Alton Towers Resort, Proposed New Ride

Noise Assessment Report

Merlin Entertainments Operations Limited,
Alton Towers Resort

June 2016

Notice

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Executive Summary

This report outlines the assessment and findings relating to a sound assessment for a proposed new ride and family entertainment building, located within Alton Towers Resort.

Noise surveys data has been used to establish representative ambient noise levels at noise sensitive receivers (NSRs) around the perimeter of Alton Towers Resort. These measurements form the basis of the assessments undertaken.

An assessment has been undertaken in relation to potential construction impacts. This relates to both construction traffic and construction activities, throughout the construction duration. Construction traffic is not expected to increase existing noise levels at defined noise sensitive receivers (NSRs).

An assessment of construction activities has also been undertaken, in accordance with BS5228, based upon the assumed phased construction programme activities. The assessment predicts that there will not be any 'significant' impacts to defined receivers.

An assessment has been undertaken with relation to noise from operational activities from the proposed ride and family entertainment building. This relates to both operational transportation and operational noise. When assessed, all NSRs comply with the requirements for sound levels to receivers from the proposed ride and family entertainment building.

Based upon the above it is considered that the proposed development will comply with the adopted criteria.

Section 1 of this report provides an overview of the proposed development. Section 2 outlines relevant policy and planning guidance. Section 3 outlines relevant calculation methodology, while section 4 outlines consultation undertaken with the Local Authority. Section 5 describes the proposed criteria for the project. Section 6 outlines the details of baseline data for the surrounding area. Section 7 outlines the assessment for construction activities, while section 8 outlines the operational assessment. Section 9 discusses any residual effects, while Section 10 discussed any potential cumulative effects. Section 11 outlines the report conclusions.

1. Introduction & Overview

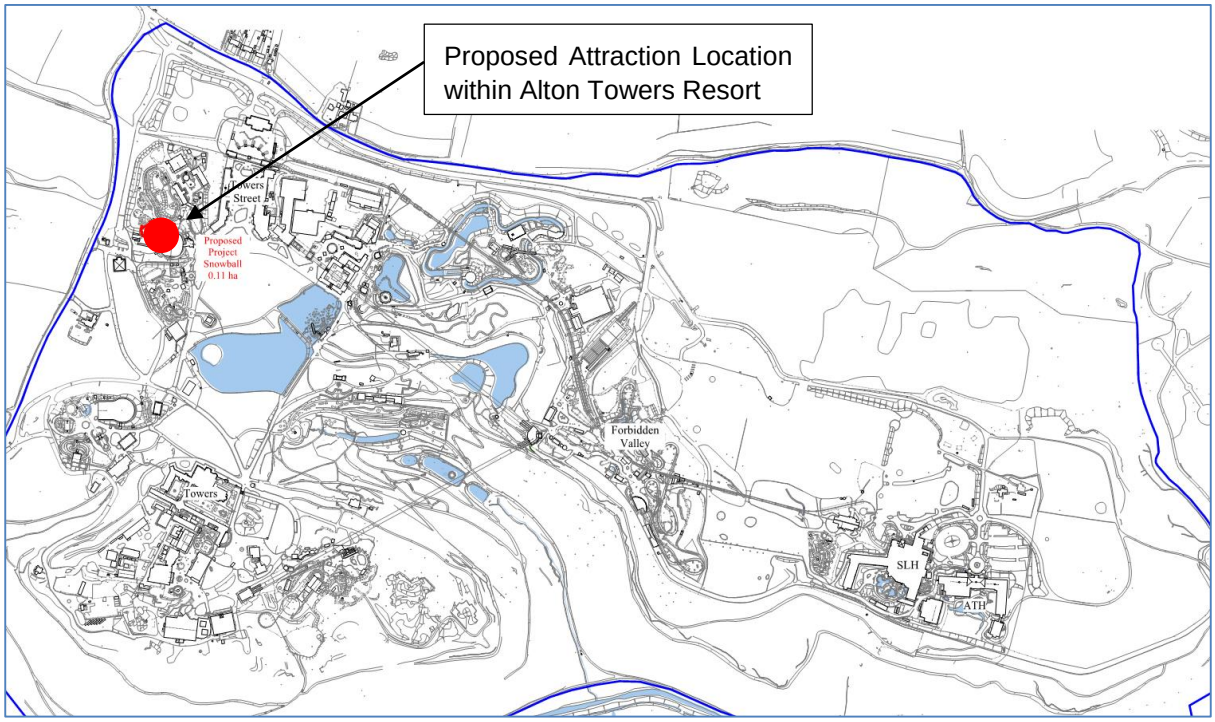
1.1. CDC has been commissioned by Merlin Entertainments Operations Ltd, Alton Towers Resort, to assess the impact from sound relating to the proposed new, to the nearest Noise Sensitive Receptors (NSRs), located outside of Alton Towers Resort boundary.

1.2. The proposed ride will form part of the already established CBeebies area of the Resort. The CBeebies area is located to the north west of the Resort.

1.3. It is proposed that the project will consist of the introduction of a new rotating ride and, in addition, a new family entertainment building. In addition to these new elements, other associated facilities will include a plaza area, buggy parking area and other landscaped areas.

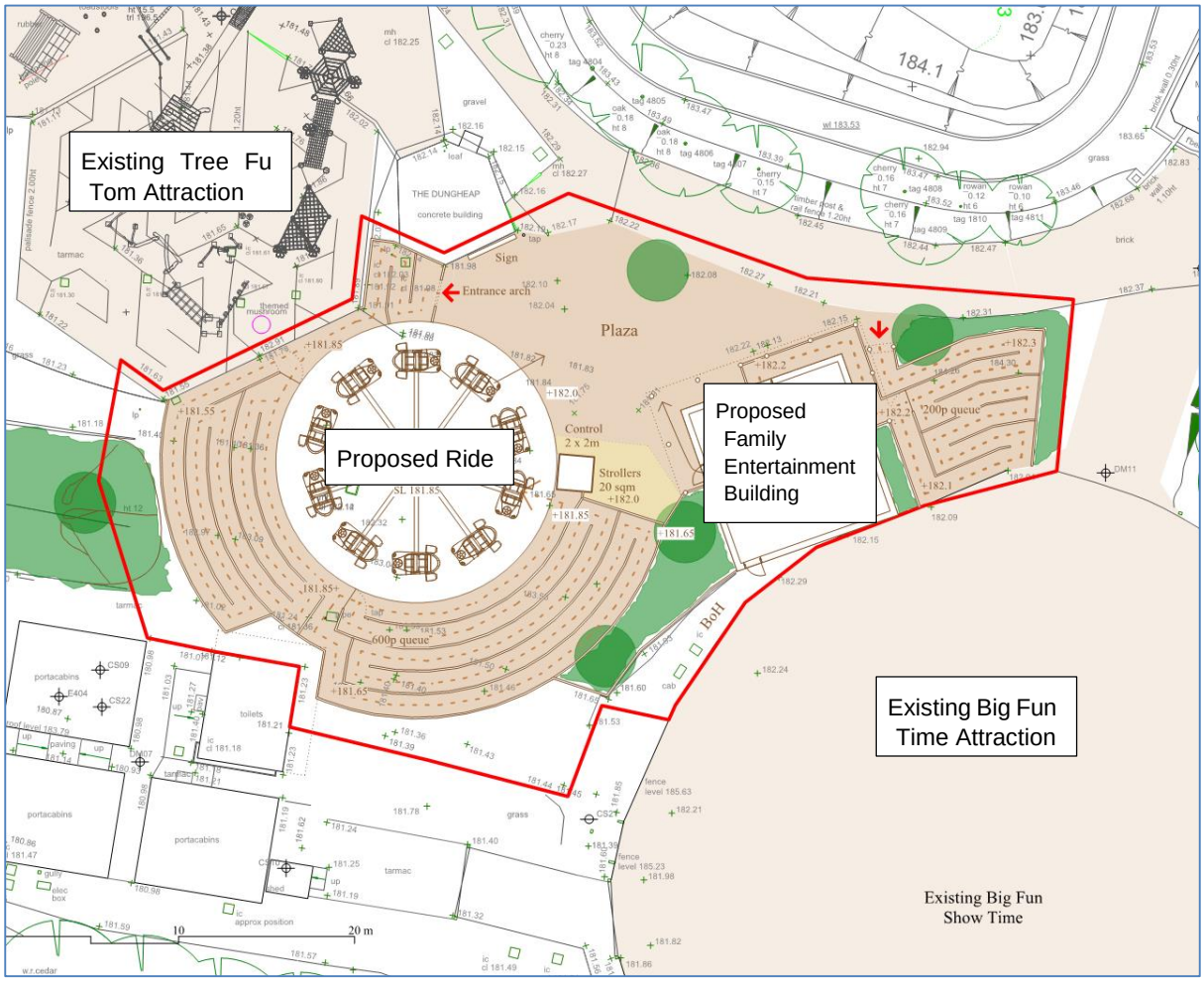
1.4. The following figure illustrates the location of the proposed attraction within the Alton Towers Resort.

Figure 1 Location of the proposed attraction in relation to Alton Towers Resort



1.5. The following figure illustrates the proposed layout for the area.

Figure 2 Proposed layout for the development



1.6. This assessment considers the potential sound impacts from the proposed development to the nearest receivers, located external to the resort boundary.

1.7. The development is proposed to be constructed from October 2016 to March 2017, with a scheduled opening for March 2017.

1.8. The nearest noise sensitive residential receivers (NSRs) from the proposed development have been defined as follows:

- Properties on Wootton Lane, approximately 350m to the **north**
- Properties on Longshaw Lane, approximately 415m to the **north west**
- Pink Lodge on Farley Lane, approximately 420m to the **south west**

1.9. All other receivers are at a greater distance than those presented above, with comparable ambient noise levels compared to those above.

1.10. These NSRs are illustrated in the following figure.

Figure 3 NSR distances relative to the nearest boundary of the proposed attraction

1.11. Criteria and calculation methodology has been developed based upon accepted code of practice for the assessment of environmental noise.

2. Policy & Guidance Documents

2.1. National & Local Policy and Guidance

Noise Policy Statement for England

2.2. The Noise Policy Statement for England (NPSE) applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise but does not apply to noise in the workplace. The Government recognises that the effective management of noise requires a co-ordinated and long term approach that encompasses many aspects of modern society.

2.3. The long term vision of Government noise policy is set out to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

2.4. This long term vision is supported by three aims:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

National Planning Policy Framework, 2012 (NPPF)

2.5. The National Planning Policy Framework (NPPF) includes the following statements relating to noise and the requirement to take it into account in the planning process:

2.6. Section 109 indicates that “The planning system should contribute to and enhance the natural and local environment by:

- preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.

2.7. Section 123 indicates that “Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”

2.8. The NPPF does not therefore provide absolute limits on noise that are acceptable or unacceptable in a given situation. It does, however, set out the need to use planning decisions, including through the use of conditions, to avoid or mitigate adverse impacts on health and quality of life resulting from noise.

The Control of Pollution Act 1974

2.9. The Control of Pollution Act 1974 Section 61 sets out the procedures whereby contractors may obtain 'Prior Consent' for construction works within agreed noise limits. Applications for such consents would be made to the local authority and would contain a construction method statement and the steps to be taken to minimise noise. The local authority has the power to attach conditions to any consent given.

The Environmental Protection Act 1990

2.10. Under Part III of the Environmental Protection Act 1990 as amended by the Noise and Statutory Nuisance Act 1993, local authorities have a duty to investigate noise complaints relating to a variety of sources, excluding road traffic noise. If the local authority is satisfied that the noise amounts to a statutory nuisance it will serve an Abatement Notice which may require that the noise be stopped altogether or limited to certain times.

3. Assessment Methodology

3.1. The following British Standards, Codes of Practice and references have been referred to and used as part of the assessment:

BS5228-2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise

3.2. There are no statutory limits regarding construction noise. BS5228-1:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open site – Part 1: Noise'*, provides guidance on assessing the potential significance of noise effects from construction activities in Annex E. Within the guidance there are two approaches described for threshold limits and noise level changes.

3.3. The following table has been reproduced from table E.1 in BS5228-1:2009+A1:2014, and shows the 'ABC criteria' thresholds for potential significant effect.

3.4. The ambient noise level is determined through baseline noise survey at, or within the vicinity of, the nearest residential properties and then rounded to the nearest 5dB to determine the appropriate category (A, B or C) and subsequent threshold value. This is compared with the noise level predicted from construction activity. A potential significant effect is indicated if the construction noise level exceeds the appropriate category threshold value. If the existing ambient level exceeds the threshold category threshold values, then a potential significant impact is indicated if the total noise level, including both the ambient noise and the various contributions of construction noise, is greater than the ambient noise level by more than 3dB.

Table 1 Construction Activity Noise Levels: Example Threshold of Potential Significant Effect at Dwellings (BS5228-1:2009+A1:2014)

Assessment Category and Threshold Value Period	Threshold Value in decibels (dB) ($L_{Aeq,T}$)		
	Category A [A]	Category B [B]	Category C [C]
Night-Time (23:00 – 07:00)	45	50	55
Evenings and Weekends [D]	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
NOTE 1: A potential significant effect is indicated if the total $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the Category appropriate to the ambient noise level.			
NOTE 2: If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3dB due to site noise.			
NOTE 3: Applied to residential receptors only.			
A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.			
B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.			
C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.			
D) 19:00 – 23:00 Weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.			

Department for Transport Memorandum, Calculation of Road Traffic Noise, 1988

3.5. The Department for Transport Memorandum, Calculation of Road Traffic Noise provides methods for measuring and calculating noise levels from road traffic, which is assessed over an 18 hour period from 06:00 to 24:00, using annual average weekday traffic (AAWT) flows. The basic noise level for a road segment can be calculated using the traffic flow, traffic speed and percentage heavy vehicles for a road segment. The traffic data will be based on the construction methods that are to be employed and information from the traffic assessment (TA).

Design Manual for Roads and Bridges part 11:3:7

3.6. The advice note entitled 'Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7 HD 213/11 Noise and Vibration' dated 2011 provides guidance on the assessment of the impacts that road projects may have on levels of noise and vibration. Where appropriate, this advice may be applied to existing roads.

3.7. It provides guidance on the significance of changes in road traffic noise, identifying that changes in noise smaller than 1 dBA are not perceptible in the short term. Assuming no changes to percentage composition of heavy goods vehicles or traffic speeds, an increase in traffic volume of 25% is required to alter the noise levels by 1 dBA.

3.8. The advice note gives an example classification of magnitude of impacts for opening year road traffic noise impacts, as shown in Table 2:

Table 2 DMRB Noise Changes and Magnitude of Opening Year Impacts

Noise change, $L_{A10,18h}$	Magnitude of Impact
0	No change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5+	Major

3.9. Although advice is given on the magnitude of impacts, no specific guidance is provided on the significance of the effect of these changes.

BS 4142: 2014 'Methods for and assessing industrial and commercial sound'

3.10. BS 4142:2014 describes methods for determining and assessing noise levels from noise sources, with a view to determining the likelihood of adverse impact.

3.11. The document has been developed for the purposes of:

- investigating complaints,
- Assessing sound from proposed new, modified or additional sources of sound of an industrial and / or commercial nature; and
- Assessing sound at proposed new dwellings or premises used for residential purposes.

3.12. The document is not suitable for the determination of noise nuisance. Furthermore, the standard is not intended to apply to the following sources of noise:

- recreational activities, including all forms of motorsport;
- music or other entertainment;
- shooting grounds;
- construction and demolition;
- domestic animals;
- people;
- public address systems for speech;
- other sources falling within the scopes of other standards or guidance.

3.13. The methodology requires the determination of the specific sound level, corrected for characteristic feature in order to produce a rating level. The rating level is then compared against the background noise level (expressed as $L_{A90,T}$), thereby producing an 'excess of Rating over background sound level'. This figure is then used for assessment of likelihood of adverse impact.

3.14. The standard places great emphasis on the context of the sound environment that is being assessed and the development overall. This is an essential part of the assessment process, particularly when predicting likelihood of adverse impact. However, for guidance the following is included in the standard:

- Typically, the greater the difference, the greater the magnitude of the impact;
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context;
- The lower the rating is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. When the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

4. Consultation

4.1. Consultation have been undertaken with the Local Authority regarding appropriate criteria and methodology to be referenced for the assessment of operational noise from proposed rides and attractions at Alton Towers Resort.

4.2. The following criteria has been agreed in consultation with the Local Authority.

- Ambient noise levels, expressed as $L_{Aeq,\ 15mins}$ dB, measured at the nearest receivers of the proposed attraction, should not exceed background noise levels, expressed as $L_{A90,\ 15mins}$ dB, as measured before the proposed attraction becomes operational.

4.3. For the purposes of this assessment the nearest residential receivers to the proposed attraction have been defined as follows:

- North of the proposed attraction – Properties on Wootton Lane. These properties are approximately 350m from the closest element of the proposed ride.
- North West of the proposed attraction – Properties on Longshaw Lane. These properties are approximately 415m from the closest element of the proposed ride.
- South West of the proposed attraction – Pink Lodge, located on Farley Lane. This property is approximately 420m from the closest element of the proposed ride.

5. Proposed Criteria

5.1. For the purposes of this assessment, the following criteria has been used as a guideline.

5.2. Impacts relating to transportation have been considered in accordance with guidance outlined within DMRB, based upon changes in ambient noise levels. This relates to both construction and operational transportation.

5.3. Noise from construction activities have been assessed in accordance with guidance outlined within BS5228. In this instance, based upon ambient noise levels at receivers, the Threshold value is 65 dB $L_{Aeq.}$ Predicted construction noise impacts above this Threshold would be deemed a 'significant' impact. Where levels are predicted to be below the Threshold, impacts are deemed not to be 'significant'.

5.4. Operational impacts have been considered in accordance with BS 4142:2014, and in line with Local Authority requirements.

6. Baseline Data Collection

6.1. A number of baseline surveys of the sound environment in the proximity of Alton Towers Resort have been undertaken over a representative day time hours. These included weekend and weekday time periods.

6.2. Measurements were undertaken on Sunday 18th and Monday 19th January 2015 and Sunday 15th March 2015. For comparative purposes, additional measurements were undertaken on Friday 8th April 2016.

6.3. Alton Towers Resort was closed during measurements undertaken in January 2015. Alton Towers Resort was operational during the March 2015 and April 2016 measurement periods.

6.4. Measurements were taken at a number of receiver locations around the perimeter of the Alton Towers Resort. However, for the purposes report, only measurements taken at, or near, the defined receivers for this assessment have been presented.

6.5. The measurement equipment was calibrated before and after measurements were taken and no drift was observed.

6.6. Meteorological conditions during the measurement period were in line with recommendations for environmental noise surveys, with minimal wind (<5m/s) during all surveys. An air temperature of 10-15^{o}C was noted during all surveys. The cloud cover was minimal during the 2015 measurement days. The cloud cover was 80% during the 2016 measurement period. Meteorological conditions did not affect the measurement results.

6.7. Several measurements were taken at each defined location. Measurements were undertaken over 15-minute time periods. The measurement locations are shown in the following Figure.

Figure 4 Measurement locations

6.8. The measurement locations illustrated in the above Figure are further detailed below:

Wootton Lane Properties: Measurements undertaken at boundary with Alton Towers Resort on Wootton Lane, directly adjacent to Wootton Lane residential properties. Road traffic noise dominates the soundscape at this location.

Longshaw Lane Properties: Measurements undertaken directly adjacent to residential properties on Longshaw Lane, off Farley Lane. Localised road traffic noise on Longshaw Lane and pass by traffic on Farley Lane, dominates the soundscape at this location.

Pink Lodge, Farley Lane: Measurements undertaken directly opposite Pink Lodge. Road traffic on Farley Lane, dominates the noise soundscape in this area, in addition to occasional activity noise from Alton Towers Resort.

6.9. The following table outlines the averaged results of the measurements. The L_{Aeq} values are the logarithmic averages while the L_{A90} values are the most commonly occurring, in accordance with BS4142:2014. Where this has not been possible an arithmetic average has been used.

Table 3: Averaged measured noise levels

Location	April 2016		March 2015		January 2015		Distance relative to attraction
	L_{Aeq} dB	L_{A90} dB	L_{Aeq} dB	L_{A90} dB	L_{Aeq} dB	L_{A90} dB	
Wootton Lane Properties	64	49	63	46	63	37	350m
Longshaw Lane Properties	58	41	N/A	N/A	N/A	N/A	415m
Pink Lodge, Farley Lane	61	50	N/A	N/A	61	38	420m

6.10. Based upon the above measurement results, the following levels have been used for the purposes of the assessment for the proposed attraction.

6.11. The following levels are taken for the most up to date measurements (April 2016) for Wootton Lane, Longshaw Lane and Pink Lodge.

Table 4: Measurements used for assessment of proposed attraction

Location	$L_{Aeq, 15mins}$ dB	$L_{A90,15mins}$ dB
Wootton Lane Properties	64	49
Farley Lane Properties	58	41
Pink Lodge, Farley Lane	61	50

6.12. The above levels form the basis of the assessment undertaken for this project.

7. Construction Noise Assessment

Construction Overview

7.1. It is understood that the construction programme will be undertaken from October 2016 to March 2017.

7.2. It is understood that the proposed ride will be largely constructed off site. The proposed family entertainment building will be a modular construction.

7.3. The nature of the construction methods, will assist in controlling noise levels being generated from onsite construction activities.

7.4. Ground works and landscaping will be undertaken on the site.

Construction Traffic

7.5. Construction activities are expected to be undertaken between October 2016 and March 2017. This includes a period of Alton Towers Resort winter shut down. It is currently anticipated that construction equipment and materials will be stored on site, thereby reducing the number of trips from construction vehicles to and from the site.

7.6. At this time there is no formal schedule for the number of construction vehicles that will arrive at the Resort, however, the daily numbers are expected to be low in comparison to the overall traffic in the area, even during Alton Towers winter shut down period.

7.7. It is anticipated that any construction traffic would use main Farley Lane contractors entrance to enter and leave the site. All construction traffic will arrive during daytime hours. No night time deliveries will be made. No construction transportation is anticipated to arrive or leave the site during weekends.

7.8. A number of the ride and building elements will be constructed off-site and transported to site. This will reduce the noise effects from on-site construction activities.

7.9. Construction workers will arrive by personal or shared transportation, but again, the number of vehicles will be small in comparison to the overall vehicles in the area on any given day.

7.10. In terms of noise impacts from transportation, anything less than a 25% increase in flows equates to a change of less than 1 dB and so is not considered an impact. In this case the predicted flows from construction traffic will be significantly less than 25% and so the impact is considered as ‘No Change’.

7.11. Therefore, the impact from construction traffic is expected to be ‘No Change’.

Construction Activities

7.12. All construction activities will be undertaken during daytime hours, as defined in BS5228, between 07:00 – 18:00 Monday to Friday and Saturdays between 07:00 – 13:00.

7.13. Based upon measured ambient levels at the defined NSRs, the Threshold value for ‘significance’ has been defined as 65 dBL_{Aeq}, in accordance with BS5228. Predicted construction noise impacts above this Threshold would be deemed a ‘significant’ impact. For levels predicted to be below the Threshold, impacts are deemed not to be ‘significant’.

The following table presents a worst case construction equipment list, assuming all the equipment in the list operates simultaneously during development. The resulting 87 dB L_{Aeq} at 10m from sources, is the logarithmic addition of all the equipment noise levels.

Table 5 Assumed construction equipment and associated noise levels (ref. BS5228)

Assumed Construction Equipment	L_{Aeq} (dB) at 10m
Dozer 20 tonne	75
Concrete mixer truck (discharging) & concrete pump (pumping)	75
Tracked Excavator 14 tonne	70
Telescopic Handler 10 tonne	71
Roller 18 tonne	73
Hand held electric circular saw x 2	84
Compressors for hand tools x 2	73
Club hammer x 2	82
Total (dB) L_{Aeq} at 10m	**87**

7.14. Assuming the above equipment all operates simultaneously, the resulting noise level would be 87 dB (A) at 10m from the construction sources. This is considered a worst case scenario.

7.15. The following table outlines the predicted impact from construction activities.

Table 6 Construction noise assessment in accordance with BS5228 A, B, C method

Location	Relative distance from proposed attraction to receiver	Distance correction based upon point source attenuation, dB	Defined Threshold value, BS5228, L_{Aeq} dB	Predicted noise level (construction + ambient)	Significant Impact Predicted?
Wootton Lane Properties	350m	31 dB	65 dB	65 dB	No Significant Impact Predicted
Longshaw Lane Properties	415m	32 dB	65 dB	60 dB	No Significant Impact Predicted
Pink Lodge, Farley Lane	420m	32 dB	65 dB	62 dB	No Significant Impact Predicted

7.16. Soft ground corrections and shielding from Alton Towers Resort buildings and attractions have not been considered in this instance and would reduce the predicted levels further.

7.17. It can be seen from the above assessment that the predicted construction levels do not exceed the outlined Threshold Values as outlined in BS5228. Therefore, no 'significant' impact is predicted from construction activities.

8. Operational Noise Assessment

Transportation

8.1. It is anticipated that the proposed attraction will not generate any additional traffic numbers to and from the Resort, and visitors will be travelling to the Resort anyway.

8.2. In terms of noise impacts from transportation, anything less than a 25% increase in flows equates to a change of less than 1 dB and so is not considered an impact. In this case the predicted flows from construction traffic will be significantly less than 25% and so the impact is considered as 'No Change'.

8.3. Therefore, the predicted impact of sound relating directly to operational transportation for these events, would be 'no change'.

Operational Noise from the Attraction

8.4. The proposed ride will be a small rotating ride with a number of themed carriages that will rise and fall throughout the ride time. The ride profile will be an approximate 2 minute ride and 2 minute turn around period.

8.5. The proposed family entertainment building will offer informal entertainment. This may involve amplified music / speech, internally within the building. However, speakers will not be located external to the building. The fabric of the building will offer substantial amounts of sound insulation, which will reduce any sound from within the building to external areas. Therefore, sound from this element of the attraction has not been considered further, with regards to operational noise impacts.

8.6. It terms of operational noise levels from the proposed ride, a similar ride has been used for reference. The Junior Rollercoaster located within the CBeebies area of the Resort has previously been assessed based upon an operational noise level of 70 dBA at 10m. Due to the nature of the Junior Rollercoaster, particularly the interaction between wheel and track, this level is seen as a worst case for the proposed ride. The proposed ride will not operate on rails. However, the use of music and noise levels from riders are likely to be similar.

8.7. Therefore, a noise level of 70 dBA has been used for the purposes of worst case assessment of operational noise levels from the proposed ride.

8.8. Based upon the above, and taking into account distance corrections from the proposed ride to the nearest receivers, the following table outlines the predicted operational noise levels at each receiver.

Table 7 Predicted operational noise levels to receivers

Receiver	Location relative to site	Minimum distance to receiver	Measured $L_{A90,15mins}$ dB	Predicted $L_{Aeq,15mins}$ dB, after corrections applied	Predicted $L_{Aeq,15mins}$ relative to L_{A90} dB
Wootton Lane Properties	North	350m	49	39	-10
Longshaw Lane	North West	415m	41	38	-3
Pink Lodge, Farley Lane	South West	420m	50	38	-12

8.9. The above predictions do not take into account shielding from the wider Alton Towers Resort, such as other rides, attractions and buildings. Such elements would reduce predicted operational noise levels further.

8.10. Alton Towers Resort will ensure that operational music sound levels from the proposed ride will not exceed a maximum of 70 dBA at 10m from the ride. Commissioning sound measurements will be undertaken to ensure that this is achieved.

8.11. The above assessment demonstrates that operational noise levels from the proposed ride will comply with the agreed criterion.

9. Residual Effects

9.1. At this stage, no residual effects are predicted from the proposed construction and operations of the proposed ride.

10. Cumulative Effects

10.1. At the time of writing, there are no major developments proposed within the local vicinity of ATR, which may overlap with the proposed attraction construction schedule.

10.2. During the general winter shut down periods for the theme park, the construction of the proposed attraction may overlap with general maintenance activities across the Resort and the construction of other proposed attractions. In accordance with Section 61 of the Control of Pollution Act 1974, best practicable means will be employed throughout the construction duration to ensure that adverse impacts are mitigated.

10.3. ATR actively manages the effects of noise from new and existing rides and attractions within the Resort. New proposed rides and attractions undergo noise assessments to ensure that levels do not exceed existing background noise levels at receivers.

10.4. Therefore, cumulative effects during construction of operations are not expected to increase noise levels over and above those outlined within this report.

11. Conclusions

11.1. This report outlines the assessment and findings relating to a sound assessment for a proposed new ride and family entertainment building, located within Alton Towers Resort.

11.2. Noise surveys data has been used to establish representative ambient noise levels at noise sensitive receivers (NSRs) around the perimeter of Alton Towers Resort. These measurements form the basis of the assessments undertaken.

11.3. An assessment has been undertaken in relation to potential construction impacts. This relates to both construction traffic and construction activities, throughout the construction duration. Construction traffic is not expected to increase existing noise levels at defined noise sensitive receivers (NSRs).

11.4. An assessment of construction activities has also been undertaken, in accordance with BS5228, based upon the assumed phased construction programme activities. The assessment predicts that there will not be any ‘significant’ impacts to defined receivers.

11.5. An assessment has been undertaken with relation to noise from operational activities from the proposed ride and family entertainment building. This relates to both operational transportation and operational noise. When assessed, all NSRs comply with the requirements for sound levels to receivers from the proposed ride and family entertainment building.

11.6. Based upon the above it is considered that the proposed development will comply with the adopted criteria.