airport remains at a throughput of 32 mppa due to the forecast fleet renewal. Details on likely fleet renewal ae presented in the Mott McDonald Impact of Restrictions Report.

The general assessment methodology involves the following:

- Derivation of assessment criteria;
- Computation of existing and future noise levels under the various scenarios;
- Assessment of magnitude of impacts (absolute) on sensitive receptors, for each scenario;
- Determination of the change in noise levels, and associated impacts (relative) as a result of the Relevant Action;
- Consideration of the likely significant effects of the Relevant Action, based on both the absolute and relative noise levels;
- Description of the potential effects (beneficial and adverse) associated with the Relevant Action; and
- Description of any mitigation measures, where appropriate, in relation to the Relevant Action and describe any residual effects.

14.3.7 Significance Criteria – Ground Noise

The ground noise effects are considered in terms of both the absolute noise level and the change in noise level due to the Relevant Action in order to determine the significance of the effects due to the Relevant Action. Both need to be considered to determine whether a significant effect arises from the Relevant Action in an EIA context; for example if a receptor experiences a high absolute noise level but no change due to the Relevant Action then this is not a significant effect. Conversely if a receptor experiences a large change in noise level but the resulting level is still very low then this receptor is not considered to be significantly affected.

14.3.7.1 Residential Receptors

Absolute noise impacts for residential receptors have been developed against an effect scale and are given in Table 14-1. The derivation of these is discussed in Appendix 14A.

Table 14-1: Ground Noise Impact Criteria (absolute) – residential

Scale Description	*Annual dB L_{den}*	*Annual dB L_{night}*
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

The effect scale used to assess the change in noise level is given in noise level is given in Table 14-2. A semantic scale of this type, following the format of examples given in the Institute of Environmental Management and Assessment guidelines, has been applied in previous ground noise assessments and accepted in Public Inquiries for airport developments in the UK and Ireland, for example the application for the North Runway at Dublin Airport. The thresholds are derived from the difference contour bands recommended in CAP1616a.

Table 14-2: Ground Noise Impact Criteria (relative)

Scale Description	*Change in noise level, dB(A)*
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9

Scale Description	Change in noise level, dB(A)
High	6 – 8.9
Very High	≥9

The effect of a change in noise level tends to increase with the absolute level of noise experienced at a receptor. If, for example, the night-time noise level at a dwelling were to change from 45 dB to 50 dB L_{night}, the overall effect for the occupants would be less than if the night-time noise level were to increase by the same amount from 55 dB to 60 dB L_{night}.

There is no clearly accepted method of how to rate the magnitude of the effect of a change in the absolute ground noise level and the associated change in noise level. Some guidance however has been provided in the UK's National Planning Practice Guidance (NPPG, 2020) which states:

"In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise may result in a significant adverse effect occurring even though little or no change in behaviour would be likely to occur."

The magnitude of an effect from changing between one scenario and another (e.g. baseline to future with the Relevant Action) has been established by considering both the absolute noise level in the higher of the two scenarios and the relative change in noise level that occurs at a given receptor.

Table 14-3 shows how the absolute and relative impacts are interpreted into magnitude of effect. This takes into account the criteria presented above, other guidance and professional judgement. The effect rating scale is taken from the EPA Draft EIAR Guidelines (EPA, 2017).

Table 14-3: Summary of magnitude of effect – ground noise

Absolute Noise Level Rating	Change in Noise Level Rating					
	Negligible	Very Low	Low	Medium	High	Very High
Negligible	Imperceptible	Imperceptible	Imperceptible	Not Significant	Slight	Moderate
Very Low	Imperceptible	Imperceptible	Not Significant	Slight	Moderate	Significant
Low	Imperceptible	Not Significant	Slight	Moderate	Significant	Significant
Medium	Not Significant	Slight	Moderate	Significant	Significant	Very Significant
High	Slight	Moderate	Significant	Significant	Very Significant	Profound
Very High	Moderate	Significant	Significant	Very Significant	Profound	Profound

A potential significant effect (adverse or beneficial) would be considered to arise if in Table 14-3 the magnitude of the effect was rated as significant or higher.

14.3.7.2 Non-Residential Receptors

For receptors other than dwellings, absolute levels rated as medium have been derived from the relevant guidance documents, as described in Appendix 14A. These are given in Table 14-4. The impact on each non-residential receptor has been rated as significant if the absolute noise level is above this threshold and the change in noise level is at least 3 dB(A), i.e. it is rated medium or higher.

Table 14-4: Ground Noise Impact Criteria (absolute) – non-residential

Receptor Type	Threshold for Medium Absolute Effect
Schools (08:00-16:00)	55 dB $L_{Aeq,30m}$ (approx. 55 dB L_{den})
Residential Healthcare Facilities – Day (07:00-23:00)	55 dB $L_{Aeq,1h}$ (approx. 55 dB L_{den})
Residential Healthcare Facilities – Night (23:00-07:00)	50 dB $L_{Aeq,1h}$ (approx. 45 dB L_{night})
Places of Worship	55 dB L_{den}

14.3.8 Limitations and Assumptions

Planned background noise surveys have been hampered by the Covid-19 pandemic which means that even if measurements were taken at this time, the ambient conditions may not currently be representative. However a detailed survey was carried out in 2016, and is supplemented by the continuous measurements taken by Dublin Airport's fixed Noise Monitoring Terminals (NMTs). In conformance with the recommended European noise assessment indicators (L_{den} and L_{night}), the ground noise assessment criteria are dependent on the absolute levels from the aircraft, rather than the background noise. The background noise level, and the existing prevailing (non-aircraft) related ambient noise conditions, can however be useful in contextualising ground noise in a particular area.

There is always some uncertainty associated with forecasting future aircraft traffic, and this has been increased by the recent Covid-19 pandemic, particularly in the short term. It is currently expected that a throughput of 32 mppa will be reached in 2025 and this is the scenario assessed.

Some aircraft in the forecasts are either not currently in service or have limited data available. There is limited data available that suggests newer aircraft types will perform similarly or slightly better than those they replace. A conservative assumption of no improvement over current aircraft types has been made.

Although a number of aircraft using Dublin Airport use Fixed Electrical Ground Power (FEGP) rather than Auxiliary Power Units (APUs) which produce more noise, this ground noise assessment has taken a conservative assumption that all aircraft use APUs. In practice there is likely to be significant use of FEGP in all assessment years.

14.4 Baseline Conditions

This section provides a description of the general noise conditions in the vicinity of Dublin Airport. In view of the location of the airport, the surrounding community is affected primarily by noise from the local road network and airport operations.

The assessment of baseline conditions relates to the long term situation and considers the noise levels in 2018, based on field studies undertaken in 2016. Due to the ongoing Covid-19 pandemic the noise conditions at the present time are likely to differ but this effect is expected to be temporary, although the precise timescale is uncertain.

Baseline noise surveys have been carried out at key receptor positions around Dublin Airport to establish the prevailing ambient and background noise conditions during both the daytime and night-time. Additionally, an attended survey of aircraft taxi operations was undertaken in 2019 to measure aircraft taxi noise levels for use in the modelling of current and future ground noise scenarios. These surveys are summarised in this section and reported in more detail in Appendix 14D.

Aircraft ground noise predictions have been made for 2018 and for the situation once the North Runway has been constructed for both 2022 and 2025. These predictions include both the primary assessment metrics, the results of which are presented later in this section, and the supplementary metrics which are presented in Appendix 14C.

14.4.1 Noise Surveys

14.4.1.1 Methodology

The survey work described here comprises three discrete elements; the long-term and short-term surveys undertaken by AWN in 2016; and the aircraft taxi noise survey undertaken by BAP in 2019.

The survey locations and dates are summarised in Table 14-5 and illustrated in Figure 14-1. Baseline noise monitoring locations were selected to obtain representative ambient and background noise levels close to the airport. Because ground noise does not reach as far as air noise, the area covered is more focused compared to the air noise baseline receptor set.

Table 14-5: Ground noise baseline survey locations and dates

Receptor	*Survey*	*Location*	*Dates of Survey*
GS01	Short-term	Cloughran House car park off the R132, E of airport	25/07/2016 - 28/07/2016
GS02	Short-term	Creche off Naul Road, NE of airport	25/07/2016 - 28/07/2016

GS03	Short-term	Residential properties on the R108, W of airport	25/07/2016 - 28/07/2016
GS04	Short-term	Field off the R122 at St. Margaret's, W of airport	25/07/2016 - 28/07/2016
GS05	Long-term	daa owned site on the R132, SE of airport	02/08/2016 - 10/08/2016
GS06	Long-term	daa owned site on Old Stockhole Lane, NE of airport	02/08/2016 - 10/08/2016
GS07	Long-term	Field adjacent to Cooks Road and Forest Road, N of airport	24/08/2016 - 01/09/2016
GS08	Long-term	Field adjacent to St. Margaret's School, W of airport	28/07/2016 - 29/07/2016
GS09	Long-term	daa owned site on Dunbro lane, W of airport	10/08/2016 - 17/08/2016
GS10	Long-term	daa owned site on Old Airport Road, S of airport	11/08/2016 - 17/08/2016
GS11	Aircraft Taxi	Airport perimeter road, facing taxiways S5 and S6	02/10/2019

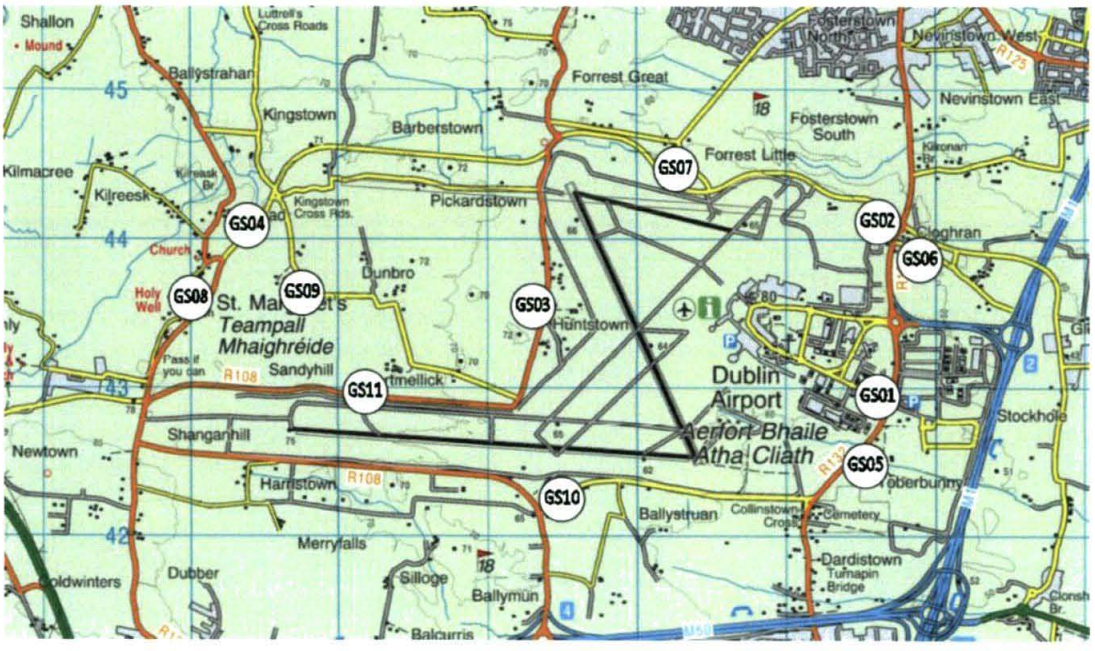


Figure 14-1: Ground noise baseline survey locations

For both long- and short-term baseline noise surveys, continuous measurements were taken with a base measurement period, T, of 15 minutes used unless otherwise stated.

Noise levels have been presented in terms of the $L_{Aeq,T}$ and $L_{AF90,T}$ metrics for the 16 hour daytime (07:00-23:00) and 8 hour night-time (23:00-07:00) periods.

$L_{Aeq,T}$ is commonly used to denote the ambient noise level and signifies the average noise level which is equivalent in energy terms to that produced by the various fluctuating noise levels that occur in the measurement period.

$L_{AF90,T}$ is commonly used to denote the prevailing background noise level and, specifically, denotes the level of noise which is exceeded for 90% of the time.

For the aircraft taxi noise survey, $L_{eq,T}$ measurements were taken, both A-weighted and for each individual octave band. Each measurement typically lasted around 90 seconds and was taken at a fixed position on the airport perimeter road, approximately 70 m from the junction of taxiway S6 and taxiway S. This was the primary exit from the runway used by R28 arrivals on the day of the survey.

14.4.2 Results – Short-Term Noise Monitoring

A summary of average values for each measurement location is given in Table 14-6. Detailed results are provided in Appendix 14D.

Table 14-6: Short-term noise monitoring results summary

Metric		*Location*			
		GS01	**GS02**	**GS03**	**GS04**
Daytime (07:00 to 23:00)	$L_{Aeq,T}$ (dB)	59	57	56	70
	L_{AF90} (dB)[1]	55	53	44	51
Night-time (23:00 to 07:00)	$L_{Aeq,T}$ (dB)	54	53	52	64
	L_{AF90} (dB)[1]	49	48	41	49

[1] Arithmetic average of $L_{AF90,15min}$ measurements

14.4.3 Results – Long-Term Noise Monitoring

A summary of average values for each measurement location is given in Table 14-7. Detailed results are provided in Appendix 14D.

The results indicate that the general ambient noise level around Dublin Airport lies in the range of 50 to 70 dB $L_{Aeq,16h}$ during the daytime with an underlying background noise level in the range of 45 to 55 dB L_{AF90}. The wide range of ambient noise levels indicate that this is dependent on the proximity to local noise sources, for example airborne aircraft, road traffic, or local schools.

During the night, ambient noise levels are generally around 3-5 dB lower than during the day and background noise levels are typically 5-10 dB quieter. Road traffic is again a factor, with roadside locations tending to have higher ambient noise levels.

Table 14-7: Long-term noise monitoring results summary

Metric	*Location*					
	GS05	**GS06**	**GS07**	**GS08[2]**	**GS09**	**GS10**
$L_{Aeq,16h}$ (dB)	71	53	58	65	59	66
$L_{AF90,day}$ (dB)[1]	50	49	52	51	47	55
$L_{Aeq,8h}$ (dB)	68	50	56	57	54	63
$L_{AF90,night}$ (dB)[1]	45	45	48	38	39	48

[1] Arithmetic average of $L_{AF90,15min}$ measurements

[2] 5 minute base measurement period

14.4.4 Results – Aircraft Taxi Noise Survey

The results of the aircraft taxi noise survey are summarised in Table 14-8 by aircraft type. Movements by Airbus A320 and Boeing 737-800 aircraft types constitute the bulk of operations at Dublin Airport, and this is reflected in the data.

Table 14-8: Location GS11, aircraft taxi noise survey results by aircraft type

Aircraft Type	*No. Measured*	*Sound Power, dB L_{WA}*
Airbus A220	1	123
Airbus A320	14	128
Airbus A321	1	130
Airbus A330	2	135
Boeing 737-800	15	129
Boeing 787	1	129
Embraer E190	1	127

Learjet 60	1	121

14.4.5 Baseline Noise Modelling L_{den} Metric

Noise contours have been produced for the primary assessment metric of L_{den} using the methodology described in Section 0. For the 2018 Baseline these are based on the actual aircraft movements in 2018. For the future years these are based on forecast aircraft movements.

The results for the years 2018, 2022 and 2025 are detailed below. 2022 represents the year that the North Runway is first expected to be operational, and 2025 the likely worst-case future year for the Relevant Action application. These results are also presented in Appendix 14C along with the results for the supplementary noise metrics.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 65 dB L_{den}, do not extend much further than the airport site in any of the Baseline scenarios. The 2018 Baseline noise contours representing a low impact, 50 dB L_{den}, extend to the west just past the R122 road, to the north to Brackenstown, to the east to Glebe and to the south just past the R104 into Santry.

The noise contours in the 2022 Baseline and 2025 Baseline are a similar size, but are shifted slightly to the north compared to the 2018 Baseline.

To provide further information on changes in the noise environment for specific communities, predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the Baseline scenarios in terms of the L_{den} metric are given in Table 14-9.

Figure 14-2: Representative Location Points

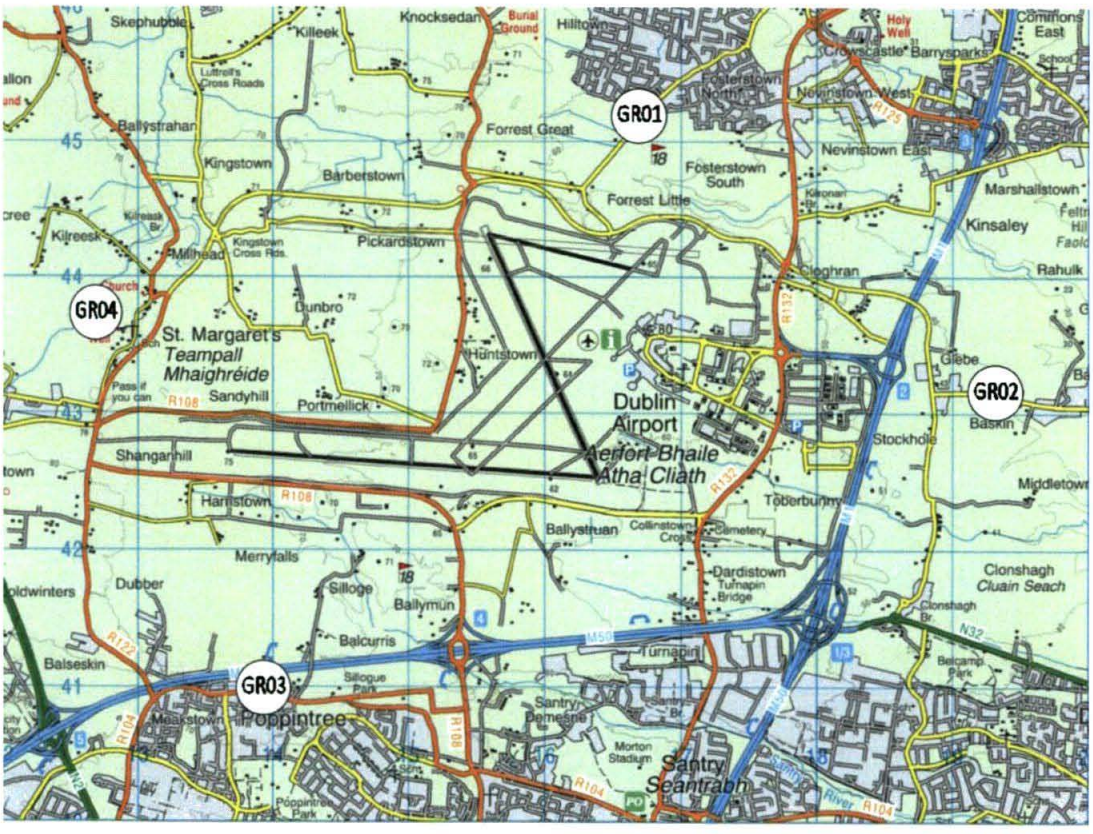


Table 14-9: Baseline Noise levels at Representative Locations (L_{den})

Representative Location	*Reference No.*	*Baseline Noise Level, dB (L_{den})*		
		2018	*2022*	*2025*
Ridgewood	GR01	54	55	56

The Baskins	GR02	48	48	48
Mayeston Hall	GR03	56	55	55
St Margret's	GR04	49	49	49

Note – noise levels rounded to nearest whole number.

L_{den} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 1 dB(A) between the 2018 Baseline and 2022 Baseline scenarios, whereas the opposite is true for receptors to the south of the airport site, for example Mayeston Hall (#03). Receptors in other locations are forecast to decrease by a similar amount or not change. Going from the 2022 Baseline to the 2025 Baseline there are small decreases of 0-1 dB at all locations.

For each of the sets of baseline contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population including consented developments. The results for 2018 Baseline are given by contour in Table 14-10.

Table 14-10: Areas, number of dwellings and population in 2018 Baseline Annual L_{den} contours

Scenario	*2018 Baseline*			
Contour L_{den} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
50	9,376	26,361	9,908	28,014
55	155	379	155	379
60	19	56	19	56
65	2	6	2	6
70	0	0	0	0

The dwelling and population results for 2022 Baseline are given by contour in Table 14-11.

Table 14-11: Areas, number of dwellings and population in 2022 Baseline Annual L_{den} contours

Scenario	*2022 Baseline*			
Contour L_{den} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
50	8,527	23,826	9,001	25,274
55	113	324	113	324
60	19	56	19	56
65	1	3	1	3
70	0	0	0	0

The dwelling and population results for 2025 Baseline are given by contour in Table 14-11.

Table 14-12: Areas, number of dwellings and population in 2025 Baseline Annual L_{den} contours

Scenario	2025 Baseline			
Contour L_{den} (dB)	Excluding Consented Developments		Including Consented Developments	
	Dwellings	Population.	Dwellings	Population
50	8,739	24,518	9,229	26,026
55	133	389	133	389
60	20	60	20	60
65	1	3	1	3
70	0	0	0	0

The number of people exposed to ground noise when measured using the L_{den} metric is forecast to reduce from the 2018 Baseline to the 2022 Baseline, for all contour levels. For example the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} 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 L_{den} 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.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship.

There are no schools, residential healthcare facilities or places of worship above the L_{den} thresholds given in Table 14-4 for any of the Baseline scenarios.

14.4.6 Baseline Noise Modelling L_{night} Metric

Noise contours have been produced for the primary assessment metric of L_{night} using the methodology described in Section 0. For the 2018 Baseline these are based on the actual aircraft movement in 2018. For the future years these are based on forecast movements.

The result for the years 2018, 2022 and 2025 are detailed below. 2022 represents the year that the North Runway is first expected to be operational, and 2025 the likely worst-case future year for the Relevant Action application. These results are also presented in Appendix 14C along with the results for supplementary noise metrics.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 55 dB L_{night}, do not extend much further than the airport site in any of the Baseline scenarios. The 2018 Baseline noise contours representing a low impact, 45 dB L_{night}, extend to the west to Shanganhill, to the north to Ridgewood, to the east to the M1 and to the south to Santry Demesne.

The noise contours in the 2022 Baseline and 2025 Baseline are a similar shape to the 2018 Baseline but are 100-200 m smaller in all directions.

To provide further information on changes in the noise environment for specific communities predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the Baseline scenarios in terms of the L_{night} metric are given in Table 14-13.

Table 14-13: Baseline Noise levels at Representative Locations (L_{night})

Representative Location	Reference No.	Baseline Noise Level, dB (L_{night})		
		2018	2022	2025
Ridgewood	GR01	45	44	44

The Baskins	GR02	40	39	39
Mayeston Hall	GR03	48	46	46
St Margret's	GR04	41	40	40

Note – noise levels rounded to nearest whole number.

L_{night} noise levels at all receptors are forecast to decrease by 1-2 dB(A) between the 2018 Baseline and 2022 Baseline scenarios. Going from the 2022 Baseline to the 2025 Baseline there are small decreases of 0-1 dB at all locations.

For each of the sets of baseline contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population, excluding consented developments, and allowing for consented developments. The results for 2018 Baseline are given by contour in Table 14-14.

Table 14-14: Areas, number of dwellings and population in 2018 Baseline Annual L_{night} contours

Scenario	*2018 Baseline*			
Contour L_{night} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
45	1,359	3,424	1,359	3,424
50	29	78	29	78
55	9	29	9	29
60	0	0	0	0
65	0	0	0	0

The dwelling and population results for 2022 Baseline are given by contour in Table 14-15.

Table 14-15: Areas, number of dwellings and population in 2022 Baseline Annual L_{night} contours

Scenario	*2022 Baseline*			
Contour L_{night} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
45	262	631	262	631
50	23	62	23	62
55	2	6	2	6
60	0	0	0	0
65	0	0	0	0

The dwelling and population results for 2025 Baseline are given by contour in Table 14-16.

Table 14-16: Areas, number of dwellings and population in 2025 Baseline Annual L_{night} contours

Scenario	2025 Baseline			
Contour L_{night} (dB)	Excluding Consented Developments		Including Consented Developments	
	Dwellings	Population.	Dwellings	Population
45	246	578	246	578
50	23	62	23	62
55	2	6	2	6
60	0	0	0	0
65	0	0	0	0

The number of people exposed to ground noise when measured using the L_{night} metric is forecast to reduce from the 2018 Baseline to the 2022 Baseline, for all contour levels. For example the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} 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 L_{night} 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.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship. Of these, only residential healthcare facilities are highly sensitive to noise at night. The numbers of these above the thresholds given in Table 14-4 for the Baseline scenarios are given in Table 14-17.

Table 14-17: Residential healthcare facilities in Baseline L_{night} contours

Scenario	No. Residential Healthcare Facilities Above Threshold for Medium Absolute Effect
2018 Baseline	1
2022 Baseline	0
2025 Baseline	0

The one residential healthcare facility exposed to an L_{night} level above the threshold given in Table 14-4 (i.e. 45 dB L_{night} or above) in the 2018 Baseline is forecast to reduce to below the threshold in the 2022 and 2025 Baseline scenarios. The property is located in Santry Demesne.

14.5 Environmental Design and Management

There are a number of measures already in place at Dublin Airport that reduce or mitigate the ground noise effects of aircraft operations. These are described in this section.

14.5.1 Reduction of Noise at Source

Over the past 20 years, the models and types of aircraft using Dublin Airport have evolved, and improvements in technology have meant that the typical aircraft using the airport are quieter than they used to be.

The ICAO Noise 'Chapter' rating defines specific air noise performance criteria which aircraft must meet in order to be certificated. Equivalent certification for ground noise does not exist, and therefore it is difficult to predict the noise level of aircraft which do not currently operate in significant numbers at Dublin Airport currently, but are forecast to do so in the future, such as the Airbus A320neo and Boeing 737 MAX 8.

It is expected that aircraft such as these will be quieter than those they replace when carrying out ground operations, although the improvement is expected to be of a smaller magnitude than for air noise. For this assessment, a conservative assumption has been made that future aircraft perform similarly to those operating today.

daa plan to incentivise fleet renewal through the introduction of noise charges. This action is included in the approved Dublin Airport Noise Action Plan 2019-2023.

14.5.2 Land use Planning and Management

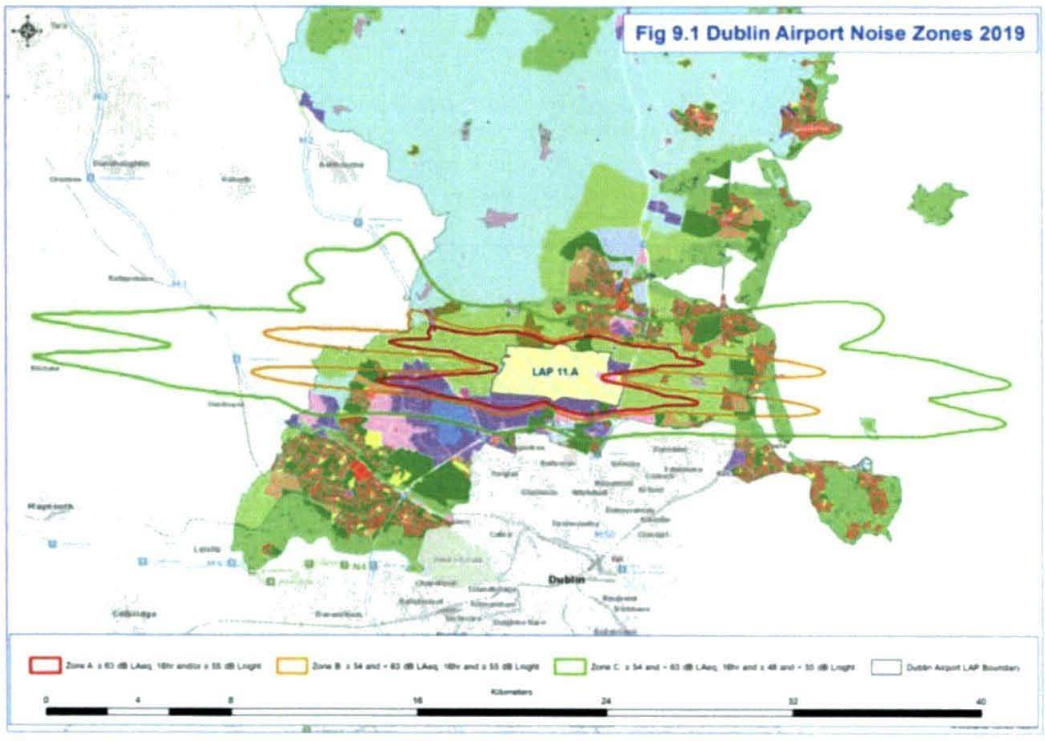
14.5.2.1 Noise Zones

The 2020 Local Area Plan (LAP) includes a dedicated section (section 9.1) to noise. In this section it notes the following. It also includes a figure of the latest Dublin Airport noise zones which is repeated below as Figure 14-3. These zones are based on air noise levels, but also act to restrict development in areas exposed to high levels of ground noise.

"The Dublin Airport LAP is a land use plan for the purposes of effective land-use planning and safeguarding the use of the Airport. Noise zones relating to Dublin Airport have been in place for many years to aid land use planning. Since the publication of previous noise zones in 2005, and over the last decade, further evidence has emerged that has updated understanding of how aircraft noise can affect health and quality of life. With the north runway set to become operational in 2022, updated information is available relating to aircraft noise performance and flight paths. For these reasons, 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 updated noise zones are set out in Fig. 9.1. Dublin Airport Noise Zones and policies relating to development in Noise Zones are set out in Variation No. 1 to the Fingal Development Plan 2017 - 2023."

Figure 14-3: Extract from Local Area Plan – Noise Zones



The actions to restrict unsuitable development in the noise zones are described in the Fingal Development Plan 2017-2023 Variation No. 1, which states:

"Table 7.2 presents the four aircraft noise zones and the associated objective of each zone along with an indication of the potential noise exposure from operations at Dublin Airport. The zones are based on potential noise exposure levels due to the airport using either the new northern or existing southern runway for arrivals or departures."

Table 7.2 is reproduced below for reference as Table 14-18. The table consider two noise metrics, L_{night} which is one of primary metrics used in this chapter, and $L_{Aeq,16hr}$ which is one of the supplementary noise metrics. Due to the distribution of flights across the day, evening and night periods at larger airports the noise exposure expressed using the $L_{Aeq,16hr}$ metric is typically 2 dB lower than if it is expressed using the L_{den} metric, the other primary metric used in this chapter.

Table 14-18: Extract from Fingal Development Plan 2017-2023 (Table 7.2)

Zone	*Indication of Potential Noise Exposure during Airport Operations*	*Objective*
D	≥ 50 and < 54 dB $L_{Aeq,16hr}$ and ≥ 40 and < 48 dB L_{night}	To identify noise sensitive developments which could potentially be affected by aircraft noise and to identify any larger residential developments in the vicinity of the flight paths serving the Airport in order to promote appropriate land use and to identify encroachment. All noise sensitive development within this zone is likely to be acceptable from a noise perspective. An associated application would not normally be refused on noise grounds, however where the development is residential-led and comprises non-residential noise sensitive uses, or comprises 50 residential units or more, it may be necessary for the applicant to demonstrate that a good acoustic design has been followed. Applicants are advised to seek expert advice.
C	≥ 54 and < 63 dB $L_{Aeq,16hr}$	To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure, where appropriate, noise insulation is incorporated within the development

	and	Noise sensitive development in this zone is less suitable from a noise perspective than in Zone D. A noise assessment must be undertaken in order to demonstrate good acoustic design has been followed.
	≥ 48 and < 55 dB L_{night}	The noise assessment must demonstrate that relevant internal noise guidelines will be met. This may require noise insulation measures. An external amenity area noise assessment must be undertaken where external amenity space is intrinsic to the development's design. This assessment should make specific consideration of the acoustic environment within those spaces as required so that they can be enjoyed as intended. Ideally, noise levels in external amenity spaces should be designed to achieve the lowest practicable noise levels. Applicants are strongly advised to seek expert advice.
B		To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure noise insulation is incorporated within the development.
	≥ 54 and < 63 dB $L_{Aeq,16hr}$	Noise sensitive development in this zone is less suitable from a noise perspective than in Zone C. A noise assessment must be undertaken in order to demonstrate good acoustic design has been followed. Appropriate well-designed noise insulation measures must be incorporated into the development in order to meet relevant internal noise guidelines.
	and	
	≥ 55 dB L_{night}	An external amenity area noise assessment must be undertaken where external amenity space is intrinsic to the developments design. This assessment should make specific consideration of the acoustic environment within those spaces as required so that they can be enjoyed as intended. Ideally, noise levels in external amenity spaces should be designed to achieve the lowest practicable noise levels. Applicants must seek expert advice.
A	≥ 63 dB $L_{Aeq,16hr}$	To resist new provision for residential development and other noise sensitive uses. All noise sensitive developments within this zone may potentially be exposed to high levels of aircraft noise, which may be harmful to health or otherwise unacceptable. The provision of new noise sensitive developments will be resisted
	and/or	
	≥ 55 dB L_{night}	

Notes:

- 'Good Acoustic Design' means following the principles of assessment and design as described in ProPG: Planning & Noise – New Residential Development, May 2017;
- Internal and External Amenity and the design of noise insulation measures should follow the guidance provided in British Standard BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'

14.5.2.2 Residential Sound Insulation Schemes

Dublin Airport operates insulation schemes for dwellings and schools based on the level of air noise they are exposed to. Although not based on the ground noise levels, this means that many of the properties with the highest ground noise levels are eligible for insulation works through these existing schemes.

14.5.3 Operational Procedures

Dublin Airport have in place a range of operational procedures which serve to minimise ground noise. These include:

- Engine test runs are only permitted at certain times to minimise ground noise.
- The aircraft engine test site which was located at the northern end of the airfield has been relocated to the centre of the airfield, away from populated neighbouring areas.
- Fixed Electrical Ground Power (FEGP) is a ground power system that allows aircraft to plug directly into a fixed, electricity powered energy source while they are parked on the airfield. This has noise (and other environmental) benefits when compared to aircraft using Auxiliary Power Units (APUs) or engine-driven Ground Power Units (GPUs).

- FEGP is available at a number of stands at Dublin Airport, and aircraft are required to use it where available, in preference to APUs or GPUs.

14.5.4 Operating Restrictions

The relevant operating restrictions are detailed in Conditions 3(d) and 5 relating to the North Runway Permission, as described in Section 12.1.

14.6 Assessment of Effects and Significance

The effects have been assessed first for the Relevant Action in isolation, and then for the cumulative effect of the Relevant Action and the Apron 5H application.

14.6.1 Effects During Operation with Proposed Relevant Action

14.6.1.1 Opening Year 2022 Relevant Action L_{den} Metric

Noise contours have been produced for the primary assessment metric of L_{den} using the methodology described in Section 0. For the 2022 Relevant Action scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission. Due to the profound impact on the aviation industry worldwide of the Covid-19 pandemic, activity is forecast to be less than 32 mppa by 2022, so the presence of Condition 3 of the Terminal 2 Permission (which limits Dublin Airport to 32 mppa) has no effect.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 65 dB L_{den}, do not extend much further than the airport site in the 2022 Relevant Action scenario or any of the Baseline scenarios.

The 2022 Relevant Action noise contours representing a low impact, 50 dB L_{den}, are a similar shape to the 2022 Baseline but extend around 100-200 m further in all directions.

To provide further information on changes in the noise environment for specific communities, predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2022 Relevant Action scenario in terms of the L_{den} metric are given in Table 14-19, where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-19: 2022 Relevant Action Noise levels at Representative Locations (L_{den})

Representative Location	*Reference No.*	*Noise Level dB (L_{den})*		
		2022 Relevant Action	*Difference to 2018 Baseline*	*Difference to 2022 Baseline*
Ridgewood	GR01	57	+3	+2
The Baskins	GR02	49	+1	+1
Mayeston Hall	GR03	56	+0	+1
St Margret's	GR04	50	+1	+1

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{den} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2022 Relevant Action scenarios. Receptors in other locations are forecast to increase by 0-1 dB(A).

Comparing the 2022 Relevant Action scenario to the 2022 Baseline, there are increases of 1-2 dB at all locations.

For the 2022 Relevant Action L_{den} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-20.

Table 14-20: Areas, number of dwellings and population in 2022 Relevant Action Lden contours

Scenario	*2022 Relevant Action*			
Contour L_{den} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
50	10,541	29,994	11,195	32,090
55	679	1,892	679	1,892
60	25	75	25	75
65	2	6	2	6
70	0	0	0	0

Comparing the 2022 Relevant Action scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) increases from 26,361 to 29,994, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) does not change from 6.

Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) is forecast to increase from 23,826 to 29,994, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) is forecast to increase from 3 to 6.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-3, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2022 Relevant Action scenario is compared with the 2018 Baseline in Table 14-21 and with the 2022 Baseline in Table 14-22. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 45 dB L_{den} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-21: Ground Noise (L_{den}) People by Magnitude of effect – 2022 Relevant Action vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	11,669	19,209
Not Significant	29	13,576
Slight	3	5,548
Moderate	0	1,054
Significant	0	20
Very Significant	0	0
Profound	0	0

Table 14-22: Ground Noise (L_{den}) People by Magnitude of effect – 2022 Relevant Action vs 2022 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	36,758
Not Significant	0	12,810
Slight	0	1,401
Moderate	0	0
Significant	0	0
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2022 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 20 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2022 Baseline to the 2022 Relevant Action scenario, no people are assessed as having a significant effect, either beneficial or adverse.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship.

There are no schools, residential healthcare facilities or places of worship above the L_{den} thresholds given in Table 14-4 for the 2022 Relevant Action scenario or any of the Baseline scenarios.

14.6.1.2 Opening Year 2022 Relevant Action L_{night} Metric

Noise contours have been produced for the primary assessment metric of L_{night} using the methodology described in Section 0. For the 2022 Relevant Action scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission. Due to the profound impact on the aviation industry worldwide of the Covid-19 pandemic activity is forecast to be less than 32 mppa by 2022, so the presence of Condition 3 of the Terminal 2 Permission (which limits Dublin Airport to 32 mppa) has no effect.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 55 dB L_{night}, do not extend much further than the airport site in the 2022 Relevant Action scenario or any of the Baseline scenarios.

The 2022 Relevant Action noise contours representing a low impact, 45 dB L_{night}, are a similar shape to the 2018 Baseline but are larger and shifted slightly to the north. They extend to the west nearly to the R122, to the north into Ridgewood, to the east to just past the M1 and to the south to Santry Demesne.

To provide further information on changes in the noise environment for specific communities, predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2022 Relevant Action scenario in terms of the L_{night} metric are given in Table 14-23. where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-23: 2022 Relevant Action Noise levels at Representative Locations (L_{night})

Representative Location	*Reference No.*	*Baseline Noise Level, dB (L_{night})*		
		2022 Relevant Action	*Difference to 2018 Baseline*	*Difference to 2022 Baseline*

Ridgewood	GR01	48	+3	+4
The Baskins	GR02	41	+1	+2
Mayeston Hall	GR03	48	0	+2
St Margret's	GR04	42	+1	+2

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{night} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2022 Relevant Action scenarios. Receptors in other locations are forecast to increase by 0-1 dB(A).

Comparing the 2022 Relevant Action scenario to the 2022 Baseline, there are increases of 4 dB(A) at Ridgewood, and 2 dB(A) at other locations.

For the 2022 Relevant Action L_{night} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-24.

Table 14-24: Areas, number of dwellings and population in 2022 Relevant Action L_{night} contours

Scenario	*2022 Relevant Action*			
Contour L_{night} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
45	3,620	9,843	3,829	10,435
50	35	96	35	96
55	12	35	12	35
60	1	3	1	3
65	0	0	0	0

Comparing the 2022 Relevant Action scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) increases from 3,424 to 9,843, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) increases from 29 to 35.

Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) is forecast to increase from 631 to 9,843, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) is forecast to increase from 6 to 35.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-3, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2022 Relevant Action scenario is compared with the 2018 Baseline in Table 14-25, and with the 2022 Baseline in Table 14-26. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 40 dB L_{night} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-25: Ground Noise (L_{night}) People by Magnitude of effect – 2022 Relevant Action vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*

Imperceptible	1,265	35,266
Not Significant	6	8,749
Slight	0	530
Moderate	3	28
Significant	0	3
Very Significant	0	0
Profound	0	0

Table 14-26: Ground Noise (L_{night}) People by Magnitude of effect – 2022 Relevant Action vs 2022 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	23,209
Not Significant	0	9,664
Slight	0	9,916
Moderate	0	2,896
Significant	0	34
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2022 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 3 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2022 Baseline to the 2022 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 34 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically residential healthcare facilities and places of worship. Of these, only residential healthcare facilities are highly sensitive to noise at night. The numbers of these above the thresholds given in Table 14-4 for the 2022 Relevant Action scenario are given in Table 14-27, where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-27: Residential healthcare facilities in 2022 Relevant Action L_{night} contours

Scenario	*No. Residential Healthcare Facilities Above Threshold for Medium Absolute Effect*
2022 Relevant Action	1

2018 Baseline	1
2022 Baseline	0

There is one residential healthcare facility exposed to an Lnight level above the threshold given in Table 14-4 (i.e. 45 dB Lnight or above) in the 2018 Baseline, which is forecast to remain so in the 2022 Relevant Action scenario, although it would reduce to below the threshold in the 2022 Baseline scenario. The property is located in Santry Demesne.

14.6.1.3 Worst-case Year 2025 Relevant Action L_{den} Metric

Noise contours have been produced for the primary assessment metric of L_{den} using the methodology described in Section 0. For the 2025 Relevant Action scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 65 dB L_{den}, do not extend much further than the airport site in the 2025 Relevant Action scenario or any of the Baseline scenarios.

The 2025 Relevant Action noise contours representing a low impact, 50 dB L_{den}, are a similar shape to the 2025 Baseline but extend around 100-200 m further in all directions.

To provide further information on changes in the noise environment for specific communities predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2025 Relevant Action scenario in terms of the L_{den} metric are given in Table 14-28.

Table 14-28: 2025 Relevant Action Noise levels at Representative Locations (L_{den})

Representative Location	*Reference No.*	*Noise Level, dB (L_{den})*		
		2025 Relevant Action	*Difference to 2018 Baseline*	*Difference to 2025 Baseline*
Ridgewood	GR01	57	+4	+2
The Baskins	GR02	49	+1	+1
Mayeston Hall	GR03	56	0	+1
St Margret's	GR04	50	+1	+1

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{den} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 4 dB(A) between the 2018 Baseline and 2025 Relevant Action scenarios. Receptors to the south or west of the airport site, such as Mayeston Hall (#03), are forecast to increase by 0-1 dB(A).

Comparing the 2025 Relevant Action scenario to the 2025 Baseline, there are increases of 1-2 dB at all locations.

For the 2025 Relevant Action L_{den} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-29.

Table 14-29: Areas, number of dwellings and population in 2025 Relevant Action L_{den} contours

Scenario	*2025 Relevant Action*

Contour L_{den} (dB)	Excluding Consented Developments		Including Consented Developments	
	Dwellings	Population.	Dwellings	Population
50	10,988	31,323	11,642	33,419
55	767	2,160	767	2,160
60	26	75	26	75
65	2	6	2	6
70	0	0	0	0

Comparing the 2025 Relevant Action scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) increases from 26,361 to 31,323, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) does not change from 6.

Comparing the 2025 Relevant Action scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) is forecast to increase from 24,518 to 31,323, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) is forecast to increase from 3 to 6.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2025 Relevant Action scenario is compared with the 2018 Baseline in Table 14-30, and with the 2025 Baseline in Table 14-31. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 45 dB L_{den} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-30: Ground Noise (L_{den}) People by Magnitude of effect – 2025 Relevant Action vs 2018 Baseline

Magnitude of effect	No. people with Beneficial Effect	No. people with Adverse Effect
Imperceptible	6,206	23,536
Not Significant	10	7,862
Slight	3	11,963
Moderate	0	1,584
Significant	0	26
Very Significant	0	0
Profound	0	0

Table 14-31: Ground Noise (L_{den}) People by Magnitude of effect – 2025 Relevant Action vs 2025 Baseline

Magnitude of effect	No. people with Beneficial Effect	No. people with Adverse Effect
Imperceptible	0	36,110
Not Significant	0	13,275

Slight	0	1,681
Moderate	0	0
Significant	0	0
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2025 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 26 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2025 Baseline to the 2025 Relevant Action scenario, no people are assessed as having a significant effect, either beneficial or adverse.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship.

There are no schools, residential healthcare facilities or places of worship above the L_{den} thresholds given in Table 14-4 for the 2025 Relevant Action scenario or any of the Baseline scenarios.

14.6.1.4 Worst-case Year 2025 Relevant Action L_{night} Metric

Noise contours have been produced for the primary assessment metric of L_{night} using the methodology described in Section 0. For the 2025 Relevant Action scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 55 dB L_{night}, do not extend much further than the airport site in the 2025 Relevant Action scenario or any of the Baseline scenarios.

The 2025 Relevant Action noise contours representing a low impact, 45 dB L_{night}, are a similar shape to the 2018 Baseline but are larger and shifted slightly to the north. They extend to the west to the R122, to the north into Ridgewood, to the east to Glebe and to the south to the R104 in Santry Demesne.

Table 14-32: 2025 Relevant Action Noise levels at Representative Locations (L_{night})

Representative Location	*Reference No.*	*Noise Level, dB (L_{night})*		
		2025 Relevant Action	*Difference to 2018 Baseline*	*Difference to 2025 Baseline*
Ridgewood	GR01	49	+3	+4
The Baskins	GR02	41	+1	+2
Mayeston Hall	GR03	48	0	+2
St Margret's	GR04	42	+1	+2

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{night} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2025 Relevant Action scenarios. Receptors in other location are forecast to increase by 0-1 dB(A).

Comparing the 2025 Relevant Action scenario to the 2025 Baseline, there are increases of 4 dB(A) at Ridgewood, and 2 dB(A) at other locations.

For the 2025 Relevant Action L_{night} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-33.

Table 14-33: Areas, number of dwellings and population in 2025 Relevant Action L_{night} contours

Scenario	2025 Relevant Action			
Contour L_{night} (dB)	Excluding Consented Developments		Including Consented Developments	
	Dwellings	Population.	Dwellings	Population
45	3,893	10,521	4,225	11,503
50	38	102	38	102
55	12	35	12	35
60	1	3	1	3
65	0	0	0	0

Comparing the 2025 Relevant Action scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) increases from 3,424 to 10,521, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) increases from 29 to 35.

Comparing the 2025 Relevant Action scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) is forecast to increase from 578 to 10,521, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) is forecast to increase from 6 to 35.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2025 Relevant Action scenario is compared with the 2018 Baseline in Table 14-34, and with the 2025 Baseline in Table 14-35. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 40 dB L_{night} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-34: Ground Noise (L_{night}) People by Magnitude of effect – 2025 Relevant Action vs 2018 Baseline

Magnitude of effect	No. people with Beneficial Effect	No. people with Adverse Effect
Imperceptible	299	34,242
Not Significant	3	9,771
Slight	3	1,877
Moderate	0	31
Significant	0	3
Very Significant	0	0
Profound	0	0

Table 14-35: Ground Noise (L_{night}) People by Magnitude of effect – 2025 Relevant Action vs 2025 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	22,855
Not Significant	0	5,465
Slight	0	11,761
Moderate	0	6,107
Significant	0	34
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2025 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 3 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2025 Baseline to the 2025 Relevant Action scenario, no people are assessed as having a significant beneficial effect, and 34 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship. Of these, only residential healthcare facilities are highly sensitive to noise at night. The numbers of these above the thresholds given in Table 14-4 for the 2025 Relevant Action scenario are given in Table 14-36, where they are compared with the 2018 and 2025 Baseline scenarios.

Table 14-36: Residential healthcare facilities in 2025 Relevant Action L_{night} contours

Scenario	*No. Residential Healthcare Facilities Above Threshold for Medium Absolute Effect*
2025 Relevant Action	1
2018 Baseline	1
2025 Baseline	0

There is one residential healthcare facility exposed to an L_{night} level above the threshold given in Table 14-4 (i.e. 45 dB L_{night} or above) in the 2018 Baseline, which is forecast to remain so in the 2025 Relevant Action scenario, although it would reduce to below the threshold in the 2025 Baseline scenario. The property is located in Santry Demesne.

14.6.2 Effects During Operation with Proposed Relevant Action and Apron 5H

14.6.2.1 Opening Year 2022 Apron 5H L_{den} Metric

Noise contours have been produced for the primary assessment metric of L_{den} using the methodology described in Section 0. For the 2022 Apron 5H scenario these are based on forecast aircraft movements without Conditions

3(d) and 5 of the North Runway Permission. Due to the profound impact on the aviation industry worldwide of the Covid-19 pandemic activity is forecast to be less than 32 mppa by 2022, so the presence of Condition 3 of the Terminal 2 Permission (which limits Dublin Airport to 32 mppa) has no effect. It has been assumed that the Apron 5H application is successful and the proposed stands are operational.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 65 dB L_{den}, do not extend much further than the airport site in the 2022 Apron 5H scenario or any of the Baseline scenarios.

The 2022 Apron 5H noise contours representing a low impact, 50 dB L_{den}, are a similar shape to the 2022 Baseline but extend around 100-200 m further in all directions.

To provide further information on changes in the noise environment for specific communities, predictions have also been undertaken of the noise levels at a number of representative locations which are shown Figure 14-2. The results of these predictions for the 2022 Apron 5H scenario in terms of the L_{den} metric are given in Table 14-37, where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-37: 2022 Apron 5H Noise levels at Representative Locations (L_{den})

Representative Location	*Reference No.*	*Noise Level, dB (L_{den})*		
		2022 Apron 5H	*Difference to 2018 Baseline*	*Difference to 2022 Baseline*
Ridgewood	GR01	57	+3	+2
The Baskins	GR02	49	+1	+1
Mayeston Hall	GR03	56	0	+1
St Margret's	GR04	50	+1	+1

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{den} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2022 Apron 5H scenarios. Receptors in other locations are forecast to increase by 0-1 dB(A).

Comparing the 2022 Apron 5H scenario to the 2022 Baseline, there are increases of 1-2 dB at all locations.

For the 2022 Apron 5H L_{den} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-38.

Table 14-38: Areas, number of dwellings and population in 2022 Apron 5H L_{den} contours

Scenario	*2022 Apron 5H*			
Contour L_{den} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
50	10,536	29,983	11,190	32,079
55	616	1,773	616	1,773
60	25	75	25	75
65	2	6	2	6
70	0	0	0	0

Comparing the 2022 Apron 5H scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) increases from 26,361 to 29,983, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) does not change from 6.

Comparing the 2022 Apron 5H scenario with the 2022 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) is forecast to increase from 23,826 to 29,983, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) is forecast to increase from 3 to 6.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2022 Apron 5H scenario is compared with the 2018 Baseline in Table 14-39, and with the 2022 Baseline in Table 14-40. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 45 dB L_{den} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-39: Ground Noise (L_{den}) People by Magnitude of effect – 2022 Apron 5H vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	13,773	16,748
Not Significant	35	11,772
Slight	3	7,479
Moderate	0	1,324
Significant	0	20
Very Significant	0	0
Profound	0	0

Table 14-40: Ground Noise (L_{den}) People by Magnitude of effect – 2022 Apron 5H vs 2022 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	36,734
Not Significant	0	12,701
Slight	0	1,455
Moderate	0	3
Significant	0	0
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2022 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 20 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2022 Baseline to the 2022 Apron 5H scenario, no people are assessed as having a significant effect, either beneficial or adverse.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship.

There are no schools, residential healthcare facilities or places of worship above the L_{den} thresholds given in Table 14-4 for the 2022 Apron 5H scenario or any of the Baseline scenarios.

14.6.2.2 Opening Year 2022 Apron 5H L_{night} Metric

Noise contours have been produced for the primary assessment metric of L_{night} using the methodology described in Section 0. For the 2022 Apron 5H scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission. Due to the profound impact on the aviation industry worldwide of the Covid-19 pandemic activity is forecast to be less than 32 mppa by 2022, so the presence of Condition 3 of the Terminal 2 Permission (which limits Terminal capacity at Dublin Airport to 32 mppa) has no effect. It has been assumed that the Apron 5H application is successful and the proposed stands are operational.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 55 dB L_{night}, do not extend much further than the airport site in the 2022 Apron 5H scenario or any of the Baseline scenarios.

The 2022 Apron 5H noise contours representing a low impact, 45 dB L_{night}, are a similar shape to the 2018 Baseline but are larger and shifted slightly to the north. They extend to the west nearly to the R122, to the north into Ridgewood, to the east to just past the M1 and to the south to Santry Demesne.

To provide further information on changes in the noise environment for specific communities, predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2022 Apron 5H scenario in terms of the L_{night} metric are given in Table 14-41, where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-41: 2022 Apron 5H Noise levels at Representative Locations (L_{night})

Representative Location	*Reference No.*	*Baseline Noise Level, dB (L_{night})*		
		2022 Apron 5H	*Difference to 2018 Baseline*	*Difference to 2022 Baseline*
Ridgewood	GR01	48	+3	+4
The Baskins	GR02	41	+1	+2
Mayeston Hall	GR03	48	0	+2
St Margret's	GR04	42	+1	+2

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{night} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2022 Apron 5H scenarios. Receptors in other locations are forecast to increase by 0-1 dB(A).

Comparing the 2022 Apron 5H scenario to the 2022 Baseline, there are increases of 4 dB(A) at Ridgewood, and 2 dB(A) at other locations.

For the 2022 Apron 5H L_{night} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-42.

Table 14-42: Areas, number of dwellings and population in 2022 Apron 5H L_{night} contours

Scenario	*2022 Apron 5H*			
Contour L_{night} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
45	3,674	9,995	3,854	10,509
50	35	96	35	96
55	12	35	12	35
60	1	3	1	3
65	0	0	0	0

Comparing the 2022 Apron 5H scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) increases from 3,424 to 9,995, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) increases from 29 to 35.

Comparing the 2022 Apron 5H scenario with the 2022 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) is forecast to increase from 631 to 9,995, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) is forecast to increase from 6 to 35.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2022 Apron 5H scenario is compared with the 2018 Baseline in Table 14-43, and with the 2022 Baseline in Table 14-44. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 40 dB L_{night} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-43: Ground Noise (L_{night}) People by Magnitude of effect – 2022 Apron 5H vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	1,935	33,258
Not Significant	9	9,370
Slight	0	1,497
Moderate	3	28
Significant	0	3
Very Significant	0	0
Profound	0	0

Table 14-44: Ground Noise (L_{night}) People by Magnitude of effect – 2022 Apron 5H vs 2022 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*

Imperceptible	0	23,195
Not Significant	0	7,060
Slight	0	10,227
Moderate	0	5,397
Significant	0	34
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2022 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 3 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2022 Baseline to the 2022 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 34 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically residential healthcare facilities and places of worship. Of these, only residential healthcare facilities are highly sensitive to noise at night. The numbers of these above the thresholds given in Table 14-4 for the 2022 Apron 5H scenario are given in Table 14-45, where they are compared with the 2018 and 2022 Baseline scenarios.

Table 14-45: Residential healthcare facilities in 2022 Apron 5H L_{night} contours

Scenario	*No. Residential Healthcare Facilities Above Threshold for Medium Absolute Effect*
2022 Apron 5H	1
2018 Baseline	1
2022 Baseline	0

There is one residential healthcare facility exposed to an L_{night} level above the threshold given in Table 14-4 (i.e. 45 dB L_{night} or above) in the 2018 Baseline, which is forecast to remain so in the 2022 Apron 5H scenario, although it would reduce to below the threshold in the 2022 Baseline scenario. The property is located in Santry Demesne.

14.6.2.3 Worst-case Year 2025 Apron 5H L_{den} Metric

Noise contours have been produced for the primary assessment metric of L_{den} using the methodology described in Section 0. For the 2025 Apron 5H scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission. It has been assumed that the Apron 5H application is successful and the proposed stands are operational.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 65 dB L_{den}, do not extend much further than the airport site in the 2025 Apron 5H scenario or any of the Baseline scenarios.

The 2025 Apron 5H noise contours representing a low impact, 50 dB L_{den}, are a similar shape to the 2025 Baseline but extend around 100-200 m further in all directions.

To provide further information on changes in the noise environment for specific communities predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2025 Apron 5H scenario in terms of the L_{den} metric are given in Table 14-46.

Table 14-46: 2025 Apron 5H Noise levels at Representative Locations (L_{den})

Representative Location	*Reference No.*	*Noise Level, dB (L_{den})*		
		2025 Apron 5H	*Difference to 2018 Baseline*	*Difference to 2025 Baseline*
Ridgewood	GR01	57	+4	+2
The Baskins	GR02	49	+1	+1
Mayeston Hall	GR03	56	0	+1
St Margret's	GR04	50	+1	+1

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{den} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 4 dB(A) between the 2018 Baseline and 2025 Apron 5H scenarios. Receptors to the south or west of the airport site, such as Mayeston Hall (#03), are forecast to increase by 0-1 dB(A).

Comparing the 2025 Apron 5H scenario to the 2025 Baseline, there are increases of 1-2 dB at all locations.

For the 2025 Apron 5H L_{den} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-47.

Table 14-47: Areas, number of dwellings and population in 2025 Apron 5H L_{den} contours

Scenario	*2025 Apron 5H*			
Contour L_{den} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population*	*Dwellings*	*Population*
50	11,016	31,430	11,670	33,526
55	834	2,362	834	2,362
60	26	75	26	75
65	2	6	2	6
70	0	0	0	0

Comparing the 2025 Apron 5H scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB L_{den} or above) increases from 26,361 to 31,430, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB L_{den} or above) does not change from 6.

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 L_{den} 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 L_{den} or above) is forecast to increase from 3 to 6.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2025 Apron 5H

scenario is compared with the 2018 Baseline in Table 14-48, and with the 2025 Baseline in Table 14-49. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 45 dB L_{den} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-48: Ground Noise (L_{den}) People by Magnitude of effect – 2025 Apron 5H vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	7,155	22,349
Not Significant	10	7,093
Slight	3	12,768
Moderate	0	1,811
Significant	0	26
Very Significant	0	0
Profound	0	0

Table 14-49: Ground Noise (L_{den}) People by Magnitude of effect – 2025 Apron 5H vs 2025 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	35,931
Not Significant	0	13,270
Slight	0	1,890
Moderate	0	6
Significant	0	0
Very Significant	0	0
Profound	0	0

Going from the 2018 Baseline to the 2025 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 26 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2025 Baseline to the 2025 Apron 5H scenario, no people are assessed as having a significant effect, either beneficial or adverse.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship.

There are no schools, residential healthcare facilities or places of worship above the L_{den} thresholds given in Table 14-4 for the 2025 Apron 5H scenario or any of the Baseline scenarios.

14.6.2.4 Worst-case Year 2025 Apron 5H L_{night} Metric

Noise contours have been produced for the primary assessment metric of L_{night} using the methodology described in Section 0. For the 2025 Apron 5H scenario these are based on forecast aircraft movements without Conditions 3(d) and 5 of the North Runway Permission. It has been assumed that the Apron 5H application is successful and the proposed stands are operational.

Appendix 14C presents the resulting noise contours for each scenario. The noise contours representing a high impact, 55 dB L_{night}, do not extend much further than the airport site in the 2025 Apron 5H scenario or any of the Baseline scenarios.

The 2025 Apron 5H noise contours representing a low impact, 45 dB L_{night}, are a similar shape to the 2018 Baseline but are larger and shifted slightly to the north. They extend to the west to the R122, to the north into Ridgewood, to the east to Glebe and to the south to the R104 in Santry Demesne.

To provide further information on changes in the noise environment for specific communities predictions have also been undertaken of the noise levels at a number of representative locations which are shown on Figure 14-2. The results of these predictions for the 2025 Apron 5H scenario in terms of the L_{night} metric are given in Table 14-50.

Table 14-50: 2025 Apron 5H Noise levels at Representative Locations (L_{night})

Representative Location	*Reference No.*	*Noise Level, dB (L_{night})*		
		2025 Apron 5H	*Difference to 2018 Baseline*	*Difference to 2025 Baseline*
Ridgewood	GR01	49	+3	+4
The Baskins	GR02	41	+1	+2
Mayeston Hall	GR03	48	0	+2
St Margret's	GR04	42	+1	+2

Note – values rounded to nearest whole number. Differences based on unrounded values.

L_{night} noise levels at receptors close to the north of the airport site, for example Ridgewood (#01), are forecast to increase by around 3 dB(A) between the 2018 Baseline and 2025 Apron 5H scenarios. Receptors in other location are forecast to increase by 0-1 dB(A).

Comparing the 2025 Apron 5H scenario to the 2025 Baseline, there are increases of 4 dB(A) at Ridgewood, and 2 dB(A) at other locations.

For the 2025 Apron 5H L_{night} contours the number of dwellings and the estimated population that they contain have been determined. This has been done based on the existing dwellings and population excluding consented developments, and also based on the existing dwellings and population allowing for consented developments. The results are given by contour in Table 14-51.

Table 14-51: Areas, number of dwellings and population in 2025 Apron 5H L_{night} contours

Scenario	*2025 Apron 5H*			
Contour L_{night} (dB)	*Excluding Consented Developments*		*Including Consented Developments*	
	Dwellings	*Population.*	*Dwellings*	*Population*
45	3,917	10,623	4,216	11,498
50	38	102	38	102
55	12	35	12	35

60	1	3	1	3
65	0	0	0	0

Comparing the 2025 Apron 5H scenario with the 2018 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB L_{night} or above) increases from 3,424 to 10,623, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB L_{night} or above) increases from 29 to 35.

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 L_{night} 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 L_{night} or above) is forecast to increase from 6 to 35.

When comparing scenarios, it is also important to consider the change in noise level in order to determine significant changes between the scenarios. Section 0, and specifically Table 14-4, set out the method for interpreting the absolute noise level and change in noise level into a magnitude of effect. The 2025 Apron 5H scenario is compared with the 2018 Baseline in Table 14-52, and with the 2025 Baseline in Table 14-53. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 40 dB L_{night} in at least one of the scenarios. People who are exposed to negligible absolute noise levels in both scenarios or are outside the study area are assessed as not being subject to significant effects and so have not been included.

Table 14-52: Ground Noise (L_{night}) People by Magnitude of effect – 2025 Apron 5H vs 2018 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	651	31,889
Not Significant	6	9,574
Slight	3	4,221
Moderate	0	31
Significant	0	3
Very Significant	0	0
Profound	0	0

Table 14-53: Ground Noise (L_{night}) People by Magnitude of effect – 2025 Apron 5H vs 2025 Baseline

Magnitude of effect	*No. people with Beneficial Effect*	*No. people with Adverse Effect*
Imperceptible	0	22,760
Not Significant	0	4,935
Slight	0	12,341
Moderate	0	6,235
Significant	0	34
Very Significant	0	0

Profound	0	0

Going from the 2018 Baseline to the 2025 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 3 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

Going from the 2025 Baseline to the 2025 Apron 5H scenario, no people are assessed as having a significant beneficial effect, and 34 people are assessed as having a significant adverse effect. No people are assessed as having the highest effect levels, i.e. very significant and profound.

In addition to the consideration of residential properties, other potential receptors of high sensitivity have been included in this assessment, specifically schools, residential healthcare facilities and places of worship. Of these, only residential healthcare facilities are highly sensitive to noise at night. The numbers of these above the thresholds given in Table 14-4 for the 2025 Apron 5H scenario are given in Table 14-54, where they are compared with the 2018 and 2025 Baseline scenarios.

Table 14-54: Residential healthcare facilities in 2025 Apron 5H L_{night} contours

Scenario	*No. Residential Healthcare Facilities Above Threshold for Medium Absolute Effect*
2025 Apron 5H	1
2018 Baseline	1
2025 Baseline	0

There is one residential healthcare facility exposed to an L_{night} level above the threshold given in Table 14-4 (i.e. 45 dB L_{night} or above) in the 2018 Baseline, which is forecast to remain so in the 2025 Apron 5H scenario, although it would reduce to below the threshold in the 2025 Baseline scenario. The property is located in Santry Demesne.

14.6.3 Cumulative Noise Effects

A potential consideration would be to assess the cumulative noise effect of the different noise sources, such as air noise assessed in Chapter 13 and ground noise assessed in this chapter. By convention, this type of cumulative assessment is not typically carried out, and was not for the Heathrow Cranford Agreement planning application (determined in February 2017) and the Stansted 43 million passengers application (determined in January 2020).

Instead each of the main sources associated with operations at the airport was assessed according to its own character, with specific methodologies applied. Air noise at a given receptor is characterised by a series of relatively loud individual noise events, between which there are periods of relative quiet. It can therefore be audible at large distances from the airport. Conversely ground noise at a given receptor is characterised by lower noise levels which have a longer duration and will vary less over time as it is often due to multiple activities occurring at the same time. It is typically only audible to those closer to the airport boundary.

For these reasons each of the noise sources are dealt with separately and it is not feasible to derive a cumulative noise impact for airport operations. Additionally, combining air and ground noise into a single assessment would have the potential to overlook potential significant effects that may arise for the quieter of the two sources.

14.7 Additional Mitigation Measures

14.7.1 Mitigation During Operation of Proposed Relevant Action

In addition to the mitigation measures already in place at Dublin Airport, as part of this application daa are proposing a number of measures in relation to the air noise effects. Of relevance to the ground noise effects is the proposal to enhance the sound insulation scheme such that dwellings will be eligible for a grant to pay for sound insulation improvement works based on their night time air noise level. No specific mitigation is proposed based on ground noise, however properties which benefit from this scheme based on their air noise level will also benefit from a reduction in the ground noise level.

14.8 Residual Effects and Conclusions

The commonly accepted metrics for assessing ground noise all relate to external noise levels. Therefore the assessment of effects presented in Section 14.6 do not allow for any benefit of the residential sound insulation schemes, as this reduces the internal noise level. However, the internal noise level is more representative of the effects, in particular for night noise which is the main focus of this application as most people would be expected to be indoors.

Therefore in order to assess the residual effects, the benefit of the residential sound insulation schemes has been allowed for by considering a residual effective noise level for properties with sound insulation, being 5 dB(A) lower than the modelled noise level.

Dwellings eligible for the existing schemes in a given scenario have been considered here as having a reduction of 5 dB for both their L_{den} and the L_{night} exposure, on the basis that the existing schemes offer to insulate the whole property.

Dwellings not eligible for the existing schemes, but eligible for the new scheme proposed as part of this application, have been considered here as having a reduction of 5 dB for their L_{night} exposure, and a reduction of 5 dB for the night component of their L_{den} exposure, on the basis that the new scheme is intended to cover insulation of bedrooms.

The assumed 5 dB(A) reduction is based on testing carried out in a sample of the properties treated under the existing scheme which found that a reduction of at least 5 dB(A) in the internal noise level has been achieved in almost all cases.

This residual effective noise level has then been used to determine residual effects, following the same methodology as the assessment of effects in Section 14.6.

Allowing for the benefit of the residential sound insulation schemes in general reduces the number of people assessed with significant adverse effects and increases the number of people assessed with significant beneficial effects.

The cumulative effect of the proposed Relevant Action and Apron 5H resulted in the highest impacts, so these scenarios have been presented in this section rather than the Relevant Action in isolation.

14.8.1 Likely Significant Environmental Effects

The residual effects, after the benefit of the residential sound insulation schemes has been allowed are summarised in Table 14-55 and Table 14-56. These tables include all people in existing residential receptors who are within the study area and are exposed to at least 45 dB L_{den} or 40 dB L_{night} in at least one of the scenarios.

Table 14-55: Summary of Residual Ground Noise Effects, 2022 Apron 5H Scenario

Baseline Scenario	*L_{den} Residual Effects*			*L_{night} Residual Effects*		
	Significant Beneficial	Significant Adverse	Not Significant	Significant Beneficial	Significant Adverse	Not Significant

2018 Baseline	0	16	50,997	3	0	45,978
2022 Baseline	0	0	50,747	3	12	45,770

Table 14-56: Summary of Residual Ground Noise Effects, 2025 Apron 5H Scenario

Baseline Scenario	L_{den} Residual Effects			L_{night} Residual Effects		
	Significant Beneficial	Significant Adverse	Not Significant	Significant Beneficial	Significant Adverse	Not Significant
2018 Baseline	0	22	51,053	3	0	46,245
2025 Baseline	0	0	50,952	3	12	46,158

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

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

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

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

Using a similar method to calculate the residual effects, the residual noise levels assessed as high or very high can be calculated. These are presented in Table 14-57.

Table 14-57: Summary of People Exposed to High Residual Noise Levels

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

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

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

14.9 Summary

The assessment in this chapter presents the likely significant effects from ground noise from aircraft as a result of the proposed Relevant Action.

This chapter has considered future forecast scenarios for the selected years of 2022 and 2025, and has compared the situation with the Relevant Action with two situations; that in 2018 (2018 Baseline), and that in the corresponding future year with the North Runway operational and the current conditions in place (2022 or 2025 Baseline).

Consideration has also been given to the cumulative effect of the Relevant Action and the separate Apron 5H application. This resulted in larger effects so results have been presented based on the cumulative situation.

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

Looking at the predicted number of people with significant residual effects, firstly considering the overall situation (L_{den} metric), in 2022 or 2025 with the Relevant Action and Apron 5H there are no forecast significant effects when compared with the corresponding 2022 or 2025 Baseline scenarios. Comparison with the 2018 Baseline leads to a forecast significant adverse effect for 16 people in 2022 and 22 people in 2025. Considering the night situation (L_{night} metric), in 2022 or 2025 with the Relevant Action and Apron 5H there is a forecast significant beneficial effect for 3 people and significant adverse effect for 12 people when compared with the corresponding 2022 or 2025 Baseline scenarios. However comparison with the 2018 Baseline leads to a forecast significant beneficial effect for 3 people and no forecast significant adverse effects.

Chapter 15: Biodiversity (Terrestrial)

15.

15. Biodiversity: Terrestrial Ecology

15.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides baseline information in relation to biodiversity and assesses the potential impacts and effects of the proposed Relevant Action on terrestrial ecological features. It should be read in conjunction with Chapter 3: Description of the Project, which provides full details of the proposed Relevant Action.

Also relevant to this chapter is the Appropriate Assessment (AA) Screening Report prepared in relation to the proposed Relevant Action. This describes the screening exercise conducted, in accordance with the requirements of Article 6(3) of the Habitats Directive[18], to test for likely significant effects from the proposed Relevant Action on the Qualifying Interests (QI) and/or Special Conservation Interests (SCI) of Special Areas of Conservation (SAC) and/or Special Protection Areas (SPA), respectively. These two documents can be read in isolation and do not rely on one another. However, where appropriate, reference is made in this chapter to the analysis presented in the AA Screening Report.

15.2 Legislation and Planning Policy Context

15.2.1 Legislation

The following legislation is relevant to this chapter and has been considered during the assessment presented within it:

- the Habitats Directive;
- Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive');
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (as amended) (hereafter referred to as the 'Water Framework Directive');
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment and Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directives');
- The Planning & Development Acts 2000 to 2020;
- The Wildlife Acts 1976 to 2018;
- Flora (Protection) Order 2015 S.I 356/2015 (the 'Flora Protection Order');
- Fisheries Acts 1959 to 2019;
- Inland Fisheries Acts 1959 to 2017; and,
- Local Government (Water Pollution Acts) 1977-2007.
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15.2.2 National Planning Policy

The following national planning policy is also relevant to this chapter and has been considered throughout the assessment presented within it:

- A National Aviation Policy for Ireland (2015);
- Project Ireland 2040 – National Planning Framework (2018); and,
- National Biodiversity Action Plan 2017 – 2021.

[18] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, more commonly referred to as the 'Habitats Directive'.

15.2.3 Regional and Local Planning Policy

The following local planning policy is considered relevant to this assessment.

- Dublin Airport Noise Action Plan 2019-2023;
- Regional Spatial & Economic Strategy for the Eastern and Midland Region 2019-2031;
- Fingal County Development Plan 2017-2023;
- Dublin City Development Plan 2016-2022 Written Statement – Volume 1; and,
- Dublin Airport Local Area Plan (2020).

15.2.4 International Policy, Standards and Guidance

The following international policies, standards and guidance documents are considered relevant to this assessment.

- *Environmental Impact Assessment of Projects: Guidance on Screening* (EC, 2017);
- Draft Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017);
- Guidelines *for Assessment of Ecological Impacts from National Road Schemes* (NRA, 2009);
- Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018); and,
- Other guidance (e.g. for field surveys) referenced throughout this chapter, as relevant.

15.3 Assessment Methodology

15.3.1 Zone of Influence

The 'zone of influence' (ZoI) of a project is the area over which ecological features may be subject to significant effects as a result of the proposed project and any associated activities.

The ZoI will vary for different ecological features depending on their sensitivity to an environmental change. It is therefore appropriate to identify different ZoI for different features. The features affected could include designated sites, habitats, species, and the processes on which they depend.

It is also important to acknowledge, as per EPA draft guidance (EPA, 2017), "*that the absence of a designation or documented feature does not mean that no such feature exists within the site*". As such, ZoI should be identified for all features potentially occurring within or near to the proposed Relevant Action, in addition to any known to occur.

Given the nature of the proposed Relevant Action and the likely absence of sensitive ecological features, the ZoI adopted was 5 km from Dublin Airport.

15.3.2 Ecological Impact Assessment

The assessment of ecological impacts described in this chapter has been conducted in accordance with the guidelines published by CIEEM (2018). The CIEEM guidelines require that assessment is only carried out for any ecological features identified within the ZoI which are sufficiently 'important' (e.g. designated sites, or habitats or species which are rare, threatened or rapidly declining) and which could be significantly affected by the particular project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and which will remain viable and sustainable. Likewise, only the impacts of a project which could result in significant effects on important ecological features need to be assessed.