Gatwick Airport Northern Runway Project

Supporting Noise and Vibration Technical Notes to the Statements of Common Ground

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1 Introduction

1.1.1 This document contains Gatwick Airport Limited's (the "**Applicant**") supporting Noise and Vibration technical notes to Statements of Common Ground and other issues raised during the Examination, up to Deadline 3 on 19th April 2024. Six technical notes are provided in Appendices A to F as follows:

Appendix A - Construction Vibration

Appendix B - Ground Noise Fleet Assessment

Appendix C - Traffic Noise Barrier Options Selection Report

Appendix D - Traffic Noise Important Area Assessment

Appendix E - Ground Noise Engine Ground Runs

Appendix F – Aircraft Fleets for Noise Modelling

1.1.2 The following sections list the contents of each Technical Note and the reasons for providing it, including identifying the Interested Party who requested the additional information.

2 Summary of Appendices Content

2.1. Appendix A - Construction Vibration

2.1.1 This Technical Note provides calculated vibration levels from use of vibratory rollers during construction and an assessment of their potential effects, as requested by the Crawley Borough Council PADSS. Additional significant effects are not predicted.

2.2. Appendix B - Ground Noise Fleet Assessment

Slower Transition Fleet

2.2.1 The assessment of Ground Noise from taxiing aircraft reported in the **ES Chapter 14: Noise and Vibration** [APP-039] uses the Central Case fleet forecast, whereas the Air Noise assessment considers both the Central Case fleet and a Slower Transition fleet. Both forecasts use the same numbers of aircraft, but the Slower Transition fleet presumes a slower uptake of quieter aircraft variants leading to overall greater noise emissions at a given future time. The reasons why it was not considered necessary to carry out the Ground Noise assessment for both fleets are explained in paragraph 4.5.5 of **ES Appendix 14.9.3 Ground Noise Modelling** [APP-173].

2.2.2 Further justification and consideration of the Slower Transition Fleet in the ground noise assessment has been requested by stakeholders including Local Authorities and in the Examining Authority's first round of questions on 28 March 2024. This note provides the results of modelling and the consideration for the effect of the Slower Transition fleet, confirming that the assessment of significant effects is the same for both the Central Case and the Slower Transition fleet.

Error in ES

2.2.3 In addition to the main purpose of the document described above, this note also seeks to correct an error that has been found in the reporting of the modelling results presented in the ES. The error relates to the calculation of the with Project night-time L_{Aeq} under westerly operation and it has resulted in the predicted '*Runway 26 night*' L_{Aeq} levels being incorrect for all assessment years. It should be noted that the error does not affect the future baseline or any of the L_{max} noise levels reported in the ES and that the modelling of the Slower Transition Fleet does not contain this error.

2.2.4 The note provides updated tables correcting this reporting error within the ES noting the observed changes this makes to the magnitudes of effect and confirming that the assessment of significant effects is unchanged following the correction.

Ground Noise Contours

2.2.5 A further point which has been raised in written representations from Local Authorities and at the issue specific hearing on aviation noise (ISH5), is the lack of any ground noise contours presented in the ES. The Applicant has explained (see response to Examiner's Question NV.1.5 in **The Applicant's Response to ExQ1 – Noise and Vibration (Doc Ref. 101.16)**) that there are a number of reasons why ground noise contours are only one part of the ground noise assessment which includes assessment of change in noise and, unlike Air Noise, exceedance above other sources of ambient noise that are also generated at ground level such as road traffic noise. This has been addressed in this Technical Note, however, by providing ground noise contours with further explanation of their use and effect.

Clarifying of Noise Insulation For Ground Noise

2.2.6 Representations from Local Authorities and CAGNE, and the Examining Authority questions dated 28 March (ref NV.1.15) have asked why eligibility for noise insulation due to ground noise cannot be based on prediction as well as monitoring. The Technical Note clarifies which properties would be eligible for noise insulation due to ground noise based on the updated predicted noise levels

provided, whilst leaving the provision for monitoring in place to allow additional properties to be considered after operations begin if necessary. 16 additional properties are identified to be included for ground noise outside the Air Noise Inner Zone. These properties will be within the Inner Zone Noise Insulation Scheme that will be launched within 6 months following the commencement of Work Nos. 1 – 7 comprised in the Project (as defined in the DCO), so will be contacted with details of the scheme and invited to take it up before the northern runway Project begins operations.

2.3. Appendix C - Traffic Noise Barrier Options Selection Report

2.3.1 Detailed road traffic noise modelling and assessment was carried during both the PEIR stage (in 2021) and ES stage (in 2022 and 2023) to support the Project proposal. As part of the Road Traffic Noise Impact Assessment, several mitigation measures were designed into the Project to reduce the potential for impacts from traffic noise.

2.3.2 The PEIR accompanying the Autumn 2021 consultation on the Project indicated the presence of three road noise barriers in the project proposals, designed to mitigate anticipated road noise impacts arising from the project on residential properties close to the A23 / Airport Way, particularly those in the Noise Important Areas within the Horley Gardens Estate. Two of these barriers were located on the north side of the two proposed flyovers, the third was at ground level on the north side of the existing A23 / Airport Way adjacent to Riverside Garden Park (hereon referred to as the Riverside Park Barrier). These barriers were also included in the Summer 2022 PEI consultation document, noting that further strategic traffic modelling could affect them.

2.3.3 Strategic and local road traffic modelling carried out since the preparation of the Summer 2022 PEI consultation and consequent further road traffic noise modelling for the refined scheme showed that noise levels at sensitive receptors in the area reduce slightly with the Project, taking into account the other mitigation it provides, without the need to install the Riverside Park Barrier referred to above.

2.3.4 The Reigate and Bansted Brough Council PADSS has suggested the Riverside Park barrier should be included in the Scheme.

2.3.5 The Technical Note details the approach taken to deriving the Project's traffic noise mitigation since the PEIR. It provides a comparison of benefits of the Riverside Park noise barrier in the PEIR scheme versus the benefits of the Riverside Park Barrier in the ES scheme, and evidences why the barrier is not needed for the Project.

2.4. Appendix D - Traffic Noise Important Area Assessment

2.4.1 This Technical Note summarises the approach and methodology used in the ES to assess road traffic noise in Noise Important Areas (NIAs) and in specifying mitigation as part of the ES Project design for the Gatwick DCO submission, as requested by National Highways.

2.4.2 In addition, in response to comments from the Local Authority and National Highways, the note also summarises the approach to using existing measured baseline noise levels to validate the road traffic noise model.

2.5. Appendix E - Ground Noise Engine Ground Runs

2.5.1 The Technical Note provides a review of the assumptions used in the assessment of noise impacts from Engine Ground Running (EGR) in the ES. It considers further background data and controls and provides a more detailed assessment, as requested by Crawley Borough Council in their Relevant Representation questions 16.3i and 16.3ii that ask for further assessment of EGR L_{max} noise levels and how engine ground running noise contributes to overall ground noise L_{eq} levels.

2.6. Aircraft Fleets for Noise Modelling

2.6.1 This Technical Note provides details of the aircraft fleets used to model air and ground noise in the baseline and with the Project in each assessment year, for the Central Case and Slower Transition Fleet cases, and the details of each aircraft type assumed in the CAA's Aircraft Noise Contour (ANCON) Model, as requested by various local authorities in the PADSS and CAGNE.

Appendix A – Construction Vibration

1 Introduction

1.1. Background

1.1.1 The Gatwick Airport Northern Runway Project Environmental Statement, **Chapter 14** [APP-039] assesses the likely significant noise and vibration impacts from the project. The results of predictions of ground vibration from vibratory sheet piling were included in **ES Appendix 14.9.1 Construction Noise Modelling** [APP-171] and were assessed to be of minor adverse significance.

1.1.2 Relevant Representations did not raise comment on the above conclusions but included a request in the Crawley Borough Council PADSS to provide further detail on the effects of the use of vibratory rollers during construction. Therefore, GAL has produced this Technical Note which includes calculated vibration magnitudes from the use of vibratory rollers during construction of major earth works (compaction vibration) and which compares the predicted vibration magnitudes against the vibration impact assessment criteria in the ES to assess the potential for significant environmental effects.

2 Methodology

2.1. Assessment Methodology

2.1.1 In order to establish the key activities to consider for this study, the construction activities were reviewed with the Project construction team. The activities that are expected closest to receptors and have the potential to result in vibration over a period that is sufficiently long (see below) to result in significant vibration impacts are works for South Terminal Roundabout retained earthworks (which are part of the construction of ramps for the flyover arrangement). These compaction works are likely to involve multiple passes to build up layers of fill material and will take place during the day.

2.1.2 The ES sets out the criteria for identifying likely significant impacts from vibration in paragraphs 14.4.43 to 14.4.45 of Chapter 14 based on criteria set out in the DMRB (Design Manual for Roads and Bridges). The criteria are set in terms of the Peak Particle Velocity (PPV), for the Lowest Observable Adverse Effect Level (LOAEL) and the Significant Observable Adverse Effect Level (SOAEL) at levels of 0.3 mm/s PPV and 1.0 mm/s PPV respectively. The DMRB criteria are based on BS 5228-2 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration**.** In accordance with the DRMB guidance the SOAEL is set at a level where such vibration in residential environments will cause complaint but can be tolerated if prior warning and explanation has been

given to residents, whereas the LOAEL is generally considered to be the point at which vibration becomes perceptible[1]. The DMRB also advises that construction vibration should constitute a likely significant effect where it is determined that the SOAEL value would occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; or
- a total number of days exceeding 40 in any 6 consecutive months.

2.1.3 The use of vibratory rollers at night would be limited to exceptions involving asphalt rolling which could be needed over approximately two nights. Since night works will be shorter than this, they have not been included in the scope of the assessment and they will not lead to a significant vibration impact.

2.1.4 It is also noted in the ES that BS 5228-2 advises that at levels above 10 mm/s PPV vibration is likely to be intolerable for any more than a very brief exposure to this level, and this has been considered in this assessment.

2.1.5 The DMRB notes that human response to vibration occurs at much lower vibration levels than would be required to cause damage to buildings. BS 5228-2 also references other vibration standards for damage to buildings such as BS 7385-2 which identifies that even cosmetic building damage would not occur below 15 mm/s at the most sensitive vibration frequencies.

2.2. Calculation Methodology

2.2.1 This note predicts vibration using the formulae in BS 5228-2:2009+A1:2014 (Table E.1). Input data for the predictions are based on recent discussions with the Project construction engineering team regarding the type of equipment expected to be required and has been undertaken on the following assumptions based on an example BOMAG 161-AD roller:

- Number of drums = 2;
- Drum width 1.2 m to 2.1 m (higher likely value used);
- Amplitude = 0.94 mm (highest figure on typical example data sheet see
- Figure 4.1 in this note).

2.2.2 The BS5228 method notes that there is uncertainty in predicting vibration levels and suggests this is addressed by the use of Scaling Factors representing the 5% and 50% probability of the predicted PPV being exceeded. The 5% probability value is most likely to occur only briefly if at all, and the 50% probability value is likely to present a more typical expected level.

[1] See BS 5228-2, Table B.1 Guidance on effects of vibration levels

2.2.3 Steady state operation has been considered for vibration magnitudes inside a typical building with slab foundations to assess the potential for disturbance. In this case external vibration levels would be expected to be approximately the same as the internal levels in the centre of the ground floor, which will be the most commonly used floor during the day in residential buildings when the works will be carried out. If regular daytime use of other floors is identified during detailed planning of the works, specific transfer functions may need to be derived for these locations, but this is not considered likely at this stage for most receptors. If required, a control measure would be undertaking the start up and run down further away from the receptors, which would most likely be viable.

2.2.4 For start up and run down of the vibratory roller, higher predicted levels might occur for a very short period. Whilst these are not expected to significantly affect the level of potential disturbance, they have been discussed in terms of their potential to cause building damage below. For the assessment of potential building damage, the predictions have been carried out at the building foundation applying a reduction factor of 0.5 to the external free-field predicted magnitudes.

2.2.5 The distances to likely use of vibratory rollers have been reviewed and calculations based on the closest distances to the works at two locations:

- Residential receivers 40 m from the site boundary of the River Mole Bridge on London Road and Balcombe Road Bridge works; and
- Non-residential office building 20 m from M23 Spur Eastbound Widening immediately East of the South Terminal Roundabout.

3 Predicted Vibration Magnitudes

3.1.1 Predicted vibration magnitudes are summarised in Table 4.1: Comparison of Predicted Vibration Magnitudes Against ES Criteria for steady state operation of the vibratory roller. Steady state operations during the day are typically what will be experienced at receptors, and which are likely to be linked to any potential disturbance. The predicted PPV values are above the SOAEL value of 1.0 mm/s (1.3 and 3.4 mm/s PPV at the nearest residential and non-residential receptors respectively) when predictions are based on worst case assumptions and on a 5% probability of the predicted value being exceeded. The levels predicted with a 50% probability of being exceeded are 0.4 mm/s and 0.9 mm/s respectively, which predicts the vibration would normally be below the SOAEL criterion, when the roller is operating at its closest approach to each receptor.

4 Assessment of Vibration Effects

4.1.1 The predicted vibration magnitudes in all cases are also clearly below the upper BS5228 criterion of 10 mm/s for tolerable vibration for brief periods.

4.1.2 Since these predictions also assume the plant is at the closest point on the site boundary to the receptors, the predictions will overestimate the vibration magnitude during most of the works. It is unlikely that vibratory compaction will result in vibration magnitudes above SOAEL for a sustained period of time within any particular shift or during a particular phase of works. Therefore applying the DMRB criterion set out in paragraph 2.1.2, vibratory compaction will not give rise to significant effects.

4.1.3 When works are further from the receptor, the vibration is unlikely to exceed the SOAEL value at all. Therefore, the effects are expected to be generally between the LOAEL and SOAEL at times and may be perceptible, but are not expected to result in significant vibration impacts. For this reason, they have been classed as Minor Adverse based on the methodology in the ES.

4.1.4 For start up and run down of the vibratory roller, higher vibration magnitudes are predicted, but only briefly as the machines start up and are shut down. The calculated PPV values at the foundation of any building are likely to be lower than external free-field values and are not expected to exceed approximately 4 mm/s, which would be below both the 10 mm/s disturbance criteria and 15mm/s criteria for cosmetic building damage, and therefore would not lead to significant environmental effects.

4.1.5 Overall, this assessment indicates vibration from vibratory rollers, assuming worst case source factors, is likely to give rise to Minor Adverse and not significant effects for limited durations. This is the same assessment rating reported in the ES (see paragraph 14.9.65 for vibratory piling).

Table 4.1: Comparison of Predicted Vibration Magnitudes Against ES Criteria

Location	Minimum Distance to Site Boundary (m)	Predicted PPV from Compaction (mm/s)	Probability of PPV Being Exceeded	ES Criteria SOAEL/LOAEL (PPV mm/s)	Comparison of Vibration Magnitude and SOAEL Criteria	Comparison of Vibration Magnitude and LOAEL Criteria
Closest residential receivers	40	1.3	5%	1.0/0.3	Vibration may exceed SOAEL for short periods if worst case conditions apply and work is at the closest point of the site boundary to the receptors. Period unlikely to be long enough to trigger significant impact based on DMRB.	Vibration may be above LOAEL and would likely to be perceptible under these worst case conditions.
		0.4	50%	1.0/0.3	Vibration during these conditions (which represent the most likely level when the works are closest to the receptor) is likely to be below the SOAEL, and therefore not a significant impact.	Vibration may be above LOAEL and would be perceptible at times leading to a minor adverse impact.
Closest non-residential receivers	20	3.4	5%	1.0/0.3	Vibration may exceed SOAEL for short periods if worst case conditions apply and work is at the closest point of the site boundary to the receptors. Period unlikely to be long enough to trigger significant impact based on DMRB.	Vibration may be above LOAEL and would likely to be perceptible under these worst case conditions.

Location	Minimum Distance to Site Boundary (m)	Predicted PPV from Compaction (mm/s)	Probability of PPV Being Exceeded	ES Criteria SOAEL/LOAEL (PPV mm/s)	Comparison of Vibration Magnitude and SOAEL Criteria	Comparison of Vibration Magnitude and LOAEL Criteria
		0.9	50%	1.0/0.3	Vibration during these conditions (which represent the most likely level when the works are closest to the receptor) is likely to be below the SOAEL, and therefore not a significant impact.	Vibration may be above LOAEL and would be perceptible at times leading to a minor adverse impact.

Figure 4.1: Typical Roller Example

BOMAG
FAYAT GROUP

TECHNICAL DATA

TANDEM ROLLER
BW 161 AD-4

Technical Data		BOMAG BW 161 AD-4
Weights		
Operating weight CECE w. cab.	kg	10.050
Axle load, front CECE	kg	5.050
Axle load, rear CECE	kg	5.000
Static linear load, front CECE	kg/cm	30,1
Static linear load, rear CECE	kg/cm	29,8
Grossweight	kg	11.500
Dimensions		
Track radius, inner	mm	4.400
Driving Characteristics		
Speed (1)	km/h	0- 5,7
Speed (2)	km/h	0- 11,0
Drive		
Engine manufacturer		Deutz
Type		TCD 2012 L04 2V
Emission stage		Stage IIIa / TIER3
Cooling		Liquid
Number of cylinders		4
Performance ISO 14396	kW	100,0
Speed	min-1	2.300
Electric equipment	V	12
Brakes		
Service brake		hydrost.
Parking brake		mech.
Steering		
Steering system		oscil.artic.
Lateral displacement right/left	mm	170
Exciter system		
Vibrating drum		front + rear
Autom. vibr. shut off		standard
Frequency	Hz	40/50
Amplitude	mm	0,94/0,42
Centrifugal force	kN	107/74
Centrifugal force	t	10,9/7,5
Capacities		
Fuel	l	200,0
Water	l	1.000,0

Technical modifications reserved. Machines may be shown with options.

Appendix B – Ground Noise Fleet Assessment

1 Purpose of this Document

Consideration of Slower Transition Fleet

1.1.1 The assessment of Ground Noise from taxiing aircraft reported in the **ES Chapter 14: Noise and Vibration** [APP-039] uses the Central Case fleet forecast, whereas the Air Noise assessment considers both the Central Case fleet and a Slower Transition fleet. Both forecasts use the same numbers of aircraft, but the Slower Transition fleet presumes a slower uptake of quieter aircraft variants leading to overall greater noise emissions at a given future time. The reasons why it was not considered necessary to carry out the Ground Noise assessment for both fleets are explained in paragraph 4.5.5 of **ES Appendix 14.9.3 Ground Noise Modelling** [APP-173] which is reproduced below for reference.

"4.5.5 The ground noise model uses the Central Case air traffic forecast which is most likely as opposed to the slower transition case fleet, as discussed in the air noise assessment which uses both fleets to predict a range of air noise impacts. The numbers of aircraft in both forecasts are the same, as is the split between large and small used to distinguish taxiing noise levels. For ground noise it was not considered necessary to model the slower transition fleet case as well for the following reasons. The slower transition fleet case would give the same Lmax levels, and Leq noise levels only 1-2 dB higher in both the baseline and Project cases. This would not result in noise impacts in significantly larger areas because compared to air noise ground noise attenuates more rapidly as it propagates close to the ground and is attenuated by buildings and structures. The assessment of engine run noise and APU noise would not change. Also ground noise is assessed in the context of other forms of ambient noise, such as road traffic, that are not affected by the rate of aircraft fleet transition. Finally, as discussed in Section 14.9 of the main ES, if concerns are raised over increased ground noise impacts after opening of the Project, monitoring will be carried out and if significant effects are found the Noise Insulation Scheme will be used to offer mitigation."

1.1.2 Further justification has been requested by stakeholders including Local Authorities and the Examining Authority's first round of questions on 28 March 2024. This note provides the results of modelling and consideration for the effect of the Slower Transition fleet, confirming that the assessment of significant affects is the same for both the Central Case and the Slower Transition fleet.

Correction of ES Error

1.1.3 In addition to the main purpose of the document described above, this note also seeks to correct an error that has been found in the reporting of the modelling results presented in the ES. The error relates to the calculation of the with project night-time L_{Aeq} under westerly operation and it has resulted in the predicted '*Runway 26 night*' L_{Aeq} levels being incorrect for all assessment years. It should be noted that the error does not affect the future baseline or any of the L_{max} noise levels reported in the ES and that the modelling of the Slower Transition Fleet reported below does not contain this error.

1.1.4 This note provides updated tables correcting this reporting error within the ES noting the observed changes this makes to the magnitudes of effect and confirming that the assessment of significant effects is unchanged following the correction. The main body of this note considers the correction for future year 2032 which is the main assessment year presented in the ES. Since the correction also applies to the other assessment years, corrections to tables presented in ES Appendix 14.9.3 have been provided at Appendix 1 to this note.

Ground Noise Contours

1.1.5 A final point, which has been raised in written representations and at the issue specific hearing on aviation noise (ISH5), is the lack of any ground noise contours presented in the ES. The Applicant has explained that there are a number of reasons why ground noise contours are only one part of the ground noise assessment which includes assessment of change in noise and, unlike Air Noise, exceedance above other sources of ambient noise that are also generated at ground level such as road traffic noise. This has been addressed here by providing ground noise contours with further explanation of their use, in Section 3.

2 Noise Modelling Results

2.1.1 The impact of remodelling the aircraft taxiing element of the ground noise assessment based on the Slower Transition fleet case forecasts has been investigated by re-running the taxiing noise model with the Slower Transition fleet. The relative proportions of older aircraft within the Slower Transition fleet case have the potential to increase predicted noise when compared to the Central Case fleet. However, this potential increase applies to both the future baseline and with Project cases since the fleet mix will be the same for the future baseline and Project cases in a given year, and it is the comparison of noise levels with the Project versus noise levels in the future baseline in a given year

that determines the noise impact in the environmental assessment. Both baseline and Project predicted noise levels are higher when applying the Slower Transition fleet for future year 2032. Noise modelling has therefore been carried out to quantify any change in the assessment between the Central Case fleet (presented in the ES) and the Slower Transition fleet for future year 2032.

2.1.2 In order to understand the effect of the Slower Transition fleet, compared to the Central Case fleet, corrections to the identified error within the ES are presented to allow a direct comparison to be made.

2.1.3 Any increase in overall levels could increase the overall area affected, and changes to the margin above the future baseline could have an impact on the magnitude of effect at some properties. Such changes could equally apply to the corrected results for the Central Case fleet and so it is important to make a clear distinction between changes relating to correction of the error and changes relating to the Slower Transition fleet. The various criteria considered when assessing the magnitude of effects are discussed in paragraphs 14.4.86 through to 14.4.97 within the ES. The way corrections to the predicted noise for the Central Case fleet and, the predicted increases in noise for the Slower Transition fleet, relate to the assessment of the noise effects for each of the 12 assessment areas used in the ES is set out in subsections below.

2.1.4 Updated versions of Tables 14.9.13 and 14.9.14 from the ES giving corrected results for the Central Case fleet are presented at Table 1 and Table 2. Corresponding tables showing results of the noise modelling for the Slower Transition fleet are presented at Table 3 and Table 4 below. It should be noted that colour coding has been used for highlighting the worst-case magnitudes of impact identified in Table 2 and Table 4 in order to make it more clear where the differences lie. Given the predicted effects for the primary L_{eq} metrics, it is not considered necessary to review the secondary, number above L_{max} metrics, and these have not been presented here.

Table 1: Updated ES Table 14.9.13 - Summary of 2032 Ground Noise Predicted Levels including Mitigation (dB)

Descriptor	Assessment Area ($L_{Aeq, T}$ dB)											
	Outer Charlwood (1)	Charlwood (2)	Charlwood Road (3)	Farmfield (4)	Povey Cross (5)	Longbridge Road, Horley (6)	Riverside, Horley (7)	Bonnetts Lane (8)	Lowfield Heath (9)	Rowley Farm (10)	Balcombe Road (11)	Tinsley Green (12)
2032 – Runway 26 Daytime (unchanged)	48	50	58	53	55	56	59	60	65	59	54	49
2032 – Runway 26 Night (corrected)	46	48	56	51	52	52	54	57	63	56	49	46
2032 – Runway 08 Daytime (unchanged)	55	64	58	54	55	51	50	60	64	62	44	46
2032 – Runway 08 Night (unchanged)	49	58	52	49	51	47	47	56	61	60	41	43

Table 2: Updated ES Table 14.9.14 - Summary of 2032 Ground Noise Predicted Levels including Mitigation versus 2032 Baseline, Differences (dB)

Descriptor	Assessment Area (Difference in $L_{Aeq, T}$ dB)											
	Outer Charlwood (1)	Charlwood (2)	Charlwood Road (3)	Farmfield (4)	Povey Cross (5)	Longbridge Road, Horley (6)	Riverside, Horley (7)	Bonnetts Lane (8)	Lowfield Heath (9)	Rowley Farm (10)	Balcombe Road (11)	Tinsley Green (12)
2032 – Runway 26 Daytime (unchanged)	1	1	6	2	2	1	1	6	3	1	1	1
2032 – Runway 26 Night (corrected)	-1	0	6	2	1	1	-0	4	3	0	-0	0
2032 – Runway 08 Daytime (unchanged)	1	4	1	1	1	1	0	-1	1	2	1	1
2032 – Runway 08 Night (unchanged)	-2	3	-1	-0	-1	-0	-1	-2	1	3	0	1
Magnitude of change impact (worst case)	High impact in areas (3) and (8);											
	Medium impact in areas (2), (9) and (10);											
	Low impact at (4), (5) and (6).											
	At all other the remaining locations (1), (7), (11) and (12), the impact is negligible											

Table 3: Slower Transition Fleet (ES Table 14.9.13) Summary of 2032 Ground Noise Predicted Levels including Mitigation (dB)

Descriptor	Assessment Area ($L_{Aeq, T}$ dB)											
	Outer Charlwood (1)	Charlwood (2)	Charlwood Road (3)	Farmfield (4)	Povey Cross (5)	Longbridge Road, Horley (6)	Riverside, Horley (7)	Bonnetts Lane (8)	Lowfield Heath (9)	Rowley Farm (10)	Balcombe Road (11)	Tinsley Green (12)
2032 – Runway 26 Daytime (STF)	49	51	60	54	56	57	60	61	66	60	56	51
2032 – Runway 26 Night (STF)	47	49	58	52	54	53	55	58	64	57	51	47
2032 – Runway 08 Daytime (STF)	56	65	60	55	57	52	51	62	65	63	45	47
2032 – Runway 08 Night (STF)	50	59	53	50	52	48	48	57	62	60	43	44

Table 4: Slower Transition Fleet (ES Table 14.9.14) Summary of 2032 Ground Noise Predicted Levels including Mitigation versus 2032 Baseline, Differences (dB)

Descriptor	Assessment Area (Difference in $L_{Aeq, T}$ dB)											
	Outer Charlwood (1)	Charlwood (2)	Charlwood Road (3)	Farmfield (4)	Povey Cross (5)	Longbridge Road, Horley (6)	Riverside, Horley (7)	Bonnetts Lane (8)	Lowfield Heath (9)	Rowley Farm (10)	Balcombe Road (11)	Tinsley Green (12)
2032 – Runway 26 Daytime (STF)	0	1	6	3	2	1	1	5	2	1	1	1
2032 – Runway 26 Night (STF)	-1	0	6	2	1	1	0	4	3	0	0	1
2032 – Runway 08 Daytime (STF)	1	4	1	1	1	1	1	-1	1	2	1	1
2032 – Runway 08 Night (STF)	-2	3	-1	0	-1	0	-1	-1	0	3	0	1
Magnitude of change impact (worst case)	High impact in areas (3) and (8);											
	Medium impact in areas (2), (4), (9) and (10);											
	Low impact at (5) and (6).											
	At all other the remaining locations (1), (7), (11) and (12), the impact is negligible											

2.1.5 Table 1 shows that the correction of the error results in both increases and decreases compared to Runway 26 Night levels reported in Table 14.9.13 within the ES. However, it is important to note that the magnitude of impact (and the assessment of significance) is determined by the worst-case change compared to future baseline which may occur during Night or Day under Runway 26 or Runway 08 operations. Table 2 shows that the correction of the error results in changes to the worst-case magnitudes of impact reported in Table 14.9.14 within the ES, with a reduction from six areas where medium impacts are reported to three areas where medium impacts are reported. The two areas where high magnitudes of impacts were reported within the ES (highlighted in red within the table) remain unchanged.

2.1.6 The absolute noise levels predicted in Table 3 with the Slower Transition fleet are between 1 and 2dB higher than with the Central Case fleet (see Table 1). These are negligible or low differences in noise that in most cases would not be perceived as noticeably higher. It is important to note that very similar increases are seen in the baseline for the Slower Transition fleet.

2.1.7 With the Slower Transition fleet, the noise changes with the Project reported in Table 4 are in most cases the same as for the Central Case Fleet (rounded to 1dB), and in the remaining cases, the changes with the Project are within 1dB of those for the Central Case fleet (see Table 2), ie the same or negligibly different.

2.1.8 The effect that these small differences in noise levels modelled with the two different fleet transition assumptions have on the assessment of effects in each Assessment Area are discussed in the following section.

3 Ground Noise Contours

3.1.1 Appendix 2 provides two figures showing contours for the predicted Daytime 63 dB L_{Aeq} and night-time 55 dB L_{Aeq} noise levels (selected based on the relevant threshold criteria for significance set out in Chapter 14 of the ES).

3.1.2 The Applicant has explained that there are a number of reasons why ground noise contours are only one part of the ground noise assessment which includes assessment of change in noise and also, unlike Air Noise, exceedance above other sources of ambient noise that are also generated at ground level such as road traffic noise.

3.1.3 There is no clear guidance on noise standards for ground noise so the LOAEL and SOAEL values have been drawn from guidance on Air Noise. The Air Noise LOAEL and SOAEL values apply to an average summer day. Ground noise has been modelled on the basis of the air traffic forecast for the same average

summer day, but the noise contours presented are for easterly or westerly operating days/nights (single mode of operation), rather than the average of easterly and westerly used for air noise assessment. The noise contours presented at the SOAEL values can therefore be considered as precautionary since they represent single mode of operation rather than the average.

3.1.4 Ground noise at Gatwick Airport is mitigated through operating procedures and a sizeable noise bund running around the northern perimeter of the airport, up to 12m high in places, and the serpentine wall noise barrier that can be seen around the eastern apron area between the north and south terminals. There are no sections of apron or taxing routes along the south side of the airfield. The main housing area is to the north, well screened by the noise bund and beyond Povey Cross Road. To the immediate east and west under the flight paths there is no housing, presumably for safety reasons. To the south there is mainly airport and commercial property with scattered housing on the far side of the Charlwood Road. To the northwest there is a single property and scattered properties before the village of Charlwood 700m from the nearest taxiway. Consequently, ground noise has not been a major concern reported by the local community in recent years. **Supporting Noise and Vibration Technical Notes to Statements of Common Ground, Appendix E - Ground Noise Engine Ground Runs in Supporting Noise and Vibration** (Doc Ref. 10.13) gives further details of engine running noise controls and also provides an analysis of complaints due to ground noise showing that in 10 years from the beginning of 2010 to the end of 2019, there was a total of 16 recorded noise complaints linked with ground noise. In contrast complaints from aircraft in flight, ie from aircraft in the air, peaked at 25,593 complaints in the 2019 year. During the pandemic there were more complaints from ground noise than usual, perhaps because ground noise became more noticeable in the context of other road, rail and air traffic noise reducing.

3.1.5 The noise contours shown in Appendix 2 fall either within or close to the airport boundary as ground noise attenuates over distance, with screening in some cases and because of the existing and proposed mitigation measures. There are small numbers of receptors within the contours due to the relatively low number of properties nearby. This is consistent with the very low numbers of complaints received due to ground noise showing that compared to air noise, ground noise has a very small impact.

3.1.6 The number of properties with potentially significant effects related to ground noise is 30 as explained in the following sections (please note that this is not simply calculated by the number of properties within the contours at Appendix 2, but also takes account of the change in noise from the Project compared to

baseline and also the level of ground noise compared to other ambient noise largely due to road traffic). This is a small number compared to Air Noise. It is for this reason that the Noise Insulation Scheme has been developed primarily for Air Noise. The properties that will be added to the air noise Inner Zone NIS to ensure that significant effects on health and quality of life due to ground noise are avoided are listed in Section 5.

4 Assessment

1 Outer Charlwood

4.1.1 The corrected results for the Central Case are within 0.2 dB of the results presented in the ES and correcting the error makes no change to the assessment within this area.

4.1.2 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.8 – 1.3 dB with the Slower Transition fleet as indicated in

4.1.3 Table 3 (when compared to the Central Case at Table 1), but the increases compared to the baseline (shown at Table 4) remain the same (within 0.5 dB) as for the Central Case (Table 2). The magnitude of impact remains low for this assessment area and the negligible effects reported for 281 properties (para 14.9.221 of the ES) are unchanged.

2 Charlwood

4.1.4 The corrected results for the Central Case are within 0.2 dB of the results presented in the ES and correcting the error makes no change to the assessment within this area.

4.1.5 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.9 – 1.1 dB with the Slower Transition fleet as indicated at Table 3 but the increases compared to the baseline (shown at Table 4) remain the same (within 0.5 dB) as for the Central Case. The magnitude of impact remains medium for this assessment area. The reported minor and not significant adverse effects at 40 properties could potentially increase to 53 properties due to the relative increase compared with road traffic noise. The major adverse effects reported for 2 properties in this area (para 14.9.222 of the ES) are unchanged.

3 Charlwood Road

4.1.6 The corrected results for the Central Case are 1.2 dB higher than the results presented in the ES. However, the worst-case magnitudes of impact are for Runway 26 Day and correcting the error brings the results for Runway 26 Night

more in line with this. The greatest effects, predicted at 8 properties during the night, are unaltered and correcting the error makes no change to the assessment within this area.

4.1.7 Predicted Northern Runway ground noise levels for this assessment area, increase by 1.2 – 1.6 dB with the Slower Transition fleet as indicated at Table 3. However, the increases compared to the baseline (shown at Table 4) are either the same, or slightly lower (greatest change is -0.3 dB for Runway 08 Night) compared with the Central Case. The greatest margin above baseline is still 6 dB i.e. greater than 5 dB and the magnitude of impact therefore remains high for this assessment area. The major adverse effects reported for 8 properties and the negligible effects at the remaining 33 properties in this area (para 14.9.223 of the ES) are unchanged.

4.1.8 For the Bear and Bunny Nursery, there is an increase of up to 1.4 dB in predicted Northern Runway ground noise levels but the increase compared to the baseline remain the same (within 1dB) as for the Central Case. Given the low sensitivity to noise, this is still expected to result in a negligible adverse effect (as reported at para 14.9.224 of the ES).

4 Farmfield

4.1.9 The corrected results for the Central Case reduce by 2.3 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 4 dB to 2 dB, ie below 3 dB, so the magnitude of impact is thus reduced from medium to low for this assessment area. Other than reducing the worst-case magnitude of impact, correcting the error makes no change to the assessment within this area.

4.1.10 Predicted Northern Runway ground noise levels for this assessment area, increase by 1.3 – 1.4 dB with the Slower Transition fleet as indicated at Table 3. However, the increases compared to the baseline (shown at Table 4) are the same (within 0.1 dB). The greatest margin above baseline is still below 3 dB and the magnitude of impact remains low for this assessment area. The minor adverse effect reported for 1 property and the negligible effects at the remaining 10 properties in this area (para 14.9.225 of the ES) are unchanged.

5 Povey Cross

4.1.11 The corrected results for the Central Case reduce by 2.7 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations reduces from 4 dB to 2 dB, i.e. below 3 dB, so the magnitude of impact is thus reduced from medium to low for this assessment area. In addition to reducing the worst-case magnitude of impact, correcting the

error changes the identified moderate adverse significant effect at 10 properties within this area to a minor adverse significant effect.

4.1.12 Predicted Northern Runway ground noise levels for this assessment area, increase by 1.2 – 1.4 dB with the Slower Transition fleet as indicated at Table 3. However, the increases compared to the baseline (shown at Table 4) are the same (within 0.2 dB) compared with the Central Case. The greatest margin above baseline is still below 3 dB and the magnitude of impact remains low for this assessment area. The minor adverse effects for 10 properties during the night and day south of Povey Cross Road in this area are unchanged along with the negligible effects at 269 properties.

6 Longbridge Road, Horley

4.1.13 The corrected results for the Central Case reduce by 2.7 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 3 dB to 1 dB, i.e. below 3 dB, so the magnitude of impact is thus reduced from medium to low for this assessment area. In addition to reducing the worst-case magnitude of impact, correcting the error reduces the number of properties where minor adverse effects occur from 66 down to 6 properties within this area.

4.1.14 Predicted Northern Runway ground noise levels for this assessment area, increase by 1.2 – 1.3 dB with the Slower Transition fleet as indicated at Table 3. However, the increases compared to the baseline (shown at Table 4) are the same (within 0.3 dB) compared with the Central Case. There is no change in the margin above baseline during Runway 26 night operations, so the magnitude of impact remains low for this assessment area. The minor adverse effects reported for 6 properties during the night in this area remain unchanged.

7 Riverside, Horley

4.1.15 The corrected results for the Central Case reduce by 1.6 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 1 dB to 0 dB, i.e. below 1 dB, so the magnitude of impact is thus reduced from low to negligible for this assessment area. The 220 properties where minor adverse effects are identified in the ES (para 14.9.228) all change to negligible effects within this area.

4.1.16 Predicted Northern Runway ground noise levels for this assessment area, increase by 1.1 – 1.4 dB with the Slower Transition fleet as indicated at Table 3. The increases compared to the baseline (shown at Table 4) are the same (within 0.5 dB, varying within a range of -0.4 dB to +0.5 dB) compared with the Central

Case, and the greatest margin above baseline is now just under 1 dB. The magnitude of impact remains negligible for this assessment area.

8 Bonnetts Lane

4.1.17 The corrected results for the Central Case increase by 2.9 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, increases from 1 dB to 4 dB, bringing it more in line with Runway 26 day. The worst-case magnitude of impact remains high but the increase in predicted levels brings 3 properties close to or above the SOAEL in this area. Combined with the high magnitude of impact, the increase in predicted noise for Runway 26 night operations means that there is a moderate adverse significant effect at these 3 properties. The remaining properties in the area have changes of 3 dB or less and have predicted noise levels 3 dB or more below the SOAEL. Correcting the error reduces the number of properties where minor adverse effects occur from 30 down to 27 properties within this area.

4.1.18 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.9 – 1.8 dB with the Slower Transition fleet as indicated at Table 3. The increases compared to the baseline (shown at Table 4) are the same (within 1 dB, varying within a range of -0.4 dB to +0.7 dB) compared with the Central Case. The greatest margin above baseline is still greater than 5 dB and the magnitude of impact remains high for this assessment area. The moderate adverse effect for up to 30 properties and the minor effects at 27 properties in this area are unchanged.

9 Lowfield Heath

4.1.19 The corrected results for the Central Case increase by 1.6 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, increases from 2 dB to 3 dB, bringing it in line with Runway 26 day. The worst-case magnitude of impact remains medium and the impacts for Runway 26 night are similar to those reported for Runway 26 day. Correcting the error does not affect the major adverse effect reported for up to 10 properties within this area.

4.1.20 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.7 – 0.9 dB with the Slower Transition fleet as indicated at Table 3. Compared to the baseline, the changes in levels (shown at Table 4) are the same (within 0.5 dB varying within a range of -0.4 dB to -0.5 dB) compared with the Central Case. The greatest margin above baseline is still greater than 1 dB and the magnitude of impact remains low for this assessment area. The major adverse effect reported for up to 10 properties above SOAEL, and the negligible

effects at the remaining 50 properties in this area (para 14.9.230 of the ES) are unchanged.

10 Rowley Farm

4.1.21 The corrected results for the Central Case reduce by 4.3 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 4 dB to 0 dB, but the margin is still 3 dB for Runway 08 night ie above 1 dB, so the magnitude of impact is thus reduced from medium to low for this assessment area. The moderate adverse effect reported for up to 7 properties and the negligible effects at the remaining 2 properties in this area (para 14.9.231 of the ES) are unchanged.

4.1.22 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.9 – 1.5 dB with the Slower Transition fleet as indicated at Table 3. The increases compared to the baseline (shown at Table 4) are the same (within 1dB, varying within a range of +0.1 dB to -0.4 dB) compared with the Central Case. The greatest margin above baseline is still greater than 3 dB, the magnitude of impact remains medium for this assessment area and the moderate adverse effects at 7 properties are unchanged.

11 Balcombe Road

4.1.23 The corrected results for the Central Case reduce by 1.8 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 2 dB to 0 dB, i.e. below 1 dB, so the magnitude of impact is thus reduced from low to negligible for this assessment area. The minor adverse effect reported for up to 70 properties in this area (para 14.9.232 of the ES) become negligible and there is an overall negligible effect at all properties in this area.

4.1.24 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.9 – 1.3 dB with the Slower Transition fleet as indicated at Table 3. The increases compared to the baseline (shown at Table 4) are the same (within 0.4 dB) compared with the Central Case. The greatest margin above baseline is still below 1 dB and the magnitude of impact remains negligible for this assessment area.

12 Tinsley Green

4.1.25 The corrected results for the Central Case reduce by 2.8 dB compared with the results presented in the ES. This means that the margin above baseline during Runway 26 night operations, reduces from 3 dB to 0 dB, ie below 1 dB, so the magnitude of impact is thus reduced from low to negligible for this assessment

area. The minor adverse effect reported for up to 290 properties in this area (para 14.9.233 of the ES) become negligible and there is an overall negligible effect at all properties in this area.

4.1.26 Predicted Northern Runway ground noise levels for this assessment area, increase by 0.3 – 1.4 dB with the Slower Transition fleet as indicated at Table 3. The increases compared to the baseline (shown at Table 4) are the same (within 1dB, in the range of 0 dB to -0.6 dB) compared with the Central Case. The greatest margin above baseline remains below 1 dB and the magnitude of impact stays negligible for this assessment area.

5 Discussion

Ground Noise and Air Noise

5.1.1 For air noise, the slightly noisier Slower Transition case modelling showed larger numbers of properties affected in the with Project case compared to the Central Case (see ES Table 14.9.7). This led to the question from some stakeholders as to whether the same would be true for ground noise. This slightly higher level of impact for air noise is not found for ground noise for two main reasons; firstly, the zone of effect from ground noise is much smaller, falling close to the airport boundary where populations are small and in many cases already protected from ground noise by the large bund and barrier around much of the airport perimeter. Secondly, whereas the air noise assessment assumes aircraft noise, being a series of peaks, is above ambient noise, the ground noise assessment considers ambient noise because ground noise is generated on the ground, and is a more continuous noise source similar in nature to road traffic noise. The airport perimeter is bounded by roads on all sides which elevate ambient noise (see ES Figures 14.6.33 and 14.6.34) so that in many areas the small increases in ground noise will not be significant compared to ambient noise levels in the area for either fleet transition cases.

Changes in Effects

5.1.2 As a result of the ES correction, there have been some changes to the number of properties with major effects in two of the assessment areas (Povey Cross and Bonnetts Lane). The major adverse effects at 10 properties in Povey Cross have reduced to minor adverse effects within this assessment area. Within Bonnetts Lane, up to 3 properties are now considered to have a major adverse effect when previously this was identified as a minor adverse effect. These changes to the number of major effects have been discussed in the relevant paragraphs above, and it should be noted that overall, there is a reduction in the number of major effects.

5.1.3 As a result of the ES correction, there have also been some changes to the number of properties with minor effects in three of the assessment areas (Longbridge Road, Riverside and Balcombe Road). The minor adverse effects have reduced to negligible effects at all but 6 properties within these assessment areas. These changes to the number of minor effects have been discussed in the relevant paragraphs above, and it should be noted that these are not significant.

5.1.4 When considering the modelling results for the Slow Transition fleet, there are no changes to the Major, Minor or negligible adverse effects for the Central Case (as discussed in the relevant paragraphs above).

Mitigation Measures

5.1.5 In relation to the three newly identified properties in the Bonnetts Lane assessment area with major adverse effects, noise bunds or barriers would not be practicable for mitigating the noise impacts. Noise barriers or bunds are most effective when they are close to either the noise source or the receptor and for receptors to the south of the airport, there are no suitable locations where a barrier or bund could be placed close enough to the main taxiways for it to be effective. However, the three identified properties are within the Inner Zone of the NIS (as set out at paragraph 4.1.4 and Diagram 4.1 of **ES Appendix 14.9.10 Noise Insultation Scheme** [APP-180]) and the noise insulation package offered to these properties would therefore mitigate the effects.

5.1.6 It should be noted that within the ES, 10 properties within the Povey Cross assessment area were identified as being subject to moderate adverse effects and potentially qualifying for the Inner Zone NIS package (ES paragraphs 14.9.226 and 14.9.235). Following the correction of the error in the ES, the 10 properties in the Povey Cross assessment area are no longer predicted to have a moderate adverse effect and it is unlikely that these properties would qualify for the Inner Zone NIS package.

5.1.7 To clarify, the table below shows all 30 properties predicted to be significantly affected by ground noise from the Project where noise screening due to the bund and barrier to be provided is not likely to be sufficient. All these properties will be offered noise insulation, and the table below clarifies the 16 of these that do not qualify due to air noise so will be offered it for ground noise.

Table 5: Summary of Significant Ground Noise Effects and Noise Insulation

Assessment Area	Number of Properties	Number already within Air Noise Inner Zone NIS	Number added to Air Noise Inner Zone

	Significantly Affected		
1 Charlwood	0	0	0
2 Outer Charlwood	2	1	1
3 Charlwood Road	8	0	8
4 Farmfield	0	0	0
5 Povey Cross	0	0	0
6 Longbridge Road, Horley	0	0	0
7 Riverside, Horley	0	0	0
8 Bonnetts Lane	3	3	0
9 Lowfield Heath	10	10	0
10 Rowley Farm	7	0	7
11 Balcombe Road	0	0	0
12 Tinsley Green	0	0	0

6 Summary

Correcting the error identified within the ES results in changes to the with Project predicted levels for Runway 26 night by varying degrees depending on assessment area. The changes in predicted level vary from -4.3 dB to +2.9 dB and these are covered in detail within section 4 above. Correcting the predicted levels also results in some changes to the magnitude of impact and the resulting effects that are reported. Within areas 1, 2, 3 and 9 there are no changes to the magnitude of impact or the reported effects. Within areas 4, 6, 7, 10, 11 and 12 the magnitude of impact is reduced and many of the reported minor effects become negligible with minor effects remaining at only 6 properties. Within area 5 the magnitude of effect is reduced from medium to low and the reported moderate averse significant effect at 10 properties reduces to a minor effect. Within area 8, the magnitude of impact does not change but moderate significant effects are now predicted at 3 properties where previously these were considered to be minor effects.

6.1.1 Ground noise modelling indicates that the Slower Transition fleet case could result in higher predicted noise levels, in the range of 0.7 – 1.8 dB higher, when compared with the Central Case fleet in the future year of greatest impact, 2032. However, similar increases apply to the Future Baseline case as well as the Project case in that year, and it is the difference between the Future Baseline and Project cases that is used to assess the impact of the Project.

6.1.2 The margin between predicted ground noise for the Future Baseline and Project cases is generally the same (to within 1 dB) for the Slower Transition fleet compared to the Central Case fleet.

6.1.3 Noise modelling for the Slower Transition Case shows the total numbers of minor, moderate and major effects do not change when compared to the Central Case fleet.

6.1.4 After taking into account the mitigation offered by the noise insulation scheme which will partly mitigate effects (see ES paragraphs 14.9.239 and 14.9.240), the residual significant moderate adverse effects would be 30 properties (reduced from the 37 identified in the ES).

6.1.5 Additionally, **ES Appendix 14.9.10 Noise Insulation Scheme** [APP-180], makes provision for monitoring ground noise to determine eligibility for noise insulation. The assessment areas where this is relevant have changed slightly from those identified in the ES but this has been clarified above as relating specifically to Charlwood, Charlwood Road and Rowley Farm. This provision serves to further mitigate effects, so that all properties where significant effects on health and quality of life arise in practice will receive mitigation through the Noise Insulation Scheme regardless of the actual fleet operating at the time.

6.1.6 Therefore, the overall assessment using the Slower Transition fleet is not significantly different from the assessment for the Central Case.

Appendix 1: Updated Tables for Central Case in ES Appendix 14.9.3

Table 5: Updated ES Appendix 14.9.3 Table 5.3.1 - Summary of Ground Noise 2029 Predicted Level (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2029 – Runway 26 Daytime	48	50	59	53	55	56	59	60	65	59	55	50
2029 – Runway 26 Night	46	48	57	51	53	52	54	58	63	56	50	46
2029 – Runway 08 Daytime	55	64	59	54	56	51	50	61	64	62	44	46
2029 – Runway 08 Night	49	58	52	49	51	47	47	56	61	60	42	43

Table 6: Updated ES Appendix 14.9.3 Table 5.3.2 - Summary of Ground Noise 2029 Predicted Project Level versus 2029 Baseline, Differences (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2029 – Runway 26 Daytime	0	0	6	2	1	1	0	5	2	0	0	0
2029 – Runway 26 Night	-2	-0	5	1	1	0	-1	3	3	-0	-1	-0
2029 – Runway 08 Daytime	0	3	0	1	0	0	0	-1	0	1	0	0
2029 – Runway 08 Night	-2	3	-2	-1	-1	-1	-1	-2	0	2	0	0

Table 7: Updated ES Appendix 14.9.3 Table 5.3.3 - Summary of Ground Noise 2038 Predicted Level (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2038 – Runway 26 Daytime	47	49	57	52	54	55	58	59	64	58	54	49
2038 – Runway 26 Night	46	48	56	50	51	51	53	57	63	55	49	45
2038 – Runway 08 Daytime	54	63	57	53	55	50	50	59	64	61	44	45
2038 – Runway 08 Night	48	57	51	48	50	46	46	55	61	59	41	42

Table 8: Updated ES Appendix 14.9.3 Table 5.3.4 - Summary of Ground Noise 2038 Predicted Project Level versus 2038 Baseline, Differences (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2038 – Runway 26 Daytime	1	2	6	3	2	1	1	6	3	1	1	1
2038 – Runway 26 Night	-1	1	6	2	1	1	-1	4	4	-0	-1	-0
2038 – Runway 08 Daytime	1	4	2	1	1	1	1	-1	1	3	1	1

2038 – Runway 08 Night	0	3	-1	0	-1	-1	-1	-3	1	3	0	1

Table 9: Updated ES Appendix 14.9.3 Table 5.3.5 - Summary of Ground Noise 2047 Predicted Level (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,\ T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2047 – Runway 26 Daytime	47	49	57	52	54	55	58	59	64	58	54	49
2047 – Runway 26 Night	46	48	56	50	52	51	53	57	63	55	49	45
2047 – Runway 08 Daytime	54	63	57	53	55	50	50	59	64	61	44	45
2047 – Runway 08 Night	48	57	51	48	50	46	46	55	61	59	41	43

Table 10: Updated ES Appendix 14.9.3 Table 5.3.6 - Summary of Ground Noise 2047 Predicted Project Level versus 2047 Baseline, Differences (dB LAeq)

Descriptor	Receptor Area ($L_{Aeq,\ T}$ dB)											
	1	2	3	4	5	6	7	8	9	10	11	12
2047 – Runway 26 Daytime	1	2	7	4	3	2	2	6	3	1	2	2
2047 – Runway 26 Night	-0	1	6	3	2	1	-1	4	4	0	-0	0
2047 – Runway 08 Daytime	2	4	2	2	1	1	1	-1	2	3	1	1
2047 – Runway 08 Night	1	3	0	0	0	0	-1	-3	1	3	0	1

Table 11: Updated ES Appendix 14.9.3 Table 5.4.1 - Ground Noise 2029 Predictions at All Locations (dB L_{Aeq})

Receptor Area	Assessment Location	Baseline				Project			
		2029 - 026 Daytime	2029 - 026 Night	2029 - 08 Daytime	2029 - 08 Night	2029 - 026 Daytime	2029 - 026 Night	2029 - 08 Daytime	2029 - 08 Night
Charlwood 1	3 Charlwood Road	46	46	57	52	47	46	57	51
	2 Frys Cottages	49	49	58	53	50	48	58	51
	Westfield Place	44	43	61	56	47	45	64	58
Outer Charlwood 2	Blue Cedars	48	47	56	51	46	46	55	49
	Chapel Farm	48	48	56	52	47	46	55	49
	12 Willow Corner	48	47	55	50	48	46	55	48
	The Seasons	38	38	55	49	41	40	55	49
Charlwood Road 3	Brook Farm	52	51	58	54	57	55	59	52
	Farmfield Cottages	51	49	55	51	56	54	57	50
	Charlwood Aquatics	53	52	58	53	59	57	58	52
	Warwick Cottage	53	51	55	51	54	52	56	51

Table 11: Updated ES Appendix 14.9.3 Table 5.4.1 - Ground Noise 2029 Predictions at All Locations (dB L_{Aeq})

Receptor Area	Assessment Location	Baseline				Project			
		2029 - 026 Daytime	2029 - 026 Night	2029 - 08 Daytime	2029 - 08 Night	2029 - 026 Daytime	2029 - 026 Night	2029 - 08 Daytime	2029 - 08 Night
	Bear and Bunny Nursery	51	49	55	50	54	51	56	50
Farmfield 4	April Cottage	46	44	49	45	49	46	50	45
	Larkfield	47	45	50	46	50	47	51	46
	Suvla	52	50	54	50	53	51	54	49
Povey Cross 5	Oakfield Cottage	54	52	55	52	55	53	56	51
	Gatwick Park Hospital	51	49	50	47	52	49	50	46
	Travel Lodge	55	52	51	49	55	51	52	48
Longbridge Road, Horley 6	103 Cheyne Walk	55	52	51	48	56	52	51	47
	17 Woodroyd Gardens	56	52	51	48	56	52	51	47
	Moat House Hotel	54	51	50	48	54	51	51	47
Riverside, Horley 7	82 The Crescent	59	55	51	49	59	54	50	47
	45 Riverside	57	53	50	48	57	53	50	47
Bonnetts Lane 8	Hyders Farmhouse	50	49	60	57	53	52	59	54
	Amberley Fields Campsite	55	54	61	57	60	58	59	55
	Westfield House	51	51	62	58	55	54	61	56
	Little Park Farm	44	44	57	52	44	44	57	51
Lowfield Heath 9	Myrtle Cottage	61	59	62	58	62	61	62	57
	Tinsley House	55	53	57	54	55	52	59	57
	St Michael & All Angels	62	59	64	62	60	58	64	61
	Hawthorn Farm	57	55	62	59	55	53	63	60
	Charlwood House	63	61	64	60	65	63	62	58
	Lowfield Farm	58	57	62	58	63	61	60	56
Rowley Farm 10	Rowley Farmhouse	57	55	58	55	58	55	59	56
	Rowley Cottage	59	57	61	58	59	56	62	60
Balcombe Road 11	Trent House	51	47	42	40	51	46	42	40
	Meadowcroft House	55	50	44	42	55	50	44	42
	Hunters Lodge	53	49	43	41	53	48	43	41
	Four Winds	52	47	43	41	52	47	43	41
	Mynthurst	49	46	43	40	49	45	43	40
Tinsley Green 12	Hoots Cottage	50	47	45	42	50	46	45	43
	Oldlands Farmhouse	49	46	46	43	50	46	46	43
	Brookside	50	46	45	42	50	46	45	43

Table 12: Updated ES Appendix 14.9.3 Table 5.4.2 - Ground Noise 2032 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2032 - 026 Daytime	2032 - 026 Night	2032 - 08 Daytime	2032 - 08 Night	2032 - 026 Daytime	2032 - 026 Night	2032 - 08 Daytime	2032 - 08 Night
Charlwood 1	3 Charlwood Road	45	45	56	51	47	46	57	51
	2 Frys Cottages	48	48	57	52	50	48	57	51
	Westfield Place	43	42	60	55	48	45	64	58
Outer Charlwood 2	Blue Cedars	47	47	55	50	46	46	54	49
	Chapel Farm	47	47	55	51	47	46	55	49
	12 Willow Corner	47	46	54	49	48	46	55	48
	The Seasons	38	38	54	48	41	40	55	49
Charlwood Road 3	Brook Farm	51	50	57	52	56	54	58	52
	Farmfield Cottages	50	48	54	50	56	53	56	50
	Charlwood Aquatics	52	51	57	52	58	56	58	51
	Warwick Cottage	52	50	54	50	54	52	55	50
	Bear and Bunny Nursery	50	48	54	49	54	51	55	49
Farmfield 4	April Cottage	45	43	49	45	48	46	50	45
	Larkfield	46	44	49	46	49	47	51	46
	Suvla	51	49	53	49	53	51	54	49
Povey Cross 5	Oakfield Cottage	53	51	55	51	55	52	55	51
	Gatwick Park Hospital	51	48	49	46	52	49	50	46
	Travel Lodge	54	51	51	48	54	51	52	48
Longbridge Road, Horley 6	103 Cheyne Walk	54	51	50	47	55	51	51	47
	17 Woodroyd Gardens	55	51	50	48	56	52	51	47
	Moat House Hotel	53	50	50	47	54	50	50	46
Riverside, Horley 7	82 The Crescent	58	54	50	48	59	54	50	47
	45 Riverside	56	52	50	47	57	52	50	47
Bonnetts Lane 8	Hyders Farmhouse	49	49	59	56	53	52	58	54
	Amberley Fields Campsite	54	53	60	56	60	57	58	54
	Westfield House	50	50	61	58	55	54	60	56
	Little Park Farm	43	43	56	51	44	44	56	51
Lowfield Heath 9	Myrtle Cottage	60	58	61	57	62	61	61	57
	Tinsley House	55	52	57	53	54	52	59	57
	St Michael & All Angels	61	59	63	61	60	57	64	61

Table 12: Updated ES Appendix 14.9.3 Table 5.4.2 - Ground Noise 2032 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2032 - 026 Daytime	2032 - 026 Night	2032 - 08 Daytime	2032 - 08 Night	2032 - 026 Daytime	2032 - 026 Night	2032 - 08 Daytime	2032 - 08 Night
	Hawthorn Farm	56	54	61	58	55	53	63	60
	Charlwood House	62	60	63	60	65	63	62	58
	Lowfield Farm	57	56	61	57	63	61	59	56
Rowley Farm 10	Rowley Farmhouse	56	54	57	54	57	55	59	56
	Rowley Cottage	58	56	60	57	59	56	62	60
Balcombe Road 11	Trent House	50	46	41	39	50	46	42	40
	Meadowcroft House	54	50	44	41	54	49	44	41
	Hunters Lodge	52	48	42	40	53	48	43	41
	Four Winds	51	47	42	40	51	47	43	40
	Mynthurst	48	45	42	40	49	45	43	40
Tinsley Green 12	Hoots Cottage	49	46	44	41	49	46	45	42
	Oldlands Farmhouse	48	46	45	42	49	46	46	43
	Brookside	49	46	44	42	49	46	45	42

Table 13: Updated ES Appendix 14.9.3 Table 5.4.3 - Ground Noise 2038 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night	2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night
Charlwood 1	3 Charlwood Road	44	44	54	50	46	45	56	50
	2 Frys Cottages	47	47	55	51	49	48	56	50
	Westfield Place	42	42	60	54	47	45	63	57
Outer Charlwood 2	Blue Cedars	46	46	53	49	46	45	53	48
	Chapel Farm	46	46	53	50	46	46	54	48
	12 Willow Corner	46	45	53	48	47	45	54	47
	The Seasons	37	37	53	48	40	39	54	48
Charlwood Road 3	Brook Farm	50	49	56	51	55	54	57	51
	Farmfield Cottages	49	47	53	49	55	52	56	49

Table 13: Updated ES Appendix 14.9.3 Table 5.4.3 - Ground Noise 2038 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night	2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night
	Charlwood Aquatics	51	50	55	51	57	56	57	50
	Warwick Cottage	51	49	54	50	53	51	55	49
	Bear and Bunny Nursery	49	47	53	49	53	50	55	49
Farmfield 4	April Cottage	44	43	48	44	47	45	49	44
	Larkfield	45	44	49	45	48	46	50	45
	Suvla	50	48	52	49	52	50	53	48
Povey Cross 5	Oakfield Cottage	52	50	54	51	54	51	55	50
	Gatwick Park Hospital	50	48	48	46	51	48	49	45
	Travel Lodge	53	51	50	47	54	50	51	47
Longbridge Road, Horley 6	103 Cheyne Walk	54	50	49	47	55	51	50	46
	17 Woodroyd Gardens	54	51	50	47	55	51	50	46
	Moat House Hotel	52	49	49	46	53	49	50	46
Riverside, Horley 7	82 The Crescent	57	53	50	47	58	53	50	46
	45 Riverside	56	52	49	47	57	52	50	46
Bonnetts Lane 8	Hyders Farmhouse	48	48	58	56	52	51	57	53
	Amberley Fields Campsite	53	52	58	55	59	57	57	53
	Westfield House	49	49	60	57	54	53	59	55
	Little Park Farm	42	42	55	50	43	43	55	50
Lowfield Heath 9	Myrtle Cottage	59	57	60	57	62	60	60	56
	Tinsley House	54	51	56	53	53	51	59	56
	St Michael & All Angels	60	58	62	60	58	57	64	61
	Hawthorn Farm	56	53	60	58	54	52	62	59
	Charlwood House	61	59	62	59	64	63	61	57
	Lowfield Farm	56	55	60	56	63	60	58	54
Rowley Farm 10	Rowley Farmhouse	54	53	55	53	56	54	58	55
	Rowley Cottage	57	56	59	56	58	55	61	59
Balcombe Road 11	Trent House	49	45	41	38	49	45	42	39
	Meadowcroft House	53	49	43	41	54	49	44	41
	Hunters Lodge	52	47	42	39	52	47	42	40
	Four Winds	50	46	41	39	51	46	42	40
	Mynthurst	47	44	41	39	48	44	42	40
Tinsley Green 12	Hoots Cottage	48	45	43	41	48	45	44	41

Table 13: Updated ES Appendix 14.9.3 Table 5.4.3 - Ground Noise 2038 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night	2038 - 026 Daytime	2038 - 026 Night	2038 - 08 Daytime	2038 - 08 Night
	Oldlands Farmhouse	47	45	44	42	48	45	45	42
	Brookside	48	45	43	41	49	45	44	42

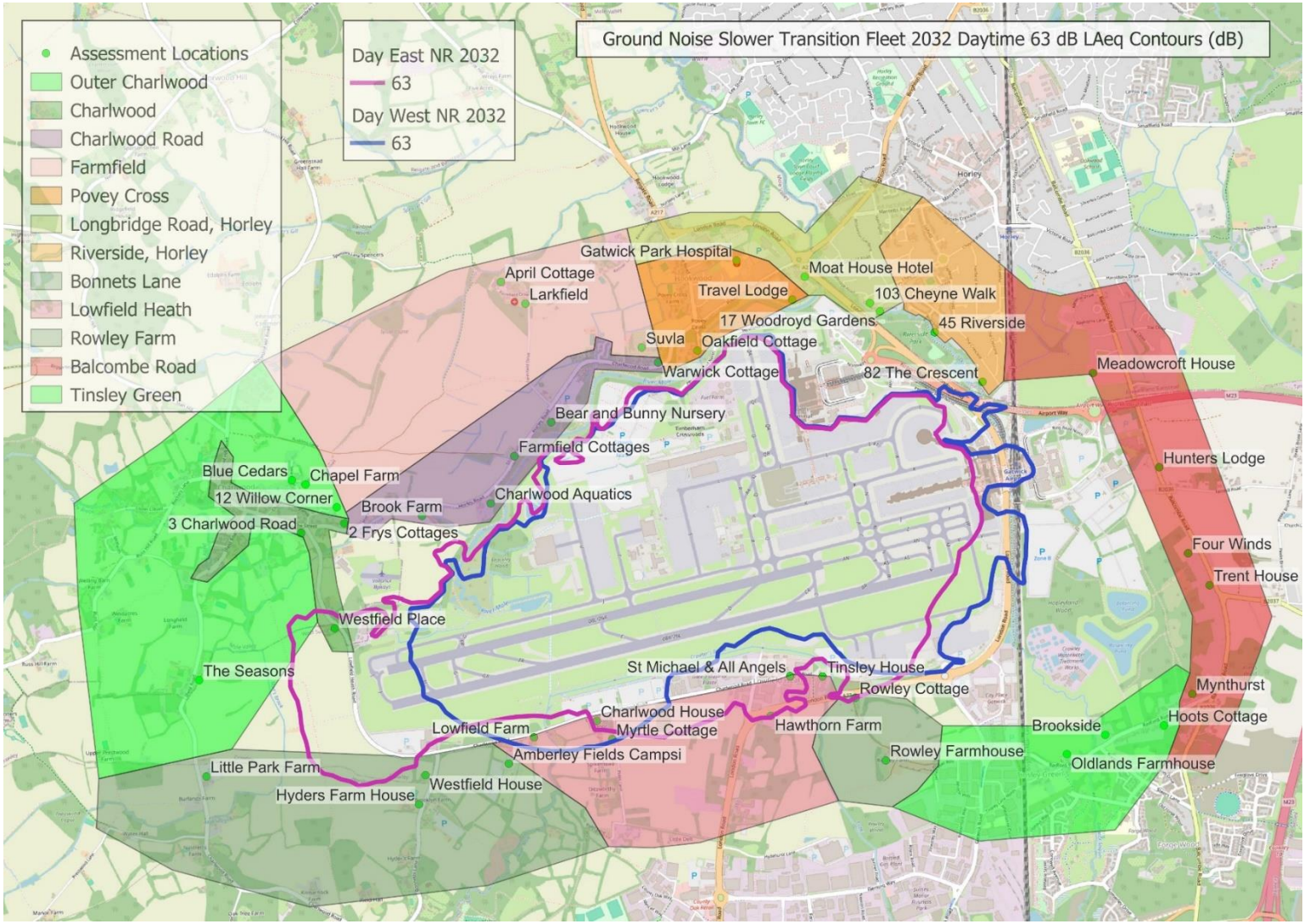
Table 14: Updated ES Appendix 14.9.3 Table 5.4.4 - Ground Noise 2047 Predictions at All Locations (dB LAeq)

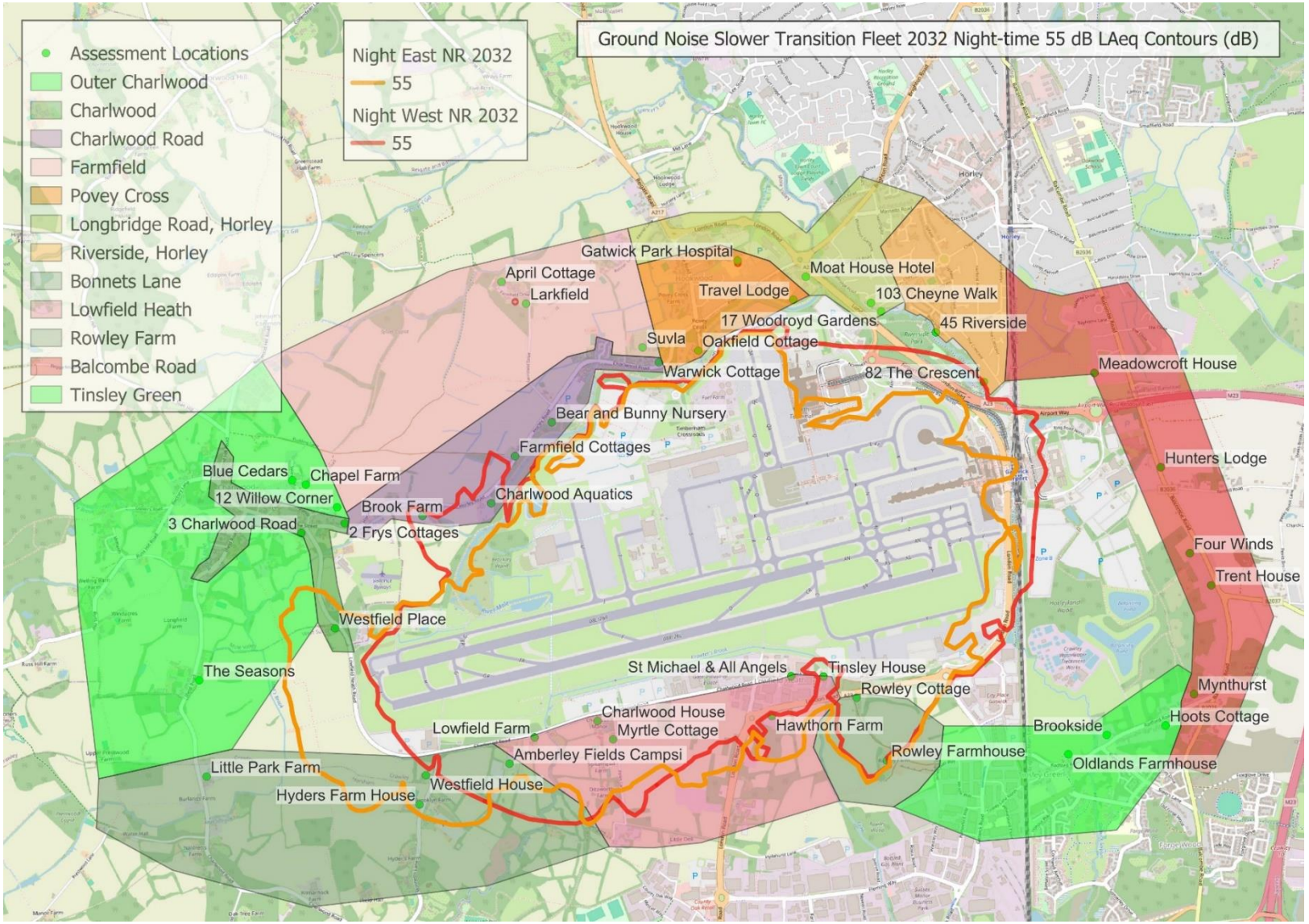
Receptor Area	Assessment Location	Baseline				Project			
		2047 - 026 Daytime	2047 - 026 Night	2047 - 08 Daytime	2047 - 08 Night	2047 - 026 Daytime	2047 - 026 Night	2047 - 08 Daytime	2047 - 08 Night
Charlwood 1	3 Charlwood Road	44	44	54	50	46	45	56	50
	2 Frys Cottages	47	47	55	51	49	48	56	50
	Westfield Place	42	42	59	54	47	45	63	57
Outer Charlwood 2	Blue Cedars	46	46	53	49	46	46	53	48
	Chapel Farm	46	46	53	49	46	46	54	48
	12 Willow Corner	46	45	52	48	47	45	54	47
	The Seasons	36	37	53	47	40	39	54	48
Charlwood Road 3	Brook Farm	50	49	55	51	55	54	57	51
	Farmfield Cottages	48	47	53	49	55	52	56	49
	Charlwood Aquatics	51	50	55	51	57	56	57	50
	Warwick Cottage	50	48	53	49	53	51	55	49
	Bear and Bunny Nursery	48	47	52	48	53	50	55	49
Farmfield 4	April Cottage	43	42	47	43	47	45	49	44
	Larkfield	44	43	48	44	48	46	50	45
	Suvla	49	47	52	48	52	50	53	48
Povey Cross 5	Oakfield Cottage	51	50	54	50	54	52	55	50
	Gatwick Park Hospital	48	47	48	45	51	48	50	45
	Travel Lodge	52	50	50	47	54	50	51	47
Longbridge Road, Horley 6	103 Cheyne Walk	52	50	49	47	55	51	50	46
	17 Woodroyd Gardens	53	50	49	47	55	51	50	46

Table 14: Updated ES Appendix 14.9.3 Table 5.4.4 - Ground Noise 2047 Predictions at All Locations (dB LAeq)

Receptor Area	Assessment Location	Baseline				Project			
		2047 - 026 Daytime	2047 - 026 Night	2047 - 08 Daytime	2047 - 08 Night	2047 - 026 Daytime	2047 - 026 Night	2047 - 08 Daytime	2047 - 08 Night
	Moat House Hotel	51	49	48	46	53	50	50	46
Riverside, Horley 7	82 The Crescent	56	53	49	47	58	53	50	46
	45 Riverside	54	51	49	47	57	52	50	46
Bonnetts Lane 8	Hyders Farmhouse	48	48	57	55	52	52	57	53
	Amberley Fields Campsite	53	52	58	55	59	57	57	53
	Westfield House	49	49	60	57	54	53	59	55
	Little Park Farm	41	42	54	50	43	44	55	50
Lowfield Heath 9	Myrtle Cottage	59	57	60	56	62	60	60	56
	Tinsley House	53	51	55	52	53	51	59	56
	St Michael & All Angels	60	58	62	60	58	57	64	61
	Hawthorn Farm	55	53	60	57	54	52	62	59
	Charlwood House	61	59	62	59	64	63	61	57
	Lowfield Farm	56	55	60	56	63	60	58	54
Rowley Farm 10	Rowley Farmhouse	54	53	55	52	56	54	58	55
	Rowley Cottage	57	55	58	56	58	55	61	59
Balcombe Road 11	Trent House	48	45	40	38	49	45	42	39
	Meadowcroft House	52	49	43	41	54	49	44	41
	Hunters Lodge	50	47	41	39	52	47	42	40
	Four Winds	49	46	41	39	51	46	42	40
	Mynthurst	46	44	41	39	48	44	42	40
Tinsley Green 12	Hoots Cottage	47	45	43	40	48	45	44	41
	Oldlands Farmhouse	46	45	44	41	48	45	45	43
	Brookside	47	45	43	40	49	45	44	42

Appendix 2: Slow Transition Fleet Noise Contours




Ground Noise Slower Transition Fleet 2032 Night-time 55 dB LAeq Contours (dB)
Assessment Locations
Outer Charlwood
Charlwood
Charlwood Road
Farmfield
Povey Cross
Longbridge Road, Horley
Riverside, Horley
Bonnets Lane
Lowfield Heath
Rowley Farm
Balcombe Road
Tinsley Green
Night East NR 2032
55
Night West NR 2032
55
Gatwick Park Hospital
April Cottage
Larkfield
Moat House Hotel
Travel Lodge
103 Cheyne Walk
17 Woodroyd Gardens
45 Riverside
Suvla
Oakfield Cottage
Warwick Cottage
82 The Crescent
Meadowcroft House
Bear and Bunny Nursery
Farmfield Cottages
Hunters Lodge
Blue Cedars
Chapel Farm
12 Willow Corner
Brook Farm
Charlwood Aquatics
3 Charlwood Road
2 Frys Cottages
Four Winds
Trent House
Westfield Place
The Seasons
St Michael & All Angels
Tinsley House
Rowley Cottage
Mynthurst
Charlwood House
Myrtle Cottage
Lowfield Farm
Hawthorn Farm
Brookside
Hoots Cottage
Amberley Fields Campsi
Rowley Farmhouse
Oldlands Farmhouse
Little Park Farm
Hyders Farm House
Westfield House

Appendix C – Traffic Noise Barrier Options Selection Report

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1 Introduction

1.1 Background

1.1.1 Detailed road traffic noise modelling and assessment was carried during both the PEIR stage (in 2021) and ES stage (in 2022 and 2023) to support the NRP proposal (referred to as the Project). As part of the Road Traffic Noise Impact Assessment, several mitigation measures were designed into the Project to reduce the potential for impacts from traffic noise.

1.1.2 The PEIR accompanying the Autumn 2021 consultation on the Project indicated the presence of three road noise barriers in the project proposals, designed to mitigate anticipated road noise impacts arising from the project on residential properties close to the A23 / Airport Way, particularly those in the Noise Important Areas within the Horley Gardens Estate. Two of these barriers were located on the north side of the two proposed flyovers, the third was at ground level on the north side of the existing A23 / Airport Way adjacent to Riverside Garden Park (hereon referred to as the Riverside Park Barrier). These barriers were also included in the Summer 2022 PEI consultation document, noting that further strategic traffic modelling could affect them.

1.1.3 Strategic and local road traffic modelling carried out since the preparation of the Summer 2022 PEI consultation and consequent further road traffic noise modelling for the refined scheme showed that noise levels at sensitive receptors in the area reduce slightly with the Project (including the other mitigation it provides) without the need to install the Riverside Park Barrier referred to above.

1.1.4 This Technical Note details the approach taken to deriving the Project's traffic noise mitigation since the PEIR. It provides a comparison of benefits of the Riverside Park noise barrier in the PEIR scheme versus the benefits of the Riverside Park Barrier in the ES scheme, and evidences why this barrier is not needed for the Project.

2 Methodology for Deriving Mitigation

2.1 Background and Approach

2.1.1 As part of the DCO process, design freezes occurred at key points in the design process. These design freezes formed the basis of the road traffic noise assessment at the PEIR and ES stages. So as the project design and the available information progressed, the approach to building noise mitigation into the design of the new or altered roads also progressed.

2.1.2 As noted above, noise barriers were assessed at the PEIR, PEI and ES stages of the Project and their effectiveness was determined by undertaking detailed noise modelling and analysis using the outputs of the Strategic Traffic model available at the time.

2.1.3 At the outset stakeholders had informed GAL of the high amenity value attached to the Riverside Garden Park. The project team undertook several visits to the park to better understand this. Due to high existing noise levels in the Riverside Garden Park and surrounding residential area (notably within the two Noise Important Areas), it was identified that addressing the third aim of the Noise Policy Statement for England (NPSE) to reduce existing adverse effects of noise where opportunities arise would be an important consideration for the Road Traffic Noise studies. The possibility of a noise barrier being beneficial adjacent to the park was identified at a very early stage.

2.2 Methodology

2.2.1 Software (Predictor-Lima)) was used to complete the road traffic noise models. The model implemented the Calculation of Road Traffic Noise (CRTN) calculation method to predict noise levels.

2.2.2 Eighteen-hour traffic flows, the percentage of heavy goods vehicles (HGVs), and average speed (in km/h) were used to calculate the basic noise level of each road in both the Do-minimum (or Business as Usual [BAU]) case and the situation with the Project.

2.2.3 All barriers were assumed to be reflective. Setback distances from the kerb for all barriers were provided by the highways design team. Height information for the scheme was also utilised from the CAD model.

2.2.4 LiDAR 10-metre grid height points were used to interpolate the height information inside the Project site boundary. The data were also used to calculate the CRTN gradient noise level correction for the road noise sources for roads that will not change as a result of the Project.

2.2.5 All locations within the study area were assumed to have acoustically hard (reflective) ground, with the exception of the Riverside Garden Park area which had a soft ground correction to account for the additional acoustic ground absorption in the area.

2.2.6 NSR locations were assumed to be 4 metres above the ground representing the first floor at residential and non-residential locations with the exception of the Riverside Garden Park, for which a height of 1.5 metres (approximating human ear height) was used, and three-storey properties represented by NSR 6 and NSR17 used in the modelling reported were modelled at 5.5 metres to represent the second floor height.

2.2.7 Section 3 reports the results of the effectiveness of the Riverside Garden Park Barrier with both the PEIR highway layout and revised ES highway layout and associated traffic flow data.

3 Assessment Results

3.1 Introduction

3.1.1 Predicted traffic noise levels are presented at all receptor locations in 2032 (the year of opening of the highway works). Tables 1 and 2 include the predicted noise levels for the do-minimum situation (which is referred to as

Business as Usual or future baseline) and the situation with the Project for the barrier design scenarios. The following scenarios were run within the noise models:

- Scenario 1 contains the noise mitigation at the full extent outlined in the PEIR, with barriers running along the A23 Riverside Park edge (2 metres high), and North and South Terminal roundabout flyovers (1 metres high); and
- Scenario 2 contains noise mitigation on the North and South Terminal roundabout flyovers as in the PEIR (1 m), but without the barrier specified at the PEIR stage along the A23 Riverside Park edge.

3.1.2 Table 1 and Table 2 present the results of the modelling using the set of data described in Sections 1 and 2 above, for the PEIR and ES stages respectively. Table 3 shows a comparison of benefits of the noise barrier in the PEIR scheme versus benefits of the barrier in the DCO scheme for direct comparison.

3.1.3 Diagram 1 below shows the Scheme design, roads from the Strategic Traffic Model output, noise barriers (including the Riverside Park barrier as per Scenario 1), and noise-sensitive receptor locations at which traffic noise was predicted in the study area for the PEIR design. Diagram 2 shows the same information for the ES road scheme design.

3.2 Results

PEIR Stage (Up to September 2021)

3.2.1 As shown in Table 1, for the PEIR scheme results from Scenario 2 (2 noise barriers, rather than 3) showed that noise levels increase generally when compared to the future baseline scenarios at most NSR buildings by 0.8 to 1.6 dB (negligible to minor) and 1.5 to 2.4 dB (minor) within the Riverside Garden Park. NSRs 8, 9, and 13 showed small reductions in noise due to the Scheme (negligible to minor) when compared to the future baseline scenarios. Furthermore, in Scenario 2 it was predicted that NSRs 1, 3, 4, and 5 would have significant increases in noise when compared to the future baseline scenarios due to the Project. This is due to a >1 dB (minor) change where the existing absolute noise levels are greater than 68 dB (Significant Observable Adverse Effect Level, SOAEL). It is also notable that NSR 1 and 5 are both located within a Noise Important Area and were predicted to be significantly affected.

3.2.2 Conversely, as shown in Table 1, for the PEIR scheme Scenario 1 (3 noise barriers) showed that traffic noise levels with the Project were predicted to give reductions in noise at the majority of residential receptors and in the Riverside Garden Park (negligible to moderate). This was a result of the additional noise barrier running adjacent to the Riverside Park that had been incorporated into the highway design. Furthermore, ii was also notable that with the inclusion of the Riverside Park Barrier, noise increases at both NSR 1 and 5 within Noise Important Areas were negligible. Hence the Riverside Garden Park noise barrier was considered necessary at that time.

PEI Stage (Up to June 2022)

3.2.3 The road scheme was refined following the PEIR, including adjustments to the north terminal roundabout and junction with the A23. At the time of issuing the PEI in June 2022, the strategic transport model had not been updated to reflect the new design and there was uncertainty as to whether these necessitated a reduction in the speed limit on the A23 London Road. The road traffic noise modelling at that time had therefore not been updated, and the noise assessment noted the following, pending that update.

3.2.4 *Updated strategic traffic modelling will allow traffic noise modelling to be updated for the Environmental Statement. It is likely that traffic speeds on the A23 would be reduced as a result of the speed limit being reduced from 50 to 40 mph. If this, in combination with the results of updated strategic traffic modelling, show noise increases in the two Noise Important Areas defined in the Crawley Agglomeration Noise Action Plan (the residential areas around either end of Riverside Garden Park) can be avoided without the need for this noise barrier, it may be shortened or removed*.

ES Stage (Up to August 2023)

3.2.5 As shown in Table 2, results from Scenario 2 (2 noise barriers) show that traffic noise levels with the Project are predicted to show negligible or minor reductions in noise at the majority of residential receptors with the exception of some negligible increases (<1dB) in noise at NSRs 7, 10, 11, and 14 when compared to the future baseline scenarios. Furthermore, it is predicted that NSRs 1 and 5 in the Noise Important Areas have minor (1 to 3 dB) decreases in noise when compared to the future baseline scenarios as a result of the refinements of the scheme outlined in Sections 3.2.3 and 3.2.4.

3.2.6 As shown in Table 2, results from Scenario 1 show further noise benefits with the inclusion of the Riverside Park Noise Barrier where there is predicted negligible to major benefits at almost all NSRs with the exception of NSR7 and 14. There would also be a predicted significant noise benefit at both NSR1 and 5 within Noise Important Areas.

3.2.7 Table 3 shows a direct comparison of the benefits of the Riverside Park Barrier in the PEIR Scheme against the DCO Scheme.

4 Discussion

PEIR Stage (Up to September 2021)

4.1.1 Since the inclusion of the Riverside Park Barrier within the PEIR Scheme Design (named Scenario 1 in 3.1.1) resulted in all potential significant effects from the Project being mitigated, it was proposed as a mitigation measure at that stage. It was also noted that significant effects were predicted in Scenario 2 if the barrier was not included in the Project design. The following mitigation was proposed

in the Preliminary Environmental Information Report: Chapter 14: Noise and Vibration, September 2021:

- a two metre noise barrier stretching along the A23 on the edge of Riverside Garden Park;
- a one metre noise barrier along the North Terminal roundabout flyover elevated section (facing Riverside Garden Park); and
- a one metre noise barrier along the South Terminal roundabout flyover elevated section, north side.

PEI Stage (Up to June 2022)

4.1.2 No updated strategic traffic modelling was available to model the refined scheme. A speed reduction on the A23 was being considered. So, the PEI noted that the modelling would be redone, and the need for the barrier would be reviewed.

ES Stage (Up to August 2023)

4.1.3 A speed reduction from 50 to 40mph on the Noise Important Areas and the Riverside Gaden Park was confirmed. Strategic traffic modelling for the revised scheme was completed. The road traffic noise modelled was updated.

4.1.4 As described in Sections 3.2.5 and 3.2.6, it was predicted that both with and without the Riverside Park Barrier that noise levels at sensitive receptors in the area would reduce. It was acknowledged that installing the third noise barrier would bring significant noise reductions and associated benefits to some properties, notably at Noise Important Areas.

4.1.5 Other key factors were considered as part of embedding further or alternative mitigation measures into the design of the Project at the ES stage of the application, as the design progressed from the PEIR stage. DMRB describes several measures to mitigate and manage operational traffic noise such as:

- vertical or horizontal alignment of the road;
- earth bunds to act as a noise barrier;
- noise barriers;
- low noise road surfacing;
- speed limits; and
- restrictions on noisy vehicle types.

4.1.6 These above measures were considered during the ES stage through scheme design and traffic management options.

4.1.7 The Project team also considered low noise surfacing as another potential additional form of mitigation, however, the lack of noise performance of low noise surfaces at the relatively low design speeds in the relevant areas, together with potential maintenance implications, led to the decision that this would not be a suitable and effective form of noise mitigation.

4.1.8 In summer 2022 two reports were produced and shared to assist our consultation with the highway authorities and local authorities at that time. A Noise Barrier Note (August 2022) provided the results of the latest noise modelling and the benefits of the various noise barriers including specifically the Riverside Garden Park noise barrier. A report entitled *A23 Noise Barrier: Environmental Review of Alternative Options (August 2022)* was produced giving the results of a review undertaken to assess the Inter-Related effects of the Riverside Park barrier on other Environmental and Social topics.

4.1.9 The review undertaken by the wider Consultant team identified that the inclusion of the Riverside Park Barrier would be likely to give rise to significant adverse effects for the landscape and ecology topics. It would also likely result in the loss of floodplain which would require compensatory mitigation (and hence potentially further land take). The following disbenefits of the barrier were noted:

- loss of all existing vegetation on the southern edge of the park within a 6–8m zone from the edge of the park during installation of the barrier;
- reduction of ability to provide replacement planting to mitigate this loss;
- an associated permanent change to the character of the southern side of the park;
- reduction of ecological connectivity along the length of the park, particularly at the north-western end where the park narrows considerably; and
- greater light spill into the park from the highway potentially affecting bats and other wildlife.

4.1.10 Whilst acknowledging that installing the Riverside Park Barrier would bring significant additional noise reduction and associated noise benefits to some properties, it was also noted that significant noise impacts could be avoided, and small noise reductions result in the area through the final scheme design and traffic management without the need for the third noise barrier.

4.1.11 Finally, it was noted that road traffic is not the only source of noise in the park, and particularly at the southern end, the airport also contributes to total ambient noise levels. A noise barrier adjacent to the road would not reduce noise from the airport by the same extent, if at all, because the airport noise sources are much further away than the road traffic and in some cases higher in elevation. Therefore, the addition of a noise barrier along Riverside Garden Park would not reduce total ambient noise levels by the full reduction predicted in the traffic noise model.

4.1.12 Taking into account the wider disbenefits as well as the position in respect of noise benefits, it was decided that the Riverside Park noise barrier be removed from the DCO scheme. Local Authorities and highways authorities were notified of this decision, and it was presented to the noise and land based Topic Working Groups. The mitigation presented in the Gatwick Airport Northern Runway Project

Environmental Statement Chapter 14: Noise and Vibration is as follows:

- alignment changes through optioneering of the road scheme design;
- the new right turn onto the A23 from the North Terminal Roundabout removes the current need for traffic wishing to turn right instead having to turn left up to the Longbridge roundabout, around it, and back down the A23, thus reducing traffic flows on this section of the A23;
- a one metre noise barrier along the North Terminal Roundabout flyover elevated section (facing Riverside Garden Park);
- a one metre noise barrier along the South Terminal Roundabout flyover elevated section, north side; and
- Traffic management and speed reductions.

4.1.13 These noise mitigation measures are secured in the DCO scheme design. The two noise barriers are shown on Surface Access Highways Plans – General Arrangements [APP-020]. Speed limits are shown on Traffic Regulation Plans – Speed Limits [APP-023] and the corresponding Schedule 6 Part 1 of the Draft DCO (Doc Ref. 2.1v6).

Diagram 1: PEIR Noise Model (Scenario 1)

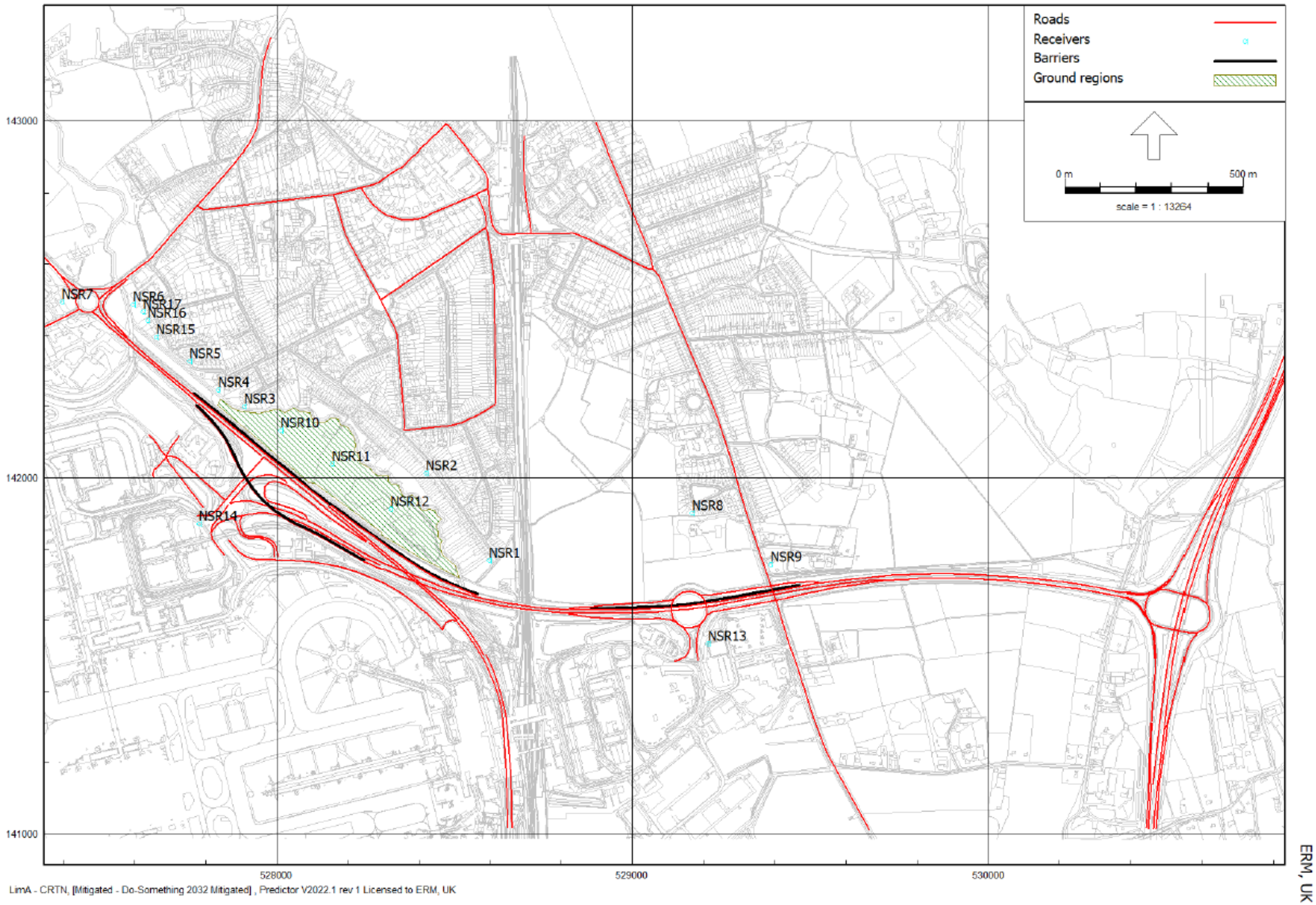

Table 1: Predicted PEIR Road Traffic Noise Levels Daytime in the Short-term

Scenario	Receptor ID / Description, $L_{A10,18hr}$ dB Results (Façade)																
	NSR1 – The Crescent East	NSR2 – The Crescent West	NSR3 – Woodroyd Gardens	NSR4 – Cheyne Walk	NSR5 – Longbridge Road East	NSR6 – Longbridge Road West	NSR7 – Povey Cross Road	NSR8 – Meadowcroft Close	NSR9 – B2036 Balcombe Road	NSR10 – Riverside Garden Park North(1)	NSR11 – Riverside Garden Park Centre(1)	NSR12 – Riverside Garden Park South(1)	NSR13 – Offices (1)	NSR14 – Premier Inn(1)	NSR15 – Longbridge Road Centre East	NSR16 – Longbridge Road Centre	NSR17 – Longbridge Road Centre West
Business As Usual 2032	69.2	64.9	69.8	71.4	70.5	70.0	69.8	67.6	74.3	63.6	63.0	64.0	69.6	68.6	71.0	69.9	69.6
With Scheme 2032 Scenario 1	69.3	64.7	66.7	68.9	71.0	70.5	70.6	67.1	72.8	61.5	62.3	63.5	69.2	69.5	71.5	70.3	70.1
With Scheme 2032 Scenario 2	70.8	66.4	71.0	72.7	71.9	70.7	70.6	67.2	72.8	65.9	65.3	65.6	69.2	69.5	71.8	70.6	70.4
Reduction Due to Park Barrier	1.5	1.7	4.4	3.8	0.9	0.2	0.0	0.2	0.0	4.4	3.0	2.1	0.0	0.0	0.3	0.3	0.3
Comparison of BAU against Scenario 1	0.1	-0.2	-3.2	-2.5	0.6	0.5	0.7	-0.6	-1.6	-2.0	-0.7	-0.5	-0.3	0.9	0.5	0.4	0.5
Comparison of BAU against Scenario 2	1.6	1.5	1.2	1.3	1.5	0.8	0.8	-0.4	-1.6	2.4	2.3	1.5	-0.3	0.8	0.8	0.7	0.8

(1) Noise-sensitive receptors represent open park areas or non-residential receptors, and results are presented as free-field values.

Where the Receptor ID / Description is highlighted, then a likely significant effect is identified at the individual receptor.

Diagram 2: ES Noise Model (Scenario 1)

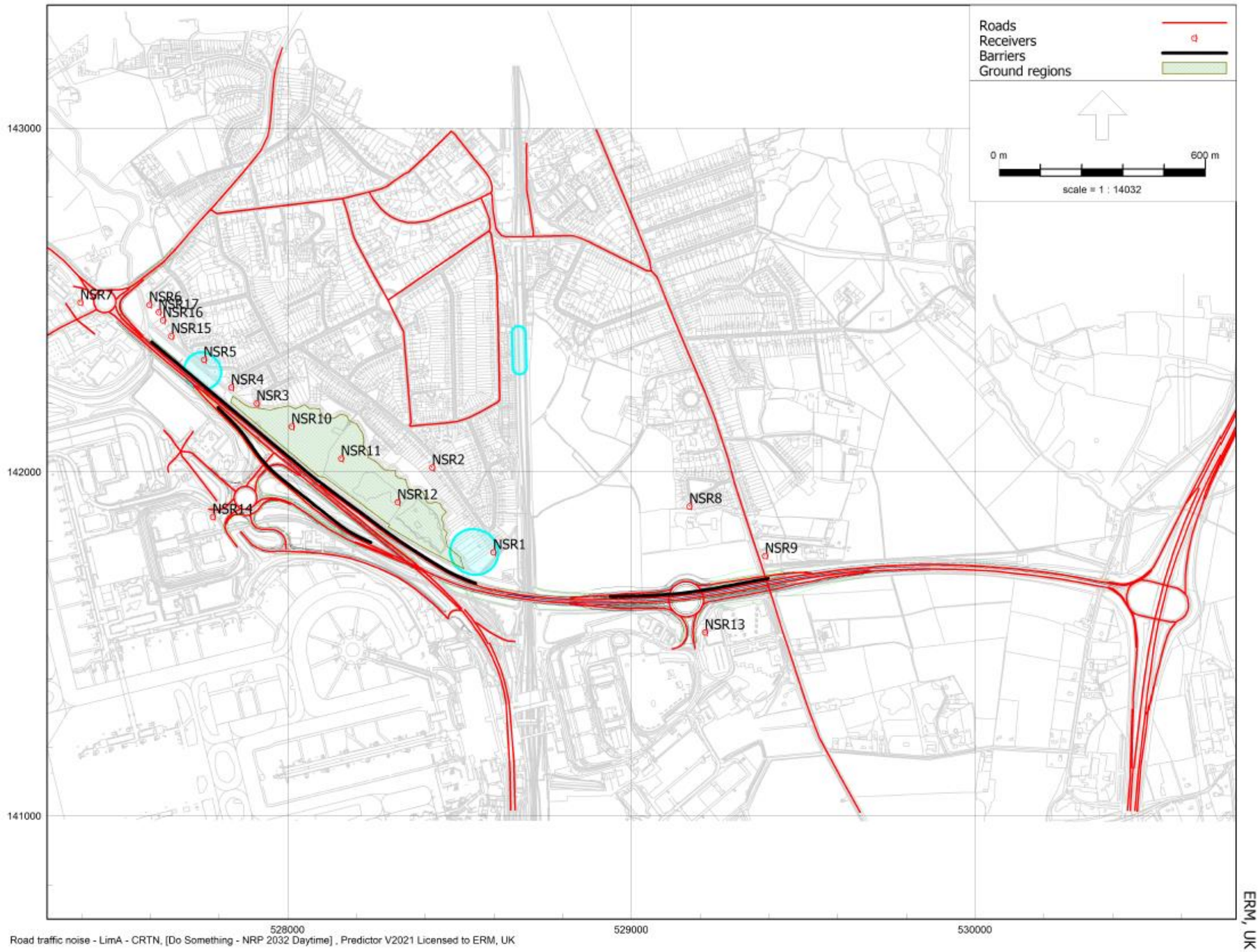

Table 2: Predicted ES Road Traffic Noise Levels Daytime in the Short-term

Scenario	Receptor ID / Description, $L_{A10,18hr}$ dB Results (Façade)																
	NSR1 – The Crescent East	NSR2 – The Crescent West	NSR3 – Woodroyd Gardens	NSR4 – Cheyne Walk	NSR5 – Longbridge Road East	NSR6 – Longbridge Road West	NSR7 – Povey Cross Road	NSR8 – Meadowcroft Close	NSR9 – B2036 Balcombe Road	NSR10 – Riverside Garden Park North(1)	NSR11 – Riverside Garden Park Centre(1)	NSR12 – Riverside Garden Park South(1)	NSR13 – Offices (1)	NSR14 – Premier Inn(1)	NSR15 – Longbridge Road Centre East	NSR16 – Longbridge Road Centre	NSR17 – Longbridge Road Centre West
Business As Usual 2032	70.5	65.9	70.2	72.1	71.6	71.2	71.2	67.9	74.2	64.0	63.5	64.9	69.8	69.7	72.3	71.2	70.9
With Scheme 2032 Scenario 1	67.3	63.2	64.8	65.9	65.6	69.9	71.3	65.9	73.0	60.1	61.4	61.6	68.1	69.9	67.8	68.4	68.9
With Scheme 2032 Scenario 2	69.1	65.2	69.3	71.1	70.5	70.5	71.3	66.1	73.0	64.4	64.1	64.3	68.1	69.9	70.6	69.8	69.8
Reduction Due to Park Barrier	1.8	2.0	4.5	5.2	4.9	0.6	0.0	0.2	0.0	4.3	2.7	2.7	0.0	0.0	2.8	1.4	0.9
Comparison of BAU against Scenario 1	-3.2	-2.7	-5.4	-6.2	-6.0	-1.3	0.1	-2.0	-1.2	-3.9	-2.1	-3.3	-1.7	0.2	-4.5	-2.8	-2.0
Comparison of BAU against Scenario 2	-1.4	-0.7	-0.9	-1.0	-1.1	-0.7	0.1	-1.8	-1.2	0.4	0.6	-0.6	-1.7	0.2	-1.7	-1.4	-1.1
(1) Noise-sensitive receptors represent open park areas or non-residential receptors, and results are presented as free-field values.																	
	Where the Receptor ID / Description is highlighted, then a likely significant effect is identified at the individual receptor.																

Table 3: Comparison of Benefits of the Riverside Park Barrier in the PEIR Scheme Versus the DCO Scheme

Scenario	Receptor ID / Description, $L_{A10,18hr}$ dB Results (Façade)																
	NSR1 – The Crescent East	NSR2 – The Crescent West	NSR3 – Woodroyd Gardens	NSR4 – Cheyne Walk	NSR5 – Longbridge Road East	NSR6 – Longbridge Road West	NSR7 – Povey Cross Road	NSR8 – Meadowcroft Close	NSR9 – B2036 Balcombe Road	NSR10 – Riverside Garden Park North(1)	NSR11 – Riverside Garden Park Centre(1)	NSR12 – Riverside Garden Park South(1)	NSR13 – Offices (1)	NSR14 – Premier Inn(1)	NSR15 – Longbridge Road Centre East	NSR16 – Longbridge Road Centre	NSR17 – Longbridge Road Centre West
PEIR Comparison of BAU against Scenario 1	0.1	-0.2	-3.2	-2.5	0.6	0.5	0.7	-0.6	-1.6	-2.0	-0.7	-0.5	-0.3	0.9	0.5	0.4	0.5
PEIR Comparison of BAU against Scenario 2	1.6	1.5	1.2	1.3	1.5	0.8	0.8	-0.4	-1.6	2.4	2.3	1.5	-0.3	0.8	0.8	0.7	0.8
ES Comparison of BAU against Scenario 1	-3.2	-2.7	-5.4	-6.2	-6.0	-1.3	0.1	-2.0	-1.2	-3.9	-2.1	-3.3	-1.7	0.2	-4.5	-2.8	-2.0
ES Comparison of BAU against Scenario 2	-1.4	-0.7	-0.9	-1.0	-1.1	-0.7	0.1	-1.8	-1.2	0.4	0.6	-0.6	-1.7	0.2	-1.7	-1.4	-1.1

(1) Noise-sensitive receptors represent open park areas or non-residential receptors, and results are presented as free-field values.

Appendix D – Traffic Noise Important Area Assessment

Table of Contents

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2	Detailed Road Traffic Assessment	3
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4	Assessment Results	4
5	Noise Model Calibration Results	4

1 Introduction

1.1 Background

1.1.1 Detailed modelling and assessment of road traffic noise emissions where roads that would be physically changed by the Project are within 600 metres of receptors was undertaken as part of the Gatwick Airport Northern Runway Project Environmental Statement Chapter 14: Noise and Vibration submission in July 2023. The noise modelling utilised traffic data from the Strategic Traffic Model to produce noise levels over day and night time periods for the operation of the highway network with the Project (do-something) and without the Project (do-minimum), as required by the Design Manual for Roads and Bridges (DMRB) methodology. The noise modelling compared the do-something with the do-minimum.

1.1.2 The operational traffic noise assessment also considered all Noise Sensitive Receptors (NSRs) along other road links on the wider strategic road network within 50 metres of the kerb line. These roads are public roads where there is a potential increase in basic noise level on the wider Strategic Road network.

1.1.3 This Topic Note summarises the approach and methodology used in the ES to assess road traffic noise in Noise Important Areas (NIAs) and to specifying mitigation as part of the ES Project design for the Gatwick DCO submission.

1.1.4 In addition, in response to comments from the Local Authority and National Highways, this report also summarises the approach to using existing measured baseline noise levels to validate the road traffic noise model.

1.2 Noise Important Areas

1.2.1 Across the country NIAs are defined as Important Areas where 1% of the population is affected by the highest noise levels from major roads regardless of this project. These locations were defined following the third round of strategic noise mapping undertaken during 2017 by DEFRA[1].

1.2.2 National Highways outline in their noise mitigation policy[2] the need to prioritise NIAs and to identify all NIAs that would benefit from resurfacing, noise barriers and insulation.

1.2.3 To address this issue, key factors were considered as part of embedding further mitigation measures into the design of the Project at the ES stage of the application, as the design progressed from the PEIR stage. DMRB describes several measures to mitigate and manage operational traffic noise such as:

- Vertical or horizontal alignment of the road;
- Earth bunds to act as a noise barrier;
- Noise barriers;
- Low noise road surfacing;
- Speed limits; and
- Restrictions on noisy vehicle types.

1.2.4 There are three NIAs (from DEFRA's Noise Action Planning Important Areas Round 3) that are designated because of existing high traffic noise levels that are located within 600 metres of the roads proposed to be physically changed by the Project as required by DMRB. Each NIA is shaded in orange in Diagram 1 below. Two are adjacent to the A23 by the Riverside Garden Park and one is adjacent to the A23 Brighton Road. All noise-sensitive buildings within these NIAs have been assessed as part of the Environmental Statement submission.

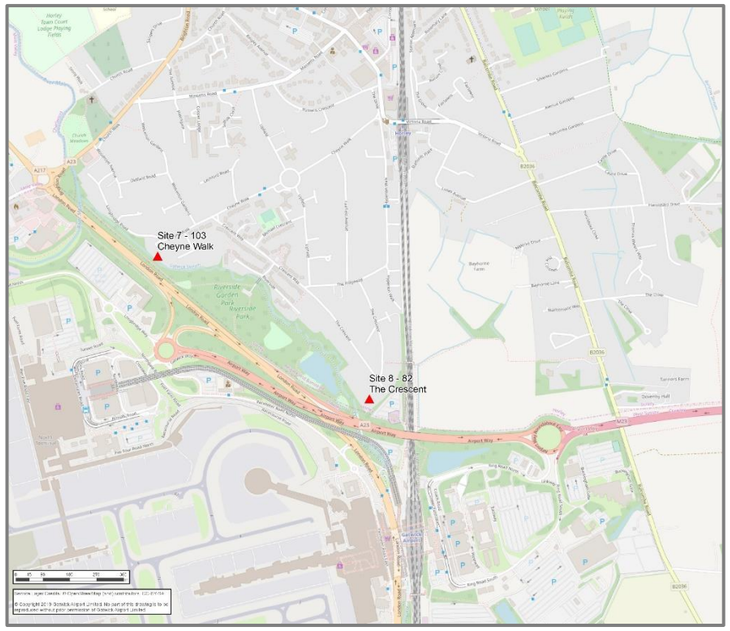
1.3 2016 Baseline Measurements

1.3.1 Long term noise surveys were conducted in 2016 by Hayes McKenzie for approximately two weeks to inform the ground noise assessment. A full report of the survey is provided in ES Appendix 14.9.6. The measurements were undertaken at a height representative of the first floor (4 m). These data have been used to calibrate the noise model. Two monitoring sites were identified in the survey that represented residential receptors which back onto the Riverside Garden Park and are representative of the locations of the Noise Important Areas and which represent areas where traffic noise is the major source of noise. Data at these locations were compared to the predicted baseline noise results. These were Site 7 and Site 8 in Diagram 1.3.1.

[1] DEFRA Noise Action Plan: Roads Environmental Noise (England) Regulations 2006, 2 July 2019:https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/813666/noise-action-plan-2019-roads.pdf

[2] National Highways Noise Mitigation Policy, ,2023: https://nationalhighways.co.uk/our-work/environment/air-quality-and-noise/noise/

Diagram 1.3.1: Monitoring Locations (Haynes McKenzie) 2016



2 Detailed Road Traffic Assessment

2.1 Predictive Noise Modelling

Introduction

2.1.1 Detailed modelling of traffic noise emissions was undertaken utilising noise modelling software where roads proposed to be physically changed by the Project are within 600 metres of receptors as required by DMRB. The traffic noise models are used to determine the net change in noise due to the Project on relevant NIAs that are within this distance of the Project.

2.1.2 Within the modelling of the road traffic noise baseline situation in 2018, receptors were placed in the model at the locations where the 2016 baseline measurements were taken to assist in the calibration and verification of the road traffic noise model. The modelling used traffic flows from the 2018 baseline outputs from the Strategic Traffic Model. Changes in noise between these two years would be expected to be negligible, so a comparison between these two was considered to be appropriate for calibration purposes.

Software and Calculation Method

2.1.3 In order to model the potential impacts of the Project at NIAs and undertake the noise model calibration exercise, noise calculation software (Predictor-Lima) was used to model the road traffic noise. The Predictor software package allows topographic details to be combined with acoustic properties of ground regions, water, foliage, significant building structures noise sources and receptor locations, to create a detailed representation of the road system and the surrounding area, realistically simulating the site-specific conditions that affect noise propagation from the road. The noise model allowed for the quantification of noise levels from multiple road links to predict the contributed noise levels from the road traffic at the nearest potentially affected receptors for do-something do-minimum operating scenarios.

2.1.4 The models implemented the prediction methodology based on the Calculation of Road Traffic Noise (CRTN), a guidance document (Department of Transport, Welsh Office, 1988) which is used for noise impact assessments of road projects.

Traffic Data and Model Inputs

2.1.1 Annual Average Weekday Traffic (AAWT), percentage of heavy goods vehicles (HGVs), and average speed (in km/h) were used to calculate the basic noise level of each road as defined in CRTN.

2.1.2 LiDAR 10-metre grid height points were used in the operational noise models to interpolate the height information inside the Project site boundary. Height data for all the Project roads were provided in CAD format by the design team. The data were also used to calculate the CRTN gradient noise level correction for the road noise sources for roads that will not change as a result of the Project.

2.1.3 All roads in both the baseline and operational noise models were assumed to have a bitumen surface with a texture depth of 1.5 mm, and source noise level elevation of 0.5 metres, following the guidance in CRTN with the exception of roads to the east end of the Project on the M23 as that section of road has already been treated with a low noise surface so were, therefore, modelled with a low-noise thin surface in all cases. National Highways have committed to installing low-noise surfaces as standard on all new roads and on existing roads when they need resurfacing within their Noise Mitigation Policy.

2.1.4 Information on local topography in the operational noise model (based on OS MasterMap data) and screening to realistically simulate the features that affect noise propagation from the road were utilised.

2.1.5 Locations within the large majority of the operational noise model study area were assumed to have acoustically hard (reflective) ground which is representative of the built up area mainly consisting of roads, buildings and other hard surfaces. This is with the exception of the Riverside Garden Park which had a soft ground correction applied to account for the additional acoustic ground absorption in the area.

2.1.6 NSRs within the calibration model were modelled at 4 m in line with the 2016 measurements. Contour plots within the NIA Assessment were modelled at 4 m, representative of first floor building height.

2.2 Calculations of Basic Noise Level change

2.2.1 As described in Section 1.1.2, NSRs within 50 metres of other road links on the wider Strategic Road

Network, where there is a potential for a change in noise as a result of the Project, were considered.

2.2.2 The CRTN method was utilised for the calculation method and to determine Basic Noise Levels (BNLs) at individual road links where it calculates either an $L_{10, 18\ hour}$ or $L_{10, 1\ hour}$ value depending on the inputs.

3 Mitigation

3.1.1 Noise mitigation options were discussed with National Highways and Local Planning Authorities in summer 2022 and up to the submission of the ES in July 2023. These discussions included representatives from various members of the design, environmental and client team, and local planning and highways authorities, to enable consideration of engineering and urban design issues. The mitigation was specified to ensure that at most receptors, including the NIAs in the vicinity of the Project, noise levels would reduce or have a negligible effect as a result of the Project. The mitigation measures developed within the Project are summarised as follows:

- alignment changes through optioneering of the Project design;
- the new right turn onto the A23 from the North Terminal Roundabout (which removes the current need for traffic wishing to turn right instead having to turn left up to the Longbridge roundabout, around it, and back down the A23, thus reducing traffic flows on this section of the A23);
- The speed limit on the A23 Brighton Road will be reduced from 50 to 40mph;
- a one metre high noise barrier along the North Terminal Roundabout flyover elevated section (facing Riverside Garden Park); and
- a one metre high noise barrier along the South Terminal Roundabout flyover elevated section, north side.

4 Assessment Results

4.1 NIA Assessment Change Contours

4.1.1 Diagram 1 below shows the Project design (do-something), roads from the Strategic Model output, noise barriers, and noise-sensitive receptor locations at which traffic noise was predicted in the study area. The diagram also shows NIAs represented by the orange hatched areas.

4.1.2 Contour plots are included in Diagram 2 to show the noise changes between the Project design against the Do-minimum (or Business as Usual [BAU]) case and highlights changes in noise within the three NIAs identified in Section □-. The results are provided for 2032 which provides the most stringent assessment. The following is noted from the results of the noise modelled at the locations:

- Noise reductions of between -1 dB and -3 dB are predicted at the location within the northwesterly NIA which is adjacent to the A23 by the Riverside Garden Park.
- Noise reductions of between -1 dB and -3 dB are predicted at the location within the southeasterly NIA which is adjacent to the A23 by the Riverside Garden Park.
- Noise reductions of between 0 dB and -1 dB are predicted at the location within the NIA adjacent to the A23 Brighton Road.

4.2 Calculations of BNL Change on Wider Strategic Road Network

4.2.1 Changes in road traffic noise levels indirectly resulting from the operation of the Project on the wider strategic road network were calculated. The results of these predictions identified no significant noise changes as a result of the Project on road links affecting NIAs (based on the noise changes being no more than 1 dB in the short term noise level in 2032).

5 Noise Model Calibration Results

5.1.1 Table 4.2.1 shows the predicted results of the 2018 baseline scenario and presents the measurements undertaken in the 2016 baseline survey. The table also presents a comparison of noise levels for ease of reference.

Table 4.2.1: Comparison of 2016 Baseline Measurement Results Against 2018 Predicted Noise Levels

Location	Measured Noise Level (18-hour period L_{10} dBA) – Arithmetic Period Average over 2-week Survey Period.	Predicted Noise Level (18-hour L_{10})	Comparison of Baseline Noise Measurements and Predicted Noise Levels
Site 7 – 103 Cheyne Walk	61.6	61.8	0.2
Site 8 – 82 The Crescent	62.2	64.0	1.8

5.1.2 The 2018 modelled noise (L_{A10}) levels at Site 7 are 0.2 dB higher than the measured baseline L_{A10} values. Modelled noise levels therefore agree well with the measured noise levels. The topographical environment in this location is fairly flat in nature, and the section of road adjacent to the monitoring location is free of any areas potentially influenced by acceleration or deceleration which CRTN is known to

approximate in its prediction methodology. This is likely a factor in the measurements and model agreeing so closely in this location.

5.1.3 The 2018 modelled noise (L_{A10}) levels at Site 8 are 1.8 dB higher than the measured baseline L_{A10} values. Predicted noise levels therefore agree reasonably well with the measured noise levels. Unlike Site 7, there are several road links influenced by deceleration, notably exiting off London Road onto Airport Way which is a likely reason why the model and measurements do not align as accurately as Site 7. Furthermore, at Site 8 the topography drops several metres (4–5 m) between the highest contributing sections of road and Site 8. The interaction of the road noise and the ground at these locations is likely to vary in a complex way which may also explain the difference between measurement and prediction.

5.1.4 On the basis of the above comparisons measured and predicted baseline noise levels agree closely. The noise modelling used for the assessment of traffic noise was therefore found to be robust. Where small differences were calculated as discussed above, these were within the bounds of expected uncertainty and indicated that in some circumstances the modelling may give slightly higher levels than measured levels. Since this would occur in all scenarios it would be likely to lead to a conservative assessment.

Diagram 1: Noise Model (Do-Something)

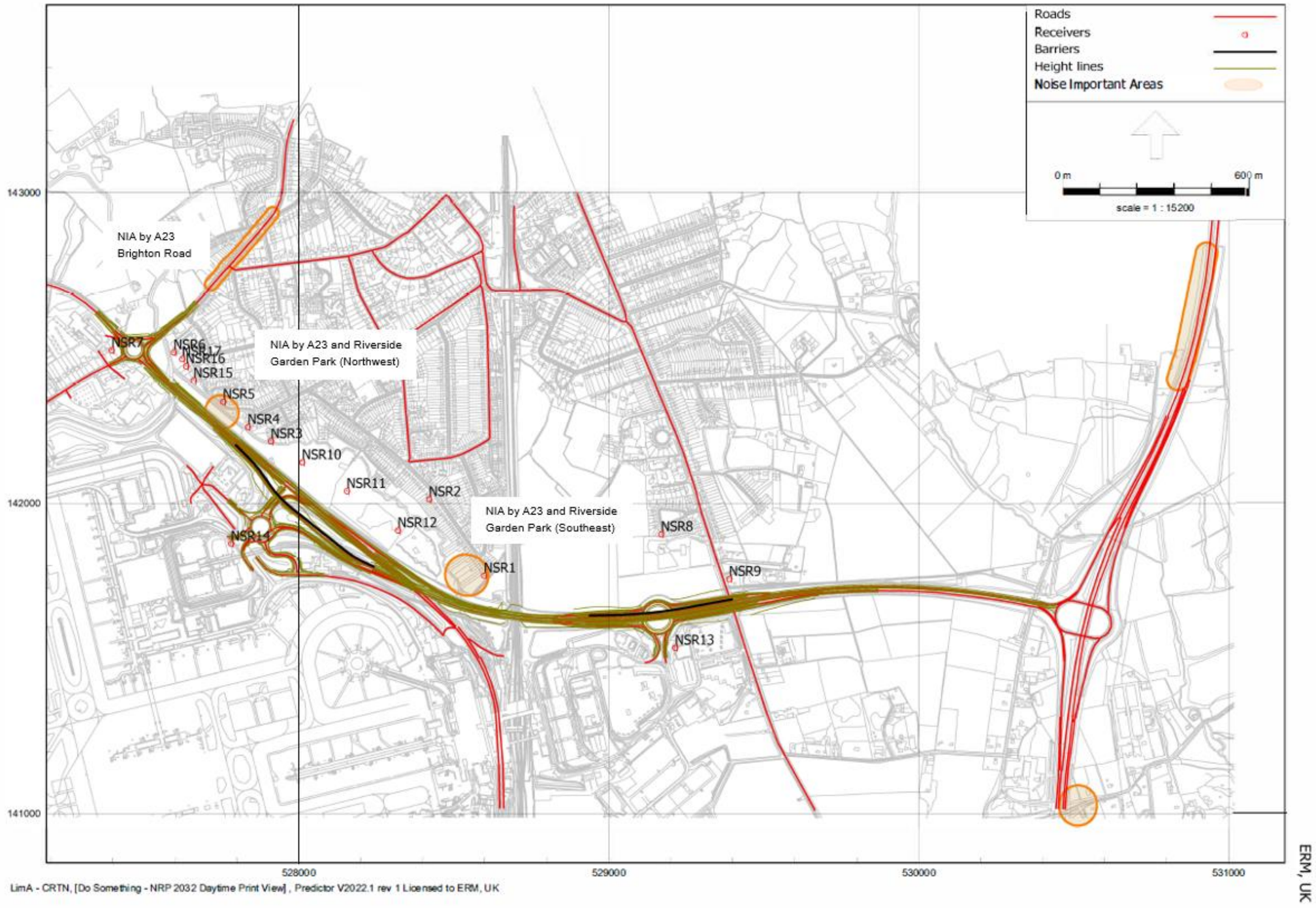
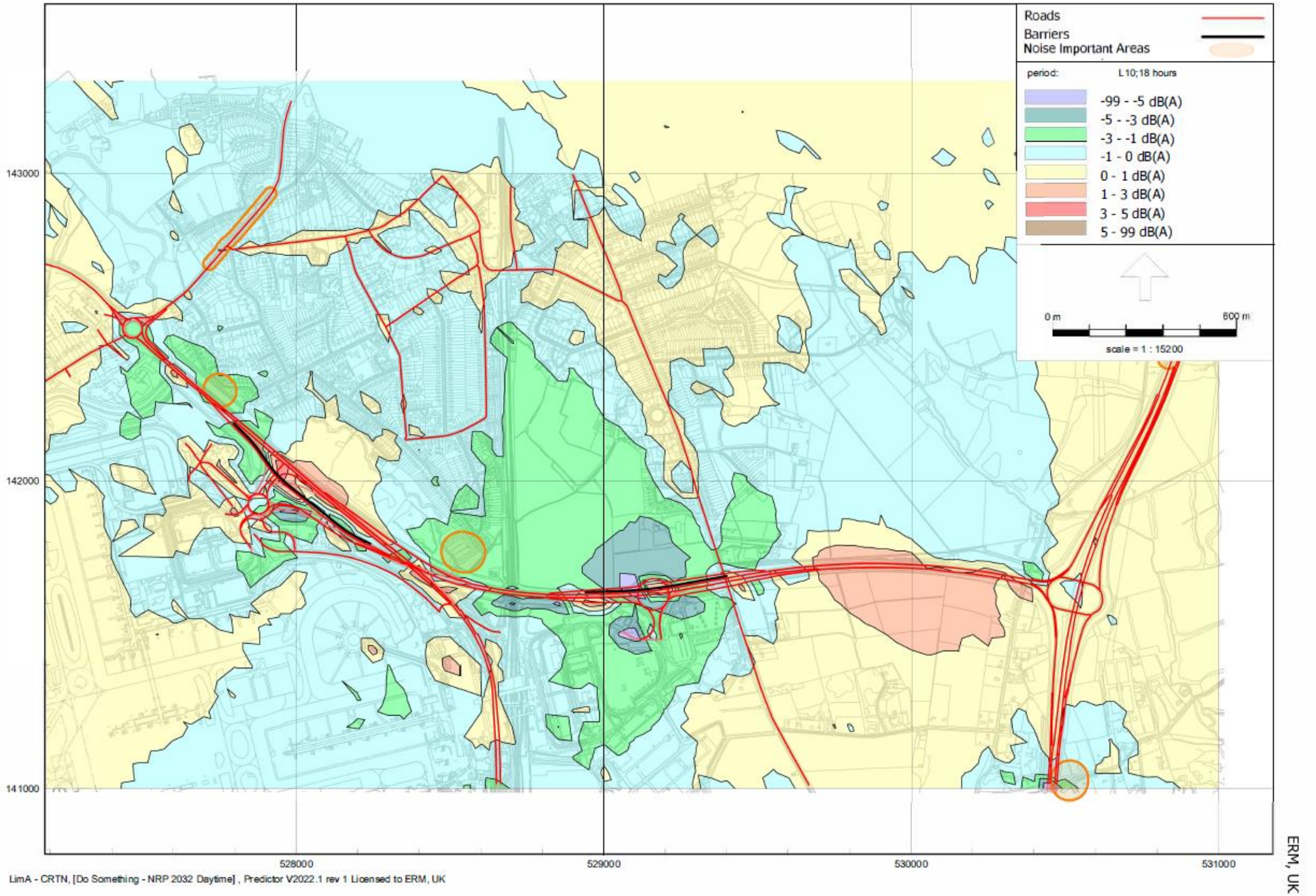


Diagram 2: Comparison of Noise Changes Between Do-Something and Do-Minimum



Appendix E – Ground Noise Engine Ground Run

1 Purpose of this Document

1.1.1 This Technical Note provides a review of the assumptions used in the assessment of noise impacts from Engine Ground Running (EGR) in the ES. It considers further background data and controls and provides a more detailed assessment, as requested by Crawley Borough Council in their Relevant Representation questions 16.3i and 16.3ii that ask for further assessment of EGR L_{max} noise levels and how engine ground running noise contributes to overall ground noise L_{eq} levels.

1.1.2 EGRs are an essential part of the aircraft maintenance process and may be carried out both prior to and after conducting scheduled and ad-hoc maintenance. The total number of EGR tests and the times at which they can occur have been limited for many years through planning obligations and internal GAL procedures which accord with those. Internal GAL procedures are set out in documents known as Gatwick Airport Directives (GAD) and there is a GAD which specifically related to EGR tests.

2 Response

2.1. Planning obligations

2.1.1 The current Section 106 agreement between GAL, West Sussex County Council and Crawley Borough Council, dated 24th May 2022 includes an obligation relating to limiting the number of engine ground run (EGR) tests. Under Schedule 2 of the agreement, the first sentence of obligation 4.4 states that it has the '*aim of mitigating the possible impact of future growth in aircraft engine testing at the Airport*'.

2.1.2 Paragraph 4.4.1 provides a limit of 250 EGR tests within a six-month period that should not be exceeded. The paragraph also details additional criteria relating to the duration of any excess above the limit and subsequent paragraphs specify what is required to be done by GAL in the event of breaching the criteria, including the need to carry out a noise assessment and, if necessary, develop mitigation measures.

2.1.3 The GAL operations team require all EGR activity to be requested and booked with them in order to regulate where and when it occurs. As part of this process, the operations team keeps a comprehensive log of EGR activity which informs noise compliance reports. GAL carry out comprehensive noise compliance reporting to ensure they are meeting

goals, including the criteria for EGR tests set out in the S106 agreement. It is intended that this part of the Section 106 Agreement is maintained in a new agreement that is developed to enable the Project.

2.2. Worst-case Noise Modelling

2.2.1 Table 6.2.3 of Appendix 14.9.3 of the ES (included as an appendix to this note for reference) provides single L_{max} noise levels at each of the 43 assessment locations for engine testing at each of the 5 locations where engine ground running (EGR) is expected to take place. Each of these L_{max} noise levels is for the noisiest aircraft category, as follows.

2.2.2 The levels are based on measurements of engine testing for a 1998 Boeing 777 'current generation' aircraft that were collected as part of the 2019 survey (detailed in section 2.3 of ES Appendix 14.9.3) which is considered to be very much worst-case. The noise output during engine testing of this aircraft was noted to be very similar to that of the Boeing 747 aircraft, a similar aged aircraft type that has not been in regular service at Gatwick Airport since 2019. It should be noted that more modern variants of the B777 would be likely to be slightly quieter as this is the general trend for aircraft engine modernisation. No measurements were obtained during the survey for EGR tests on next generation aircraft but, given it is the main engines that are the dominant noise source for both EGR tests and taxiing, similar differences could be expected between EGR noise and taxiing noise. The 2019 survey results indicate that, for taxiing aircraft, the sound power level of next generation category E aircraft is 5 dB lower than the current generation equivalent. It also shows that for taxiing aircraft the more common (Category C) aircraft are 7-9dB quieter than the larger Category E. The smaller Category C aircraft being more common will make up the majority of EGRs, so the single predicted level for the larger current generation aircraft will arise for only a minority of EGRs, with the majority being around 7-9dB quieter. This makes the assessment very cautious, and increasingly so for future years as next generation aircraft become increasingly common and older types are retired.

2.3. Current and Forecast Engine Ground Running Assumed in the ES

Number of EGRs

2.3.1 In the ES noise chapter it states, at paragraph 14.9.214, that in 2018 there were less than 200 EGR tests carried out across the year which is based on a review of data supplied by the operations team. The actual recorded

number of EGR tests in 2018 was 192 and for comparison, it was 195 in 2017 and 211 in 2019. The paragraph goes on to state that up to 267 EGR tests per year are forecast by 2038 with the Northern Runway Project but stops short of providing any further detail, and it should be noted that this was based on previous traffic forecast data which did not go up to future year 2047, although forecast ATM growth from 2038 to 2047 is minimal. The number of EGR tests per year was estimated based on the numbers in 2017 and 2018 compared to the number of ATMs recorded in those years. The Gatwick Airport Masterplan 2019 states that 2017/2018 ATMs were 280,790 (Figure 4.1 at page 53) and rounding the number of EGRs to 200, this is 0.07% of the number of ATMs. Applying this percentage to the current forecast yearly ATMs, it can be seen that the forecast reaches 272 by 2047:

Scenario	Year	Forecast ATMs (1000s)	0.07%
Base	2029	313	219
Base	2032	316	221
Base	2038	321	225
Base	2047	328	230
NR	2029	333	233
NR	2032	381	267
NR	2038	385	269
NR	2047	389	272

2.3.2 These are annual forecasts, whereas the S106 agreement limit is 6 monthly. So, this further analysis confirms the NRP assessment is based on a robust assumption as to the numbers of EGRs and that number is expected to remain within the S106 limit.

2.3.3 The forecasts set out in the table above show the number of additional EGRs as a result of the Project (NR) compared with the Baseline (Base). The increases can be calculated as follows:

- 2029: EGRs increasing from 219 to 233, an increase of 14 (6%) over the future baseline.
- 2032: EGRs increasing from 221 to 267, an increase of 46 (21%) over the future baseline.
- 2038: EGRs increasing from 225 to 269, an increase of 44 (20%) over the future baseline.
- 2047: EGRs increasing from 230 to 272, an increase of 42 (18%) over the future baseline.

Time of Day

2.3.4 Paragraph 14.9.214 notes that: '*analysis of data shows that runs generally occur during the operational day*' which implies that they can occur during the night hours. The operations team generally do not permit EGR activity after 22:00 or before 07:00 (local time) unless it is unavoidable and high power testing is not permitted in any circumstances. From analysis of a detailed EGR log supplied by the GAL operations team which includes all EGR activity at the airport between 12/01/2016 and 29/03/2019, it has been determined that only 1 EGR test occurred during the Leq night hours (23:00 – 07:00) within this 3 year period. This is in accordance with Gatwick Airport Directive (GAD) "Procedures for Aircraft engine Testing", which states

- *To ensure that the environmental impact of aircraft engine testing on the local community is kept to a minimum, aircraft operators with maintenance commitments at the airport are expected to plan their schedule to avoid the need for ground testing of engines at night. Night for these purposes are defined as the period between 2200 - 0700 hours local time.*
- *NIGHT TESTING (2200 - 0700 hours local time)*
  High power testing will not be permitted in any circumstances. "Start-Stop" procedures may be permitted where required, "Start-Stop" engine testing for maintenance purposes will not be permitted between the hours of 2200 – 0700 (local time) on the taxiways and aircraft stands within the North Terminal site (Piers 4 and 5, Taxiways abeam Piers 4 and 5 and Stands 64 to 68).

2.3.5 It can be concluded, therefore, that there are control measures in place (which are to continue to applied with the NRP) to ensure that there will be no high power engine ground testing at night, and the ES is based upon a robust approach.

2.4. Complaints from EGRs

2.4.1 The GAL noise compliance team has a number of key performance indicators (KPIs), one of which is complaints relating specifically to ground noise. As part of quarterly reporting information produced by the noise compliance team KPI tables are produced (and published online) which include information on the number of ground noise complaints. In 10 years from the beginning of 2010 to the end of 2019, there was a total of 16

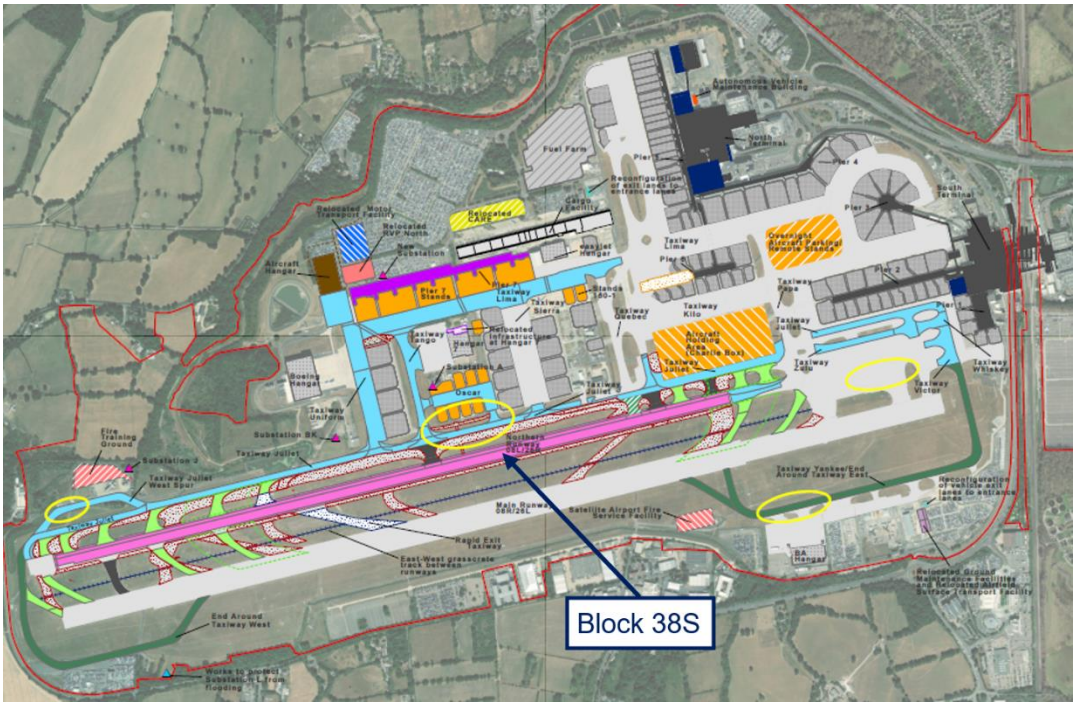
recorded noise complaints linked with ground noise. In contrast complaints from aircraft in flight, ie from aircraft in the air, peaked at 25,593 complaints in the 2019 year.

2.4.2 During the pandemic there were more than usual, perhaps because ground noise became more noticeable in the context of other road, rail and air traffic noise reducing, but even at the peak of this, there were only a total of 10 ground noise complaints logged in 2020. In 2021 there were 3 complaints and in 2022 there were 5 complaints. Through further analysis of the 8 complaints made in 2021 and 2022, it has been determined that they all originate from the Horley area. The specific source of noise complained of is not always clear and out of these 8 complaints, 4 of them are unidentified noise sources and of the remaining 4, only 2 of these related to an EGR test.

2.5. Location of EGRs

2.5.1 Figure 5.2.1a of the ES highlights the four planned areas where EGR testing will take place as part of the Northern Runway development as the yellow circled areas shown in the extract from this figure below.

ES Figure 5.2.1a Extract



2.5.2 In paragraph 14.9.215 of the ES, the planned usage of each of these areas is outlined. Paragraph 14.9.215 notes that the current Block 38S location

(highlighted on the figure above) will be replaced with two alternative nearby central locations on the Juliet taxiway (depending on mode of operation) and states:

'the intention will be to use these replacement locations on taxiway Juliet wherever possible, to minimising use of the western end of Taxiway Juliet and Taxiway Yankee so as to minimise the noise generated at locations outside the airport boundary'

2.5.3 The paragraph goes on to state the intended use of no more than 10% at the western end of Taxiway Juliet and 50% at the central Taxiway Juliet locations. It should be noted that this presents a potential improvement compared with the baseline. Analysis of the log of EGR activity mentioned above at paragraphs2.1.3 and 2.3.4, indicates that from the beginning of 2017 to the end of 2018, block 38S was used 45% of the time, the western end of Taxiway Juliet was used 17% of the time, Yankee taxiway was used 33% of the time and a location known as Alpha2 was used 5% of the time. It is also worth noting that 4% of the records in the log during this period do not specifically mention the location of the EGR test which could affect these calculated percentages, but regardless of this, the current usage of the western end of Taxiway Juliet is higher than it is planned to be with the development.

2.6. Assessment of Daytime EGR Noise Impacts

2.6.1 Given that night-time EGRs will be extremely rare, and not at high power given the control measures in place, this section details the daytime impacts. It should be noted that this is simply additional detail on the summary of EGR impacts that is already given in the ES.

2.6.2 Table 6.2.3 in Section 6 of ES Appendix 14.9.3 provides the noise levels predicted from the 4 EGR locations, and is reproduced as an Appendix to this note for ease of reference. These levels are worst case predicted levels from the noisiest aircraft, as discussed above and are assessed as follows for daytime EGRs.

2.6.3 As noted at paragraph 14.9.214 of the ES, the daytime maximum noise criterion of 65 dB L_{Amax} is potentially exceeded at 16 of the 43 assessment locations and these locations are spread across 6 of the 12 assessment areas (areas 1,2,3, 8,9 and 10). The numbers of EGR tests where the 65 dB L_{Amax} criterion could be exceeded in FY2032 are summarised in the table below. The significance of the potential impacts in each of the 6

assessment areas is discussed in each of the relevant subsections following the table below.

Assessment Area	Highest EGR L_{Amax} at this location	No. of Base Forecast EGRs >65dB LAmax (2032)		No. of NR Forecast EGRs >65dB LAmax (2032)	
		Per Year	Per Day	Per Year	Per Day
1. Outer Charlwood	66	38	0.10	26	0.07
2. Charlwood	79	38	0.10	26	0.07
3. Charlwood Road	67	99	0.27	95	0.26
8. Bonnetts Lane	70	99	0.27	121	0.33
9. Lowfield Heath	80	99	0.27	127	0.35
10. Rowley Farm	82	183	0.50	133	0.36

1. Outer Charlwood

2.6.4 Within the Outer Charlwood assessment area, there is the potential for 26 engine tests per year where the maximum noise level (L_{Max}) criterion could be exceeded at some properties and this is a reduction compared to 38 for the future baseline. The frequency of occurrence is low with one EGR exceeding the criterion every 2 weeks compared to one every 9 days for the baseline. The change from 38 to 26 per year could be seen as a minor improvement but the frequency of occurrence is so low that this is deemed to be insignificant. It should be noted that this reduction is a direct result of the intention to minimise usage of the western end of Taxiway Juliet that is noted in the ES and quoted at paragraph 0 above.

2. Charlwood

2.6.5 The forecast numbers are the same as for Outer Charlwood and the same conclusions are drawn for this assessment area.

3. Charlwood Road

2.6.6 Within the Charlwood Road assessment area, there is the potential for up to 95 engine tests per year where the maximum noise level (L_{Max}) criterion could be exceeded and this is a slight reduction compared to 99 for the future baseline. The frequency of occurrence is still low and equates to one EGR every 3 – 4 days for both the baseline and NR cases. In the context of noise produced by taxiing aircraft, similar, if not slightly higher maximum levels could be expected due to taxiing aircraft (see ES table 14.9.15) within this assessment area and this could occur up to 47 times per day (see ES

table 14.9.16) under easterly operations during the day. The relative noise impact from EGR testing is therefore considered to be insignificant.

8. Bonnetts Lane

2.6.7 Within the Bonnetts Lane assessment area, there is the potential for up to 121 engine tests per year where the maximum noise level (L_{Max}) criterion could be exceeded and this is an increase compared to 99 for the future baseline. The frequency of occurrence equates to one EGR every 3 days for the with Project case. In the context of noise produced by taxiing aircraft, similar, if not slightly higher maximum levels are expected due to taxiing aircraft in the future baseline and with the Project (see ES table 14.9.15) within this assessment area and this could occur up to 59 times per day (see ES table 14.9.16) under westerly operations during the day with the Project, and 45 times per day in the future baseline under easterly operations during the day. The relative noise impact from EGR testing approximately once every three days is therefore considered to be insignificant.

9. Lowfield Heath

2.6.8 Within the Lowfield Heath assessment area, there is the potential for up to 127 engine tests per year where the maximum noise level (L_{Max}) criterion could be exceeded and this is an increase compared to 99 for the future baseline. The frequency of occurrence equates to one EGR every 3 days for the NR case. In the context of noise produced by taxiing aircraft, EGR noise has the potential to be up to 6 dB higher in the future baseline and with the Project (see ES table 14.9.15) within this assessment area. However, maximum noise levels due to taxiing aircraft are expected to exceed the maximum noise criterion up to 324 times per day (see ES table 14.9.16) under easterly operations during the day. Furthermore, maximum noise levels due to air noise will regularly exceed the 65 dB criterion and are estimated to be in the region of 75 dB L_{Amax} due to departing A320 aircraft (see ES Figure 14.9.25) and larger aircraft could reach similar maximum levels to those predicted for EGR testing, both in the baseline and with Project cases. In the context of so many events exceeding the maximum noise level (L_{Max}) criterion, the relative noise impact from EGR testing approximately once every three days is considered to be insignificant in this assessment area.

10. Rowley Farm

2.6.9 Within the Rowley Farm assessment area there is the potential to exceed the maximum noise level (L_{Max}) criterion up to 133 times per year and this is a decrease compared to 183 for the future baseline. The frequency of occurrence equates to one EGR every 2 – 3 days for the NR case. In the context of noise produced by taxiing aircraft, EGR noise has the potential to be up to 12 dB higher (see ES table 14.9.15) within this assessment area. However, this is only for Rowley Cottages which is subject to high level of road traffic noise (see ES Paragraph 14.9.216) and predicted levels due to EGR are 10 dB lower at the other assessment location in this assessment area. Predicted EGR levels within 2 dB of maximum noise levels due to taxiing aircraft in the future baseline and with the Project are considered to be similar enough that they are unlikely to be particularly distinguishable. Maximum noise levels due to taxiing aircraft are expected to exceed the maximum noise level (L_{Max}) criterion up to 97 times per day (see ES table 14.9.16) under easterly operations during the day with the Project, 26 time a day in teh future baseline. Within the context of taxiing aircraft and existing road traffic noise levels, the frequency of occurrence of EGR testing producing maximum levels once every 2 to 3 days above the criterion is considered to be very low in this assessment area and the impact is considered to be insignificant.

2.7. EGR Noise in the Context of the Ground Noise Leq Calculation

2.7.1 In the ES the contribution of EGR noise to the daily $L_{eq,16\ hr}$ noise level was taken to be small enough to be considered insignificant and as such has only been assessed in terms of the maximum noise level. To help explain this, it is useful to consider the location which is worst affected by EGR noise and consider its duration and how much this could potentially add to the calculated ground noise L_{eq} at this location.

2.7.2 Aside from Rowley Cottages, where road traffic noise is high, the worst affected assessment location is St. Michaels & All Angels Church located in the former settlement of Lowfield Heath (now used as a Seventh-day Adventist church). This has a predicted L_{Amax} of 80 dB due to EGR operations at the location on taxiway Yankee (see table at Appendix A). As noted at paragraph 14.9.214 of the ES, the peak levels experienced when engines are run at up to 70% of full power typically only last for a couple of minutes and do not occur every time an EGR test is conducted (lower power EGR tests are far more common). Furthermore, we have explained

in this note that there would be fewer than 1 EGR test per day at any of the locations and for the Lowfield Heath assessment area in the table above the average frequency of occurrence would be 0.35 EGRs per day. Therefore, it would be a reasonable assumption that these levels would occur for 2 minutes at a time and for an average day within the 92-day summer period, this could be expected to reduce to 2*0.35 = 0.7 minutes. Based on this assumption of 0.7 minutes over a 16-hour day, the 80 dB L_{Amax} reduces to 49 dB $L_{Aeq,\ 16\ hr}$ and it should be borne in mind that this level has not been corrected for average wind conditions which would further reduce the calculated L_{eq}.

2.7.3 The highest predicted aircraft taxiing ground noise level at St. Michaels & All Angels occurs under easterly operations when the L_{Aeq} reaches 64 dB and it is considered that EGR operations are likely to produce levels in the region of 16 dB (or more) below this level. Adding together two L_{eq} values where one is 16 dB higher than the other will produce a result which is 0.1 dB higher than the greatest of the two values. If corrections for wind conditions were added, the difference between L_{eq} from EGR and L_{eq} from taxiing aircraft would be likely to be considerably greater than 16 dB and the contribution is therefore considered to be insignificant.

3 Conclusion

3.1.1 This note has reviewed and checked the assumptions used to assess noise from Engine Ground Running in the ES. It concludes that the assessment is cautious and the basis of the conclusions reached in the assessment is robust.

3.1.2 The number of EGRs has been suitably extrapolated from the numbers measured in recent years. This shows that the current Section 106 limit is not likely to be exceeded (and would in any event be effective following its re-application to the NRP).

3.1.3 This note clarifies the locations where EGRs are expected to take place. The main reason for the 4 locations is that they assist the airport operationally as it is difficult to access the more remote locations with a towed movement through the normal daytime traffic. The taxiway Yankee location is across the runway from the main operation and the western end of taxiway Juliet is a long way away from aircraft stands, so they are used less. It would not be possible operationally to introduce control measures to

require minimal use of the two locations near the airport perimeter, (western end of Juliet Taxiway and Taxiway Yankee in the East) but the proportionate use of the 4 locations is supported by historical data.

3.1.4 A review of complaints from ground noise shows they are very rare, with only two attributed to EGRs in recent years.

3.1.5 The ES assumed EGRs may occur occasionally at night, and at full power, and assessed that, whereas the control measures which are in place indicate that night-time EGRs at full power are actually forbidden. An assessment of EGRs during the daytime is provided and concludes that maximum noise levels due to EGRs are insignificant at assessment locations.

3.1.6 An analysis has shown that because of the short duration and low numbers of ERGs, in terms of $L_{eq,\ 16\ hour}$ noise levels, even in the worst case location, EGR noise is at least $L_{eq,\ 16\ hour}$16dB below aircraft taxiing noise and the contribution of EGR noise to aircraft taxiing noise is insignificant.

3.1.7 The potential for EGR noise to contribute to the overall predicted ground noise L_{eq} (for taxiing aircraft) has been assessed and it is concluded that the contribution would be less than 0.1 dB which is considered to be insignificant.

Appendix A: ES Appendix 14.9.3 ERG Noise Predictions

ES Table 2.7.1: Predicted EGR L_{Amax} Noise Levels

Receptor Area	Assessment Location	Juliet 4	Yankee	Alpha 2	Juliet Tango	Juliet Sierra	Maximum
Charlwood 1	3 Charlwood Road	67	50	45	57	43	67
	2 Frys Cottages	65	54	46	59	44	65
	Westfield Place	79	51	-	58	43	79
Outer Charlwood 2	Blue Cedars	62	56	37	60	43	62
	Chapel Farm	62	51	38	61	43	62
	12 Willow Corner	64	54	38	62	44	64
	The Seasons	66	47	36	52	40	66
Charlwood Road 3	Brook Farm	67	54	40	63	47	67
	Farmfield Cottages	60	56	42	65	54	65
	Charlwood Aquatics	63	56	42	67	50	67
	Warwick Cottage	51	57	51	60	63	63
	Bear and Bunny Nursery	57	57	44	63	58	63
Farmfield 4	April Cottage	55	52	45	55	55	55
	Larkfield	56	53	46	56	56	56
	Suvla	52	57	50	58	62	62
Povey Cross 5	Oakfield Cottage	49	57	53	61	60	61
	Gatwick Park Hospital	48	53	56	57	55	57
	Travel Lodge	46	55	60	58	57	60
Longbridge Road, Horley 6	103 Cheyne Walk	43	56	60	54	57	60
	17 Woodroyd Gardens	43	57	61	53	57	61
	Moat House Hotel	45	54	59	57	56	59
Riverside, Horley 7	82 The Crescent	40	58	62	47	57	62
	45 Riverside	42	58	59	50	57	59
Bonnetts Lane 8	Hyders Farm House	68	53	42	63	51	68
	Amberley Fields Campsite	60	57	45	68	56	68
	Westfield House	70	54	44	65	51	70
	Little Park Farm	64	48	44	56	49	64
Lowfield Heath 9	Myrtle Cottage	51	63	49	67	66	67
	Tinsley House	-	79	64	54	70	79
	St Michael & All Angels	-	80	61	59	72	80
	Hawthorn Farm	44	73	59	64	69	73
	Charlwood House	54	63	48	71	64	71
	Lowfield Farm	56	59	45	68	57	68
Rowley Farm 10	Rowley Farmhouse	43	72	67	56	66	72
	Rowley Cottages	-	82	68	59	67	82
Balcombe Road 11	Trent House	34	43	59	39	50	59
	Meadowcroft House	37	51	61	43	53	61
	Hunters Lodge	35	47	62	39	51	62
	Four Winds	34	44	60	39	51	60
	Mynthurst	34	44	59	39	50	59
Tinsley Green 12	Hoots Cottage	35	45	59	39	51	59
	Oldlands Farmhouse	36	51	61	43	54	61
	Brookside	36	48	62	41	53	62

Appendix F – Aircraft Fleets Used in Noise Modelling

ANCON TYPES

ANCON type	Description
B717	Boeing 717
B727	Boeing 727 (Chapter 2&3)
B732	Boeing 737-200 (Chapter 2&3)
B733	Boeing 737-300/400/500
B736	Boeing 737-600/700
B738MAX	Boeing 737 MAX 8
B73710MAX	Boeing 737 MAX10
B738	Boeing 737-800/900
B747	Boeing 747-100 & 200/300 series (certificated to Chapter 3)
B744G	Boeing 747-400 with General Electric CF6-80F engines
B744P	Boeing 747-400 with Pratt & Whitney PW4000 engines
B744R	Boeing 747-400 with Rolls-Royce RB211 engines
B747SP	Boeing 747SP
B748	Boeing 747-8
B753	Boeing 757-300
B757C	Boeing 757-200 with Rolls-Royce RB211-535C engines
B757E	Boeing 757-200 with Rolls-Royce RB211-535E4/E4B engines
B757P	Boeing 757-200 with Pratt & Whitney PW2037/2040 engines
B762	Boeing 767-200
B763G	Boeing 767-300 with General Electric CF6-80 engines
B763P	Boeing 767-300 with Pratt & Whitney PW4000 engines
B763R	Boeing 767-300 with Rolls-Royce RB211 engines
B764	Boeing 767-400
B772G	Boeing 777-200 with General Electric GE90 engines
B772P	Boeing 777-200 with Pratt & Whitney PW4000 engines
B772R	Boeing 777-200 with Rolls-Royce Trent 800 engines
B773G	Boeing 777-200LR/300ER with General Electric GE90 engines
B773P	Boeing 777-300 with Pratt & Whitney PW4000 engines
B773R	Boeing 777-300 with Rolls-Royce Trent 800 engines
B788	Boeing 787-8
B789	Boeing 787-9
BA46	BAe 146/Avro RJ series
CRJ	Bombardier CRJ100/200 series
CRJ700	Bombardier CRJ700 series
CRJ900	Bombardier CRJ900 series
DC10	McDonnell Douglas DC-10
EA221	Airbus A220-100
EA223	Airbus A220-300
EA30	Airbus A300
EA31	Airbus A310

EA318	Airbus A318
EA319C	Airbus A319 with CFM56 engines
EA319V	Airbus A319 with IAE V2500 engines
EA320C	Airbus A320 with CFM56 engines
EA320NEO	Airbus A320neo
EA320V	Airbus A320 with IAE V2500 engines
EA321C	Airbus A321 with CFM56 engines
EA321NEO	Airbus A321neo
EA321V	Airbus A321 with IAE V2500 engines
EA33	Airbus A330
EA34	Airbus A340-200/300
EA346	Airbus A340-500/600
EA359	Airbus A350-900
EA38GP	Airbus A380 with Engine Alliance GP7000 engines
EA38R	Airbus A380 with Rolls-Royce Trent 900 engines
ERJ	Embraer ERJ 135/145
ERJ170	Embraer E-170/175
ERJ190	Embraer E-190/195
EXE2	Chapter 2 executive jets
EXE3	Chapter 3 executive jets
FK10	Fokker 70/100
L101	Lockheed L-1011 TriStar
L4P	Large four-engine propeller
LTT	Large twin-turboprop
MD11	McDonnell Douglas MD-11
MD80	McDonnell Douglas MD-80 series
SP	Single propeller
STP	Small twin-piston
STT	Small twin-turboprop
TU54	Tupolev Tu-154

AIRCRAFT FLEETS FOR DAY & NIGHT ASSESSMENT YEARS

2029 Central Base Day				**2029 Central NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h _NR Arrs**	**LAeq16h _NR Deps Main RWY**	**LAeq16h _NR Deps North RWY**	**LAeq16h _NR Deps**

B73710 MAX	2.48	3.38		B73710 MAX	2.73	0.36	3.24	3.60
B738	15.17	15.55		B738	15.83	1.63	14.66	16.28
B738MAX	43.97	45.73		B738MAX	46.28	4.80	43.16	47.96
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	5.22	7.74		B772G	5.65	8.19	0.00	8.19
B772R	3.11	4.33		B772R	3.37	4.58	0.00	4.58
B773G	0.32	0.32		B773G	0.34	0.34	0.00	0.34
B779X	0.48	0.48		B779X	0.51	0.51	0.00	0.51
B788	5.44	6.95		B788	5.80	7.39	0.00	7.39
B789	17.99	23.84		B789	18.93	25.32	0.00	25.32
CS100	7.70	7.70		CS100	7.70	0.77	6.93	7.70
CS300	2.63	2.56		CS300	2.75	0.23	2.05	2.27
EA319C	18.80	18.73		EA319C	19.54	1.94	17.48	19.42
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	4.50	4.88		EA319V	4.68	0.51	4.56	5.06
EA320C	58.92	57.51		EA320C	61.75	5.98	53.81	59.79
EA320NEO	121.17	119.46		EA320NEO	126.43	12.36	111.27	123.63
EA320V	38.33	41.41		EA320V	40.17	4.31	38.75	43.06
EA321C	4.21	5.65		EA321C	4.47	0.59	5.34	5.93
EA321NEO	28.39	27.54		EA321NEO	29.81	2.87	25.84	28.71
EA321V	3.99	3.87		EA321V	4.23	0.41	3.66	4.07
EA33	2.84	4.27		EA33	3.11	4.53	0.00	4.53
EA33NEO	0.12	0.12		EA33NEO	0.13	0.13	0.00	0.13
EA3510	0.74	2.01		EA3510	0.86	2.13	0.00	2.13
EA359	5.47	5.98		EA359	5.85	6.36	0.00	6.36
EA38GP	1.05	1.04		EA38GP	1.11	1.10	0.00	1.10
EA38R	2.16	2.17		EA38R	2.29	2.31	0.00	2.31
ERJ	0.14	0.14		ERJ	0.15	0.15	0.00	0.15
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.60	0.61		EXE3	0.63	0.64	0.00	0.64
LTT	0.67	0.67		LTT	0.67	0.07	0.60	0.67
	397	**415**			**416**	**100**	**331**	**432**

2029 Central Base Night			**2029 Central NRP Night**			

ANCON TYPE	LAeq 8h Arrs	LAeq 8h Deps		ANCON TYPE	LAeq8h_ NR Arrs	LAeq8h_ NR Deps Main RWY	LAeq8h_ NR Deps North RWY	LAeq8h_ NR Deps
B73710 MAX	2.32	1.42		B73710 MAX	2.29	1.07	0.35	1.42
B738	1.89	1.51		B738	1.96	1.14	0.37	1.51
B738MAX	8.47	6.71		B738MAX	8.38	5.06	1.64	6.71
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	2.52	0.00		B772G	2.52	0.00	0.00	0.00
B772R	1.22	0.00		B772R	1.22	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	2.51	1.00		B788	2.58	1.00	0.00	1.00
B789	7.44	1.59		B789	7.98	1.59	0.00	1.59
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.07		CS300	0.00	0.36	0.12	0.47
EA319C	2.99	3.23		EA319C	2.95	2.44	0.79	3.23
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.66	0.12		EA319V	0.66	0.09	0.03	0.12
EA320C	8.17	9.25		EA320C	8.05	7.23	2.35	9.58
EA320NEO	13.92	15.63		EA320NEO	13.72	12.47	4.05	16.52
EA320V	8.22	5.47		EA320V	8.11	4.28	1.39	5.66
EA321C	2.77	1.27		EA321C	2.75	0.96	0.31	1.27
EA321NEO	4.05	4.91		EA321NEO	4.01	3.86	1.25	5.11
EA321V	0.41	0.59		EA321V	0.41	0.45	0.14	0.59
EA33	1.59	0.16		EA33	1.58	0.16	0.00	0.16
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.27	0.00		EA3510	1.26	0.00	0.00	0.00
EA359	1.03	0.52		EA359	1.03	0.52	0.00	0.52
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.04	0.00	0.04
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**53**			**72**	**43**	**13**	**55**

2029 SFT Base Day				**2029 SFT NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps Main RWY**	**LAeq16h_NR Deps North RWY**	**LAeq16h_NR Deps**
B73710 MAX	1.60	2.18		B73710 MAX	1.76	0.23	2.09	2.33
B738	30.94	32.06		B738	32.43	3.36	30.24	33.60
B738MAX	28.15	29.29		B738MAX	29.64	3.07	27.64	30.71
B744G	0.31	0.85		B744G	0.36	0.90	0.00	0.90
B753	0.28	0.45		B753	0.31	0.48	0.00	0.48
B757E	0.67	0.68		B757E	0.72	0.73	0.00	0.73
B763G	1.47	1.81		B763G	1.45	1.92	0.00	1.92
B772G	6.45	9.57		B772G	6.99	10.13	0.00	10.13
B772R	3.85	5.36		B772R	4.17	5.67	0.00	5.67
B773G	0.28	0.28		B773G	0.30	0.30	0.00	0.30
B779X	0.24	0.24		B779X	0.26	0.26	0.00	0.26
B788	5.02	6.53		B788	5.39	6.94	0.00	6.94
B789	14.28	18.56		B789	15.00	19.72	0.00	19.72
CS100	4.52	4.52		CS100	4.52	0.45	4.07	4.52
CS300	2.06	2.02		CS300	2.15	0.17	1.54	1.71
EA319C	43.82	42.82		EA319C	45.62	4.45	40.06	44.51
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	10.49	11.17		EA319V	10.92	1.16	10.45	11.61
EA320C	69.42	67.97		EA320C	72.77	7.05	63.49	70.55
EA320NEO	80.95	79.05		EA320NEO	84.45	8.18	73.66	81.84
EA320V	45.17	48.95		EA320V	47.34	5.08	45.73	50.81
EA321C	4.84	6.46		EA321C	5.13	0.68	6.08	6.76
EA321NEO	19.35	18.43		EA321NEO	20.30	1.92	17.28	19.20
EA321V	4.58	4.43		EA321V	4.86	0.46	4.17	4.63
EA33	5.14	6.88		EA33	5.57	7.30	0.00	7.30
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	0.55	1.51		EA3510	0.65	1.60	0.00	1.60
EA359	4.10	4.48		EA359	4.39	4.76	0.00	4.76
EA38GP	1.14	1.13		EA38GP	1.21	1.19	0.00	1.19
EA38R	2.35	2.37		EA38R	2.49	2.51	0.00	2.51
ERJ	0.14	0.14		ERJ	0.15	0.15	0.00	0.15
ERJ195	2.40	2.40		ERJ195	2.40	0.24	2.16	2.40
EXE3	0.60	0.61		EXE3	0.63	0.64	0.00	0.64

LTT	1.46	1.46		LTT	1.46	0.15	1.31	1.46
	397	**415**			**416**	**102**	**330**	**432**
2029 SFT Base Night				**2029 SFT NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps North RWY**	**LAeq8h_ NR Deps**
B73710 MAX	1.50	0.91		B73710 MAX	1.48	0.69	0.22	0.91
B738	5.09	3.97		B738	5.15	3.00	0.97	3.97
B738MAX	5.43	4.29		B738MAX	5.36	3.24	1.05	4.29
B744G	0.54	0.00		B744G	0.53	0.00	0.00	0.00
B753	0.24	0.06		B753	0.23	0.06	0.00	0.06
B757E	0.39	0.38		B757E	0.39	0.38	0.00	0.38
B763G	0.38	0.05		B763G	0.51	0.05	0.00	0.05
B772G	3.12	0.00		B772G	3.12	0.00	0.00	0.00
B772R	1.51	0.00		B772R	1.51	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	2.54	1.03		B788	2.58	1.03	0.00	1.03
B789	5.75	1.47		B789	6.19	1.47	0.00	1.47
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.04		CS300	0.00	0.33	0.11	0.44
EA319C	6.21	7.64		EA319C	6.13	5.77	1.87	7.64
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	1.38	0.27		EA319V	1.36	0.21	0.07	0.27
EA320C	9.49	10.50		EA320C	9.36	8.32	2.70	11.02
EA320NEO	8.57	10.47		EA320NEO	8.45	8.35	2.71	11.06
EA320V	9.55	6.21		EA320V	9.42	4.92	1.60	6.51
EA321C	3.10	1.42		EA321C	3.07	1.10	0.36	1.46
EA321NEO	2.33	3.25		EA321NEO	2.30	2.57	0.83	3.40
EA321V	0.46	0.66		EA321V	0.46	0.51	0.17	0.68
EA33	2.16	0.41		EA33	2.15	0.41	0.00	0.41
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	0.95	0.00		EA3510	0.95	0.00	0.00	0.00
EA359	0.77	0.39		EA359	0.77	0.39	0.00	0.39
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00

ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.04	0.00	0.04
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**53**			**72**	**43**	**13**	**55**

2032 Central Base Day				**2032 Central NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h _NR Arrs**	**LAeq16h _NR Deps Main RWY**	**LAeq16h _NR Deps North RWY**	**LAeq16h _NR Deps**
B73710 MAX	2.83	3.74		B73710 MAX	3.94	0.48	4.31	4.79
B738	2.47	2.47		B738	2.55	0.26	2.30	2.55
B738MAX	56.67	59.31		B738MAX	62.14	6.47	58.19	64.65
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	1.37	2.03		B772G	1.49	2.16	0.00	2.16
B772R	0.82	1.14		B772R	0.89	1.21	0.00	1.21
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.80	0.80		B779X	0.80	0.80	0.00	0.80
B788	6.96	8.58		B788	10.14	12.66	0.00	12.66
B789	26.20	35.94		B789	33.65	44.16	0.00	44.16
CS100	8.31	8.31		CS100	8.45	0.84	7.60	8.45
CS300	3.49	3.49		CS300	12.50	1.19	10.71	11.90
EA319C	8.82	8.31		EA319C	9.15	0.85	7.68	8.54
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	2.11	2.17		EA319V	2.19	0.22	2.00	2.23
EA320C	35.47	34.94		EA320C	40.00	3.87	34.83	38.70
EA320NEO	163.81	163.89		EA320NEO	199.69	19.63	176.64	196.26
EA320V	23.08	25.17		EA320V	26.02	2.79	25.09	27.87
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	44.03	44.16		EA321NEO	51.55	5.08	45.73	50.81
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.51	1.21		EA33	0.52	1.21	0.00	1.21
EA33NEO	0.60	0.60		EA33NEO	0.60	0.60	0.00	0.60
EA3510	0.41	1.11		EA3510	0.42	1.11	0.00	1.11

EA359	6.85	7.43		EA359	9.51	11.27	0.00	11.27
EA38GP	1.05	1.04		EA38GP	1.05	1.04	0.00	1.04
EA38R	2.16	2.17		EA38R	2.16	2.17	0.00	2.17
ERJ	0.14	0.15		ERJ	0.17	0.17	0.00	0.17
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.61	0.62		EXE3	0.73	0.74	0.00	0.74
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	400	**419**			**480**	**121**	**375**	**496**
2032 Central Base Night				**2032 Central NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps North RWY**	**LAeq8h_ NR Deps**
B73710 MAX	2.60	1.69		B73710 MAX	2.53	1.26	0.43	1.69
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	10.05	7.41		B738MAX	10.35	5.91	1.92	7.84
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.66	0.00		B772G	0.66	0.00	0.00	0.00
B772R	0.32	0.00		B772R	0.32	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	2.70	1.08		B788	3.89	1.36	0.00	1.36
B789	11.33	1.59		B789	13.75	3.25	0.00	3.25
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.20	0.60	0.20	0.80
EA319C	0.85	1.44		EA319C	0.83	1.15	0.39	1.54
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.19	0.05		EA319V	0.18	0.04	0.01	0.06
EA320C	5.48	5.92		EA320C	5.38	4.79	1.63	6.43
EA320NEO	20.92	20.84		EA320NEO	20.94	18.17	6.19	24.36
EA320V	5.51	3.50		EA320V	5.41	2.83	0.97	3.80
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	8.24	8.12		EA321NEO	8.18	6.65	2.27	8.92
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.71	0.00		EA33	0.70	0.00	0.00	0.00

EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	0.71	0.00		EA3510	0.70	0.00	0.00	0.00
EA359	1.18	0.60		EA359	2.37	0.60	0.00	0.60
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**52**			**76**	**47**	**14**	**61**

2032 SFT Base Day				**2032 SFT NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps Main RWY**	**LAeq16h_NR Deps NR**	**LAeq16h_NR Deps**
B73710MAX	2.27	3.03		B73710MAX	3.17	0.39	3.48	3.87
B738	29.05	30.60		B738	31.95	3.35	30.18	33.53
B738MAX	30.82	32.09		B738MAX	33.84	3.50	31.48	34.98
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	6.15	9.13		B772G	6.70	9.70	0.00	9.70
B772R	3.67	5.11		B772R	4.00	5.43	0.00	5.43
B773G	0.40	0.40		B773G	0.40	0.40	0.00	0.40
B779X	0.20	0.20		B779X	0.20	0.20	0.00	0.20
B788	5.65	7.14		B788	8.23	10.40	0.00	10.40
B789	16.91	21.61		B789	22.87	28.22	0.00	28.22
CS100	6.64	6.64		CS100	6.76	0.68	6.08	6.76
CS300	2.48	2.48		CS300	11.46	1.09	9.77	10.85
EA319C	21.35	21.48		EA319C	22.08	2.20	19.80	22.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	5.11	5.60		EA319V	5.29	0.57	5.16	5.74
EA320C	65.71	64.16		EA320C	77.14	7.39	66.49	73.88
EA320NEO	109.32	107.57		EA320NEO	133.89	12.97	116.76	129.73
EA320V	42.75	46.20		EA320V	50.19	5.32	47.89	53.21
EA321C	5.09	6.86		EA321C	5.74	0.76	6.82	7.57

EA321NEO	24.36	23.26		EA321NEO	30.10	2.83	25.51	28.34
EA321V	4.83	4.71		EA321V	5.43	0.52	4.67	5.19
EA33	6.72	8.70		EA33	9.30	12.18	0.00	12.18
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	0.82	2.23		EA3510	0.83	2.23	0.00	2.23
EA359	3.42	3.71		EA359	4.75	5.63	0.00	5.63
EA38GP	1.12	1.10		EA38GP	1.12	1.10	0.00	1.10
EA38R	2.29	2.31		EA38R	2.29	2.31	0.00	2.31
ERJ	0.14	0.15		ERJ	0.17	0.17	0.00	0.17
ERJ195	0.83	0.83		ERJ195	0.84	0.08	0.76	0.84
EXE3	0.61	0.62		EXE3	0.73	0.74	0.00	0.74
LTT	0.83	0.83		LTT	0.84	0.08	0.76	0.84
	400	**419**			**480**	**120**	**376**	**496**
2032 SFT Base Night				**2032 SFT NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps NR**	**LAeq8h_ NR Deps**
B73710MAX	2.11	1.35		B73710MAX	2.06	1.01	0.34	1.35
B738	4.75	3.20		B738	5.13	2.71	0.85	3.55
B738MAX	5.83	4.55		B738MAX	5.81	3.50	1.17	4.67
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	2.99	0.00		B772G	2.99	0.00	0.00	0.00
B772R	1.44	0.00		B772R	1.44	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	2.47	0.98		B788	3.38	1.21	0.00	1.21
B789	6.28	1.59		B789	8.36	3.01	0.00	3.01
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.20	0.60	0.20	0.80
EA319C	3.52	3.56		EA319C	3.43	2.76	0.94	3.69
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.78	0.13		EA319V	0.76	0.10	0.03	0.13
EA320C	8.84	9.96		EA320C	8.75	8.34	2.84	11.18

EA320NEO	12.17	13.91		EA320NEO	12.22	12.22	4.16	16.38
EA320V	8.90	5.89		EA320V	8.80	4.93	1.68	6.61
EA321C	3.46	1.59		EA321C	3.41	1.18	0.40	1.59
EA321NEO	3.01	4.10		EA321NEO	3.03	3.57	1.22	4.79
EA321V	0.52	0.74		EA321V	0.51	0.55	0.19	0.74
EA33	2.39	0.40		EA33	3.52	0.64	0.00	0.64
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.41	0.00		EA3510	1.40	0.00	0.00	0.00
EA359	0.59	0.30		EA359	1.18	0.30	0.00	0.30
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**52**			**76**	**47**	**14**	**61**

2038 Central Base Day				**2038 Central NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps Main RWY**	**LAeq16h_NR Deps North RWY**	**LAeq16h_NR Deps**
B73710MAX	2.72	3.59		B73710MAX	3.91	0.48	4.28	4.75
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	58.89	61.43		B738MAX	63.53	6.60	59.36	65.96
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	3.01	3.01		B779X	3.01	3.01	0.00	3.01
B788	6.83	8.87		B788	10.18	12.64	0.00	12.64
B789	30.94	42.33		B789	39.52	51.17	0.00	51.17
CS100	8.27	8.27		CS100	8.51	0.85	7.66	8.51
CS300	3.64	3.64		CS300	12.53	1.19	10.73	11.92
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00

EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	229.85	230.86		EA320NEO	272.90	26.98	242.81	269.79
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	48.58	47.36		EA321NEO	56.24	5.52	49.64	55.15
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.60	0.60		EA33NEO	0.60	0.60	0.00	0.60
EA3510	1.11	2.51		EA3510	1.18	2.57	0.00	2.57
EA359	6.99	8.16		EA359	10.10	11.87	0.00	11.87
EA38GP	0.33	0.32		EA38GP	0.33	0.32	0.00	0.32
EA38R	0.68	0.68		EA38R	0.68	0.68	0.00	0.68
ERJ	0.14	0.15		ERJ	0.17	0.17	0.00	0.17
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.61	0.63		EXE3	0.73	0.74	0.00	0.74
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	403	**422**			**484**	**125**	**374**	**500**
2038 Central Base Night				**2038 Central NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps North RWY**	**LAeq8h_ NR Deps**
B73710MAX	2.57	1.69		B73710MAX	2.53	1.26	0.43	1.69
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	9.94	7.41		B738MAX	10.19	5.85	1.92	7.76
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	3.12	1.08		B788	3.78	1.31	0.00	1.31
B789	12.98	1.59		B789	15.01	3.36	0.00	3.36

CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.20	0.60	0.20	0.80
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	31.96	30.96		EA320NEO	32.22	26.34	8.98	35.32
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	7.70	8.92		EA321NEO	8.70	7.30	2.49	9.79
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.41	0.00		EA3510	1.40	0.00	0.00	0.00
EA359	1.77	0.60		EA359	2.37	0.60	0.00	0.60
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**52**			**76**	**47**	**14**	**61**

2038 SFT Base Day				**2038 SFT NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps Main RWY**	**LAeq16h_NR Deps North RWY**	**LAeq16h_NR Deps**
B73710MAX	2.58	3.42		B73710MAX	3.72	0.45	4.07	4.53
B738	7.95	8.35		B738	8.58	0.90	8.08	8.98
B738MAX	51.41	53.63		B738MAX	55.64	5.78	51.99	57.76
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	2.06	2.98		B772G	2.27	3.20	0.00	3.20
B772R	1.23	1.67		B772R	1.36	1.79	0.00	1.79
B773G	0.10	0.10		B773G	0.10	0.10	0.00	0.10

B779X	1.76	1.76		B779X	1.76	1.76	0.00	1.76
B788	6.58	8.59		B788	9.83	12.24	0.00	12.24
B789	26.77	36.25		B789	34.40	44.11	0.00	44.11
CS100	7.86	7.86		CS100	8.09	0.81	7.28	8.09
CS300	3.37	3.37		CS300	12.27	1.17	10.49	11.66
EA319C	7.56	7.45		EA319C	7.82	0.76	6.88	7.64
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	1.81	1.94		EA319V	1.87	0.20	1.79	1.99
EA320C	26.16	25.61		EA320C	30.14	2.91	26.20	29.11
EA320NEO	159.33	155.44		EA320NEO	195.43	18.85	169.63	188.48
EA320V	17.02	18.44		EA320V	19.61	2.10	18.87	20.97
EA321C	1.30	1.61		EA321C	1.43	0.19	1.70	1.89
EA321NEO	64.13	66.71		EA321NEO	71.57	7.36	66.28	73.65
EA321V	1.23	1.11		EA321V	1.36	0.13	1.17	1.30
EA33	2.14	2.99		EA33	3.08	4.05	0.00	4.05
EA33NEO	0.45	0.45		EA33NEO	0.45	0.45	0.00	0.45
EA3510	0.97	2.20		EA3510	1.03	2.25	0.00	2.25
EA359	6.12	7.14		EA359	8.84	10.38	0.00	10.38
EA38GP	0.71	0.70		EA38GP	0.71	0.70	0.00	0.70
EA38R	1.45	1.46		EA38R	1.45	1.46	0.00	1.46
ERJ	0.14	0.15		ERJ	0.17	0.17	0.00	0.17
ERJ195	0.21	0.21		ERJ195	0.21	0.02	0.19	0.21
EXE3	0.61	0.63		EXE3	0.73	0.74	0.00	0.74
LTT	0.21	0.21		LTT	0.21	0.02	0.19	0.21
	403	**422**			**484**	**125**	**375**	**500**
2038 SFT Base Night				**2038 SFT NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_NR Arrs**	**LAeq8h_NR Deps Main RWY**	**LAeq8h_NR Deps North RWY**	**LAeq8h_NR Deps**
B73710MAX	2.45	1.61		B73710MAX	2.41	1.20	0.41	1.61
B738	1.20	0.80		B738	1.28	0.68	0.21	0.89
B738MAX	8.92	6.69		B738MAX	9.13	5.28	1.73	7.01
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00

B772G	0.91	0.00		B772G	0.91	0.00	0.00	0.00
B772R	0.44	0.00		B772R	0.44	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	3.06	1.05		B788	3.71	1.30	0.00	1.30
B789	11.07	1.59		B789	12.90	3.19	0.00	3.19
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.20	0.60	0.20	0.80
EA319C	1.08	1.25		EA319C	1.07	0.98	0.33	1.31
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.24	0.04		EA319V	0.24	0.03	0.01	0.05
EA320C	3.77	4.21		EA320C	3.84	3.46	1.18	4.64
EA320NEO	15.84	19.73		EA320NEO	16.46	17.46	5.95	23.41
EA320V	3.80	2.49		EA320V	3.87	2.04	0.70	2.74
EA321C	0.68	0.40		EA321C	0.85	0.30	0.10	0.40
EA321NEO	14.17	11.58		EA321NEO	14.46	9.24	3.15	12.39
EA321V	0.10	0.18		EA321V	0.13	0.14	0.05	0.18
EA33	0.96	0.10		EA33	1.19	0.22	0.00	0.22
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.23	0.00		EA3510	1.22	0.00	0.00	0.00
EA359	1.55	0.53		EA359	2.07	0.53	0.00	0.53
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**52**			**76**	**47**	**14**	**61**

2047 Central Base Day				**2047 Central NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps Main RWY**	**LAeq16h_NR Deps North RWY**	**LAeq16h_NR Deps**
B73710MAX	2.76	3.63		B73710MAX	3.93	0.48	4.30	4.78
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	59.02	61.55		B738MAX	63.50	6.61	59.47	66.07
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00

B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	4.12	4.12		B779X	4.08	4.08	0.00	4.08
B788	7.06	9.11		B788	10.25	12.81	0.00	12.81
B789	32.21	43.60		B789	39.64	52.03	0.00	52.03
CS100	8.26	8.26		CS100	8.52	0.85	7.67	8.52
CS300	2.57	2.57		CS300	11.50	1.09	9.80	10.89
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	211.11	211.54		EA320NEO	248.69	24.55	220.96	245.51
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	68.92	68.27		EA321NEO	82.99	8.10	72.89	80.99
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.62	0.62		EA33NEO	0.62	0.62	0.00	0.62
EA3510	1.18	2.59		EA3510	1.22	2.62	0.00	2.62
EA359	7.23	8.40		EA359	10.29	12.05	0.00	12.05
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.15	0.15		ERJ	0.17	0.18	0.00	0.18
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.62	0.63		EXE3	0.74	0.75	0.00	0.75
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	406	**425**			**486**	**127**	**375**	**502**
2047 Central Base Night				**2047 Central NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps North RWY**	**LAeq8h_ NR Deps**
B73710 MAX	2.57	1.69		B73710 MAX	2.53	1.26	0.43	1.69
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00

B738MAX	9.94	7.41		B738MAX	10.34	5.85	1.92	7.76
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	0.00	0.00		B779X	0.00	0.00	0.00	0.00
B788	3.12	1.08		B788	3.88	1.31	0.00	1.31
B789	12.98	1.59		B789	15.75	3.36	0.00	3.36
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.20	0.60	0.20	0.80
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	28.12	27.69		EA320NEO	28.33	23.50	8.01	31.51
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	11.55	12.19		EA321NEO	11.61	10.14	3.46	13.60
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.41	0.00		EA3510	1.40	0.00	0.00	0.00
EA359	1.77	0.60		EA359	2.37	0.60	0.00	0.60
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	72	**52**			**76**	**47**	**14**	**61**

2047 SFT Base Day				**2047 SFT NRP Day**				
ANCON TYPE	**LAeq 16h Arrs**	**LAeq 16h Deps**		**ANCON TYPE**	**LAeq16h_NR Arrs**	**LAeq16h_NR Deps**	**LAeq16h_NR Deps**	**LAeq16h_NR Deps**

						Main RWY	**North RWY**	
B73710 MAX	87.52	88.97		B73710 MAX	102.73	10.29	92.63	102.92
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	49.14	51.04		B738MAX	56.64	5.83	52.46	58.29
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	9.19	11.18		B779X	10.27	12.40	0.00	12.40
B788	3.53	4.55		B788	5.13	6.41	0.00	6.41
B789	24.31	32.80		B789	30.31	39.62	0.00	39.62
CS100	4.54	4.54		CS100	4.69	0.47	4.22	4.69
CS300	1.41	1.41		CS300	6.33	0.60	5.39	5.99
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	126.67	126.92		EA320NEO	149.21	14.73	132.57	147.30
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	83.35	82.94		EA321NEO	99.54	9.76	87.81	97.57
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.62	0.62		EA33NEO	0.62	0.62	0.00	0.62
EA3510	3.12	4.59		EA3510	4.06	5.71	0.00	5.71
EA359	11.66	14.70		EA359	15.71	19.44	0.00	19.44
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.15	0.15		ERJ	0.17	0.18	0.00	0.18
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.62	0.63		EXE3	0.74	0.75	0.00	0.75
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00
	406	**425**			**486**	**127**	**375**	**502**

2047 SFT Base Night				**2047 SFT NRP Night**				
ANCON TYPE	**LAeq 8h Arrs**	**LAeq 8h Deps**		**ANCON TYPE**	**LAeq8h_ NR Arrs**	**LAeq8h_ NR Deps Main RWY**	**LAeq8h_ NR Deps North RWY**	**LAeq8h_ NR Deps**
B73710 MAX	14.97	13.51		B73710 MAX	15.10	11.13	3.78	14.91
B738	0.00	0.00		B738	0.00	0.00	0.00	0.00
B738MAX	7.46	5.56		B738MAX	7.84	4.66	1.53	6.19
B744G	0.00	0.00		B744G	0.00	0.00	0.00	0.00
B753	0.00	0.00		B753	0.00	0.00	0.00	0.00
B757E	0.00	0.00		B757E	0.00	0.00	0.00	0.00
B763G	0.00	0.00		B763G	0.00	0.00	0.00	0.00
B772G	0.00	0.00		B772G	0.00	0.00	0.00	0.00
B772R	0.00	0.00		B772R	0.00	0.00	0.00	0.00
B773G	0.00	0.00		B773G	0.00	0.00	0.00	0.00
B779X	2.23	0.24		B779X	2.64	0.50	0.00	0.50
B788	1.56	0.54		B788	1.94	0.66	0.00	0.66
B789	9.87	1.38		B789	11.99	2.68	0.00	2.68
CS100	0.00	0.00		CS100	0.00	0.00	0.00	0.00
CS300	0.00	0.00		CS300	0.11	0.33	0.11	0.44
EA319C	0.00	0.00		EA319C	0.00	0.00	0.00	0.00
EA319NEO	0.00	0.00		EA319NEO	0.00	0.00	0.00	0.00
EA319V	0.00	0.00		EA319V	0.00	0.00	0.00	0.00
EA320C	0.00	0.00		EA320C	0.00	0.00	0.00	0.00
EA320NEO	16.87	16.61		EA320NEO	17.00	14.10	4.81	18.91
EA320V	0.00	0.00		EA320V	0.00	0.00	0.00	0.00
EA321C	0.00	0.00		EA321C	0.00	0.00	0.00	0.00
EA321NEO	12.88	13.30		EA321NEO	12.95	11.13	3.80	14.93
EA321V	0.00	0.00		EA321V	0.00	0.00	0.00	0.00
EA33	0.00	0.00		EA33	0.00	0.00	0.00	0.00
EA33NEO	0.00	0.00		EA33NEO	0.00	0.00	0.00	0.00
EA3510	1.66	0.18		EA3510	1.83	0.18	0.00	0.18
EA359	3.97	0.93		EA359	4.99	1.26	0.00	1.26
EA38GP	0.00	0.00		EA38GP	0.00	0.00	0.00	0.00
EA38R	0.00	0.00		EA38R	0.00	0.00	0.00	0.00
ERJ	0.01	0.01		ERJ	0.01	0.01	0.00	0.01
ERJ195	0.00	0.00		ERJ195	0.00	0.00	0.00	0.00
EXE3	0.06	0.04		EXE3	0.06	0.05	0.00	0.05
LTT	0.00	0.00		LTT	0.00	0.00	0.00	0.00

	72	**52**			**76**	**47**	**14**	**61**