

Appendix 1B: Interactions and Cumulative Effects Addendum

Introduction

1. This appendix presents an addendum to Chapter 21: Interactions and Cumulative Effects of the September 2021 EIAR. It provides an update to the assessment undertaken at that time and addresses the passage of time changes described in Chapter 1: Introduction of this EIAR Supplement.
2. The two types of cumulative effects assessed in the EIAR are:
 - Interactions of several impacts arising from the proposed Relevant Action: these are effects resulting from the interaction of several different impacts (e.g., noise, air quality etc.) arising from the proposed Relevant Action that may collectively cause an effect / effects of greater magnitude on any single environmental receptor. Individually the effects resulting from these impacts may not be significant, but the accumulation of effects may collectively cause an overall significant effect; and
 - Cumulative effects of proposed Relevant Action with other existing or permitted projects: these occur when the environmental impacts and effects of the proposed Relevant Action interact with those associated with other planned projects and developments located within a realistic geographical scope where environmental impacts could act together to result in a greater significance of effect on environmental receptors.

Interactions Assessment

3. The environmental receptors / receptor groups identified and considered in relation to potential interactions in the 2021 EIAR and considered to be appropriate for this update are:
 - Human receptors (residents and local community, including those using schools, healthcare facilities and places of worship).
4. The types of residual effects associated with the proposed Relevant Action considered to have potential to result in interactions in the 2021 EIAR and this update are outlined below:
 - Effects on noise sensitive receptors caused by noise impacts from aircraft as a result of changes in aircraft noise patterns (refer to replacement Chapter 13: Air Noise and Vibration and replacement Chapter 7: Population and Human Health of this EIAR Supplement); and
 - Effects on noise sensitive receptors due to ground noise as a result in changes to operation (refer to replacement Chapter 14: Ground Noise and Vibration and replacement Chapter 7: Population and Human Health of this EIAR Supplement).
5. No other types of effect considered to have potential to result in interactions have been classified as having greater than 'imperceptible' effects, i.e., they would not be perceptible or would not occur and are excluded from the assessment of interactions.
6. Table 21-3 of the 2021 EIAR shows the likely residual effects on the receptors and provides a description of the likely interactions experienced. This has been reproduced below as Table 1 and updated to reflect the updated assessments presented in replacement Chapters 7, 13 and 14 of this EIAR Supplement.

Table 1 Assessment of interactions

Receptor	Receptor Value/ Sensitivity	Summary of potential residual effects		Interactions
		Air Noise	Ground Noise	
Human receptors – residential property (dwellings)	High	<p>Greater than imperceptible effects on up to 67,256 residents in worst case year 2025 (see 'Key Concepts and Terminology Used in the EIAR' for an explanation of worst case year) due to noise from airborne aircraft resulting in increased annoyance and sleep disturbance. Up to 57,147 of these would experience effects which are not classified as significant, very significant or profound. Comparing the 2025 Proposed Scenario to the 2025 Permitted Scenario, the majority of the receptors see increases of up to 3 dB(A) associated with a very low to medium impact. Some see decreases of up to 3 dB(A) associated with a very low to medium impact. However, receptors closer to flight paths from the North Runway, for example Tyrellstown, Toberburr (AR01) and Ridgewood (AR02), see larger increases of up to 10 dB(A), associated with very high impacts (refer to replacement Chapter 13: Air Noise and Vibration).</p>	<p>Increase in ground noise as a result of the proposed Relevant Action would be very low during daytime hours in 2025. Noise increase during night-time hours (represented by L_{night}) would be around 3 dB (A) for most receptors (a low magnitude of impact) with the greatest increases predicted at representative receptor location GR01 – Ridgewood, to the north of the airport. The increase at this location is predicted to be +5 dB (A), a medium magnitude of impact. Absolute ground noise levels at Ridgewood due to aircraft ground noise would be 38dB (A). The effect would be moderate adverse (not significant).</p>	<p>Replacement Chapter 14: Ground Noise and Vibration has considered the potential contribution of air noise and ground noise from aircraft and road traffic to overall noise levels and the effect that the proposed Relevant Action would have on the overall noise levels at sensitive receptors. At Ridgewood (GR01), considering the total noise during night-time hours, the increase due to the proposed Relevant Action is predicted to be 4 dB(A) in 2025 and reduces to 3 dB(A) in 2035. This represents a medium overall impact and would result in a moderate effect (not significant).</p>
Human receptors – community facilities including schools, residential healthcare facilities and places of worship	High	<p>In 2025, increases in noise levels (as represented by the L_{den} metric) for individual receptors are all low (less than 3 dB (A)). Air noise impacts would therefore not contribute to interactions on these receptors. During night-time hours, the increases for three individual receptors are greater than 3 dB(A) and so are rated as significant. Air noise impacts would therefore contribute to interactions on these receptors.</p>	<p>No schools, residential healthcare facilities or places of worship would experience noise levels above the thresholds of approx. L_{den} 55dB (A) or approx. L_{night} 45 dB (A). Effects on these receptors would therefore be non-significant and would not contribute to interactions.</p>	<p>No interaction would affect human receptors in community facilities.</p>

Cumulative Effects Assessment

7. Cumulative effects consider the impacts of other projects which have potential for cumulative effects with the proposed Relevant Action. The assessment considers developments which have planning permission and / or which are in the planning system pending a planning decision, but which do not form part of the Current Receiving Environment or, in the case of traffic-related assessments, the Future Receiving Environment. The potential for other developments to result in cumulative effects with the proposed Relevant Action is dependent upon the location, type and scale of development and associated activities, and the type and duration of any likely environmental effects of the other developments. The following section details the process followed to identify those projects with the potential to result in significant cumulative effects when considered in combination with the proposed Relevant Action.
8. Potential adverse cumulative effects may occur where the technical assessments for the proposed Relevant Action indicate that there would be more than negligible effects as a result of the proposed Relevant Action, i.e., which are classified as 'slight to profound'. As with the 2021 EIAR, these are:
 - Air and ground noise effects on human health and well-being;
 - Air noise effects on noise-sensitive receptors; and
 - Ground noise effects on noise-sensitive receptors.
9. Noise sensitive receptors include both residential and non-residential receptors, where the former would be occupied during the night-time hours affected by the proposed Relevant Action. As effects on human health are an indirect effect of noise impacts, potential cumulative effects on human health and well-being are considered to be addressed by the potential for air and ground noise effects on noise sensitive receptors. The proposed Relevant Action is not considered likely to result in any other types of cumulative effects.
10. Given that noise, with its indirect effect on human health, is the only effect for which there are potential cumulative effects, the study area for the cumulative effects assessment, which has been used to identify other third-party developments which could result in cumulative effects in conjunction with the proposed Relevant Action, is therefore defined by the area which could be affected by perceptible air and /or ground noise effects due to the proposed Relevant Action. This has been taken as the area within the 40 dB (A) L_{night} noise level contour for 2025. Any noise level increases within the 40 dB (A) L_{night} noise contour have potential to give rise to annoyance or sleep disturbance due to noise, on the basis that, at noise levels below 40 dB (A), night-time disturbance due to noise is not likely. The reason for selecting 40 dB L_{night} as the study area is that WHO Guidelines 2018 state that night-time aircraft noise above this level is associated with adverse effects on sleep and it is the lowest level of night-time noise modelled in the EIAR.

Third Party Projects

11. Having determined the types of effect and defined the 40dB L_{night} Study Area for the cumulative effects assessment, a search was undertaken for planning applications granted permission, or which are in the planning system but have not been granted permission within the 40 dB Study Area from June 2011 to June 2021, as available on the All-Ireland digital planning register maintained by the Department of Housing, Planning and Local Government (see section 'Third Party Developments' in the 2021 EIAR). This exercise has been repeated for the purposes of this addendum to identify any changes or additional projects over the period June 2021 to August 2023.
12. A long list of additional projects was produced and is included at Appendix A to this addendum. Using the same methodology as adopted in the 2021 EIAR (see section 'Defining the Short List' in Chapter 21 of the 2021 EIAR) this long list was then reduced to a shortlist comprising 9 projects.
13. For the purposes of Short-Listing third-party developments, those developments which are in a location where there would be an increase in noise levels of 3 dB (A) L_{night} or more in the Proposed Scenario compared with the Permitted Scenario have been given further consideration for inclusion in the Short-List. A noise level increase of 3 dB (A) L_{night} represents a medium increase in noise levels and would result in an effect that is slight or greater where absolute noise levels are in the very low range (i.e. 45 40 – 44.9 dB (A) L_{night}).
14. Figure 21.1 shows the locations of the additional short-listed developments and Table 2 provides a description of the projects and presents an assessment of the likelihood of significant cumulative effects.

daa Projects

15. The Applicant has a number of projects for which permission has been granted or which are in the planning system that have not been granted permission. The 2021 EIAR included an assessment of the cumulative effects with Apron 5H, a development comprising the replacement of 12 aircraft stands in the north-east of the airport. That development has now been constructed and no longer forms part of the cumulative assessment. The projects included in this updated assessment are:
- Underpass – a planning application for the construction of a subterranean Underpass of Runway 16/34, a critical airfield operational safety project (planning reference F22A/0460) was granted by FCC on 27 February 2023. An appeal was subsequently lodged and is now under consideration by An Bord Pleanála (ABP). This project has been included in the short-listed developments in Table 2.
 - Airfield Drainage Project – the Applicant is currently preparing a planning application due for imminent lodgement to FCC. The application comprises significant upgrades to the surface water management infrastructure at Dublin Airport. It comprises a series of drainage system enhancement measures and infrastructure proposals, including the upgrade of existing drainage infrastructure and the construction of additional infrastructure to supplement the performance of the existing surface water management system. The Airfield Drainage Project has been included in the short-listed developments in Table 2.

Table 2 Short-listed Third-Party Developments Included in the Cumulative Effects Assessment

ID ¹	Planning Ref. No./ Applicant	Status	Development Description	Assessment of Cumulative Effects	Significance of Cumulative Effect
daa 1	F22A/0460	Granted 27/03/2023 (now subject to appeal)	The proposed development will consist of the construction of a subterranean Underpass of Runway 16/34, a critical airfield operational safety project. The proposed development does not propose any increase in passenger, cargo or operational capacity at Dublin Airport.	<p>If this development is consented, it is probable that construction of the Underpass would take place between 2025 and 2027. Construction would take place within the airport campus and this would limit noise on the surrounding environment arising from the construction work. However, it would require the removal of a significant amount of spoil from the construction site and this would add construction traffic on the surrounding road network.</p> <p>The EIAR submitted with the planning application found that noise from construction traffic was assessed as being (at worst) perceptible but not significant at night during the busiest phase of construction, and not perceptible at other times. There are no significant operational effects from the underpass project. Therefore, there is no prospect of cumulative effects with the proposed Relevant Action.</p>	Not significant
daa 2	Due to be submitted imminently	Due to be submitted	The proposed new infrastructure includes a new Contamination Detection and Response System, the provision of additional pollution control facilities and the construction of additional hydraulic capacity in the network. The proposals include local network improvements at West Apron as well as reconfiguration works at South Apron to ensure they are fully integrated with the proposed airfield-wide surface water management system.	No prospect of operational noise impacts and noise during construction will be limited to the airfield.	Not significant
Add 1	211042	Granted 23/7/2021	Extension of duration of planning permission AA/160527 - change of use of the existing hotel/B&B premises and its extension and redevelopment to allow for the construction of an 80 no. bed space nursing home facility.	Very limited potential for generation of additional noise.	Not significant

ID ¹	Planning Ref. No./ Applicant	Status	Development Description	Assessment of Cumulative Effects	Significance of Cumulative Effect
Add 3	211436	Granted 31/1/2022	A Solar PV Energy Development with a total site area of 34.4ha. to include solar panels mounted on steel support structures, associated cabling and ducting, 7 No. MV Power Stations, 1 No. Client Substation, 1 No Temporary Construction Compound, access tracks, hardstanding area, boundary security fencing and security gates, CCTV, landscaping and ancillary works.	Limited potential for operational noise. It is expected that the appointed contractor would adopt a Construction Environmental Management Plan and Construction Traffic Management Plan to limit noise during construction.	Not significant
Add 18	F19A/0248	Granted 4/9/2019	Single-storey extension to the existing care facility comprising 32 no. bedrooms with associated ancillary/common facilities and office/administration.	Very limited potential for generation of additional noise.	Not significant
Add 32	FW22A/0201	Pending	Permission for development at a site of c. 61.1 hectares. The development will consist of: a 10 year permission for the construction of a Solar Photovoltaic (PV) panels on ground mounted frames/support structures within existing field boundaries; 6 no. transformer stations; inverters; 3 no. weather stations; all ancillary underground cabling and ducting; internal site access tracks; site perimeter (stock-proof) security fencing; CCTV structures; 1 no. storage container; landscaping including screen planting; new vehicular access from R121 (Regional Road); 1 no. temporary construction compound; and all associated site development works.	Limited potential for operational noise. It is expected that the appointed contractor would adopt a Construction Environmental Management Plan and Construction Traffic Management Plan to limit noise during construction.	Not significant
Add 34	F21A/0042	Granted 16/9/2021	Permission for a Solar PV Energy Development with a total site area of c 105 ha, to include solar panels mounted on steel supports, associated cabling and ducting, 1 no. client substation, 33 no. MV Power Stations, 8 No. Battery Storage Containers, 1 no. Temporary Construction Compound, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary site works.	Limited potential for operational noise. It is expected that the appointed contractor would adopt a Construction Environmental Management Plan and Construction Traffic Management Plan to limit noise during construction.	Not significant
Add 38	FW22A/0136	Granted 12/12/2022	The development will consist of a new temperature-controlled warehouse incorporating ancillary offices and storage areas and staff facilities, ESB substation, solar PV panels, loading area with	Construction noise is unlikely to be significant. In terms of operational noise, the Traffic and Transport Assessment concludes that there will be no material impact on the local	Not significant

ID ¹	Planning Ref. No./ Applicant	Status	Development Description	Assessment of Cumulative Effects	Significance of Cumulative Effect
			associated dock levellers, hard and soft landscaping, boundary treatments, new vehicular entrance, Access controlled gate, car parking, bicycle parking, HGV parking spaces, trailer parking spaces, lighting, signage, and all associated site development works.	highway network. Road traffic noise is therefore expected to be limited.	
Add 44	FW22A/0179	Granted 8/11/2022	The development subject to Retention Permission consists of amendments to the Food Processing Warehouse facility permitted under Fingal County Council Reg. Ref. FW20A/0202 which comprises the provision of a food processing warehouse facility (11,696 sq m) comprising a coldstore (10,955 sqm) with a maximum roof level height of 18.65 metres and a fire escape stairs extending to 19.8 metres; an ancillary office building (610 sqm) with a maximum height of 8 metres, including office space, meeting rooms, canteen locker rooms, toilet facilities and associated facilities; and 4.3 metre high driver welfare facilities building (131 sqm)..	The Environmental Noise Impact Assessment concludes that during normal operation of the facility there would be negligible noise impact at Noise Sensitive Receptors and that the predicted noise would be below background noise levels. There would therefore be no prospect of cumulative operational noise effects. It is expected that the appointed contractor would adopt a Construction Environmental Management Plan and Construction Traffic Management Plan to limit noise during construction	No significant
Add 47	F19A/0550	Granted 25/2/2020	The proposed development will consist of: alteration and extension of permission Reg. Ref. F15A/0550 as amended by Reg. Ref. F19A/0001 to provide 42 no. dwellings.	Very limited potential for generation of additional noise.	Not significant
Add 64	FW21A/0187	13/1/2022	The development will comprise the construction of a warehouse unit (c. 8,617 sq m) including ancillary office space (457 sq m), staff facilities and associated development.	The Traffic and Transport Assessment concludes that there will be no negative impact the surrounding road network. It is therefore unlikely that there will be significant road traffic noise. The Traffic and Transport Assessment also presented an Outline Construction Traffic Management Plan to minimise any adverse environmental impacts during construction.	Not significant

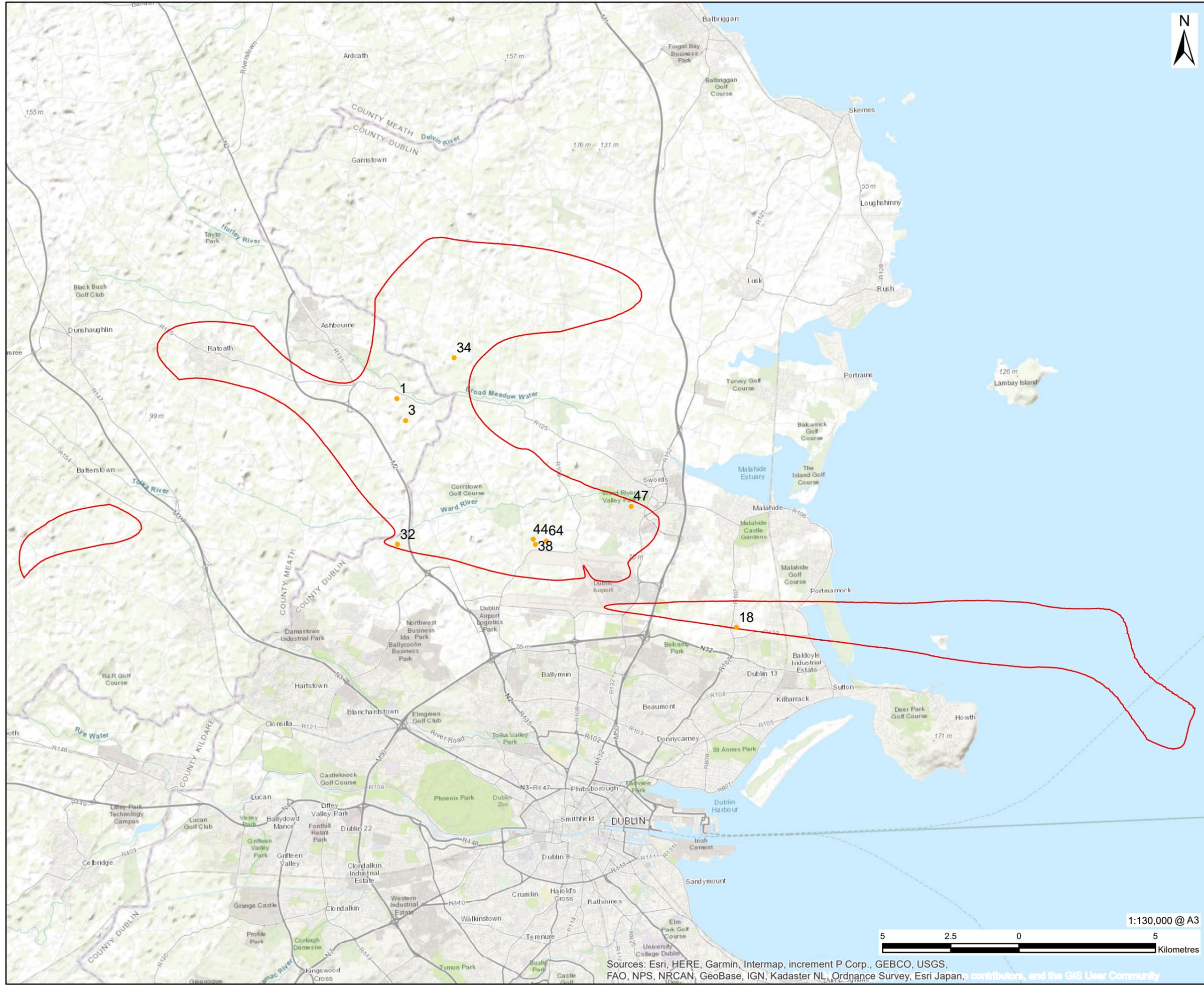
¹ daa XX denotes daa projects includes in the short list of schemes included in the assessment of cumulative effects. Add XX denotes the additional third-party projects included in the assessment and shown on Figure 21.1.

Summary

16. The assessments of interactions and cumulative effects have considered the residual effects identified by the individual technical assessments in the 2021 EIAR and the updated assessments presented in replacement chapters 7, 11, 13 and 14, excluding those which are classified as 'imperceptible'.
17. The only residual effects of the proposed Relevant Action which are classified as greater than 'imperceptible' are those relating to air noise and ground noise. Cumulative effects on population and human health are an indirect effect of air and ground noise impacts and are therefore addressed by consideration of air and ground noise effects.
18. The proposed Relevant Action would result in a moderate, but not significant effect on human receptors in residential property as a result of impacts on the overall noise environment due to increases in air noise and ground noise at noise sensitive receptors.
19. The proposed Relevant Action would not result in any significant cumulative effects. Other developments within the daa 40dB L_{night} (A) Study Area and within the area where noise increase of 3dB L_{den} (A) or more would occur as a result of the proposed Relevant Action either have limited potential to generate noise impacts, or would be operational only outside the additional hours of operation proposed under the proposed Relevant Action, or are subject to planning conditions which will mitigate and control any potential noise impacts from those developments. There is therefore limited potential for cumulative noise effects and there will be no significant cumulative noise effects.

What has changed since the EIAR was submitted in September 2021?

- This addendum to Chapter 21 of the 2021 EIAR has been prepared to take account of the changes presented in Chapter 1: Introduction. This includes consideration of the updated assessments in replacement chapters 7, 11, 13 and 14.
- Although some of the updated noise values presented in Table 1 have changed, the overall conclusions regarding impact interactions remain the same.
- Due to the passage of time, the assessment of cumulative effects with other daa projects and third-party projects has been updated to include new shortlisted projects and the results of the updated assessments in replacement chapters 13 and 14. As in the 2021 EIAR, there are no significant cumulative effects.
- The metric used for the short-listing of third-party schemes was previously 3 dB(A) L_{den} . This has been replaced with the 3dB(A) L_{night} metric.



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PROJECT
North Runway Proposed
Relevant Action

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LEGEND
● Third party schemes
— 3dB(A)_{Lnight} contour

NOTES
CYAL50217544
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ISSUE PURPOSE
FINAL
PROJECT NUMBER
60601864
FIGURE TITLE

Third party projects falling within the 3dB(A) additional contour, when comparing 2025 Proposed versus Permitted Assessment Years

FIGURE NUMBER
Figure 21.1

1:130,000 @ A3



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, contributors, and the GIS User Community

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