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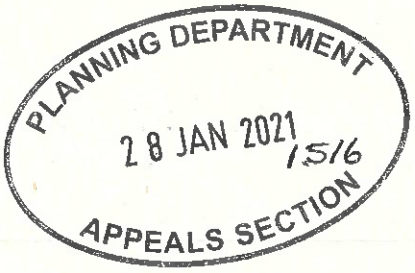

Date:	28/01/2021
Our reference:	1516
Licence Type:	Planning Application
Name and address of applicant:	DAA PLC.
Location of facility:	Dublin Airport, Co. Dublin
Reference No:	F20A/0668
EIS/EIAR submitted:	Yes
Planning Authority to whom EIS/EIAR has been submitted:	Fingal County Council

Dear Sir/Madam

Please find enclosed the HSE consultation reports in relation to the above planning application. If you have any queries regarding any of this report the initial contact is Ms Geraldine O Callaghan, Principal Environmental Health Officer, who will refer your query to the appropriate person

Yours faithfully,

Geraldine O Callaghan
Principal Environmental Health Officer

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Introduction

The following HSE departments were notified of the consultation request for the licence application on 7th January 2021

- Emergency Planning – Brendan Lawlor
- Estates – Helen Maher
- Assistant National Director for Health Protection – Kevin Kelleher / Laura Murphy
- CHO – Mellany McLoone

This report only comments on Environmental Health impacts of the licence application.

Environmental Health Submission

EHS Ref: 1516

Planning Ref: F20A/0668 Fingal County Council

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

Air Quality:
The EHS have assessed chapter 10 which looks at Air Quality with particular attention on concentrations at nearby human health sensitive receptors. For the EIAR an air quality impact assessment was undertaken to assess the impact of emissions on local air quality primarily due to the proposed change in aircraft movements.

The assessment focuses on the impact and effect of changes to long-term and short-term concentrations of nitrogen dioxide (NO2) and Particulate Matter (PM_{10} and $PM_{2.5}$). These are considered to be the pollutants of greatest concern from aircraft emissions

The first thing the EHS noted was Dublin airport's own pollution monitoring which is outlined in section 10.5.1.1. From this data we can see that the annual mean NO2 and PM10 concentrations monitored at Dublin Airport are consistently below relevant air quality standard values, typically representing around 50 - 60% of those values, as displayed in Table 10-4.

The DAA have also undertaken the measurements of NO2, and benzene (C6H6) using passive sampling by diffusion tubes at several offsite locations in the vicinity of Dublin Airport. The annual data for these measurements are shown in Tables 10-5 to 10-7 and they demonstrate that the Air Quality Limit Values for the pollutants monitored are not being exceeded.

EHS notes that for the detailed modelling study a total of 52 existing receptors were modelled that may be affected by the operation of the permitted North Runaway, the details of which can be found in Table 10-11 and Figure 10-1 of the EIAR.

Section 10.6 outlines the predicted annual mean NO2, PM_{10} and $PM_{2.5}$ concentrations for Permitted and Proposed scenarios and associated impacts. All of the predicted NO2 levels fall well below the Limit Values. There was no exceedances of the annual mean Limit Values for PM_{10} and $PM_{2.5}$ the values for which were all well below the annual mean Limit Values.

The EHS is satisfied with the conclusion in the EIAR which states that the model was based on a conservative assessment and even with this worst case scenario the annual mean concentrations of all the pollutants considered are below the relevant Limit Values for all of the assessed receptor locations. Concentration changes between the permitted and proposed Relevant Action show residual effects to be Not Significant.

Water:
The EHS have assessed chapter 12 which looks at the likely significant effects on the water

environment of the proposed development. The EHS is satisfied that the proposed development will not have any significant effect on the water environment.

Noise:

The EHS have based their assessment on Chapter 13 - Air craft noise and Vibration (Air) on The World Health Organisation's Environmental Noise Guidelines 2018, as endorsed by the European Commission through Directive 2020/367.

The WHO 2018 Noise Guidelines strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as it states that aircraft noise above this level is associated with adverse health effects.

The EIAR based its Noise surveys on future forecast scenarios for the selected years of 2022 and 2025. It compared the situation with the Relevant Action with three situations, that in 2018 (2018 Baseline), that in the corresponding future year with the North Runway operational and the current conditions in place (2022 or 2025 Baseline).

With the above in mind the EHS looked at the results of the noise surveys in Section 13.4. The World Health Organisation's Environmental Noise Guidelines 2018, provide a method for calculating the number of people highly annoyed by airborne aircraft noise which has been used in the EIAR. The aim of this method is to give an overall picture of the noise exposure by assessing a percentage of people as being highly annoyed at different noise levels. For example, around 10% are assessed as being highly annoyed at a noise level of 45 dB Lden, increasing to around 67% at a noise level of 75 dB Lden.

The EIAR states that the number of people exposed to aircraft noise increased from the 2018 Baseline to the 2019 Baseline. Consequently, the number of people assessed as highly annoyed by aircraft noise also increased, specifically by 5% from 110,234 to 115,740. The number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above) increased from 251 to 285.

However when the EIAR compares the 2018 baseline and the forecast 2022 Baseline the number of people exposed to aircraft noise is forecast to reduce for all contour levels. Consequently, the number of people assessed as highly annoyed by aircraft noise also decreases, specifically by 41% from 110,234 to 65,227. The number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above) decreases from 251 to 133.

This number is further reduced in the 2025 Baseline scenario to 63,316 people assessed as highly annoyed and 128 people exposed to at least a high noise level.

The EIAR also identifies the number of non-residential receptors exposed to the thresholds. There is a reduction of one between 2018 and 2019, and a further reduction of 3 is forecast in the 2022 baseline scenario. There was no change in the 2022 and 2025 Baseline scenarios.

While the EHS welcomes the significant reduction in the people exposed to airline noise between the 2018/2019 baseline and the 2022/2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 63,316 people assessed as highly annoyed and 128 people

exposed to at least a high noise level based on the 2025 baseline scenario, will still be exposed to airline noise above the WHO recommendations of 45Lden.

The WHO 2018 Noise Guidelines strongly recommends reducing night noise exposure levels produced by aircraft during night time below 40 dB Lnight, as it states aircraft noise above this level is associated with adverse effects on sleep.

The World Health Organisation's Environmental Noise Guidelines 2018 provide a method for calculating the number of people highly sleep disturbed by airborne aircraft noise which has been used by the EIAR. This aim of the method is to give an overall picture of the noise exposure by assessing a percentage of people as being highly sleep disturbed at different noise levels.

The EIAR states that the number of people exposed to aircraft noise increased from the 2018 Baseline to the 2019 Baseline, for all contour levels. Consequently, the number of people assessed as highly sleep disturbed by aircraft noise also increases, specifically by 11% from 42,260 to 47,044. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above) increases from 753 to 1,533.

However when the EIAR compares the 2018 baseline and the forecast 2022 Baseline the number of people exposed to aircraft noise is forecast to reduce for all contour levels. Consequently the number of people assessed as highly sleep disturbed by aircraft noise also decreases, specifically by 53% from 42,260 to 19,690. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above) decreases from 753 to 284.

This number is further reduced in the 2025 Baseline scenario to 19,464 people assessed as highly sleep disturbed and 281 people exposed to at least a high noise level.

The EIAR also identifies the number of non-residential receptors exposed to the thresholds, of these, only residential healthcare facilities are highly sensitive to noise at night. There is a reduction of 2, from 4 to 2, between 2018 and 2019, the forecast is to remain the same in the 2022 and 2025 Baseline scenarios.

While the EHS welcomes the significant reduction in the people exposed to airline noise between the 2018/2019 baseline and the 2022/2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 19,464 people assessed as highly annoyed and 281 people exposed to at least a high noise level based on the 2025 baseline scenario, will still be exposed to airline noise above the WHO recommendations of 40Lnight.

The World Health Organisation's Environmental Noise Guidelines 2018 summarise the research into the impact on health and exposure to aircraft nose. The critical health outcomes identified were:

For average noise exposure

1. Cardiovascular disease

2. Annoyance

3. Cognitive impairment

For night noise exposure

1. Effects on sleep

4. Hearing impairment and tinnitus

5. Adverse birth outcomes

6. Quality of life, well-being and mental health

7. Metabolic outcomes

As already outlined above the WHO strongly recommends reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight, as aircraft noise above these level is associated with the above adverse health effects.

In order to reduce these health effects, the WHO strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the WHO recommends implementing suitable changes in infrastructure.

The EIAR also looked at the number of dwellings exceeding the threshold for potential vibration effects due to airborne aircraft. The EHS is satisfied that there will be no dwellings which experienced noise levels in excess of 97 dB LCmax at least once per day. This is down from 4 dwellings identified in the 2018 baseline scenario.

With WHO's recommendation on specific interventions on implementing suitable changes in infrastructure in mind the EHS the has assessed how the EIAR outlines ways in which the airport is reducing noise. These actions are welcomed by the EHS, they are out lined in section 13.5.2. They include the following.

- Land Zones: These are areas of land identified by the DAA to restrict unsuitable development in the noise zones. The EIAR states that with the north runway set to become operational in 2022, updated information has become available relating to aircraft noise performance and flight paths. Due to this it was considered appropriate to update the noise zones for Dublin Airport to allow for more effective land use planning for development within airport noise zones. The Noise Zones and policies relating to development in Noise Zones are set out in Variation No. 1 to the Fingal Development Plan 2017 – 2023.

- Residential Sound Insulation Schemes: Dublin Airport operates an insulation scheme for dwellings exposed to 63 dB LAeq,16h or greater. The 63 dB LAeq,16h contour eligibility as part of the North Runway scheme will be reviewed every two years following the opening of the North Runway as required by the planning conditions.

- Schools Sound Insulation Scheme: A voluntary insulation scheme is on offer for all schools and registered pre-schools which fall within the predicted 60 dB LAeq,16h contour.

- Dwelling Purchase Scheme: Eligibility for the Scheme is based on the predicted 69 dB LAeq,16h contour. Five dwellings are currently located in this contour, however the daa has voluntarily extended participation in the Scheme to a further 33 dwellings.

Additional noise mitigation measures are outlined in section 13.7. Again these are welcomed by the EHS. They include.

- An Annual Noise Quota (ANQ) system to replace the limit of 65 flights per night.
- A preferential runway use system.
- A night noise insulation scheme. This scheme will provide a grant of €20,000 to fund sound insulation improvement works, for dwellings meeting either of the following criteria:
    - Forecast to be exposed to night-time noise levels of at least 55 dB Lnight in the 2025 Relevant Action scenario, or
    - Forecast to be exposed to noise levels greater than 50 dB Lnight in the 2022 Relevant Action scenario, accompanied by an increase of at least 9 dB when compared to 2018.

- Noise Monitoring Framework. The proposal is to implement a framework for monitoring the noise performance with respect to any Noise Abatement Objective (NAO) set by the Aircraft Noise Competent Authority (ANCA). Performance will be reported annually to ANCA, in compliance with the relevant sections of the Aircraft Noise (Dublin Airport) Regulation Act 2019. While this is welcomed by the EHS the proposal doesn't outline what measures can or will be taken if poor performances are identified.

Ground Noise and Vibration:

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

The EHS are satisfied with the EIAR's statement that *"Aircraft ground activities do not typically produce any significant vibration effects at sensitive receptors outside of the airport site, and therefore the assessment of vibration due to aircraft ground operations has been scoped out of the EIA."*

Section 14.3.4 looks at Methodology for Determining Baseline Conditions and Sensitive Receptors. The EIAR states that *"the study area contains all receptors exposed to ground noise levels of at least 50 dB Lden or 45 dB Lnight. This includes all of the receptors that experience potential significant effects. Although significant effects can in theory be found down to 45 dB Lden and 40 dB Lnight, the change in noise level required for this finding was not experienced at any of the assessed receptors."*

The EHS if of the opinion that The World Health Organisation's Environmental Noise Guidelines 2018 should also have been used for ground noise. As stated already in this report The WHO strongly recommends reducing noise levels produced by aircraft to below 45 dB Lden, as aircraft noise above this level is associated with adverse health effects and for night noise exposure, the WHO strongly recommends reducing noise levels produced by aircraft during night time below 40 dB Lnight, as aircraft noise above this level is associated with adverse effects on sleep.

The EIAR first looks at the baseline Lden modelling comparing the 2018 baseline and the 2022 Baseline the following was found. The number of people exposed to at least a low level of ground noise (i.e. 50 dB Lden or above) decreases from 26,361 to 23,826, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB Lden or above) decreases from 6 to 3. Going forward to the 2025 Baseline Scenario, there is a small increase compared to the 2022 Baseline to 24,518 people exposed to at least a low ground noise level and no change to the 3 people exposed to a high ground noise level.

While the EHS welcomes the reduction in the people exposed to ground noise between the 2018 baseline and the 2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 24, 518 people assessed as being exposed to 50dB Lden or above and 3 people exposed to 65dB Lden or above.

The results from the Lnight modelling comparing the 2018 baseline and the 2022 Baseline the following was found. The number of people exposed to at least a low level of ground noise (i.e. 45 dB Lnight or above) decreases from 3,424 to 631, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB Lnight or above) decreases from 29 to 6. Going forward to the 2025 Baseline Scenario, there are further reductions to 578 people exposed to at least a low ground noise level and no change to the 6 people exposed to a high ground noise level.

While the EHS welcomes the significant reduction in the people exposed to ground noise between the 2018 baseline and the 2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 578 people assessed as being exposed to 45dB Lnight or above and 6 people exposed to 55dB Lnight or above.

Section 14.5 outlines the measures already in place at Dublin Airport that reduce or mitigate the ground noise effects of aircraft operations. This include:

- Reducing the noise at source by the increased use of new quieter airplanes;
- Land use, planning and management which looks at noise zones and residential sound insulation schemes;
- Operational procedures where Dublin Airport have in place a range of operational procedures which serve to minimise ground noise and;
- Operating restrictions relating to the North Runway Permission.

Section 14.6 of the EIAR looks at the assessment of effects and significance.

While the EHS assessed all the scenarios covered in the EIAR it was decided to only address the Worst-case Year 2025 Apron 5H Lden Metric and Lnight Metric in this report as these scenario have the potential to effect more people and as such mitigation measure to best counter this should be implemented. For clarification Apron 5H is a separate planning application which has been submitted to the planning authority that seeks to develop an area in the north east of the airport site, which will result in 10 aircraft stands being located there.

The EIAR states that comparing the 2025 Apron 5H scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB Lden or above) is forecast to

increase from 24,518 to 31,430, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB Lden or above) is forecast to increase from 3 to 6.

The EIAR states that comparing the 2025 Apron 5H scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB Lnight or above) is forecast to increase from 578 to 10,623, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB Lnight or above) is forecast to increase from 6 to 35.

The EHS acknowledges that the increase in people exposed to 50 dB Lden and 45 dB Lnight may result in adverse health effects as outlined in The World Health Organisation's Environmental Noise Guidelines 2018. Due to this the EHS feels that the mitigation measures proposed must be reflected in these increased numbers in order to reduce as much as possible the number of people exposed. The EHS also feels that the WHO levels of 45 dB Lden and 40 dB Lnight should be used when assessing eligibility for schemes such as the sound insulation improvement works.

Land/Soil including groundwater:
The EHS have assessed chapter 18 which looks at the likely significant effects on Land and Soil impacts as a result of the proposed Relevant. The EHS is satisfied that the proposed development will not have any significant effect on land and soils.

Conclusion:
The EHS makes the following observations in relation to this proposed development:

- **All efforts should be made by the DAA to ensure as many people as possible are protected from the adverse health effects associated with aircraft noise as outlined above in this report. This must include reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight.**

- **The EHS if of the opinion that The World Health Organisation's Environmental Noise Guidelines of 45dB Lden and 40 dB Lnight should have been used for ground noise assessments.**

All correspondence or any queries with regard to this report, including acknowledgement of this report, should be forwarded to Ms. Geraldine O Callaghan, Principal Environmental Health Officer, at the above address

Geraldine O Callaghan
Principal Environmental Health Officer

Thomas Mangan
Environmental Health Officer
Environment OU