architectural Conservation Areas (ACAs), including those located eastward of the Airport at Kinsealy, Portmarnock and Malahide.*

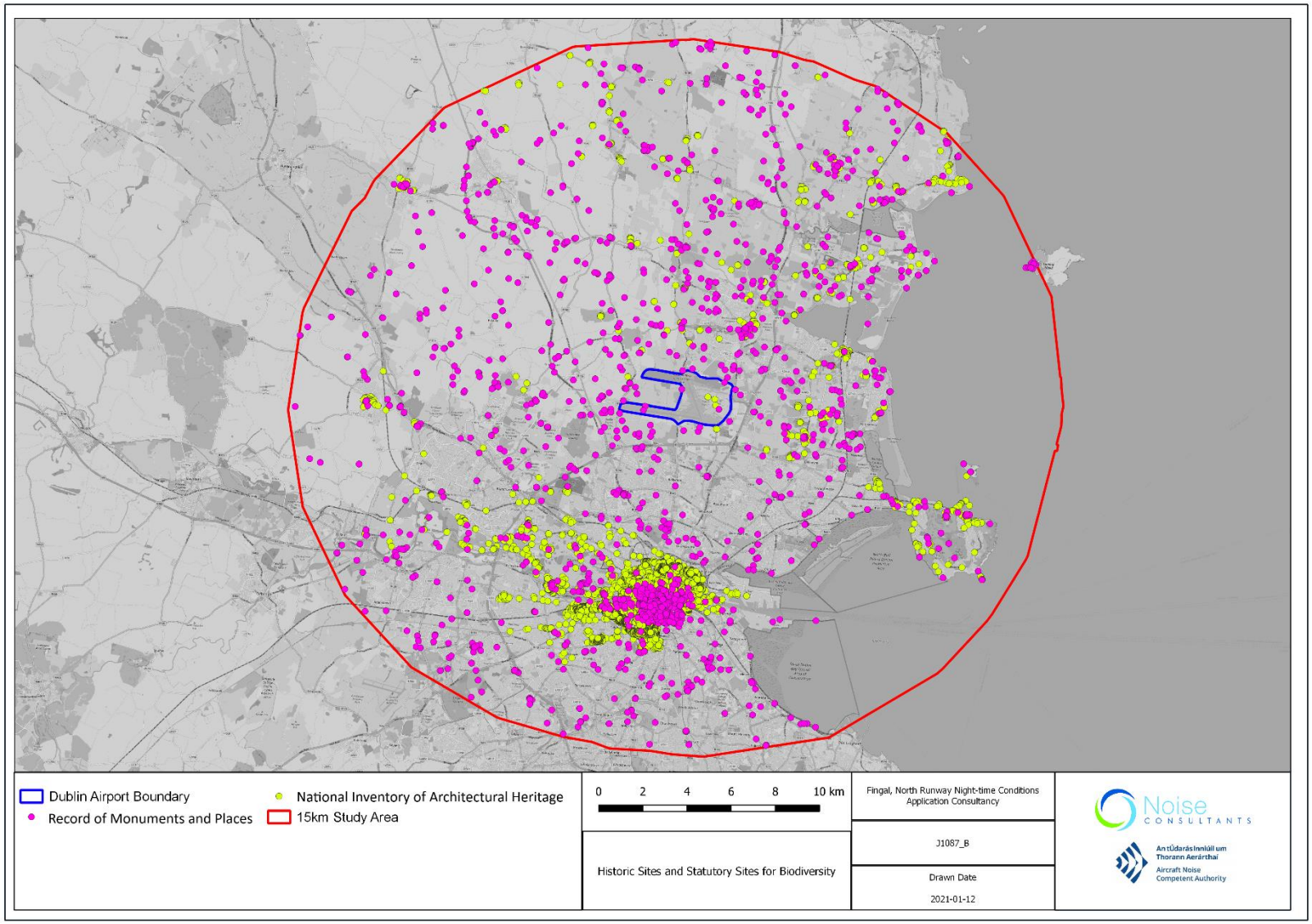


Figure 4.3: Designated heritage assets in the vicinity of Dublin Airport

Likely evolution of the environment without implementation of the NAO and RD

4.59 *The FDP (2017) describes "Protection, enhancement and promotion of the County's rich archaeological and architectural heritage" as a key environmental challenge. However, no existing conflicts with legislative objectives governing archaeological and architectural heritage have been identified in the vicinity of the Airport.*

Landscape and Visual

Key policy context

4.60 *The purpose of the National Landscape Strategy for Ireland 2015-2025 is "to ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the landscape while positively managing its change." Its objectives include providing "a policy framework, which will put in place measures at national, sectoral - including agriculture, tourism, energy, transport and marine - and local level, together with civil society, to protect, manage and properly plan through high quality design for the sustainable stewardship of the landscape."*

4.61 *Also at a national level, the NPF (2018) seeks, through NPO 14, to "protect and promote the sense of place and culture and the quality, character and distinctiveness of the Irish rural landscape that make Ireland's rural areas authentic and attractive as places to live, work and visit." Meanwhile, NPO 61 facilitates landscape protection, management and change through guidance on local landscape character assessments, whilst NPO 62 seeks to strengthen the value of greenbelts and green spaces at a regional and city scale.*

4.62 *At a local level, the FDP (2017) contains a number of policies relating to the protection of landscape and visual amenity. For example:*

- *Objective NH34 seeks to "Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity."*
- *Objective NH40 seeks to "Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development."*
- *Objective LP01 requires "that the design of lighting schemes minimises the incidence of light spillage or pollution into the surrounding environment."*

Current state of the environment including characteristics and problems

4.63 *Ireland's landscape has been shaped by long-running natural processes and human intervention throughout history. As stated by the EPA (2020), it forms an important part of the nation's cultural and natural identity, and contributes to the wellbeing of the economy (e.g. the tourism industry), society and environment. The extent to which the landscape is valued and protected plays an important role in where and how settlements are able to grow and where any supporting infrastructure should be placed.*

4.64 *The FDP (2017) describes the landscape character of Fingal as being characterised by "gently rolling countryside in the central area of the County and the uplands around Garristown and the Naul located in the northern part of the County". The Plan also describes Fingal as comprising "a rich variety of natural amenities, vibrant towns, attractive villages, arable pasture and horticultural lands, uplands, inland rivers and streams and a scenic coastline."*

4.65 *As revealed through the SEA of the FDP (FCC, 2017), there are a number of landscape designations in the County of Fingal. These include High Amenity Zones and Sensitive Landscapes, i.e. areas of special value or sensitivity in which inappropriate development would contribute to a significant diminution of landscape amenity in the county. High amenity landscapes include the coastal zone, river valley areas (Liffey, Delvin, Ward and Tolka) and the Naul Hills area. In addition, the Planning and Development Act 2000 enables Landscape Conservation Areas and Special Amenity Areas to be established to protect and enhance the landscape and amenities of an area. Special Amenity Area Orders (SAAOs) are in place for Howth and the Liffey Valley.*

4.66 *A 15km ZoI has been used for this environmental aspect, on the basis of possible overflying impacts on tranquillity. The closest designated landscapes to Dublin Airport are as follows, and shown in Figure 4.4:*

- *High Amenity Areas located in Swords (Ward River Valley Park, c. 2km north of the Airport), all along the coast (c. 3km northeast and c. 5km east of the Airport), and near Blanchardstown (c. 6km to the southwest).*
- *Highly Sensitive Landscapes located at Kinsaley (c. 3km east of the Airport), all along the coast (within c. 3km northeast and c. 5km east of the Airport), and near Sheephill (c. 4km to the southwest).*
- *Special Amenity Area Orders located at Howth and Ireland's Eye (c. 10km away to the east), and the Liffey Valley near Palmerston (c. 4km to the southwest).*

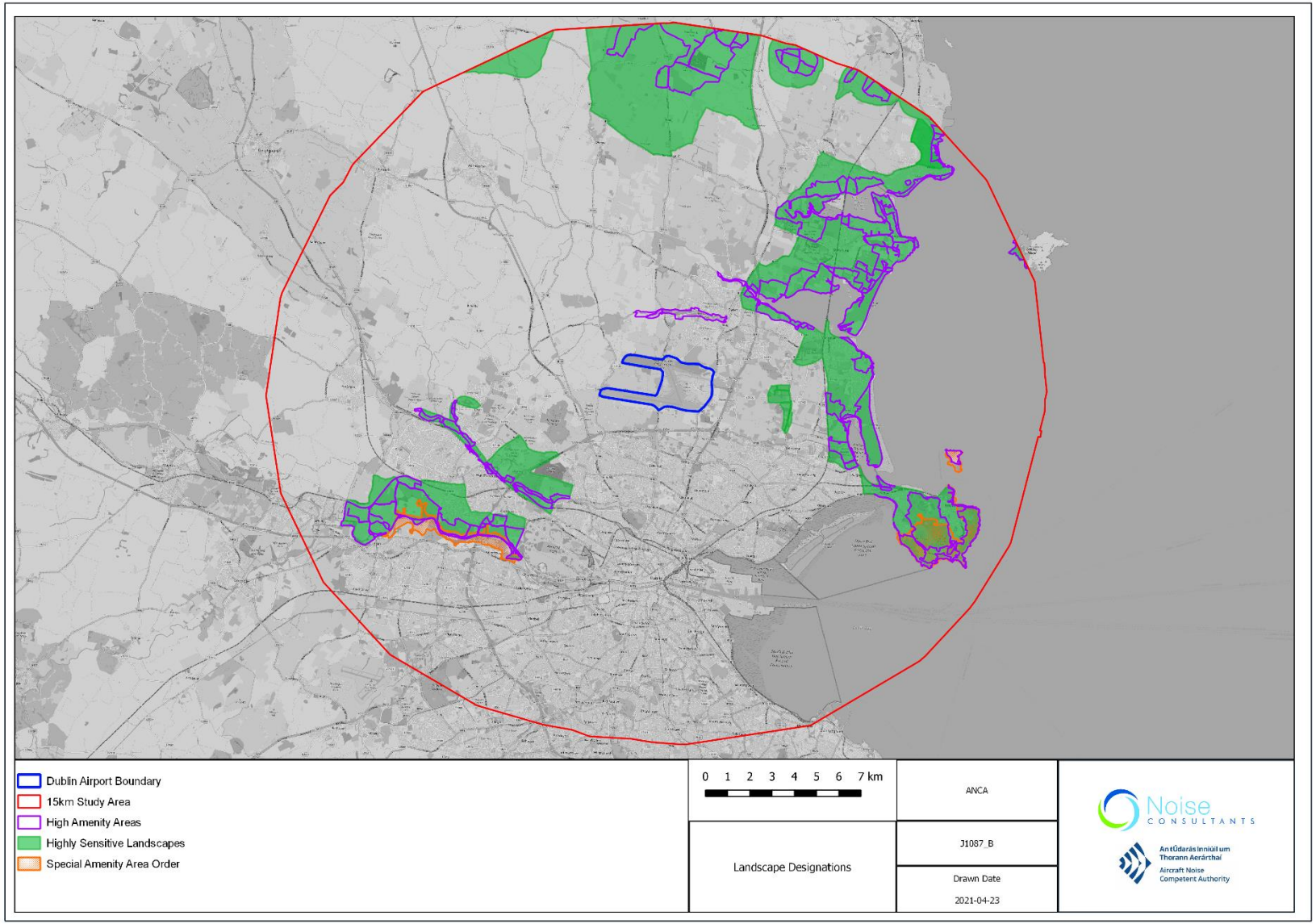


Figure 4.4: Designated landscapes in the vicinity of Dublin Airport

4.67 *There are seven distinct landscape character areas (LCA) in Fingal County. Dublin Airport is located within the Airport and Swords LCA. The SEA for the FDP (FCC, 2017) notes that increasing industrial activity in this area is beginning to encroach on agricultural land. To the east, west and south of the Airport and Swords lies the Low Lying Agricultural LCA, comprising large open areas of pasture, arable and grassland that are uninterrupted by large settlements. To the northeast of the Airport and Swords is the Estuary LCA, characterised by the intertidal sand and mudflats, and saltmarshes at Rogerstown, Swords/Malahide and Baldoyle (FCC, 2017). Finally, to the northwest of the Airport and Swords is the Rolling Hills with Tree Belts LCA. This comprises the valleys of the River Ward and River Broadmeadow and their surrounding farm and woodland.*

4.68 *The landscape of Dublin Airport is entirely artificial in character, comprising existing roads, car parks, buildings and landscape planting. The airfield contains a large proportion of airport-managed grassland with limited enclosure (FCC, 2019). Outside the airfield, the western part of the site consists mainly of agricultural grasslands together with arable land, whilst enclosure is provided by hedgerows and treelines. A limited number of residential dwellings are located immediately west of Airport, including St. Margaret's; however, the open space in this area is not used for significant levels of amenity (FCC, 2019). The area beyond the Airport boundary comprises a working agricultural landscape including agricultural grasslands and arable lands, whilst the M1 Motorway is located to the east. The Airport is located between the urban fringe of Dublin City and the Dublin town of Swords, c. 5km inland from the coast (FCC, 2019).*

4.69 *The Airport itself is relatively flat, with an elevation of 80 m above Ordnance Datum (OD) to the west close to runway 10/28 and declining to 60 m above OD in the south-east, with a gradient of 0.005. As such, local views are dominated by structures and development associated with the operational Airport. The SEA of the Dublin Airport LAP (FCC, 2019) reveals that most views of the site are from passing motorists along the M1 and M50 motorways, stretches of which are enclosed by treelines making views intermittent, and the N2 national primary road and M2 motorway.*

Likely evolution of the environment without implementation of the NAO and RD

4.70 *The FDP (2017) describes "Management of the County's varied landscapes so that change maintains and enhances landscapes of high-quality and improves landscapes" as a key environmental challenge. However, whilst new developments have resulted in changes to the visual appearance of lands surrounding the Airport, legislative objectives governing landscape and visual appearance have not been identified as being conflicted with (FCC, 2019).*

Noise and Vibration

Key policy context

4.71 *The WHO Environmental Noise Guidelines for the European Region (2018) (ENG18) sets out recommendations for protecting human health from exposure to environmental noise originating from various sources: transportation (road traffic, railway and aircraft) noise, wind turbine noise and leisure noise. In relation to aircraft noise, the Guidelines strongly recommend reducing average noise levels below 45 dB L_{den} and night-time noise levels below 40 dB L_{night}, via suitable changes in infrastructure, in order to reduce health effects. ENG18 also describes 'exposure response relationships' linking long-term noise exposure to associated health effects. These relationships have been endorsed by the European Parliament and Council in Directive 2020/367 which establishes assessment methods for harmful effects of environmental noise. These relationships are to be applied for noise management and assessment purposes under Directive 2002/49/EC which requires the production of strategic noise maps and noise action plans, as transposed into Irish law through S.I. No. 140/2006 - Environmental Noise Regulations 2006. These relationships should also be applied in the consideration of noise and health under EU Regulation 598/2014.*

4.72 *At a national level, NPO 65 of the NPF (2018) seeks to "Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans."*

4.73 *At a local level, Objective DA09 of the FDP (2017) seeks to "Ensure that aircraft-related development and operation procedures proposed and existing at the Airport consider all measures necessary to mitigate against the potential negative impact of noise from aircraft operations (such as engine testing, taxiing, taking off and landing), on existing established residential communities, while not placing unreasonable, but allowing reasonable restrictions on airport development to prevent detrimental effects on local communities, taking into account EU Regulation 598/2014 (or any future superseding EU regulation applicable) having regard to the 'Balanced Approach' and the involvement of communities in ensuring a collaborative approach to mitigating against noise pollution". In addition, Objective NP02 seeks to "Continue to promote appropriate land use patterns in the vicinity of Dublin Airport to minimise the amount of residents exposed to undesirable noise levels."*

4.74 *The strategic aims and objectives of the Dublin Airport LAP (2020) seeks "to protect community amenity and mitigate potential impact from airport growth", in part via the designation of airport noise zones, updated in 2019. The LAP seeks to restrict incompatible development where aircraft noise exposure is considered too high and ensures that where noise is above certain thresholds that adequate consideration is given to aircraft noise during the planning process and as part of designing and incorporating noise insulation measures.*

The LAP also refers to specific policies for noise as documented in the Noise Action Plan for Dublin Airport 2019 - 2023 (2018), designed to manage noise issues and effects associated with existing operations at Dublin Airport. The Noise Action Plan sets out 13 actions relating to reducing noise at source, land use planning and management, noise abatement operating procedures, and monitoring and community engagement. For example, Action 4 seeks to "Monitor noise encroachment associated with Dublin Airport to ensure that airport noise policy is appropriately informed through land use planning frameworks in so far as they relate to Dublin Airport.". The Noise Action Plan sets a key objective for the management of aircraft noise at Dublin Airport. This is:

"to avoid, prevent and reduce, where necessary, on a prioritised basis the effects due to long term exposure to aircraft noise, including health and quality of life through implementation of the International Civil Aviation Organisation's 'Balanced Approach' to the management of aircraft noise as set out under EU Regulation 598/2014"

Current state of the environment including characteristics and problems

4.75 *As stated in the EPA's State of the Environment Report (2020), approximately 14.4% of the urban population in Ireland (equivalent to about 430,000 people, based on the Central Statistics Office 2016 census) are exposed to road noise levels above the Environmental Noise Directive (2002/49/EC) guideline values. This indicates that a substantial portion of the population may be experiencing some adverse effects on health and wellbeing caused by noise.*

4.76 *In the vicinity of Dublin Airport and under its flightpaths, noise from aircraft is a more pressing issue. Noise from aircraft is produced both on the ground and in the air. In general, these sources are considered separately and are typically described as air noise and ground noise. Air noise is created by aircraft in the air or on the runway when taking off or landing. This noise comprises of two components – airframe and engine noise – and is the main source of noise at civil airports. As the Noise Action Plan for Dublin Airport 2019 - 2023 (2018) points out, many people who live around an airport experience aircraft noise as a series of aircraft events which may potentially change over the course of a day or between days according to factors such as the airport's schedule, aircraft routing and the operating direction.*

4.77 *The Noise Action Plan (2018) reveals the noise situation from aircraft at Dublin Airport. The number of people exposed to average daytime noise levels greater than 55 dBA L_{den} increased between 2011 and 2016, from 11,900 to 18,500, with areas being introduced to this level of exposure including Tyrrelstown and Balgriffin. Meanwhile, the number exposed to levels greater than 65 dBA L_{den} rose from 200 in 2011 to 300 in 2016.*

4.78 *In terms of night-time noise levels, the number of people exposed to undesirable night-time noise exposure levels above 55 dBA L_{night} from the Airport was 200 people in 2006 and 2011,*

rising to 400 people in 2016. The number of people exposed to night-time noise levels above 50 dBA L_{night} increased even more sharply, from 1,200 in 2011 to 6,200 in 2016. The main changes in night-time noise exposure occurred in Tyrrelstown, Balgriffin, Portmarnock Bridge and Santry. The L_{night} contours around Dublin Airport can be seen in Figure 4.5.

4.79 *The Noise Action Plan (2018) notes that "Whilst it is the case that there has been an increase in activity between 2011 and 2016, and a corresponding increase in the number of people within the L_{den} and L_{night} contours, it is also important to note that a number of developments will have been constructed and occupied around the airport over this timeframe and this will also contribute towards the increase in the population"*

4.80 *However, based on information submitted as part of planning application F20A/0668, the advice report on the potential noise problem associated with the application (Noise Consultants Ltd, 2021) shows further increases in noise exposure beyond those in the NAP. For example, the number of people exposed to night-time noise levels above 50 dBA L_{night} had risen to 12,317 in 2018, and to 13,838 in 2019 – more than double the figure for 2016. Similarly, the number of people exposed to average daytime noise levels greater than 55 dBA L_{den} reached 35,483 in 2018 (falling slightly to 34,097 in 2019) – again double the 2016 figure.*

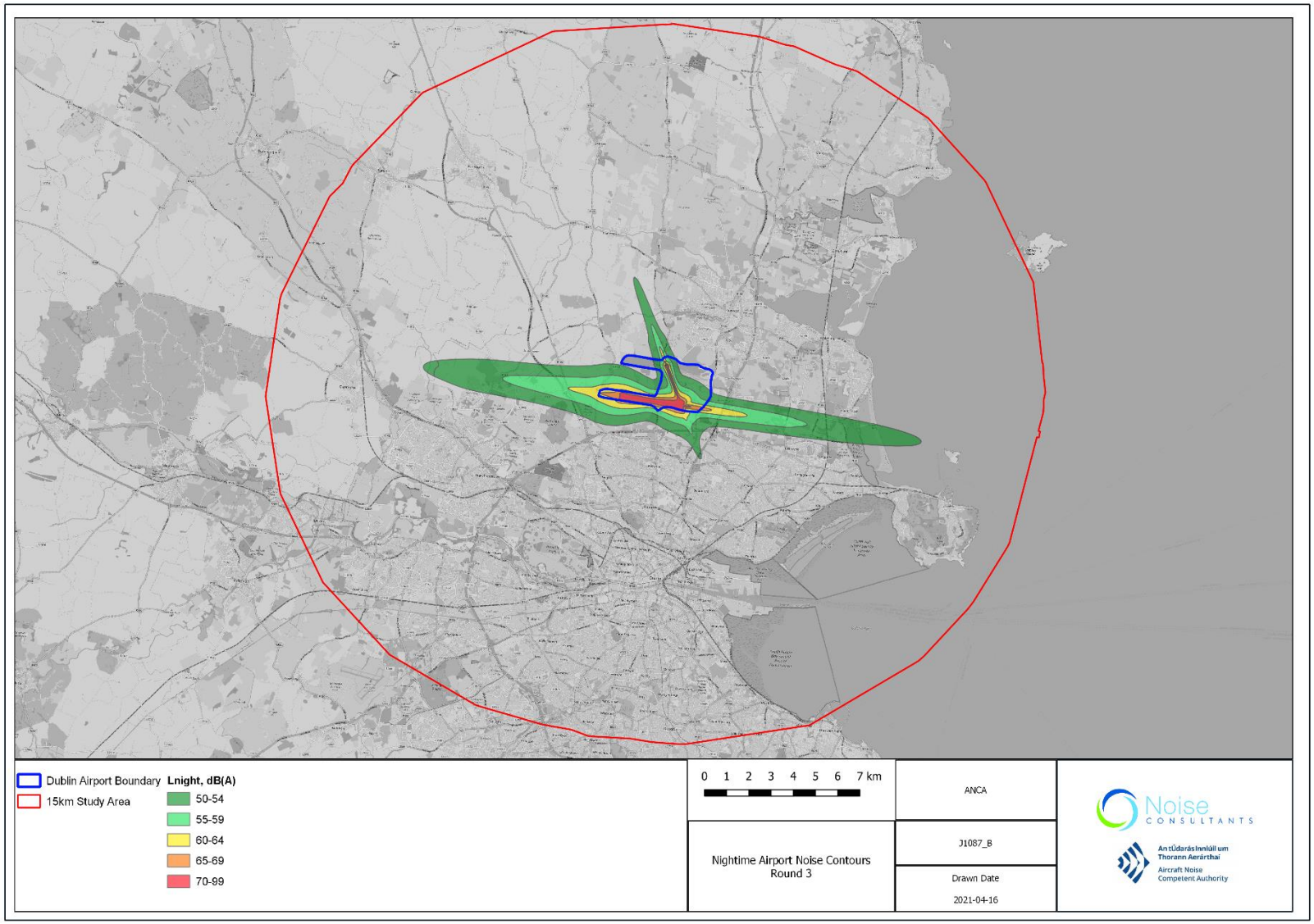


Figure 4.5: Noise contours for the night period (Round 3, 2018) for Dublin Airport

Likely evolution of the environment without implementation of the NAO and RD

4.81 *The EPA (2020) notes that, from a human health and wellbeing perspective, the issue of environmental noise requires action on two fronts. Firstly, the proactive management of noise that is likely to have a significant negative impact on health and wellbeing; and, secondly, the preservation and increased provision and accessibility to designated quiet areas (i.e. those largely undisturbed by noise from traffic, industry or recreational activities), particularly in areas with a high population density.*

4.82 *The Noise Action Plan (2018) notes that, at present, there are no operating restrictions at Dublin Airport in its current form. However, there are noise mitigation operational procedures set out in the Dublin Airport Noise Management Plan which aim to ensure aircraft are operated in a manner which is safe, and which reduces as far as practicable the noise in areas surrounding the airport. Furthermore, the airport has insulation and voluntary purchase schemes which seek to protect those experiencing elevated levels of aircraft noise.*

4.83 *It is clear that without the NAO or RD (which aim to reduce noise at Dublin Airport), the mechanisms for managing noise may not be the most appropriate or cost-effective. Without the NAO or RD the potential exists for the noise situation at the airport to be managed ineffectively particularly given the growth and changes in operating procedures (subject to appropriate consents) that are planned by daa.*

Population and Health

Key policy context

4.84 *The Healthy Ireland Framework 2019 – 2025 (2017) sets out a vision to create "A Healthy Ireland, where everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone's responsibility". It notes that health and wellbeing are affected by all aspects of a person's life: economic status, education, housing, and the physical environment in which people live and work. The latter "includes not only the study of the direct pathological effects of various chemical, physical, and biological agents, but also the effects on health of the broad physical and social environment, which includes housing, urban development, land use and transportation, industry, and agriculture."*

4.85 *Also at a national level, Chapter 6 of the NPF (2018) deals with 'People, Homes and Communities', and notes how specific health risks, such as include heart disease, respiratory disease, mental health, obesity and other injuries, can be influenced by spatial planning. Relevant objectives include NPO 26 which supports the delivery of the Healthy Ireland Framework and the National Physical Activity Plan, and NPO 28 which seeks "a more diverse and socially inclusive society that targets equality of opportunity and a better quality of life for*

all citizens, through improved integration and greater accessibility in the delivery of sustainable communities and the provision of associated services."

4.86 *At a local level, the Fingal Economic and Community Plan 2016-2021 aims "to promote the well-being and quality of life of citizens and communities", whilst the FDP (2017) has an overarching aim to promote and improve quality of life and public health. Importantly, the FDP acknowledges that poor air quality, light pollution and noise pollution can be detrimental to the health of Fingal's citizens. Objective AQ01 therefore seeks to: "Implement the provisions of EU and National legislation on air, light and noise and other relevant legislative requirements, as appropriate and in conjunction with all relevant stakeholders." More specifically, Objective NP02 seeks to "Continue to promote appropriate land use patterns in the vicinity of Dublin Airport to minimise the amount of residents exposed to undesirable noise levels."*

4.87 *In addition, through Objective PM69, the FDP seeks to "Ensure that proposals do not have a detrimental effect on local amenity by way of traffic, parking, noise or loss of privacy of adjacent residents". Similarly, Objective ED31 aims to ensure that any growth at Dublin Airport takes "into account the impact on local residential areas, and any negative impact such proposed developments may have on the sustainability of similar existing developments in the surrounding area".*

4.88 *The Dublin Airport LAP (2020) contains a number of strategic aims and objectives, many of which are relevant to population and health. For example, it aims to "Support the growth of the Airport as a major economic driver for the region" (including through Objective ED01). At the same time, it seeks to "Support continued communication between the Airport and neighbouring communities to protect community amenity and mitigate potential impact from airport growth in the interests of long-term sustainability" (e.g. through Objective CS01).*

Current state of the environment including characteristics and problems

4.89 *The EPA (2020) refers to the rising level of urbanisation and population growth in Ireland, coupled with the increasing public health burden of obesity and physical inactivity. Urbanisation can support the emergence of obesogenic environments, promoting more sedentary, inactive lifestyles and leading to an increase in obesity, a reduction in physical activity and increased prevalence of chronic diseases. Other health challenges arising from urbanisation include exposure to excessive noise and poor air quality (EPA, 2020). Moreover, increased urban living means that there may be fewer opportunities for engaging with the natural environment, which can in itself be detrimental to physical and mental health. Also of concern to Ireland's population is the effect of climate change on physical health (e.g. through worsening the effects of aeroallergens and air pollutants) and on psychological wellbeing and mental health, particularly for those living in ecologically sensitive areas such as those prone to flooding.*

4.90 *Air pollution from transport is dominated by NO_X emissions. Of these, NO_2 is particularly impactful from a health perspective. The EPA's Air Quality in Ireland 2017 report (2018) describes that concentrations of NO_2 at urban areas in Ireland are close to the EU annual limit value. Short-term exposure to NO_2 is linked to adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in asthmatics, whilst long-term exposure is associated with increased risk of respiratory infection (EPA, 2018). Poor air quality in general is linked to incidence of chronic lung disease (chronic bronchitis or emphysema) and heart conditions and asthma levels of among children and young people.*

4.91 *Noise can have a significant and disruptive effect on everyday life and it has been identified by the WHO as the second greatest environmental cause of health problems (after air quality). Environmental noise (including aircraft noise) has been linked with negative health outcomes including cardiovascular disease, cognitive impairment, sleep disturbance, annoyance and psycho-physiological effects (impacts on quality of life, wellbeing and mental health). As identified in the preceding section on Noise and Vibration, noise in the vicinity of Dublin airport is affecting a larger number of people than in previous years, partly due to an increase in noise, and partly due to residential development undertaken in the area surrounding the airport. Overall, data supplied by the planning application suggests that 115,738 people were highly annoyed by noise from Dublin airport in 2019, and that 47,045 people were considered highly sleep disturbed based on exposure thresholds of ≥45 db L_{den} and ≥40 dB L_{night} respectively.*

4.92 *Meanwhile, the Dublin Airport Economic Impact Study (2019) reports on the positive economic impacts associated with Dublin Airport. The key findings are that direct employment supported by ongoing operations at Dublin Airport amounts to 21,500 jobs - adjusting for part-time and seasonal employment, this totals 19,200 Full-Time Equivalent jobs (FTEs). The total direct Gross Value Added (GVA) generated by Dublin Airport is estimated to be over €1.7 billion. Adding in multiplier impacts (indirect and induced), the total employment supported by activities at Dublin Airport is estimated to be 49,000 jobs (or 43,600 FTEs), earning a total of €1.9 billion. The catalytic impacts of Dublin Airport (tourism, transport of high value exports, the ability of Irish and multinational businesses to travel to clients and global headquarters etc) were estimated to total 80,700 jobs (71,300 FTEs) and €6.0 billion in GVA in 2018. The total economic impact of Dublin Airport therefore amounts to 129,700 jobs in Ireland, equivalent to 114,900 full-time jobs, earning a total €9.8 billion in GVA contributions to the national economy, representing 3.1% of total GDP.*

Likely evolution of the environment without implementation of the NAO and RD

4.93 *The EPA (2020) states that strong health-centred urban design, policies and planning (e.g. prioritising a modal shift away from the currently high dependence on private motor vehicles towards more active travel) are vital for Ireland's transition to more compact urban living, as*

well as for reducing air and noise pollution. Promoting the benefits of a clean environment for health and wellbeing is also a key action for Ireland (EPA, 2020).

4.94 Through increasing stringency on aircraft noise emissions as implemented by ICAO, aircraft have become quieter. However, as the airport grows and the surrounding area becomes more developed, it is possible that noise and other health impacts on the local population could continue to increase. At the same time, it is likely that the local area will see population growth and greater job creation.

5 Assessment of Likely Significant Effects on the Environment

5.1 As stated in para 3.10 of this Report, although there is currently a 32 mppa passenger cap in place at Dublin Airport, the future baseline for the SEA must take into account national and local policy ambitions to increase passenger numbers to c.40 mppa in 2030, and c.55 mppa from 2050. The assessment of the NAO and RD in this section of this chapter is therefore against the 'future baseline', which includes the permitted restrictions via conditions 3(d) and 5, but allows for policy-directed passenger growth beyond the 32 mppa cap, i.e. daa's Scenario B, albeit understanding that this does not fully meet policy ambitions (peaking at 42 mppa in 2040) as is explained in para 3.11.

5.2 Related to this, the scope of this assessment (as set out in paras 3.2 and 3.3) includes only the impacts relating to the management of aircraft noise, along with the c. 10% increase in passenger numbers (of 4.6 mppa by 2040), occurring at night-time, associated with the assessment case. The impacts of specific measures set out in the NAO and RD are therefore assessed separately in this chapter, with mitigation proposed where appropriate in the next chapter (albeit on occasion it is also referenced here).

5.3 Though not specified within the NAO or RD, certain measures related to the operation of aircraft, for example airspace design (flight routes), angle of ascent and fleet mix, can be altered to reduce the impact of aircraft noise. In cases where altering such operational measures has potential to impact on the other environmental aspects, these impacts are highlighted in the assessment below, and mitigating measures proposed in Chapter 6. However, the design and implementation of these operating measures are out of ANCA's control (albeit the need to consider these measures will be driven by the requirement to meet the NAO), and will need to be considered in more detail likely through EIA (and AA) of future plans, programmes and projects following the adoption of the NAO and RD.

5.4 Similarly the NAO and RD do not dictate the level of growth at the Airport in either ATM or passenger terms or specify a particular fleet mix that operates. Rather they mandate that operations occur within defined noise limits. It is up to Dublin Airport to identify a specific approach that allows growth to occur whilst meeting these defined noise limits. For this reason, the assessment undertaken is necessarily high level. It makes the assumption that adherence to the NAO and RD will require the Airport to operate a newer and therefore more efficient aircraft fleet and operate in a more efficient manner in order to ensure that the prescribed noise limits are met. Furthermore, the assumption is made that such efficiency to meet noise limits set will have the benefit of also, unless otherwise stated later in this assessment, have positive implications for some other environmental aspects including air quality and carbon.

Assessment of the NAO and RD

5.5 *The predicted impacts of the NAO and the RD (as described in Tables 2.2 and 2.3 respectively) on each of the environmental aspects is described in detail below. This assessment is based on the assessment case compared to the future baseline, which results in an additional 4.6 million night-time passengers flying each year by 2040.*

5.6 *Given that this increase occurs entirely at night, when currently few aircraft operate, it is important to identify what the likely change in ATMs will be at night. According to daa forecasts for 2040, with amendments to Conditions 3(d) and 5 permitted, actual numbers of flights to occur within the night-time period will be, annually, around 43,500 compared to the future baseline under existing operating restrictions of around 19,000 night-time flights annually.*

5.7 *The assessment of reasonable alternatives for the NAO and the RD is set out later in this chapter.*

Air quality

5.8 *Various studies have each determined that airborne emissions from aircraft, in particular NO_2 and particulates, become negligible, in terms of changes in ground-level air quality and the effect of this on human health, once aircraft are more than approximately 350-650 ft (100-200m) above the ground on departure, and when greater than approximately 160-350 ft (50-100m) on arrival. This means that pollutants will have dispersed to such an extent that they will have only a negligible effect on human health anywhere outside of a radius of 2km from the Airport boundary which is, conservatively, the point at which these altitudes are reached. Additionally, effects can only occur where populations are overflown and therefore when they occur on defined flight paths. Within a 2km radius of the Airport boundary, and situated along flight paths (including those that will be in operation to serve the second runway) lie the settlements of St Margaret's, Kishane Cross, Broughan and Baskin Lane.*

5.9 *However, it is customary for studies on air quality around airports to include the whole aircraft landing and take-off cycle, including operations on the ground and in the air up to 3,000 ft (~1,000m) above ground level. All aircraft operating from Dublin Airport will, in normal circumstances, have reached this altitude within 15km of the Airport itself. For the most part this is so that consideration can be paid to the effect of changes in air quality at ground level affecting important ecological receptors, where there can be habitats and species that are particularly sensitive to changes in air quality. Effects from changes in air quality on important ecological receptors are dealt with later in this report, specifically in the section on Biodiversity (and as part of the AA).*

5.10 *Compared to the future baseline, air quality is also likely to improve. This is because of the focus on improved operations to ensure the effective management of noise as required by the*

NAO, as the Airport is unlikely to be able to achieve growth consistent with the NAO without changes to the aircraft fleet mix. Specifically, this will mean that newer, cleaner and more efficient planes will need to enter the aircraft fleet that operates from the Airport. This will have the consequence of reducing the level of fuel that is burnt, and therefore the level of emissions to the air will also fall. Furthermore, an emphasis, through consideration of the airspace design, on overflying as few people as is possible, thereby reducing the numbers affected by noise, is also likely to have positive implications as it will also reduce the number of people affected by adverse changes in air quality, albeit it is acknowledged that the impact of airspace design changes is rarely felt as close in as 2km.

5.11 *Reducing noise on existing populations to meet the requirements of the NAO, particularly within the area closest to the Airport, may also result in departing aircraft increasing the angle of their ascent to get them higher in the sky as quickly as is possible. This has the potential for a higher level of pollutants albeit over a smaller area. The increased thrust required necessarily increases fuel burn and so those that are very close to the Airport can be affected by increased exposure to poorer air quality. The potential for benefit is that a reduced area will be affected because the altitude at which pollutants disperse to such an extent that they do not affect human health, will be reached more quickly.*

5.12 *Air quality in the area that surrounds the Airport, monitored at daa-owned stations within a 2km radius, indicate currently there is no non-compliance with legislation. Indeed, as set out in paras 4.14-4.15 of this report, monitoring data for 2019 and early 2020 (i.e. the most recent data prior to the onset of the pandemic) shows emissions of NO_2 and PM_{10} to be well within both the legal limit values and the WHO guidelines at all sites within 2km of the Airport, with the exception of the bus depot. At the latter site, NO_2 emissions reached an average of 39.41 µg/m³ in Q1 2020 (very close to the limit and guideline value of 40 µg/m³), however this is due to emissions from the buses themselves, and aircraft make up only a very small component part of the emissions.*

5.13 *Overall, the likelihood of compliance with the air quality legislation as a result of the implementation of the NAO and RD is considered high. Beyond 2km from the Airport, where most residents are located, no impacts are likely to be felt with regards to air quality. For residents of settlements located directly under the flightpath within 2km of the Airport, air quality may deteriorate due to the ~10% increase in passenger numbers and associated ATMs under the assessment case – particularly if aircraft take a steeper ascent – but this is unlikely to be significant to the extent that air quality legislation is breached. Consideration will however, need to be paid to this during any detailed environmental assessment work undertaken to inform future growth plans at the Airport.*

Biodiversity

5.14 *The NAO is seeking to reduce noise from the current baseline situation, and against the future baseline. It is likely that the NAO will lead to the Airport incentivising the development of a more efficient aircraft fleet so that noise levels directly from aircraft flying overhead are reduced. This will have the obvious benefit that, although still understanding that the assessment case is based on potentially higher numbers of aircraft operating (albeit only if a planning consent is gained by daa that allows such), more generally those that do will be less noisy and therefore noise generated from aircraft activities is likely to be broadly similar or at least, even if it is worse in the assessment case, the difference will not be significant. This means that overall noise impacts on statutory and non-statutory ecological sites is likely to be similar, with more, but quieter, aircraft flying overhead.*

5.15 *Importantly though, based on information provided by daa and used to define both the future baseline and assessment case, it is considered that the additional 4.6 mppa will use the Airport within the defined night-time period only, and particularly during the hours 23:00-00:00 and 06:00-07:00. This means that the effect of additional overflying of important ecological sites as a result of the NAO and RD is only relevant during the night-time.*

5.16 *The interest features of SPAs that fall within the ZoI are wild birds and in particular waterbirds including wintering wildfowl and waders. For context, as part of the AA Screening undertaken for the planning application (F20A/0668), a total of 228 hours of vantage point survey were carried out within Baldoyle Bay and Rogerstown Estuary between June 2016 and December 2018. The AA Screening Report (AECOM, 2020) reveals that, during this period, despite an almost continuous stream of air traffic overhead, at no time was a reaction by any wetland bird(s) to passing aircraft recorded. It could therefore be assumed that birds that occupy the closest SPAs to the Airport have already habitually gotten used to the noise.*

5.17 *The Natura Impact Statement produced alongside this Draft Environmental Report reports on the results of various other studies that found that birds can become habitually used to aircraft overflying and the noise associated with it. For example, the Federal Highway Association review (FHWA, 2004) is an important review of studies on the effect, in terms of behavioural and physiological responses, of aircraft noise on wildlife including, of particular relevance, migratory wildfowl and dabbling ducks). The review identifies a number of potentially negative effects caused by noise from aircraft. In particular alert reactions to physiological indicators of stress (e.g. changes in hormonal levels, organ function, etc.) occurred in both domestic and wild species ranging with, in particular, migratory waterfowl often making brief flights in response to aircraft overflights. However, noise in these studies was generally intermittent and occurred at levels greater than will be typically encountered at the SPAs in question i.e. > 100 dB, even after growth has occurred.*

5.18 *In contrast, at a mean sound level of 85dBA and when exposed to low-flying aircraft (L_{eq} 24 hr. = 63 dBA), a field study by Conomy et al. (1998) of black ducks, American wigeon Anas americana, gadwall and green-winged teal A. crecea carolinensis, and other dabbling ducks, found no change to the birds studied time-activity budgets (i.e. the time they spend doing normal tasks). This study concluded that there was no major disturbance from their normal behaviour for these species. A number of other studies also report habituation to aircraft noise, and thus no discernible effects. For example, Cutts et al. (2009) note in their literature review that birds within the Humber Estuary habituate to construction noise as long as it is continuous and below 70 dBA. Previously, Burger (1981) found that reactions from herring gulls Larus argentatus (i.e. taking flight) to noise only occurred significantly when Concorde was overflying, and where noise occurred at levels exceeding 101 dBA. The normal colony noise itself was 77 dBA and hence birds had become habituated to non-Concorde jet aircraft noise events below that noise level.*

5.19 *Perhaps most relevant to this assessment is a study by Harms et al. (1997). Harms measured the heart rate of black ducks for 4 days and subjected them to simulated aircraft noise for 48 episodes per day with peak volume of 110 dB. On the first day acute responses occurred but these diminished significantly after that thus indicating the ability of the species to habituate to the noise for low flying aircraft. Also relevant is a study by Kempf & Hüppop (1998) that determined that the frequency and regularity with which an aeroplane flies past can have a significant influence on the reactions of birds. They found that waterfowl on Wadden Sea islands that have an airfield, developed a certain tolerance to air traffic, when compared to similar flyovers undertaken on an adjacent island, Mellum, where there is no airfield and where, as a result, the same species of birds showed considerable flight reactions.*

5.20 *With all this said it is considered unlikely that the, in general, increased numbers of aircraft that are likely to occur during the lifespan of the NAO and RD will affect the interest features of the SPAs given that they are already subject to overflying. The birds appear from the evidence gathered to already be habitually used to aircraft noise which is a response that research supports, and the increased number of overflying aircraft will likely be mitigated by the fact that a more efficient and less noisy fleet mix will be operating from the Airport, thereby meaning that any changes in noise experienced will be very small, if such occurs at all.*

5.21 *It should also be noted that this increase in ATMs occurs only in this night-time period. During the day, with North Runway fully operational (as is the case in the future baseline scenario), these sites are already overflown and will be subject to even higher levels of overflying than during the night. Furthermore, there are likely to be fewer flights operating in the daytime to enable additional flights to operate at night, thus reducing noise disturbance at these sites during the day. As a result, on average across the entire day / night period, noise levels will be similar with the NAO and RD as without.*

5.22 *The question therefore is whether specifically, increased night-time flights are more likely to disturb interest features for which the Natura 2000 sites have been designated, this being, in particular, important birds. It is considered that birds are unlikely to be any more disturbed by aircraft at night when compared with the day. In fact arguably, because the aircraft themselves will be, except for its lighting, much less visible, birds would become less likely to be disturbed. This lack of visual stimuli is backed up by research from Cutts et al (2009), who detailed that habituation by waterfowl flocks on the Humber Estuary, England, to regular commercial aircraft flights that operate to and from Humberside Airport, appears to occur. The research states that birds showed no response to these flights, except on two occasions, when they appeared disturbed by the shadow of an aircraft that occurred close to where they were congregated. For these reasons it is believed that visual stimuli increases the potential for disturbance from overflying.*

5.23 *Additionally the timings of these increased number of night-flights, being mostly late (06:00-07:00) and early (23:00-00:00) in the night-time period are so close to the timings of flights that would occur outside of the night-time period (just after 07:00 and just before 23:00) that it is considered highly unlikely that they would lead to new effects. The behaviour of birds during these times might change somewhat during a year reflecting seasonal differences including the timing of sunrise and sunset, but it is not considered that these additional night-flights given the timing they occur, would be affected.*

5.24 *However, changes in airspace design to meet the requirements of the NAO and in particular to reduce the number of people exposed to certain levels of noise, may mean that there is an emphasis on airspace redesign so that fewer people are overflown. The consequence of this could be that the less densely populated areas overflown include areas of importance for ecology whether this being afforded statutory protection or not. Consideration will need to be paid to this if and when redesigning airspace to NAO requirements so that the presence of sites of ecological value, including particularly those that are afforded statutory protection, these being the SPAs and SACs, are a material consideration of the redesign process. New or additional overflying of these sites will need to be avoided if it is considered that the impacts that arise as a result of this could be sufficiently adverse that they have the potential to affect the important features of a site or other conservation priorities.*

5.25 *Other potential impacts on biodiversity caused by increased numbers of overflying aircraft include effects of changes to air quality, particularly increases in the concentrations of NOx and levels of nitrogen deposition. Generally, other than very close to the Airport, airborne pollutants tend to dissipate to such an extent before they reach the ground, that changes in air quality have limited effects on ecological receptors. However, some habitats are more sensitive than others to any change in air quality and therefore new or additional overflying, may have a disproportionate impact on the most sensitive habitats.*

5.26 *The Natura Impact Statement produced alongside this Draft Environmental Report provides information on sensitivity to pollution (including NOx and SO_2) of a number of habitats associated with the SACs in the vicinity of Dublin Airport, including coastal habitats such as saltmarsh and shingle, and terrestrial habitats such as heath. Of course, importantly the interest features of the SPAs, i.e. the birds, and a range of important invertebrates, cetaceans, molluscs and mammals as are noted in the citations for the SACs, rely on these habitats for a range of their lifecycle needs. The Natura Impact Statement revealed that whilst a deterioration in air quality could lead to damage of the habitats that occur on at least some of the SACs, such is not expected to occur as a result of daa operating in accordance with the NAO and RD. The level of increase in air passenger numbers when comparing the assessment case with the future baseline is, as already stated, likely to result in very modest increases in air traffic. In addition, that implementation of the NAO is likely to drive an acceleration in the modernisation of the aircraft fleet that operates from the Airport when compared to the future baseline, will also likely mean that this increase is, at least in part, mitigated by the fact that aircraft will likely produce a reduced level of emissions.*

5.27 *It is, however, important to note that this assessment cannot take into account more detailed changes in overflying, including importantly whether as a result of airspace re-design that might occur to help meet the requirements of the NAO, a route over a SPA or SAC becomes more used than another which doesn't. Such will only be known when detailed proposals for growth come forward, likely through a planning application made to FCC and when the competent authorities revise their plans for the airspace design and management of the increased flights, and with associated SEA, EIA and AA, and within which this point should be considered.*

5.28 *Finally, the effect of emergency fuel dumping from overflying aircraft affecting biodiversity directly or indirectly through surface water pathways needs to be considered. However, as stated in the EIA Report (AECOM, 2020), previous incidents have involved relatively minor leakages, and any dumping would still occur very infrequently, and typically be undertaken in a controlled manner and in an appropriately selected area away from watercourses or Natura 2000 sites themselves, and/or at a sufficient altitude to allow for vaporisation and dispersion before reaching ground level.*

5.29 *To conclude, the likely impact of the NAO and RD on biodiversity in the vicinity of Dublin Airport will be mixed. This is due to the likely increase in night-time flights of circa 4.6 mppa by 2040 potentially resulting in more overflying of protected sites and species, but at the same time these aircraft being quieter and cleaner. In particular, it appears from specific work undertaken at Natura 2000 sites within the defined ZoI, that birds are habituated to overflying and the minor increases in new flights that occur when comparing the future baseline with the assessment case, will have no adverse effect on the integrity of those Natura 2000 sites either as a result of changes in noise or airborne emissions to important species or habitats that occur.*

Carbon and climate change

5.30 *The future baseline used in this assessment takes both predicted growth in passenger numbers/ATMs and aircraft improvements into consideration. Even without the introduction of the NAO, aircraft in fleets operating from the Airport will improve leading to reduced per passenger carbon emissions, albeit unlikely at the same level as with the NAO in place, given that the NAO is likely to drive a more efficient aircraft fleet and more efficient operations.*

5.31 *Specifically, although aviation is one of the fastest growing sources of GHG emissions, as stated in para 4.45 of this Report, improvements in aircraft technology are expected to result in a 24% improvement in fuel efficiency amongst Ireland's aircraft fleet between 2010 and 2040. Taking air traffic growth of 82% into account, this is expected to result in an overall 8.5% reduction of fuel consumption and CO_2 emissions over the period. UK sources similarly predict a 10.9% reduction in CO_2 emissions by 2040 (vs 2019), taking growth of 24% into account.*

5.32 *The NAO is expected to lead to a more efficient fleet operating from the Airport, resulting in a reduction in carbon emissions. In addition, a trend toward larger aircraft carrying more passengers, although these may produce more CO_2 on a per flight basis, would reduce the number of ATMs required and thus the overall CO_2 levels on a per passenger basis.*

5.33 *However, whilst within the number set out in wider policy ambitions, the assessment case includes an additional ~10% in terms of passenger numbers compared to the future baseline (resulting in an additional 4.6 mppa flying at night by 2040), the effect of which being an overall increase in CO_2 emissions.*

5.34 *Furthermore, as mentioned above for air quality, measures to reduce the number of people exposed to noise could result in departing aircraft increasing the angle of their ascent; if so, the increased thrust required would also increase both fuel burn and CO_2 emissions albeit when considered a % of the entire flight, the increase would be small. Such should, though, be a consideration of any future management practices.*

5.35 *Despite the identified impacts of the NAO and RD on CO_2 emissions resulting in both increases and likely decreases, overall it is felt that the additional passengers associated with the assessment case may have an overall adverse effect on carbon and climate change when compared with the future baseline. However, assuming that consideration is paid to the carbon impacts of changes in operational measures, and that in particular the NAO leads to a more efficient fleet mix, growth in carbon emissions can be managed to the extent it is likely to be insignificant. On this basis it is thought that the likelihood of meeting aviation carbon emissions reduction targets is largely unaffected by implementation of the NAO and RD. Nevertheless, it should be noted that, whilst many of the effects associated with aviation will, over time, be reversible should the operations halt, carbon emissions could take a considerable time before their effect is no longer felt, requiring climate change adaptation measures well into the future.*

Cultural heritage

5.36 *Settlements situated along flight paths in close proximity to the Airport boundary include St Margaret's, Kishane Cross, Broughan and Baskin Lane. Heritage assets located in these areas, for example St. Margaret's church, the ruins of Cloghran Church and Holy Well, are therefore likely to be overflown more often with the NAO and RD in place, given the c. 10% increase in passenger numbers in the assessment case compared to the future baseline. The EIA Report submitted by daa also identified Malahide Castle and associated assets as likely to be affected.*

5.37 *However, whilst the frequency of visual and noise disturbances may increase at these heritage sites, this is expected to occur during the late evening (23:00-00:00) and early morning (06:00-07:00) when people are less likely to be making use of these sites. Of course, increased numbers of night-flights could affect the setting of heritage sites which are particularly sensitive to overflying at night, but no such sites have been identified through the EIA Report. Furthermore, given the focus of the NAO and RD on reducing noise impacts on local residents through quieter aircraft (amongst other measures), the noise impact at cultural heritage sites on existing flight paths is likely to actually reduce during the day, both when compared to 2019 and to the future baseline.*

5.38 *Should departing aircraft increase the angle of their ascent to get them higher in the sky as quickly as is possible, designated heritage assets located within the Airport boundary (or within close proximity to the Airport boundary), may experience increased noise disturbance – though it should be noted that noise levels within the footprint of the site are already high, and many of these assets are neither visible at ground level, nor likely to be impacted by increased vibration or wake vortex issues. In contrast, heritage assets located beyond the Airport, whether in urban or rural areas, would benefit from reductions in noise disturbance in this case.*

5.39 *Given that the objective of the NAO is to reduce the number of people highly annoyed or highly sleep disturbed by aircraft noise, it is possible that aircraft could be partially re-routed to avoid the busiest areas, resulting in overflying of more rural areas. The setting of heritage assets in tranquil rural areas therefore have the potential to be impacted by this type of noise reduction measure albeit this is something that should be considered during any detailed airspace redesign that might occur as a result of a planning application for growth at the Airport.*

5.40 *With all this said and because, as stated in para 4.55 of this Report, no existing conflicts with legislative objectives governing archaeological and architectural heritage have been identified in the vicinity of the Airport, adverse impacts on designated cultural heritage assets from a 10% increase in overflying of what will need to be quieter aircraft to meet the requirements of the NAO on existing flight paths at night, are thought to be unlikely.*

5.41 *It should be noted however, that as a result of growth, there is the potential for airspace change which might mean overflying less densely populated areas where heritage assets are located. For these reasons proposals for airspace change and / or increased numbers of night-flights would need to be carefully considered as part of any future plans, programmes or projects introduced, to avoid causing new or increased impacts to heritage sites.*

Landscape and visual

5.42 *Of the designated landscapes located within a 15km radius of Dublin Airport, many are located underneath existing flight paths. However, in most cases the aircraft are sufficiently high in the sky not to cause impacts on the tranquillity of these sites, either through visual or noise disturbance. Exceptions to this include Highly Sensitive Landscapes and High Amenity Areas located directly east of the Airport at Kinsealy and Portmarnock, where noise exposure is expected to be at or above 60 dB L_{den} in the future baseline. In such areas the noise from aircraft events would be clearly distinguishable. Nevertheless, legislative objectives governing landscape and visual appearance have not been identified as being conflicted with as a result of existing aircraft operations at Dublin Airport.*

5.43 *The additional flights associated with the assessment case may cause a slight increase in visual and noise disturbances for those people using designated landscapes – particularly High Amenity Areas and Highly Sensitive Landscapes located along the coast to the east and to the far north of the Airport, however, as this will be at night (predominantly in the hours of 23:00-00:00 and 06:00-07:00), the overall impact will be negligible. Furthermore, given the focus of the NAO and RD on reducing noise impacts (e.g. through encouraging quieter aircraft or by introducing other operational measures to reduce noise), noise disturbance is likely to decrease outside of the night-time period, with the associated benefit that places become more tranquil (albeit accepting that there will be more overflying of these areas and tranquillity is not just a product of noise but also of visual stimuli).*

5.44 *If aircraft were to be re-routed to avoid the most densely populated areas in order to reduce the number of people highly annoyed or highly sleep deprived, then the associated increase in overflying of more rural areas could impact on the tranquillity of certain designated landscapes. This, however, would be a product of practices proposed by the Airport as they seek to establish an efficient approach to meeting NAO requirements. It would also likely be part of wider growth ambitions and therefore the subject of a project requiring EIA or EIA Screening that would need to consider the impact of noise management on other environmental aspects such as landscape and visual.*

5.45 *With all this said, and as with cultural heritage assets, adverse impacts on designated landscapes from a 10% increase in overflying of quieter aircraft on existing flight paths – particularly at night – are thought to be unlikely as long as their presence is considered carefully in any plans, programmes or projects to unlock future growth.*

Noise and vibration

5.46 *As stated in paras 4.73 and 4.74 of this report, the number of people exposed to average day-evening-night noise levels greater than 55 dBA $L_{den,}$ and undesirable night-time noise exposure levels above 50 dBA L_{night} related to the Airport increased substantially over the period 2011-2016, in part due to increasing activity and as a result of new development in areas surrounding the Airport increasing the local population. As reported in para 4.76, the number of people exposed to such levels has continued to rise sharply thereafter, approximately doubling between 2016-2019. A noise problem has been since been identified at Dublin Airport associated with the current planning application, for the reasons set out in para 1.7 of this report.*

5.47 *Though aircraft are expected to become quieter in the future, under the future baseline, reductions in the number of people exposed to undesirable levels of noise exposure in the vicinity of the Airport will be dependent on normal timescales for fleet upgrades. In contrast, the specific purpose of the NAO is to limit and reduce the population who may be considered highly annoyed and highly sleep disturbed, as well as the number of people exposed to aircraft noise from Dublin Airport above 55 dB L_{night} and 65 dB L_{den} compared to 2019. By introducing noise reduction measures, implementation of the NAO and RD will likely have a faster and more substantial positive impact on noise outcomes at Dublin Airport than relying on future upgrades alone. In addition, with the implementation of improved operational practices, for example aircraft taking off from Dublin Airport increasing their angle of their ascent to get higher up faster, then the emphasis of the NAO will be on ensuring that fewer people overall will be exposed to undesirable noise levels.*

5.48 *There are aspects of the assessment case that could increase noise in the vicinity of the Airport however, including the approximate 10% increase in passenger numbers compared to the future baseline. Even with a trend towards larger and quieter planes (and an overall reduction in the number of people chronically affected by noise compared to 2019), servicing an additional 4.6m passengers at night is likely to mean more ATMs, and so there will be more aircraft noise events, and the potential for increased night-time noise exposure. This is particularly the case between the hours of 23:00-00:00 and 06:00-07:00, and for locations affected by use of North Runway for landings and take-offs (although other areas will see a reduction in noise).*

5.49 *Overall, the likelihood of compliance with WHO noise guidelines as a result of implementing the NAO and RD is high, and importantly, albeit accepting that night-time noise exposure is likely to increase, greater than the likelihood of compliance without the NAO.*

Population and health

5.50 *The FDP (2017) acknowledges that air, light and noise pollution associated with the Airport can have adverse effects on the health and amenity of the local population, whilst being overflown can impact on privacy. At the same time, Airport operations provide the local and wider population with employment and travel opportunities. The NAO and RD could therefore affect the local population in a myriad of ways.*

5.51 *However, the greatest effect of the Airport's current operations on local residents, and the effect that the NAO and RD specifically seek to address, is noise, and particularly the health impacts of noise. As reported in para 4.88 of this Report, data shows that 115,738 people were highly annoyed by noise from Dublin airport in 2019, and 47,045 people were considered highly sleep disturbed (based on exposure thresholds of ≥45 db L_{den} and ≥40 dB L_{night} respectively). By having to "limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night" as its objective, and "reducing the number of people chronically affected by noise in 2030 by 30% when compared to 2019" as one of its outcomes, the NAO will ensure positive impacts on the health of the local population compared to the 2019 situation.*

5.52 *However, given the c. 10% increase in passenger numbers by 2040 associated with the assessment case, and the fact that the associated additional flights are expected to occur in the late evening (23:00-00:00) and early morning (06:00-07:00), more people overall will be exposed to undesirable night-time noise levels when compared to the future baseline. The level of noise, and thus the number of people who are highly sleep deprived, depends upon the specific location, however, as there are expected to be improvements in some locations (e.g. at Ratoath and Dunshaughnlin to the west of the Airport), and deteriorations in others, affecting in particular areas overflown by aircraft departing North Runway, such as Ridgewood, Kilbrook, The Ward Cross, Coolquay, Mooreside and Rathlittle.*

5.53 *Human health may also be negatively impacted by the NAO if changes to aircraft operations (such as increasing the angle of ascent) increase fuel burn and therefore the level of air pollutants emitted. Furthermore, additional airborne emissions could also result from the ~10% passenger growth associated with the assessment case compared to the future baseline. This is only likely to affect residents of settlements located directly under the flightpath within 2km of the Airport, however, and in these areas air quality is currently known to be good.*

5.54 *To conclude, as stated above, WHO noise guidelines are more likely to be met with the NAO in place than without it, however the assessment case does allow for additional night flights to occur, which could adversely impact on people's health. Meanwhile, air pollution impacts on people's health in the immediate vicinity of the Airport may worsen, but given the generally good air quality at present in the area, overall, the likelihood of compliance with air quality legislation as a result of implementing the NAO and RD is also high. Overall, impacts on human*

health as a result of implementing an NAO (and RD) which specifically targets health outcome improvements, but at the same time facilitates additional night flights, is expected to be mixed.

Alternatives Assessment and Comparison

5.55 *The likely impacts of the reasonable alternatives for the NAO and RD on each of the environmental aspects are summarised graphically in Tables 5.1 and 5.2. The key used for this assessment is repeated below:*

Key to likely significant effects	
Potential for significant positive effects	++
Potential for minor positive effects	+
Negligible or no effect	*0*
Potential for both positive and negative effects	+/-
Potential for minor negative effects	-
Potential for significant negative effects	- -

Table 5.1: Summary assessment of the alternative options for the NAO

	Environmental aspects						
NAO alternative being assessed	*Air Quality (compliance with legislation and WHO guidelines)*	*Biodiversity (effects on SPAs, SACs and pNHAs)*	*Carbon and Climate Change (meeting aviation carbon emissions reduction targets)*	*Cultural Heritage (effects on designated heritage assets)*	*Landscape and Visual (effects on designated landscapes)*	*Noise and Vibration (compliance with WHO guidelines)*	*Population and Health (compliance with air quality legislation and WHO guidelines)*
1) As described in Table 2.1, an NAO which seeks to "Limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, particularly at night, as part of the sustainable development of Dublin Airport", with specific outcomes set for 2030, 2035 and 2040.	+/-	+/-	-	0	0	+/-	+/-
2) An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, but does not set specific outcome reductions (as per the planning application).	-	-	-	0	0	-	-
3) An NAO which seeks to limit the long-term adverse effects of aircraft noise on health and quality of life, but not reduce it.	-	-	-	0	0	-	-
4) An NAO which seeks to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, with a specific outcome set only for 2040.	+/-	-	-	0	0	+/-	+/-

5) An NAO which seeks to limit and reduce aircraft noise, but does not link this to health outcomes.	+/-	+/-	-	0	0	+/-	-

Table 5.2: Summary assessment of the alternative options for the RD

	Environmental aspects						
RD alternative being assessed	*Air Quality (compliance with legislation and WHO guidelines)*	*Biodiversity (effects on SPAs, SACs and pNHAs)*	*Carbon and Climate Change (meeting aviation carbon emissions reduction targets)*	*Cultural Heritage (effects on designated heritage assets)*	*Landscape and Visual (effects on designated landscapes)*	*Noise and Vibration (compliance with WHO guidelines)*	*Population and Health (compliance with air quality legislation and WHO guidelines)*
Alternatives to Condition 5 (i.e. a limit of 65 flights per night between the hours of 23:00 and 07:00)							
i) The change to Condition 5 requested by daa, which would remove the numerical cap on the number of night-time flights and replace it with an annual night-time noise quota of 7990 between the hours of 23:30 and 06:00 (i.e. with no constraints during 23:00 to 23:30 and 06:00 to 07:00).	-	-	-	0	0	- -	- -
ii) A change to Condition 5 that mimics the daa request, but with additional noise-related limits on the types of aircraft permitted to operate at night.	-	0	-	0	0	-	-

iii) A change to Condition 5 that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00.	*0*	-	-	*0*	*0*	-	-
iv) The change to Condition 5 set out in Table 2.2, i.e. that subjects the Airport to a noise quota with an annual limit of 16,260 between the night-time hours of 23:00 and 07:00 with noise-related limits on the aircraft permitted to operate at night.	*0*	*0*	-	*0*	*0*	*0*	*0*
Alternatives to Condition 3(d) (i.e. prohibiting the use of North Runway for landings and take-offs between the hours of 23:00 and 07:00)							
v) No change to Condition 3(d), but assuming the Condition 5 restriction of 65 flights per night is lifted. This is runway use pattern P11.	*0*	*0*	-	*0*	*0*	-	-
vi) The revision to Condition 3(d) requested by daa and as set out in Table 2.2, which prohibits the use of North Runway for landings and take-offs only between the hours of 00:00 and 06:00, enabling use of both runways during 23:00 to 00:00 and 06:00 to 07:00 (with all landings to be from the east, and all take-offs to the west). This is runway use pattern P02.	*0*	+/-	-	*0*	*0*	+/-	+/-
vii) As per runway use pattern P02, but with variations to the timings, e.g. preventing the use of North Runway between 23:00 and 06:00, or between 23:30 and 05:00. These are runway use patterns P03, P07, P12 and P13 (night-time hours vary across the patterns, though all are shorter than the Condition 3(d) hours of 23:00 to 07:00).	*0*	+/-	-	*0*	*0*	+/-	+/-

viii) Removal of the Condition 3(d) prohibition on the use of North Runway for landings and take-offs at night, enabling both runways to be used. These are runway use patterns P04, P05, P06, P08, P09 and P10, which differ from each other in terms of the factors that determine which of the two runways is used, e.g. depending on destination or using one for arrivals and the other for departures, or whether daa is free to choose (though all effectively result in both runways having roughly equal night-time traffic).	*0*	*+/-*	*-*	*0*	*0*	*+/-*	*+/-*
Other alternative measures being considered by ANCA to address noise impacts associated with the daa planning application							
ix) As proposed by daa, a voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour, and for all homes experiencing a 'very significant' effect in the first full year when the Relevant Action comes into operation (i.e. 2022).	*0*	*0*	*0*	*0*	*0*	*+*	*+*
x) As set out in Table 2.2, a voluntary residential sound insulation grant scheme for residential dwellings for all homes forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour and for all those experiencing a 'very significant' effect in 2025 (i.e. the worst year for noise).	*0*	*0*	*0*	*0*	*0*	*+*	*++*

Air quality

5.56 *NAO Alternatives 4 and 5 are expected to have similar impacts on air quality to NAO Alternative 1 (described in the preceding section), although the longer term target of Alternative 4 means that improvements in the aircraft fleet mix (which benefit air quality as well as noise) could take longer to be introduced. In contrast, with no specific noise outcome reduction targets, Alternatives 2 and 3 would be likely to result in further increases in passenger numbers beyond 2030 (subject to planning permission), meaning that settlements located directly under the flightpath within 2km of the Airport could see air pollution increase yet further.*

5.57 *Comparing the different RD alternatives, impacts on air quality are expected to be negligible for all alternatives, with the exception of Alternatives (i) and (ii) to Condition 5. The change to Condition 5 requested by daa would mean no specific limits would apply (either in terms of ATMs or noise) during the hours of 23:00 to 23:30 and 06:00 to 07:00, potentially resulting in a large increase in flights during this time (with associated decreases at other times, e.g. during the day, to account for any passenger cap in place). Given that the number of ATMs across the whole night period is expected to increase with Condition 5 lifted, operating as many of these as possible during the hours of 23:00 to 23:30 and 06:00 to 07:00 would lead to a much greater proportional increase at this time. The concentration of air pollutants under the flight paths within 2km of Dublin Airport during the night-time shoulder period could therefore be much higher than at other times, and so an adverse effect has been predicted for these alternatives. Nevertheless, the likelihood of compliance with air quality legislation overall remains high.*

Biodiversity

5.58 *In terms of the different NAO alternatives, NAO Alternative 5 would be expected to have similar impacts on biodiversity to NAO Alternative 1 (described in the preceding section). In contrast, with Alternatives 2 and 3 having no specific noise outcome reduction targets, disturbance of birds at designated nature conservation sites would continue rather than decline. Furthermore, these alternatives would be likely to result in further increases in passenger numbers beyond 2030 (subject to planning permission), which could increase noise and visual disturbance effects on these sites and their designated species. The longer term target of Alternative 4 also means that improvements in the aircraft fleet mix could take longer to be introduced, which means that noisier aircraft could be in operation for longer.*

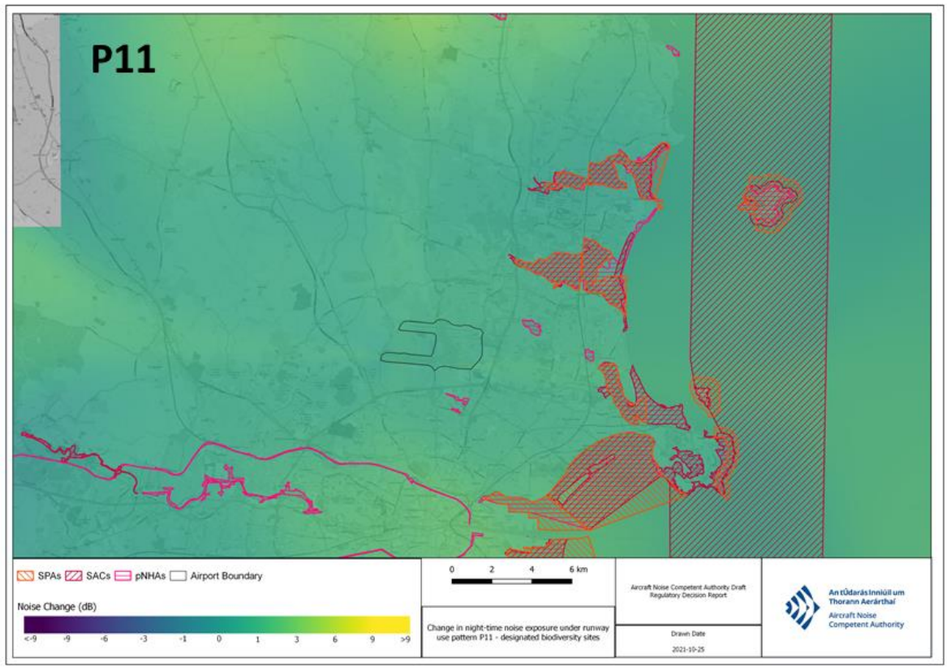
5.59 *There are discernible differences in the likely impacts on biodiversity of the different RD alternatives (with the exception of the residential sound insulation grant scheme alternatives which have no impact on biodiversity). Of the alternatives to Condition 5, whilst the effects of Alternatives (ii) and (iv) are expected to be negligible, it is considered that RD Alternatives (i) and (iii) could have a minor adverse effect on protected sites and species located under the*

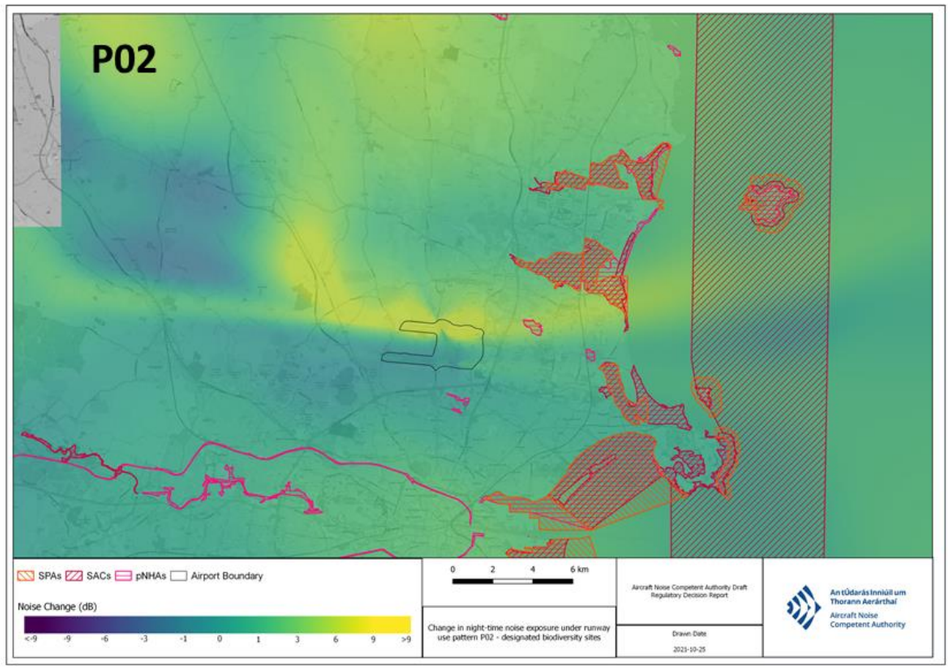
flight paths. This is because these alternatives require no noise-related limits on the types of aircraft permitted to operate at night, meaning that daa could choose to operate its most noisy aircraft at these times, at a time when background noise levels are lowest. It is likely that these loud noise episodes could be considered isolated rather than continuous, and so it is less likely that birds and other species would become habituated to them.

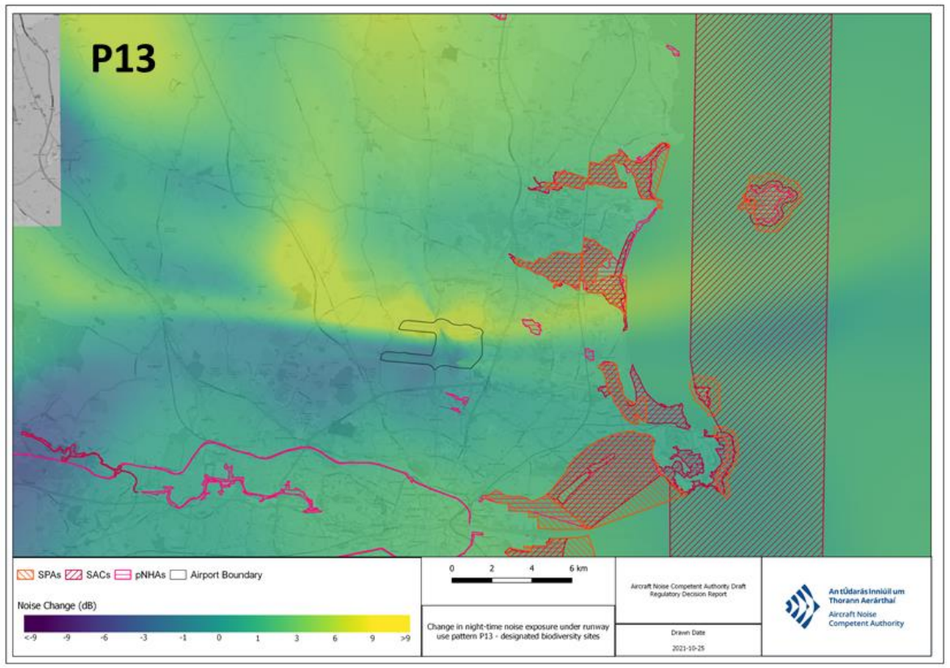
5.60 *In terms of the alternatives to Condition 3(d), Alternative (v) (i.e. runway use pattern P11) is likely to have a negligible effect on protected sites and species, as with aircraft expected to operate as currently (with just the increase in night flights associated with lifting Condition 5) the overall level of noise will increase very slightly everywhere (i.e. for all of the designated sites within the ZoI), as shown in Figure 5.1. In contrast, the changes to operations associated with each of the other runway use patterns result in a much greater level of noise (of up to 9.5 dB) occurring along the descent and take-off routes of the North Runway as night-time flights begin to operate from here, and a potential reduction in noise (of up to 1.5 dB) along the descent and take-off routes of the South Runway as some of these flights are moved to the North Runway. These are also shown in Figure 5.1, with runway use pattern P02 shown for Alternative (vi), and Alternatives (vii) and (viii) represented by runway use patterns P13 and P04 respectively.*

5.61 *In addition to mixed impacts on biodiversity in general, for Alternatives (vi) and (vii) there is likely to be a minor adverse effect on designated sites, with increases in night-time noise levels over Malahide Estuary SPA / SAC and Feltrim Hill pNHA being most pronounced, at around 7 dB for each of the associated runway use patterns (represented by P02 and P13). This is due to the North Runway being used for landings from the east during the shoulder periods of 23:00 to 00:00 and 06:00 to 07:00 (along with the South Runway throughout the night). However, for the reasons discussed previously, these increases in night-time noise levels are not expected to have significant effects on these sites.*

5.62 *In contrast, Alternative (viii) removes the time-based prohibition on the use of North Runway for landings and take-offs at night entirely, enabling both runways to be used throughout the night. This would result in even more night-time landings from, and take-offs to, the east at North Runway, with a reduction in take-offs and landings to the east of South Runway. The effect of this is most pronounced for runway use pattern P04, which shows a likely 10 dB increase in noise over Malahide Estuary SPA / SAC and 14 dB over Feltrim Hill pNHA, and a likely 6 dB decrease in noise over Baldoyle Bay SPA / SAC / pNHA and Ireland's Eye SPA / SAC / pNHA. Again, these impacts on biodiversity are not thought to be significant.*







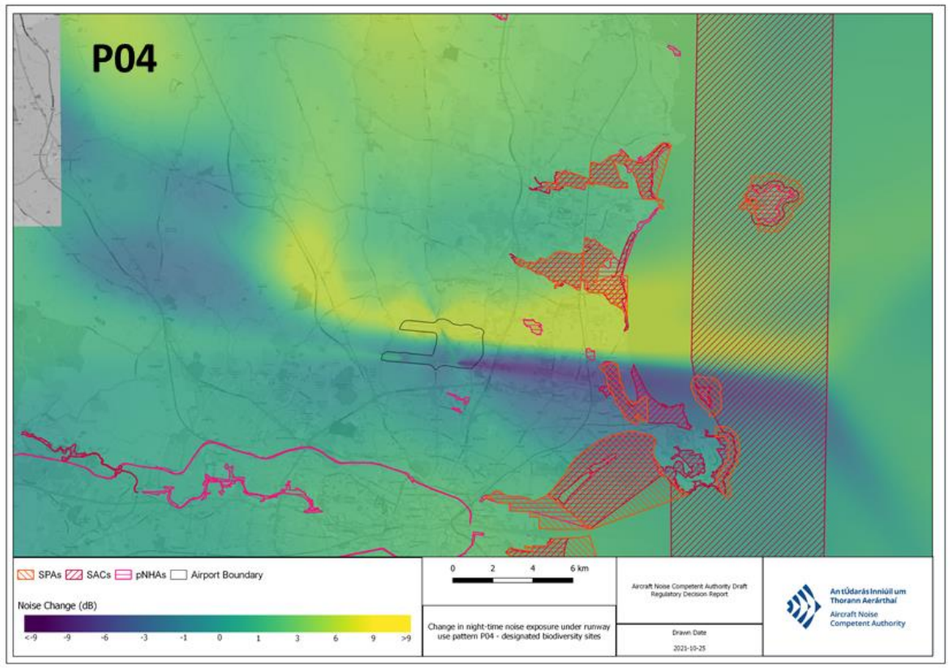


Figure 5.1 – Change in night-time noise exposure of RD Alternatives (v), (vi), (vii) and (viii) (represented by runway use patterns P11, P02, P13 and P04) at designated nature conservation sites in the vicinity of Dublin Airport

Carbon and climate change

5.63 *Given the overall increase in passenger numbers and associated flights with the assessment case compared to the future baseline, the impact of all five NAO alternatives is expected to be negative. However, as for Alternative 1 (described in the preceding section), it is expected that the effects of Alternative 5 on carbon and climate change can also be managed to the extent they are insignificant. The longer term target of Alternative 4 means that improvements in the aircraft fleet mix (which benefit CO_2 emissions as well as noise) could take longer to be introduced, but overall the impact will be similar. In contrast, with no specific noise outcome reduction targets, Alternatives 2 and 3 would be likely to result in further increases in passenger numbers beyond 2030, with an associated increase in CO_2 emissions.*

5.64 *In terms of the RD alternatives, all of the alternatives to Conditions 3(d) and 5 of the Dublin Airport North Runway Planning Permission are expected to have the same minor adverse impact on carbon and climate change, with the residential sound insulation grant scheme alternatives having no impact.*

Cultural heritage

5.65 *Given the overall increase in passenger numbers and associated flights with the assessment case compared to the future baseline will be at night, the impact of all five NAO alternatives on visual and noise disturbance at cultural heritage sites in the vicinity of Dublin Airport is expected to be negligible. Alternatives 2 and 3 would be likely to result in further increases in passenger numbers beyond 2030 (subject to planning permission), but these are similarly unlikely to impact on cultural heritage.*

5.66 *In terms of the RD alternatives, though night-time noise levels will increase particularly for cultural heritage assets located east and west of North Runway (shown for runway use pattern P02, Alternative vi, in Figure 5.2 below), given that people are unlikely to be using these sites at night, the overall impact on designated heritage assets and their settings is expected to be negligible regardless of the alternative considered.*

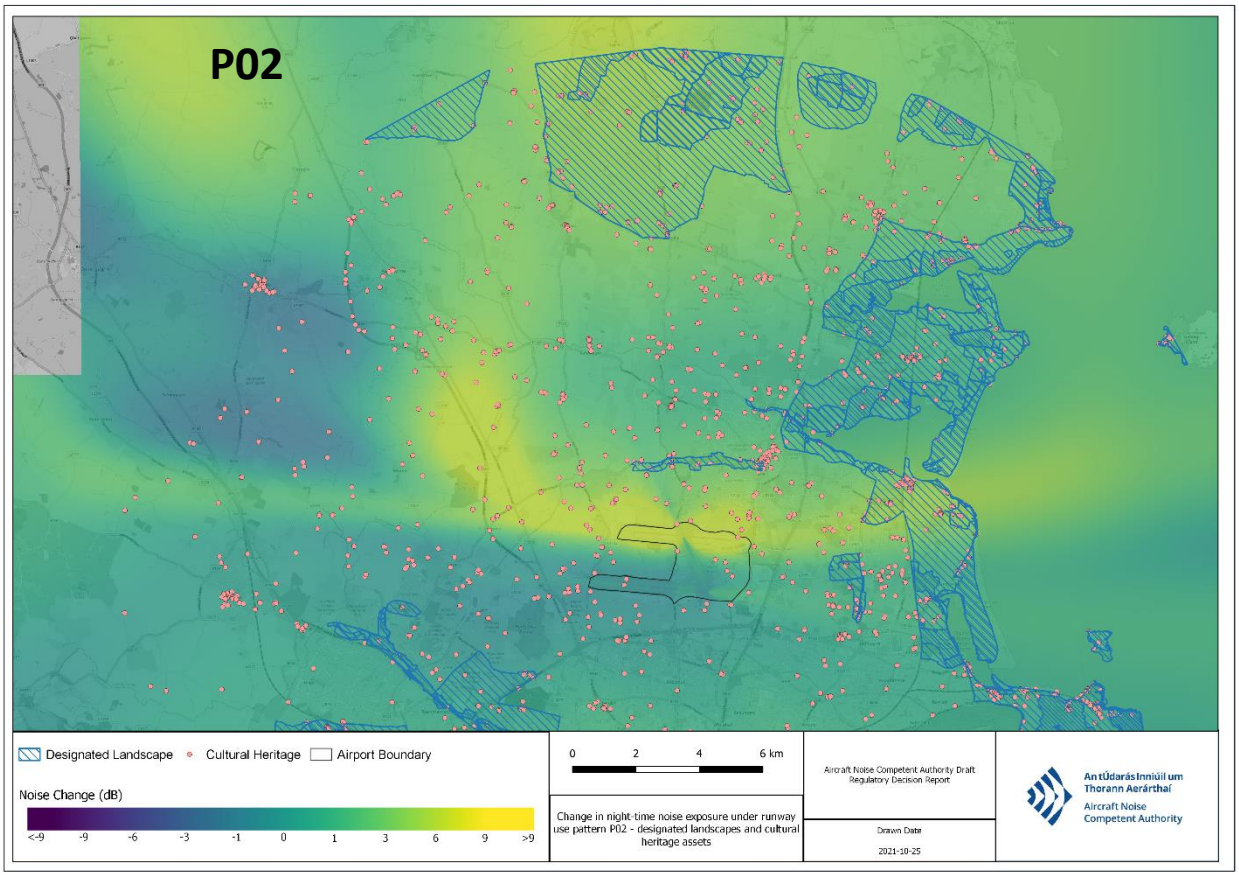


Figure 5.2 – Change in night-time noise exposure of RD Alternative (vi) (runway use pattern P02) on cultural heritage assets and designated landscapes in the vicinity of Dublin Airport

Landscape and visual

5.67 *In terms of NAO alternatives, as was the case for cultural heritage, the impact of all five NAO alternatives on visual and noise disturbance at designated landscapes in the vicinity of Dublin Airport is expected to be negligible.*

5.68 *In terms of the RD alternatives, though night-time noise levels will increase particularly for designated landscapes located along the coast to the east and to the far north of the Airport (by 7dB and 8dB respectively, shown for runway use pattern P02, Alternative vi, in Figure 5.2 above), given that people are unlikely to be using these sites at night, the overall impact on designated landscapes is expected to be negligible regardless of the alternative considered.*

Noise and vibration

5.69 *NAO Alternatives 4 and 5 are expected to have similar impacts on noise to NAO Alternative 1 (described in the preceding section), although the longer term target of Alternative 4 means that improvements in the aircraft fleet mix could take longer to be introduced, and so noise effects could get worse before they get better. There is also a risk that the delayed effort means*

the likelihood of daa meeting the reduction targets also reduces, though the overall effect of Alternative 4 is still expected to be mixed. In sharp contrast, with no specific noise outcome reduction targets, WHO guideline values would be unlikely to be met with Alternatives 2 or 3. Furthermore, these alternatives would be likely to result in further increases in passenger numbers beyond 2030 (subject to planning permission), meaning that areas located directly under the flightpath could experience noise more frequently.

5.70 *In terms of the RD alternatives, these are expected to have varying impacts on night-time noise. Of the alternatives to Condition 5 of the Dublin Airport North Runway Planning Permission, Alternative (i), as requested by daa, is considered likely to have significant adverse effects on noise. This is because the annual night-time noise quota proposed to replace the numerical cap on the number of night-time flights does not include the period 23:00 to 23:30 or 06:00 to 07:00, meaning that daa could choose operate as many of its additional night-time flights during this period as possible. Furthermore, this alternative does not impose any noise-related limits on the types of aircraft permitted to operate at night, meaning that particularly noisy aircraft may be flown throughout the night. The impacts of Alternatives (ii) and (iii) are also expected to be negative, though not significantly so, as the former does introduce noise-related limits on the types of aircraft permitted to operate at night, whilst the latter ensures that the noise quota operates for the full night-time period of 23:00-07:00. By requiring both noise-related limits on the aircraft permitted to operate at night and a noise quota scheme extending for the full 8-hour night-time period, Alternative (iv), as proposed through the RD, is expected to be able to reduce the additional noise impacts to a minimum.*

5.71 *In terms of the alternatives to Condition 3(d), Alternative (v) (i.e. runway use pattern P11) is likely to have a minor adverse effect on night-time noise levels, as with aircraft expected to operate as currently the overall level of noise will increase slightly everywhere, as can be seen in Figure 5.1 above. In contrast, the changes to operations associated with each of the other runway use patterns result in a much greater increase in noise (of up to 9.5 dB for P02) occurring along the descent and take-off routes of the North Runway as night-time flights begin to operate from here, and a potential reduction in noise (of up to 1.5 dB for P02) along the descent and take-off routes of the South Runway (e.g. at Ratoath and Dunshaughnlin to the far west) as some of these flights are moved to the North Runway. The change in noise for runway use pattern P02 is shown in Figure 5.3 below, with the addition of contours for 55 dB L_{night} and 40 dB L_{night}. The change in noise for the other alternatives can be seen in Figure 5.1 above, with Alternatives (vii) and (viii) represented by runway use patterns P13 and P04 respectively. Given that all of the runway use patterns involve the same number of night-time ATMs, the overall noise level will be the same, just distributed differently.*

5.72 *Finally, in terms of the alternative sound insulation grant schemes, these are both expected to have a positive effect on noise levels for residential dwellings forecast in 2025 to be exposed*

to aircraft noise at or above 55dB L_{night} contour, provided that affected residents take-up the voluntary grant and insulate their homes.

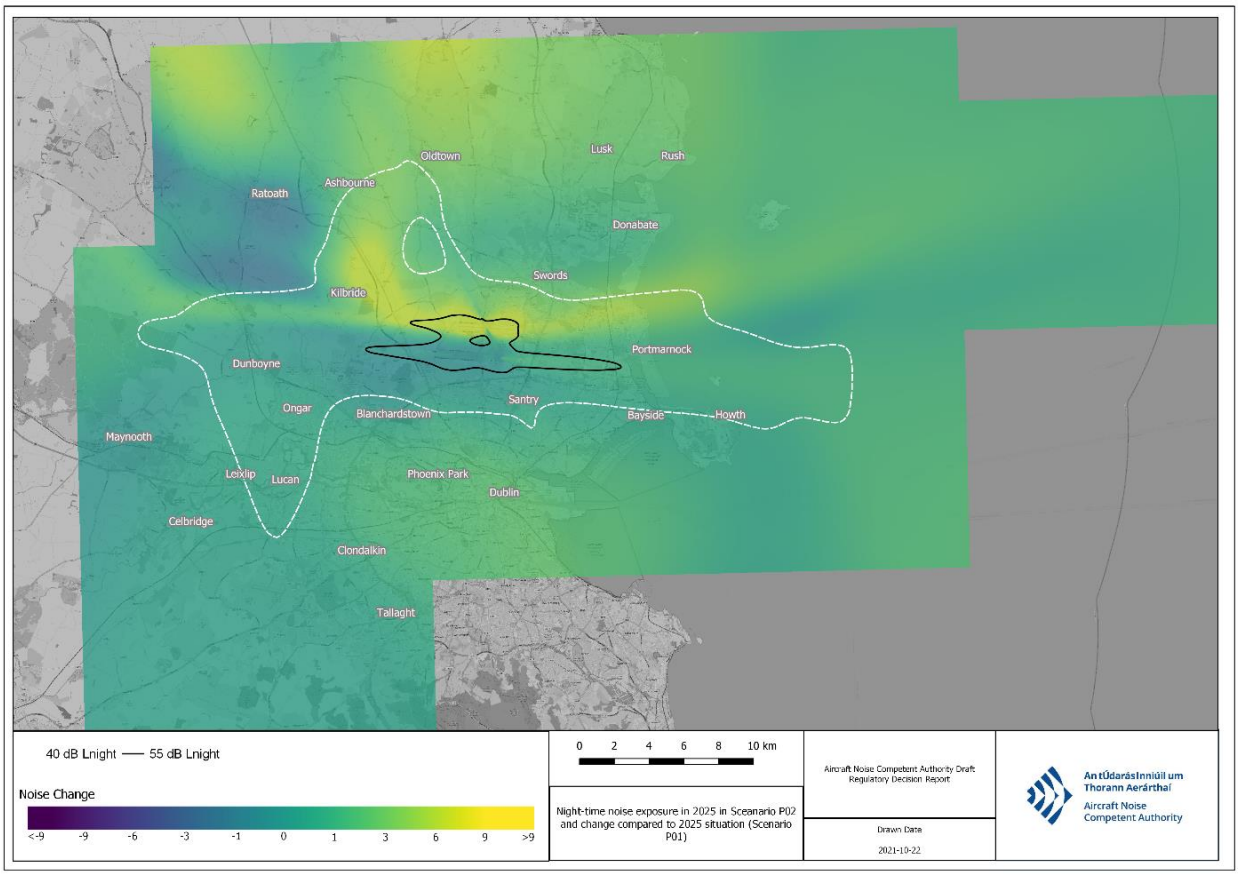


Figure 5.3 – Change in night-time noise exposure of RD Alternative (vi) (runway use pattern P02) along with 55 dB L_{night} and 40 dB L_{night} noise contours

Population and health

5.73 *NAO Alternative 4 would be expected to have similar impacts on human health to NAO Alternative 1 (described in the preceding section), although the longer term target of Alternative 4 means that improvements in the aircraft fleet mix could take longer to be introduced, and so noise and air quality effects (and thus health effects) could get worse before they get better. In contrast, with no specific outcome reduction targets for noise, health or quality of life, WHO guideline values would be unlikely to be met with Alternatives 2 or 3. Furthermore, these alternatives would be likely to result in further increases in passenger numbers beyond 2030 (subject to planning permission), meaning that dwellings located directly under the flightpath could experience noise more frequently. In this case, Alternative 5 would also be expected to have an adverse effect on human health, as though it includes targets for the reduction of noise in the vicinity of the Airport, it does not account for where*

people are located and so would not seek to reduce exposure of dwellings. The number of people exposed to sleep disturbance could therefore increase.

5.74 *As for noise, the RD alternatives are expected to have varying impacts on the health of the local population. Alternative (i), as requested by daa, is considered likely to have significant adverse effects on health, as there would be no numerical or noise-related restrictions imposed on operations during the hours 23:00 to 23:30 or 06:00 to 07:00, meaning that daa could choose operate as many of its additional night-time flights during this period as possible. The lack of noise-related limits on the types of aircraft permitted to operate at night in this alternative is also a concern. The impacts of Alternatives (ii) and (iii) on health are also expected to be negative, though not significantly so, for the reasons outlined as for noise, above. Alternative (iv), as proposed through the RD, is expected to be able to reduce the additional noise impacts on people's health to a minimum, however, by requiring both noise-related limits on the aircraft permitted to operate at night and a noise quota scheme extending for the full 8-hour night-time period. This alternative therefore has the benefit of providing certainty to residents affected by flights from North Runway, with guaranteed respite from noise during the full 8-hour night period.*

5.75 *Again, as for noise impacts, Alternative (v) (i.e. runway use pattern P11) is likely to have a minor adverse effect on the health of everyone currently affected by night-time noise, as levels would increase for everyone due to the additional night-time flights. In contrast, the changes to operations associated with each of the other runway use patterns result in a much greater increase noise (of up to 9.5 dB for P02) occurring along the descent and take-off routes of the North Runway (affecting in particular areas such as Ridgewood, Kilbrook, The Ward Cross, Coolquay, Mooreside and Rathlittle) as night-time flights begin to operate from here, putting the health of a small proportion of residents at risk. These areas can be seen in Figures 5.1 and 5.3 above, with runway use pattern P02 shown for Alternative (vi), and Alternatives (vii) and (viii) represented by runway use patterns P13 and P04 respectively. There is also potential for a reduction in noise (of up to 1.5 dB for P02) along the descent and take-off routes of the South Runway as some of these flights are moved to the North Runway, which could benefit the health of people residing in these areas (e.g. at Ratoath and Dunshaughnlin to the far west).*

5.76 *Finally, in terms of the alternative sound insulation grant schemes, Alternative (ix), as proposed by daa, is expected to have a positive effect on the health of people residing in dwellings forecast in 2025 to be exposed to aircraft noise at or above 55dB L_{night} contour, provided that affected residents take-up the voluntary grant and insulate their homes. Alternative (x), as proposed through the RD, is expected to have a significant positive effect on human health (again assuming that the voluntary scheme is taken up), as it is additionally applicable to all those dwellings experiencing a 'very significant' effect in 2025 (i.e. the worst year for noise), whereas alternative (ix) only includes homes experiencing a 'very significant' effect in 2022, when the number of ATMs, and thus noise, is expected to be lower.*

Interrelationships and Cumulative Effects

5.77 Cumulative effects result from a combination of two or more individual effects on a receptor (or in this case, environmental aspect). The Guidance on Cumulative Effects Assessment (EPA, 2020) states that such effects can occur as a result of plans, programmes, projects and other actions in the past, present and the reasonably foreseeable future. However, as stated in para 2.30 of this report, the NAO and RD are complementary to and in accordance with the existing plans listed in para 2.16, and not in any way additional, other than providing more detail on aircraft noise reduction measures than the other plans, particularly to deal with growth at night. For these reasons, there is no need for this SEA to consider cumulative effects with actions contained within other plans, programmes, projects and actions.

5.78 In terms of cumulative effects on environmental aspects arising from different actions within the NAO and RD, it is worth reiterating the causes of potential adverse effects reported in the above assessments.

5.79 The main cause of adverse effects associated with the NAO and RD is that, compared to the future baseline, the assessment case includes a ~10% increase in passenger numbers (of 4.6 mppa by 2040) associated with the daa planning application; all of which are expected to occur at night. This is likely to cause minor negative effects on air quality (specifically for settlements located directly under the flightpaths within 2km of the Airport); biodiversity (due to more overflying of protected sites and species, though existing research suggests that the birds for which nearby Natura 2000 sites are designated are habituated to overflying); carbon and climate change; noise and vibration; and population and health (due to more frequent noise episodes at night impacting on sleep).

5.80 Though considered for the NAO and RD together, this growth in night-time passenger numbers relates specifically by the lifting of Condition 5 of the Dublin Airport North Runway Planning Permission (i.e. the numerical cap on night flights), and replacing it with a noise quota. The growth is therefore facilitated by the RD (through its response to the daa planning application to amend Condition 5).Aircraft noise resulting from growth is managed by the NAO ensuring it is sustainable and meets the stated noise and health outcomes. The growth of 4.6 mppa discussed in this assessment therefore applies to both the NAO and RD together, and so no cumulative effects between the NAO and RD will occur in relation to passenger growth.

5.81 The other specified components of the NAO seek to limit and reduce the long-term adverse effects of aircraft noise on health and quality of life, including through encouraging a switch to quieter and more efficient aircraft, and these are expected to have beneficial effects on each of these environmental aspects. However, though not within ANCA's remit, daa could choose to deliver the expected outcomes of the NAO (i.e. reductions in the number of people adversely affected by noise) by increasing the angle of ascent to get higher in the air more quickly, and/or changing airspace design to overfly less densely populated areas. Though these latter effects

are indirect and uncertain, they could result in additional adverse impacts on air quality (though emissions from additional burnt fuel would affect a smaller area); biodiversity (through overflying of sites not previously overflown); and carbon and climate change.

5.82 *The alternatives assessment for the RD did highlight other potential adverse impacts on the environmental aspects which are not covered by the NAO, however; though only those relating to the proposed RD alternative (as set out in Table 2.2) are discussed here. Specifically, amending Condition 3(d) to enable use of North Runway during the period 23:00 to 00:00 and 06:00 to 07:00, with all landings to be from the east, and all take-offs to the west (i.e. runway use pattern P02) is expected to have additional minor negative effects on biodiversity (due to the increase in noise over Malahide Estuary SPA / SAC and Feltrim Hill pNHA), and population and health (due to the increase in noise over settlements including Ridgewood, Kilbrook, The Ward Cross, Coolquay, Mooreside and Rathlittle). Having said that, it should be noted that the alternative runway use patterns simply redistribute spatially the noise associated with the lifting of Condition 5. Runway use pattern P02 therefore, whilst causing an increase in noise for the people and species residing in the aforementioned locations, also causes a decrease in noise over Baldoyle Bay SPA / SAC / pNHA, Ireland's Eye SPA / SAC / pNHA, and settlements such as Ratoath and Dunshaughnlin.*

5.83 *Finally, there are a number of interrelationships between the environmental aspects that have been addressed throughout the assessment of the NAO and RD. For example, a deterioration in air quality has the potential to lead to impacts on biodiversity (especially pollution-sensitive habitats associated with SACs) and human health. For the NAO and RD, this is only relevant for locations directly beneath the flight paths within 2km of the Airport, and thus air pollution is not considered to be an issue for biodiversity or human health in this case. An increase in noise also has the potential to lead to impacts on several of the other environmental aspects, as has been the focus of this assessment. For the NAO and RD, this increase in noise is expected to occur only at night, and so impacts on human health are of greatest concern; impacts on biodiversity have been deemed to be insignificant; whilst impacts on the use of cultural heritage and landscape assets and their settings are considered negligible.*

Alternatives Selection and Documentation

5.84 *Through application of the Balanced Approach, ANCA has identified available measures to reduce the identified noise impact, and has evaluated these in terms of their effectiveness (in terms of both noise and cost), and their impact on environmental sustainability (including interdependencies between noise and emissions). Through working closely with ANCA, the SEA process has fed into the development and selection of alternatives for both the NAO and the RD, ensuring that each alternative put forward for assessment is reasonable and realistic. The SEA alternatives assessment itself has enabled ANCA to understand the implications of the different noise measures for each of the environmental aspects (including particularly air*

quality, biodiversity, climate change, cultural heritage and landscape), ensuring that these are taken into account alongside considerations noise, health and cost considerations.

5.85 *The assessment of the NAO alternatives revealed that the policy objective and outcomes proposed by daa through the planning application (i.e. Alternative (2)) would be likely to have an adverse effect on most of the environmental aspects, due to its lack of specific outcome reductions. Indeed, with no measurable requirement to reduce noise or health impacts beyond current levels, it was felt that WHO guideline values for noise and health would unlikely be met, and furthermore that passenger numbers and ATMs may increase further after 2030 (subject to planning permission), putting air quality, biodiversity and climate at additional risk. Alternative (3) would be similarly adverse, whilst the very long-term targets of Alternative (4) would make them difficult to achieve, and would likely result in impacts for the majority of environmental aspects worsening before they get better. Alternative (5) would be disadvantageous to human health, though the effects on environmental aspects would be the same as Alternative (1), i.e. mixed minor adverse and minor beneficial.*

5.86 *The best realistic alternative was therefore considered to be Alternative (1), with a specific short-term, health-based outcome reduction of 30% set for 2030 (mimicking EC guidance), with further, more stringent outcome reductions of 40% and 50% set for 2035 and 2040 respectively. These latter outcome reductions go beyond EC guidance, yet are considered to be achievable, and will incentivise further initiatives and measures to reduce noise at Dublin Airport (including efficiency measures that will have broader environmental benefits). The best NAO alternative in SEA terms is therefore also the preferred alternative identified by ANCA through application of the balanced approach.*

5.87 *The assessment of the RD alternatives similarly revealed that the proposed amendments to Condition 5 put forward by daa through the planning application (i.e. Alternative (i)) would be likely to have an adverse effect on most of the environmental aspects, due to its lack of operational constraints during the period 23:00 to 23:30 and 06:00 to 07:00. In particular, their proposal does not cover the same 8-hour night-time period as defined in EU noise policy and against which the NAO has been set. Alternatives (ii) and (iii) would be better for biodiversity and air quality respectively (with impacts reduced to negligible levels), whilst both would offer a reduction in adverse effects on noise and health compared to Alternative (i). The alternative with the most positive impacts (or rather, the least detrimental) across the environmental aspects is Alternative (iv), as not only would the proposed noise quota operate throughout the 8 hours of the night, but there would be additional noise-related limits on the types of aircraft permitted to operate at night. The preferred alternative to Condition 5 identified by ANCA is therefore also the best alternative in SEA terms.*

5.88 *The alternatives to Condition 3(d) are represented in terms of runway use patterns, and all involve the lifting of the Condition 5 restriction on numbers of flights at night. Alternative (v) (i.e.*

runway use pattern P11) simply restates the existing Condition 3(d), which would result in all of the additional night-time ATMs associated with lifting Condition 5 occurring on the South Runway. As a result, all areas currently affected by night-time ATMs and associated aircraft noise and health impacts would experience a proportional increase in these effects with other environmental aspects experiencing negligible effects. However, ANCA's review of the information provided in the planning application indicates that overall health outcomes are likely to improve by using both the north and South Runways at night. ANCA also recognises daa's view that use of the North Runway is necessary as part of meeting demand. It is concluded by ANCA that Condition 3(d) should be revised alongside replacing Condition 5.

5.89 *Revising Condition 3(d) effectively means prescribing a form of night-time runway preference or prescribing scheduled use of the north or South Runways over a certain period of the night. All of the alternative runway use patterns considered by ANCA involve the same amount of noise overall, just redistributed depending on which runway is being used and how. Consequently, it is not possible to state which of the runway use patterns is better or worse overall, as all will involve noise improvements (and thus human health and biodiversity improvements) in some locations, and deteriorations in others. Nevertheless, as the runway use patterns associated with Alternatives (vi) and (vii) involve revisions to the timings of North Runway restrictions, whereas the runway use patterns associated with Alternative (viii) involves the removal of North Runway timing restrictions, the former could be said to provide receptors potentially affected by aircraft noise with more certainty over respite from noise.*

5.90 *Alternative (vi) (i.e. runway use pattern 2) is the proposal put forward by daa in the planning application, and is also the preferred alternative of ANCA. This is because it permits the operation of the runways in a manner which reduces the impacts on those newly affected by aircraft night-time noise, whilst providing certainty to communities as to how they will be affected by night-time operations from the North Runway, while also providing continuity with the day-time operating pattern set down by Conditions 3(a)-(c) of the North Runway Planning Permission. The SEA has identified the impact of Alternative (vi) on environmental aspects to be generally very similar to that of the other runway use patterns/Alternatives, and thus there is no preference from an environmental perspective.*

5.91 *Finally, the two alternatives considered by ANCA in relation to the proposed voluntary residential sound insulation grant scheme for residential dwellings differ only in their impacts on human health, with Alternative (x), as proposed by ANCA, being more beneficial than Alternative (ix) proposed by daa. There are no other impacts from an environmental perspective, and so Alternative (x) is the preferred alternative.*

6 Measures to Prevent, Reduce, Offset and Monitor Significant Environmental Effects

6.1 The assessment of the NAO and RD revealed that there would be no significant adverse environmental effects as a result of implementing the preferred alternatives, i.e. Alternative (1) for the NAO and Alternatives (iv), (vi) and (x) for the RD. ANCA will monitor the effectiveness of these measures with regard noise through the requirements of the NAO.

Measures to Prevent, Reduce and Offset Significant Adverse Effects

6.2 By its very nature, implementation of the NAO is to ensure that any growth or other changes at Dublin Airport that have the potential to affect the noise environment (specifically by causing a noise problem) do so in a managed way and in line with specific limits that have been set. By its very nature, this will mean that there will be a drive toward having both a most efficient fleet and efficient operations at the Airport.

6.3 This will, of course, help reduce noise but will have the positive knock-on effect of having the potential to trigger other environmental improvements. In particular:

- *Meeting the outcomes as defined in the NAO will likely drive a more efficient fleet mix, made up of more newer aircraft, to operate at the Airport. These are likely to generate less noise but also will almost certainly also provide other efficiencies such as using less fuel. Of course the less fuel burnt, the less emissions, including those that affect local air quality such as NO_2, or carbon which contributes to climate change.*
- *The reduction of noise that comes as a result of meeting the outcomes as defined in the NAO will have directly linked benefits including in particular supporting the improvement of the health of local residents.*
- *Similarly reducing noise will increase the tranquillity of open spaces overflown and disturbing, to a lesser extent, biodiversity and heritage assets.*

6.4 Though the NAO and RD do not prescribe a particular fleet mix, it will be necessary for daa, and particularly the airlines which operate from Dublin Airport, to undertake such efficiency measures if they are to achieve the levels of growth anticipated in existing policy in compliance with the noise and health outcomes of the NAO. Adopting such measures will also help mitigate the predicted increase in air and carbon emissions, and possible disturbance to wildlife, associated with the additional night flights.

6.5 However, conversely driving aircraft noise efficiencies can have the effect of increasing the potential for other environmental effects. For example:

- *Routing aircraft over less densely populated areas can mean that more rural and therefore more tranquil areas are overflown.*
- *Similarly overflying areas that are less densely populated can result in new receptors including important biodiversity sites and heritage assets, being affected or receptors already affected being impacted more.*
- *Certain operational measures, for example steeper ascents, can result in more fuel burn as a result of requiring increased thrust, thereby increasing carbon (and other pollutant) emissions.*

6.6 *For the above reasons, and to ensure that appropriate decisions are made as the Airport plans future growth in line with the requirements of the NAO, there will need to be detailed consideration of the exact form of measures that are proposed including operational measures proposed, any changes to airspace and even the types of aircraft that operate. All this will need to be captured and considered in an alternatives assessment undertaken as part of an EIA that would be associated with a planning application for growth.*

6.7 *In terms of other impacts beyond the increase in night flights that are facilitated by the RD, the assessment revealed that the preferred runway use pattern (P02, as set out in Alternative (vi)) is likely to increase night-time noise levels over Malahide Estuary SPA / SAC and Feltrim Hill pNHA, High Amenity Areas and Highly Sensitive Landscapes located along the coast to the east and to the far north of the Airport, and residential areas including Ridgewood, Kilbrook, The Ward Cross, Coolquay, Mooreside and Rathlittle. Due to being at night, this increase in noise is unlikely to impact on the landscapes, and given that bird species are already habituated to overflying (including during the day when there are far more flights), potential impacts on biodiversity will also be insignificant. Nevertheless, the above-mentioned efficiency measures to reduce the sound produced by each aircraft will help mitigate the increase in numbers of flights. The additional specific measure of the voluntary residential sound insulation grant scheme has been proposed to reduce the impacts on the health of people residing in these locations.*

Measures to Monitor Significant Environmental Effects

6.8 *As stated in para 6.1, no significant adverse environmental effects have been identified for the NAO and RD. Nevertheless, within the NAO appropriate monitoring requirements are set out. Annual monitoring of the Airport's performance against the NAO will be undertaken as detailed in Schedule A (Part 4) of the draft RD. This is repeated below:*

Part 4 – Noise Performance Reporting

The Airport shall issue annual reports to the planning authority on its noise performance. The report for the previous Annual Period shall be published by no later than 31 March each year and comprise of:

Noise exposure statistics and contours as required to facilitate performance review of the Noise Abatement Objective including as a minimum:

- *Annual 55dB L_{night}*
- *Annual 65dB L_{den}*
- *through the number of people 'highly sleep disturbed' and 'highly annoyed' 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, taking into account noise exposure from 45 dB L_{den} and 40 dB L_{night}.*
- *Annual L_{night} contours from 40 dB in 5 dB increments*
- *Annual L_{den} contours from 45 dB in 5 dB increments*
- *Summer 60 dB $L_{Aeq, 16hr}$ and 63 dB $L_{Aeq, 16hr}$ (measured averaged across 92-day summer period from 16th June to 15th September).*

Any residential properties that have benefits and are eligible for and yet to benefit from the Airport's noise insulation schemes.

Key Statistics with respect to aircraft operations in the preceding Annual and Summer Periods including but not limited to:

- *aircraft movements including average hourly movements*
- *use of the Noise Quota Scheme*
- *movements by aircraft type*
- *passenger numbers*
- *aircraft destinations*
- *flight routings*
- *runway use*

Summaries from noise monitoring terminals for the Airport

Details of all noise modelling undertaken in support of the Noise Performance Reporting describing compliance with the methodology set out in Directive 2015/996 (ECAC Doc.29 4th Edition). All noise modelling shall be validated using local noise and track keeping performance data from the Airport's systems.

Summary of complaints records for the preceding Annual Period categorised by the:

- *location of complaints; and*
- *reason for complaint*

Details of any anticipated changes or developments that may affect noise at the Airport in the current year, through for example airspace change or fleet modernisation.

6.9 The NAO requires that the monitoring data collected that relates specifically to the NAO itself (para 6.12) should be provided to ANCA in an Annual Report. The contents of this Report will be informed by the measures determined by ANCA within the NAO and RD.

7 Next Steps

7.1 This Draft Environmental Report will be made available for public consultation alongside the NAO, draft RD, the RD Report, and the Natura Impact Statement, and will additionally be forwarded to each Environmental Authority. It will be available for consultation for a period of 14 weeks.

7.2 The following stages of the SEA process, as prescribed in the SEA Process Checklist (EPA, 2008) / SEA Pack (Updated 2020), will then be undertaken to ensure that the requirements of the relevant legislation has been met:

- *Final Environmental Report: This will be an updated version of the Draft Environmental Report, accounting for the submissions made during the public consultation (including those from the Environmental Authorities);*
- *SEA Statement: Following adoption of the NAO and Final RD, this will provide information on the decision, specifically:*
    - *how environmental considerations have been integrated into the NAO and RD;*
    - *how the Environmental Report, submissions and observations made to ANCA by the Environmental Authorities and the public, and any consultations under article 14, have been taken into account during the preparation of the NAO and RD,*
    - *the reasons for choosing the NAO and RD in the light of the other reasonable alternatives dealt with; and*
    - *the measures decided upon to monitor the significant environmental effects of implementation of the NAO and RD.*

8 References

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Fingal County Council (2020) Dublin Airport Local Area Plan. Appendix 6: Strategic Flood Risk Assessment and Surface Water Management Plan

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Fingal County Council (2019) Draft Dublin Airport Local Area Plan. Appendix 4: Strategic Environmental Assessment Environmental Report

Fingal County Council (2019) Fingal Development Plan 2017-2023

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Appendices

A1 EPA Scoping Consultation Response

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

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Ms Ethna Felten
Director of Services
Aircraft Noise Competency Authority
Fingal County Council
County Hall
Main Street, Swords
Co Dublin, K67 X8Y2

28th May 2021 Our Ref: SCP210501.1

Re. SEA Scoping Report for the Proposed Noise Abatement Objective for Dublin Airport

Dear Ms Felten,

We acknowledge your notice, dated 6th May 2021, in relation to the SEA Scoping Report for the Proposed Noise Abatement Objective for Dublin Airport (the 'Plan').

The EPA is one of the statutory environmental authorities under the SEA Regulations. In our role as an SEA environmental authority, we focus on promoting the full and transparent integration of the findings of the Environmental Assessment into the Plan and advocating that the key environmental challenges for Ireland are addressed as relevant and appropriate to the plan. Our functions as an SEA environmental authority do not include approving or enforcing SEAs or plans.

Where we provide specific comments on plans and programmes, our comments will focus on the EPA's remit and areas of expertise (in particular water, air, climate change, waste, resource efficiency, noise, radon and the inter-relationships between these and other relevant topics e.g. biodiversity), as appropriate and relevant to the particular plan or programme.

Following on from this submission, the EPA may provide additional comments upon receipt of the SEA Environmental Report and Draft Plan at the next stage of the SEA process.

Sustainable Development Goals & Key Actions for Ireland
Our State of Environment Report *Ireland's Environment - An Integrated Assessment 2020* (EPA, 2020) identifies thirteen Key Messages for Ireland. Delivering Ireland's long-term sustainable development and environmental protection goals will require a concerted effort by government departments to address these key actions:

1. *National Policy Position for Ireland's Environment* - Recognition of the need for an integrated policy position given the many interlinkages and dependencies.

2. *Full Implementation of existing environmental legislation and review of governance/coordination on environmental protection across public bodies*
3. Promote the benefits of a clean environment for health and wellbeing
4. Systemic change is needed for Ireland to become climate neutral and a climate resilient society and economy.
5. WHO clean air quality guideline values to be adopted within the Clear Air Strategy as specific targets to achieve.
6. Safeguard nature and wild places as a national priority to preserve its legacy for future generations
7. Improve the water environment and tackle water pollution water quality locally at a water catchment level.
8. Reduce human induced pressures on the marine environment
9. Move away rapidly from extensive use of fossil fuels to the use of clean energy systems
10. An agriculture and food sector that demonstrates validated performance around producing food with a low environmental footprint.
11. Drinking water and wastewater infrastructure must meet the needs of our society
12. Move to a less wasteful and circular economy where the priority is waste prevention, reuse, repair and recycle.
13. Promote integrated land mapping approaches to support decision making on sustainable land use.

In finalising the Plan and integrating the findings of the SEA into the Plan, the relevant recommendations, key issues and challenges described in our recent State of the Environment Report Ireland's Environment – An Assessment 2020 *(EPA, 2020)* should be taken into account.

The relevant objectives and policy commitments of the National Planning Framework and the Regional Spatial and Economic Strategy for the Eastern and Midlands Region should be aligned with and considered, as appropriate.

Transition to a low carbon climate resilient economy and society

You should ensure that the Plan aligns with national commitments on climate change mitigation and adaptation, as well as any relevant sectoral, regional and local adaptation plans.

Scope of the SEA

The Plan should clearly set out the scope, remit and implementation related elements of the Plan. These will have implications for the SEA, in terms of guiding the level of assessment applicable at the appropriate level for the Plan. Where it is envisaged that measures proposed in the Plan will be implemented via other plans, which themselves have been or will be subject to SEA, this should be explained in the Environmental Report and taken into account in the assessment.

Where specific measures will be implemented directly, further detail should be provided in the Environmental Report and Plan on the relevant environmental assessments to be carried out at the project stage and relevant mitigation measures to be applied, as appropriate. There may be merit in exploring this issue further with the relevant Environmental Authorities during the Plan preparation and SEA processes.

Integration of SEA and Plan

All recommendations from the SEA and AA processes, including mitigation measures, should be integrated in the Plan. We recommend that the Plan includes summary tables outlining the key

findings of the SEA and linking the significant environmental effects identified to the proposed mitigation measures, monitoring programme and Plan policies/measures.

Monitoring, Review & Reporting

The Plan should include a commitment to implement the environmental monitoring programme and associated reporting. We suggest including a separate section on '*Monitoring, Review and Reporting*' in the Plan, setting out the provisions for monitoring and reporting on the implementation of the Plan and periodic reviews. There may be merits, where relevant, in aligning the periodic reviews of the Plan with existing cyclical reporting e.g. *Ireland's Environment*, National Planning Framework, Water Framework Directive, Marine Strategy Framework Directive etc.

In between review periods for the Plan, if appropriate, we recommend that Plan-related implementation reports are published annually, or biennially, as appropriate. We recommend aligning these is Plan implementation monitoring/reporting with the environmental monitoring required under the SEA legislation. Doing so would enable the environmental performance of the Plan to be evaluated and would also provide for increased transparency during implementation.

The SEA-related monitoring should address positive, negative and cumulative effects where they are likely to occur and should include provision for on-going review to facilitate an early response to any environmental issues that may arise. The Environmental Report should specify the monitoring frequency and responsibilities and include provisions for reporting on the monitoring. To avoid duplication in data collection, the same indicators should be used for the plan-related and SEA-related monitoring where possible.

Integration with other key Plans and Programmes

We recommend including schematics in the Plan and SEA Environmental Report, showing the links and key inter-relationships with other key relevant national, regional, sectoral and environmental plans.

Data & Knowledge Gaps

The Plan should identify any significant data and knowledge gaps, include commitments to help address these on a priority basis during the implementation phase of the Plan. This is with a view to strengthening the evidence base for future reviews and iterations of the Plan.

Available Guidance & Resources

Our website contains various SEA resources and guidance, including:

- SEA process guidance and checklists
- Inventory of spatial datasets relevant to SEA
- topic specific SEA guidance (including *Good practice note on Cumulative Effects Assessment* (EPA, 2020), Guidance on SEA Statements and Monitoring (EPA, 2020), *Integrating climatic factors into SEA* (EPA, 2019), *Developing and Assessing Alternatives in SEA* (EPA, 2015), and *Integrated Biodiversity Impact Assessment* (EPA, 2012))

You can access these resources at: www.epa.ie/monitoringassessment/assessment/sea/

Environmental Sensitivity Mapping (ESM) Webtool

The ESM Webtool is a new decision support tool to assist SEA and planning processes in Ireland. The tool brings together over 100 datasets and allows users to explore environmental

considerations within a particular area and create plan-specific environmental sensitivity maps. These maps can help planners anticipate potential land-use conflicts and help identify suitable development locations, while also protecting the environment. The ESM Webtool is available at www.enviromap.ie.

EPA SEA WebGIS Tool

Our SEA WebGIS Tool has been updated recently and is now publicly available at https://gis.epa.ie/EPAMaps/SEA. It allows public authorities to produce an indicative report on key aspects of the environment in a specific geographic area It is intended to assist public authorities in SEA screening and scoping exercises.

EPA WFD Application

Our WFD Application provides a single point of access to water quality and catchment data from the national WFD monitoring programme. The Application is accessed through EDEN https://wfd.edenireland.ie/ and is available to public agencies. Publicly available data can be accessed via the Catchments.ie website.

EPA AA GeoTool

Our AA GeoTool application has been developed in partnership with the NPWS. It allows users to a select a location, specify a search area and gather available information for each European Site within the area. It is available at: http://www.epa.ie/terminalfour/AppropAssess/index.jsp

Environmental Authorities

Under the SEA Regulations, you should consult with:

- Environmental Protection Agency;
- Minister for Housing, Local Government and Heritage;
- Minister for Environment, Climate and Communications;
- Minister for Agriculture, Food and the Marine.
- Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media

If you have any queries or need further information in relation to this submission, please contact me directly. I would be grateful if you could send an email confirming receipt of this submission to: sea@epa.ie.

Yours Sincerely,

_____

David Galvin
SEA Section
Office of Evidence and Assessment
Environmental Protection Agency

A2 DAFM Scoping Consultation Response

From: Environmental Co-ordination (Inbox) <Environmental_Co-ordination@agriculture.gov.ie>
Sent: 04 June 2021 14:39
To: Aircraft Noise CA <AircraftNoiseCA@fingal.ie>
Subject: SEA Scoping; Noise Abatement Objective and Regulatory Decision relating to Aircraft Noise Management at Dublin Airport

Hello
I refer to your recent correspondence concerning the above.

Where SEA scoping indicates potential impacts on sea-fisheries and the marine environment, the following information should be taken into account in the SEA.

Relevant Legislation, Plans and Policies

- Foreshore Acts 1933 to 2011
- Aquaculture Acts 1997 to 2006 (Fisheries (Amendment) Act 1997 and amendments)
- Sea Fisheries and Maritime Jurisdiction Act 2006 and Sea-Fisheries Regulations
- Fisheries Natura Plans and Declarations made under European Union (Birds and Natural Habitats) (Sea-fisheries) Regulations 2013 (online at http://www.fishingnet.ie/sea-fisheriesinnaturaareas/natura2000sitesundermanagement/)
- National Seafood Operational Programme (EMFF requirement) and National Strategic Plan for Aquaculture (CFP requirement) currently under preparation for 2014 – 2020
- Food Harvest 2020
- Harnessing Our Ocean Wealth – the national integrated marine plan for Ireland
- Implementation of pollution reduction programmes for designated shellfish waters (Shellfish Waters Directive 2006/113/EC)
- Classified Shellfish Production areas (classified for food safety and consumer protection purposes under Regulation (EC) No 854/2004)
- National Climate Change Adaptation Framework – particularly sector adaptation plans (including marine) due to undergo consultation in 2014.

Issues for consideration
In the development of any Plans or Programmes due consideration should be given to:

Potential impacts, both positive and negative, on marine environmental quality including potential impacts on designated Shellfish Growing Waters. Examples include, but are not limited to the following: increased sedimentation; re-suspension of contaminants; discharge of contaminants; and introduction of non-native or invasive species.

- Potential impacts , both positive and negative, on the microbiological quality of shellfish in Classified Shellfish Production areas

- Potential impacts on human health resulting from the placing on the market of microbiologically contaminated shellfish
- Potential impacts on commercially important fish and shellfish stocks, licensed aquaculture sites and areas of importance for fish / shellfish and fisheries e.g. spawning grounds, nursery areas
- Potential impacts on freshwater aquaculture operations including the requirement for water abstraction and capacity of the receiving waters to assimilate discharges
- Future designations of areas of importance to the Aquaculture and Fisheries Sector
- Relevant EU Directives and National Legislation in the area of Marine Spatial Planning

Potential Impacts on Sea-Fisheries and Aquaculture
Major land-use changes can significantly impact the quality of the marine (particularly coastal) environment (e.g. sedimentation, hydrographic change, impacts on benthic eco-system, etc).
All aspects of the seafood sector rely on safe high quality water and assessment of potential impacts on water quality should include the seafood sector. To guarantee food safety the growing waters must attain certain standards. This is of relevance to the fishing and aquaculture sectors. In freshwater aquaculture (on land) a continuity of supply is important to ensure animal welfare and quality. Water supplies in this instance are sourced from rivers, wells and occasionally from mains supplies.

The seafood processing sector also requires a safe and reliable water supply to support its operations. Designated shellfish waters are very important to the shellfish sector in Ireland working to maintain standards in product safety and quality and enabling sale for direct consumption from many areas, reducing production costs and contributing to the good international reputation of the products. The role of filter-feeding shellfish as a nutrient sink thus helping to reduce eutrophication potential and improve water quality is also important to consider in assessments.

Sources of Marine Data
Details of designated shellfish growing areas which are protected by law (2006/113/EC) are available at: http://www.environ.ie/en/Environment/Water/WaterQuality/ShellfishWaterDirective/
Details of Classified Shellfish Production areas (classified for food safety and consumer protection purposes under Regulation (EC) No 854/2004) are available on the Sea-Fisheries Protection Authority website: http://www.sfpa.ie/

The Marine Institute publishes a range of corporate reports, scientific and technical reports, peer reviewed articles and conference papers which are relevant to the SEA process. These can be found on the Marine Institute website: http://www.marine.ie/Home/publications or Marine Institute Open Access Repository.

Relevant reports and on line GIS include:
- Shellfish Stocks and Fisheries Review 2011: An Assessment of Selected Stocks
- Atlas of Commercial Fisheries Around Ireland
- Atlas of Commercial Discarding
- Ireland's Marine Atlas

Information on the Initial Assessment of Ireland’s marine waters, required under the Marine Strategy Framework Directive, is available at

http://www.environ.ie/en/Environment/Water/WaterQuality/Marine/

Who to Consult With

- DAFM – Policies, plans and legislation concerning sea-fisheries and aquaculture
- SFPA – Competent Authority for Seafood Safety (classifications, monitoring and sanitary surveys) and Sea-fisheries Control
- Marine Institute – Fisheries and Marine Environment
- BIM – Seafood Development Agency
-

Consideration should also be given to consulting directly with the seafood sector. This may include regional inshore fisheries forums, Fisheries Local Action Groups, fisheries representative bodies, including producer organisations, local advisory committees, associations, co-operatives; seafood processors; aquaculture representative bodies, etc.

Kind regards

An tAonad um Chomhordú Timpeallachta, An Rannóg um Athrú Aeráide agus Beartas Bithfhuinnimh,
Environmental Co-ordination Unit | Climate Change & Bioenergy Policy Division |
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
Pailliún A, Páirc Gnó Grattan, Bóthar Átha Cliath, Port Laoise, Co Laoise, R32 K857
Pavilion A, Grattan Business Park, Dublin Road, Portlaoise, Co Laois, R32 K857
T +353 (0)57 868 9915 environmentalco-ordination@agriculture.gov.ie
www.agriculture.gov.ie

An tÚdarás Inniúil um Thorann Aerárthaí

Aircraft Noise Competent Authority

Comhairle Contae Fhine Gall
Fingal County Council