Alton Towers Resort,
ATR Hotel Extension

Sound Assessment Report

Merlin Entertainments Limited – Alton Towers Resort

July 2015

Notice

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This document has 24 pages including the cover.

Document history

Document Ref No: P1021/June15					
Revision	Purpose description	Originated	Checked	Authorised	Date
1.0	Draft for Comment	BC	AC	BC	July 15
2.0	ISSUE	BC	AC	BC	July 15

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Executive Summary

This report outlines the assessment and findings relating to a sound assessment for the proposed ATR Hotel extension.

Noise surveys have been undertaken 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 construction programme activities. The assessment predicts that there will not be any 'significant' impacts to defined receivers.

Mechanical and electrical services noise has been considered. The ATR Hotel Extension will incorporate plant rooms throughout the hotel and an external service yard at ground floor level. At this stage in the design process, a detailed plant schedule has not been developed. However, an acoustic consultant will be engaged by Alton Towers Resorts during the design process for the ATR Hotel Extension to ensure that any building services do comply with the adopted criteria outlined within this report. Furthermore, it is anticipated that requirements for receivers within the resort itself will be more onerous than those to off Resort receivers.

An operational noise assessment has been undertaken for operational sound from ATR Hotel Extension. When assessed in accordance with the adopted criterion, all NSRs comply with the requirements for sound levels to receivers. The external shell of the ATR Hotel Extension will provide significant levels of sound insulation from internal activities.

Based upon the above it can be seen that the proposed development will comply with the adopted criteria.

Furthermore, Alton Towers Resort will engage the services of an acoustic consultant during the detailed design and construction stages to ensure that the above elements are considered as the design progresses and to ensure that building services comply with the adopted criteria set out in this report.

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 describes the proposed criteria for the project. Section 5 outlines the details of baseline data for the surrounding area. Section 6 outlines the assessment for construction activities, while section 7 outlines the operational assessment. Section 8 discusses any residual effects. Section 9 outlines any potential cumulative impacts and Section 10 outlines the report conclusions.

1. Introduction & Overview

1.1. CDC has been commissioned by Merlin Entertainments, Alton Towers Resort, to assess the impact from sound relating to the proposed ATR Hotel Extension, to the nearest Noise Sensitive Receptors (NSRs), located external to Alton Towers Resort.

1.2. The hotel extension is to be located adjacent to the existing Alton Towers Hotel on the north side and the Enchanted Village on the east side. The extension will have an overall footprint area of 5,545m^2.

1.3. The extension will provide 74 additional rooms which will be constructed in the garden area between the existing hotel and ornamental pond to the north and the deer wall to the south.

1.4. The development will add the following new accommodation:

- A separate entrance on the east side of the accommodation block;
- A reception with back office;
- Double height restaurant;
- 74 guest rooms;
- Storage and BOH areas.

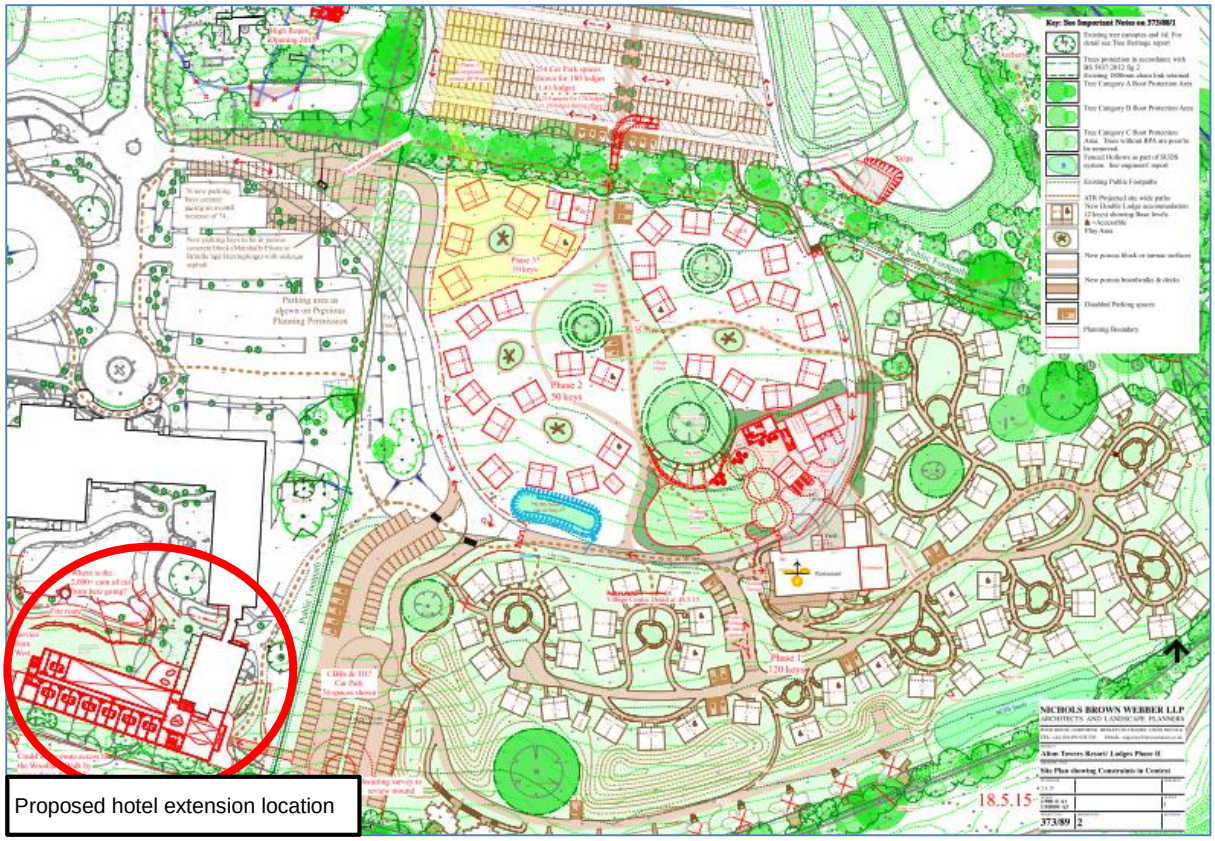
1.5. The development will be four stories in height, from lower ground floor to second floor. The lower ground floor will be dedicated to food and beverage and back of house areas, while the upper three floors will be comprised predominately of guest accommodation. There will be no direct link between the existing hotel and the proposed hotel extension.

1.6. It is understood that construction of the Hotel will commence in February 2016 with anticipated handover in June 2017. The hotel is anticipated to be open to the public in Summer 2017.

1.7. This assessment considers the potential sound impacts from the proposed development to off Resort receivers, from both construction and operational activities.

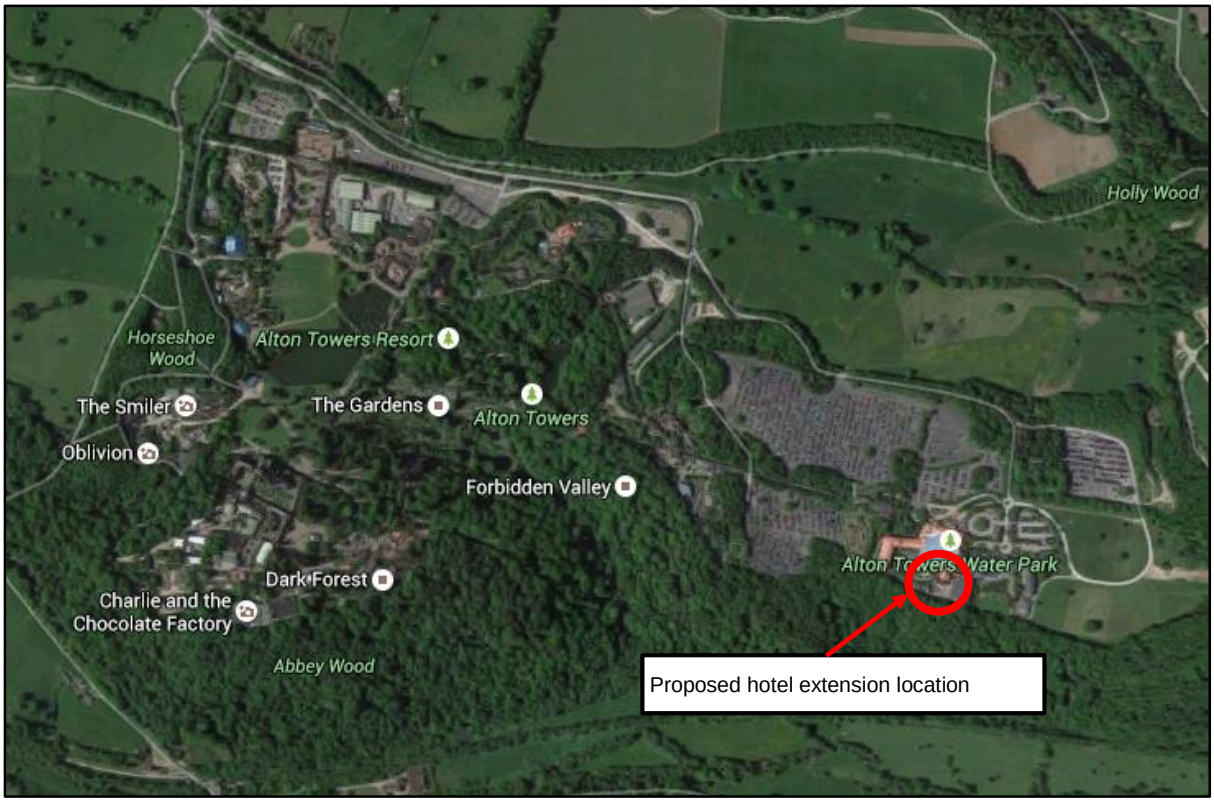
1.8. The following figure outlines the current plan for the hotel extension.

Figure 1 Location of the proposed hotel extension



1.9. The following figure illustrates the location of the phase ATR hotel extension, relative to the wider Alton Towers Resort. To the east of the hotel site is the newly opened lodge and treehouse development known as the Enchanted Village

Figure 2 Proposed hotel location relative to the wider Alton Towers Resort site



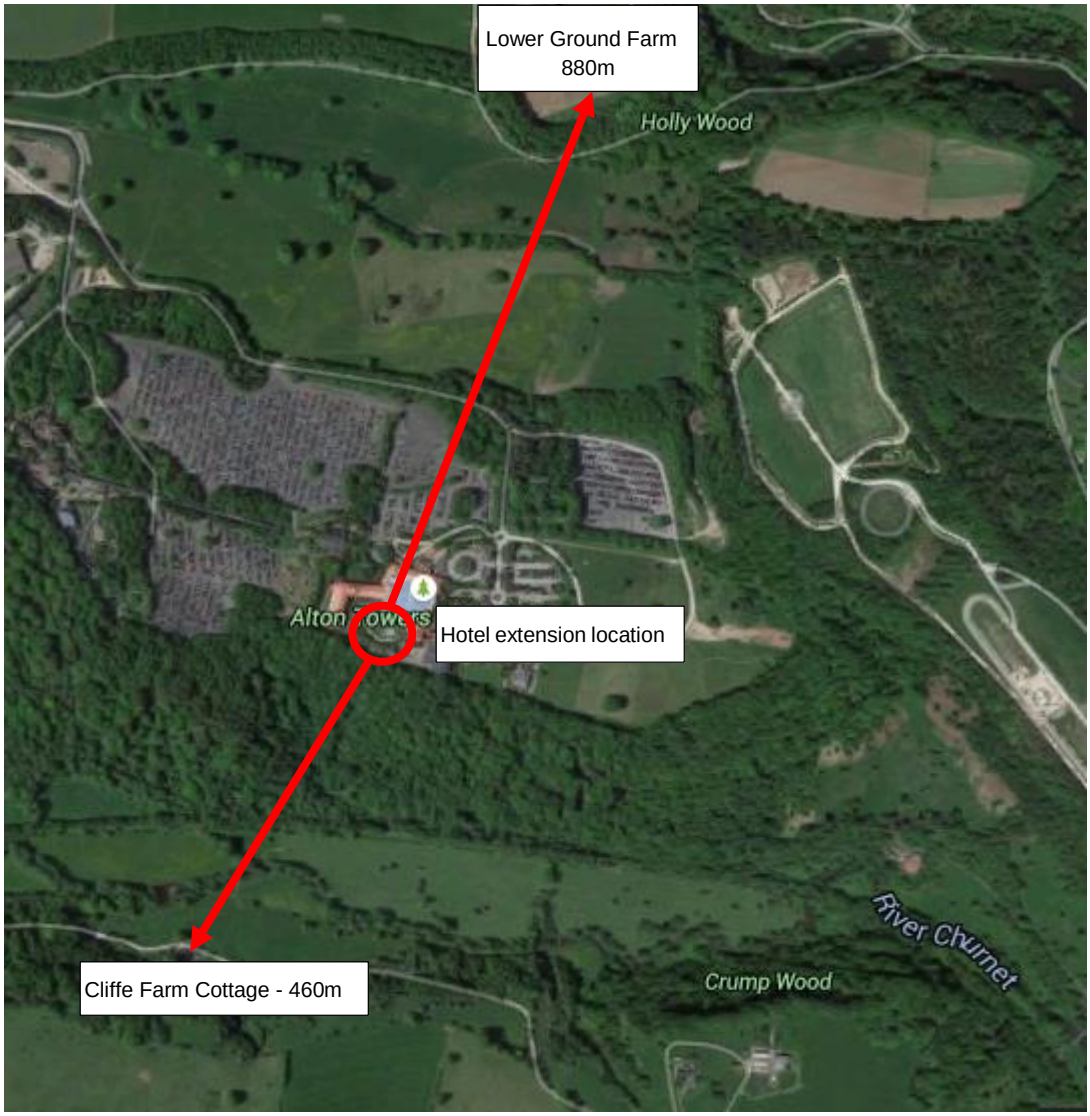
1.10. The nearest noise sensitive residential receivers (NSRs) from the proposed lodges have been defined as follows:

- Cliffe Farm Cottage, approximately 460m to the **south**;
- Lower Ground Farm, off Wootton Lane, approximately 880m to the **north;**

1.11. All other receivers are at a greater distance than those presented above, with higher ambient noise levels compared to those above. Therefore, this assessment has been undertaken with respect to the above receivers only.

1.12. These NSRs are illustrated in the following figure.

Figure 3 NSR distances relative to the nearest boundary of the proposed hotel extension



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

1.14. Further information is provided in Section 3 of this report.

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[1]; and

[1] The NPPF contains the caveat “Subject to the provisions of the Environmental Protection Act 1990 and other relevant law”.

- 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:

- Construction noise activities have been considered in accordance with methodology and data contained within BS5228-2009+A1:2014 'Code of Practice for noise and vibration from construction and open sites-Part 1';
- Traffic noise impacts have been considered in accordance with guidance within DMRB (Design Manual for Roads and Bridges) and CRTN (Calculation of Road Traffic Noise);
- Operational noise from has been assessed in accordance with BS4142:1997 "Method for rating industrial noise affecting mixed residential and industrial areas", in line with Phase 1 assessments.

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 4142:1997 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 now suitable for the determination of noise nuisance. Furthermore, that 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' figure. 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. Proposed Criteria

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

4.2. 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.

4.3. 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'.

4.4. Operational impacts have been considered in accordance with BS 4142:2014. In this case, the adopted criteria is for operational noise levels not to exceed existing background noise levels (expressed as L_{A90} dB), at defined receivers.

5. Baseline Data Collection

5.1. A baseline survey of the sound environment in the proximity of Alton Towers Resort was undertaken over a representative weekend period, on Sunday 15th March 2015.

5.2. Alton Towers Resort was operational during the entire measurement period. Measurements were taken at a number of receiver locations around the perimeter of the Alton Towers Resort. However, for the purposes of this assessment, only measurements taken at, or near, the defined receivers for this assessment have been presented.

5.3. Measurements representative of Lower Ground Farm were undertaken on the track leading to the farm.

5.4. Measurements representative of Lower Ground Farm were undertaken at Wootton Lane cattle grid, beside the gate that leads to the farm.

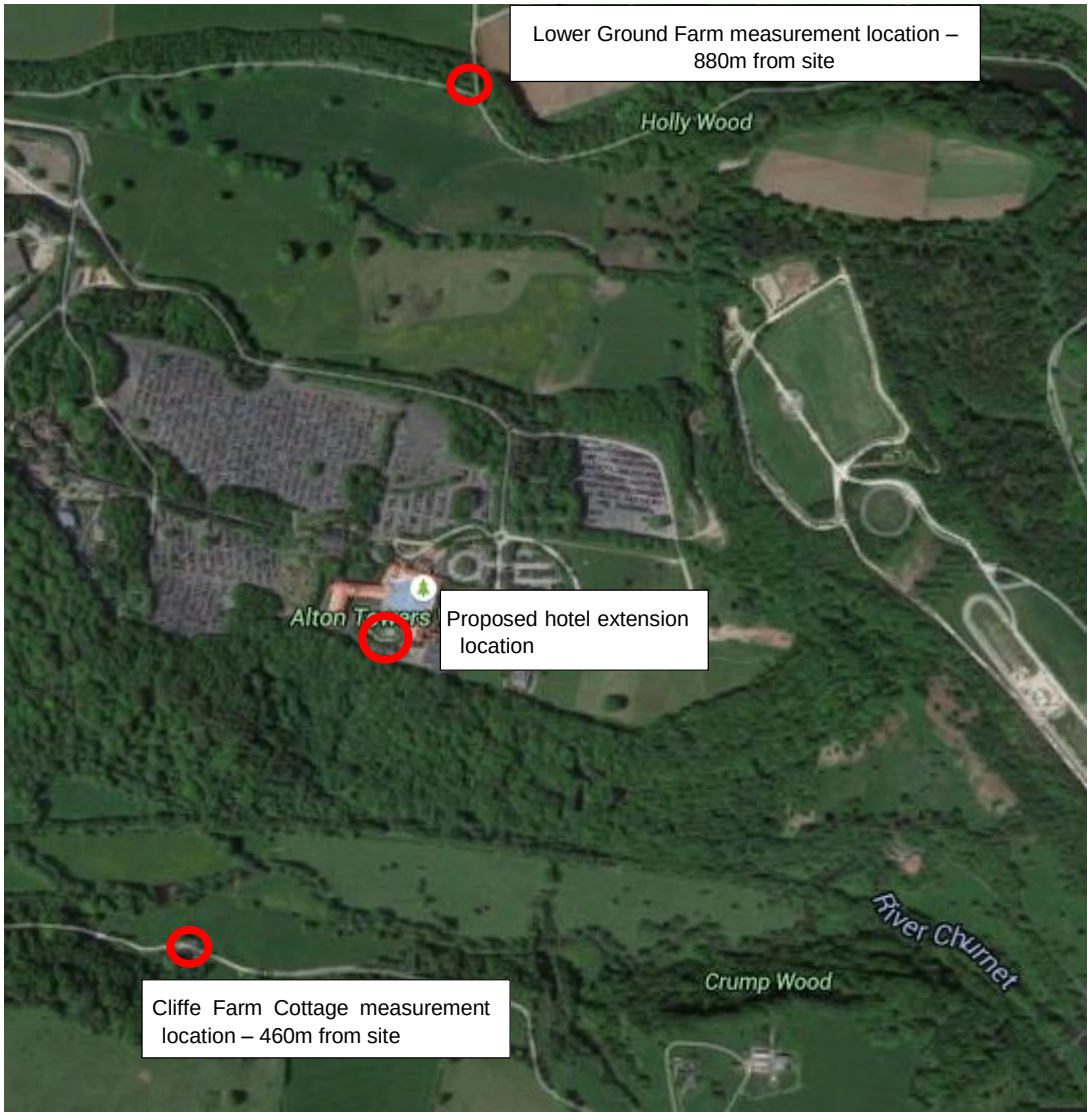
5.5. Measurements at these locations were undertaken between 11:33AM and 14.48PM.

5.6. The measurement equipment was calibrated before and after measurements were taken and no drift was observed. Details of the equipment used for the survey are included in Appendix B of this report.

5.7. 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 15°C was noted during surveys. The cloud cover was minimal over both the 9th and 10th measurement days. Meteorological conditions did not affect the measurement results.

5.8. 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



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

Cliffe Farm Cottage: Located south of the proposed hotel site. This location is down a quiet track accessed from Alton Village. The soundscape consists of wildlife sounds, water running sounds from nearby river and the occasional car and dog walker.

Lower Ground Farm: The location was at the eastern end of Wootton Lane. The soundscape consisted of wildlife sounds and the occasional car.

5.10. 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 lowest measured.

Table 3: Averaged measured noise levels

Location	Averaged L_{Aeq} dB	Lowest L_{A90} dB	Relative distance from proposed attraction to receiver
Cliffe Farm Cottage	49 dB	44 dB	460m
Lower Ground Farm	43 dB	32 dB	880m

5.11. Although the above levels were measured during representative daytime hours, given the remote locations of the receivers and measurement locations, these levels are expected to be representative of evening hours also.

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

5.13. Detailed measurement results are included in Appendix A of this report.

6. Construction Noise Assessment

Construction Overview

6.1. It is understood that the construction programme will last for approximately 16 months, from the February 2016 to June 2017. The construction duration will incorporate two periods of the winter shut down for ATR.

6.2. It is understood that the construction of the hotel extension will replicate the existing ATR Hotel style and construction elements will remain the predominately the same.

6.3. At this time it is anticipated that the works will be phased and not carried out simultaneously. Construction will be phased as follows:

- Ground works including clearance, excavation, levelling, foundations and piling;
- Main building construction works;
- Fit out works
- Landscaping and theming.

6.4. The above constructions phases are assumed to overlap to some degree, for the purposes of this assessment.

6.5. The total construction period is expected to last approximately 16 months.

Construction Traffic

6.6. Construction activities are expected to be undertaken over a 16 month period, including two periods of ATR 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.

6.7. 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 Resort winter shut down period.

6.8. It is anticipated that any construction traffic would use the main Farley Road entrance to enter and leave the site. All construction traffic will arrive during Alton Towers Resort normal opening hours, or before Resort opening. No night time deliveries will be made. No construction transportation is anticipated to arrive or leave the site during weekends.

6.9. It should be noted that there were no adverse construction noise impacts during the construction of Phase 1 Lodges, which are located adjacent to the hotel development.

6.10. Construction workers will arrive by personal or shared transportation, but again, the number of vehicles will be small in comparison to the overall visitor vehicles arriving at the site on any given day.

6.11. 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'.

6.12. Therefore, the impact from construction traffic is expected to be 'No Change'.

Construction Activities

6.13. 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.

6.14. 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'.

6.15. This Threshold level would also be applicable for winter shut down periods.

6.16. The following table presents a worst case construction equipment list, assuming all the equipment in the list operates simultaneously and phases of construction are overlapped by some degree. The resulting 88 dB L_{Aeq} is the logarithmic addition of all the equipment noise levels.

Table 4 Assumed construction equipment and associated noise levels (ref. BS5228)

Assumed Construction Equipment	L_{Aeq} (dB) at 10m
Auger piling – crawler mounted rig 150kW, 35t	79
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	**88**

6.17. Assuming the above equipment all operates simultaneously at the proposed attraction, the resulting noise level would be 88 dB (A) at 10m from the construction sources.

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

Table 5 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?
Cliffe Farm Cottage	460m	33 dB	65 dB	56 dB	No Significant Impact Predicted
Lower Ground Farm	880m	39 dB	65 dB	50 dB	No Significant Impact Predicted

6.19. 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.

6.20. 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.

7. Operational Noise Assessment

Transportation

7.1. A traffic assessment has been undertaken for the proposed hotel extension. The assessment concludes that the proposed hotel extension will generate an additional 10 vehicles per day, assuming 90% hotel occupancy level. Unlike general ATR visitors, the arrival and departure profile for hotel guests will be outside the peak traffic times. This is a nominal overall increase in the total trips to Alton Towers on a daily basis.

7.2. 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'.

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

Mechanical & Electrical Services Noise

7.4. The new development will incorporate mechanical and electrical services installations. Plant rooms are currently proposed to be constructed in the south west corner of the proposed hotel, on all 4 floors. An external service yard is also proposed to the western side of the site.

7.5. At this stage of design, a detailed schedule of plant has not been developed. However, it can be assumed that the plant rooms would be installed with air handling units and pumps with fan coil units providing cooling to the rooms themselves.

7.6. ATR will engage the services of an acoustic consultant assess noise from building services plant as plant schedules and associated noise levels become apparent. The acoustic consultant will ensure that all plant noise is controlled to not exceed existing background noise levels at defined receivers, when assessed in accordance with BS4142:2104. This will ensure that adverse impacts from plant are unlikely.

7.7. Given the distances to off Resort receivers, it is not anticipated that significant levels of noise mitigation will be required for the plant. Indeed requirements on protect receivers within ATR itself, will be more onerous than those to receivers.

Operational Sound from Guest Activities

Guest Noise within Alton Towers Resort

7.8. The proposed hotel will add an additional 74 keys to the existing hotel accommodation. All guests using the hotel will also be able to use the Resort rides and attractions.

7.9. The existing rides and attractions will continue to operate as they do currently. Therefore, operational sound from guest activities will remain the same as current within the Resort.

7.10. Therefore, no impacts are predicted from guests using the Alton Towers Resort itself.

Evening Guest Entertainment

7.11. It is anticipated that the majority of guests will remain in the hotel during evening hours and dine within the ground floor restaurant. During this time, background music may be played but noise levels are not expected to be high from these activities.

7.12. Although there is no specific entertainment planned for the hotel guests, the ground floor restaurant area may host informal entertainment and activities for guests. Such entertainment will be family based and is not anticipated to generate high levels of noise or extend beyond 10PM in the evening.

7.13. The solid construction of the hotel extension itself will provide significant sound insulation from any activities that may take place in the restaurant area. Furthermore, any activities will be carefully managed to make sure they do not disturb other hotel guests.

7.14. Therefore, it is not anticipated that there will be any impacts from guest activities during evening periods.

Car Parking Areas

7.15. It is understood that 88 additional car parking spaces will be provided to the east of the hotel. This is sufficient to provide one parking space per room, plus additional for staff and restaurant guests.

7.16. Given the distances to off Resort receivers and the profile for guests arriving and leaving the hotel, the car park will not cause any impacts to receivers.

7.17. The majority of guests will remain in the hotel for the evening, including dining. The number of guests leaving the Resort for evening entertainment / dining will be small and are not anticipated to cause impacts to off Resort receivers.

8. Residual Effects

8.1. At this stage, no residual effects are predicted from the proposed construction and operations of the hotel extension. However, an acoustic consultant will be engaged throughout the design and construction process to ensure this remains the case as the design develops.

9. Cumulative Effects

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

9.2. During the general winter shut down periods for the theme park, the construction of the proposed hotel extension may overlap with general maintenance activities across the Resort. 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.

9.3. 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.

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

10. Conclusions

10.1. This report outlines the assessment and findings relating to a sound assessment for the proposed ATR Hotel extension.

10.2. Noise surveys have been undertaken 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.

10.3. 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).

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

10.5. Mechanical and electrical services noise has been considered. The ATR Hotel Extension will incorporate plant rooms throughout the hotel and an external service yard at ground floor level. At this stage in the design process, a detailed plant schedule has not been developed. However, an acoustic consultant will be engaged by Alton Towers Resorts during the design process for the ATR Hotel Extension to ensure that any building services do comply with the adopted criteria outlined within this report. Furthermore, it is anticipated that requirements for receivers within the resort itself will be more onerous than those to off Resort receivers.

10.6. An operational noise assessment has been undertaken for operational sound from ATR Hotel Extension. When assessed in accordance with the adopted criterion, all NSRs comply with the requirements for sound levels to receivers. The external shell of the ATR Hotel Extension will provide significant levels of sound insulation from internal activities.

10.7. Based upon the above it can be seen that the proposed development will comply with the adopted criteria.

10.8. Furthermore, Alton Towers Resort will engage the services of an acoustic consultant during the detailed design and construction stages to ensure that the above elements are considered as the design progresses and to ensure that building services comply with the adopted criteria set out in this report.

APPENDIX A – Measurement Results

APPENDIX B – Measurement Equipment

Equipment	Manufacturer	Type	Serial Number
Sound Level Meter	Rion	NL-52	1043459
Preamplifier	Rion	NH-25	43488
Microphone	Rion	UC-59	7235
Calibrator	Rion	NC-74	35246905

MEASUREMENT SYSTEMS

CERTIFICATE OF CONFORMANCE

Date of Issue	**03 March 2015**
Customer	**Cahill Design Consultants**
Certificate Number	**CONF031502**

	Manufacturer	**Type**	**Serial Number**
Sound Level Meter	Rion	NL-52	01043459
Preamplifier	Rion	NH-25	43488
Microphone	Rion	UC-59	07235

This is to certify that the instrument was tested and calibrated at the Manufacturer's factory according to their specification and that the product satisfied all the relevant requirements of the following Standards:

IEC 61672-1:2002 Class 1.

The instrument also received a functional check by ANV Measurement Systems prior to despatch in the UK, in accordance with our standard procedures.

Signed Amrat C Patel Position Laboratory Manager Date.03 March 2015

Amrat C Patel

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