**Evaluating Noise and Vibration of the EIAR of Destination Hillend**

**Introduction**

In May 2019, Midlothian Councillors agreed to invest £13.8 million of capital funding into the development of Midlothian Snowsports Centre into an all year round, multi leisure facility. Midlothian Snowsports centre is located south of Edinburgh, at Hillend Country Park on the edge of the Pentland Hills Regional Park and is currently described as having aging facilities and the existing freestyle jump slope is permanently closed. Despite this, there is an increase in general demand for the snow sports centre and in order to secure the long-term future of the facility, Midlothian Council are aiming to revitalise the facilities and upgrade the site as a whole. The newly developed and upgraded facility is planned to be called ‘Destination Hillend’ and will include developments such as: leisure facilities, a food court, function space, a hotel, additional car parking, improved access road and various other developments that could potentially establish the development into a tourist destination of regional and national importance.

In relation to the proposed project of development, Sweco was commissioned in March 2019 to produce an Environmental Impact Assessment Report (EIAR) to accompany the planning permission in principle (PPiP). The purpose of an EIAR is to present the findings of the assessment into the likely significant environmental affects of the development and in the specific EIAR for this development, it: documents the likely environmental impacts of the development, present an assessment of the significance of these impacts upon the environment and describes the mitigation measures that are proposed to avoid or reduce any identified impacts, and, where appropriate, achieve environmental enhancement.

As a result, the EIAR is intended to enable stakeholders and decision makers to understand the nature of the development and to evaluate the likely significant effects and therefore serves to inform the decision-making process and to present information in a readily accessible form. Included within the EIAR’s structure is a section of technical chapters in relation to the proposed development and in this essay, I will be critically evaluating the processes utilised in ‘Technical Chapter 4 – Noise and Vibration’ of the EIAR and will discuss whether the EIAR process is sufficient to address environmental sustainability.

**Evaluation**

‘Technical Chapter 4 – Noise and vibration’ presents an assessment of the effects of the development on noise and vibration in the surrounding environment in which they have assessed the potential effects of noise and vibration at existing sensitive receptors in relation to the construction and operation of the development as well as the potential effects of noise from existing and future sources in relation to new sensitive receptors that will be introduced as part of the development. As revealed in the document, Dan Doherty MIOA was responsible for preparing this specific chapter and is shown to be a suitable choice has shown to have comprehensive experience in the environmental assessment of noise and vibration and has worked on a wide variety of noise impact assessments for planning and is said to have over thirteen years of practical experience working in acoustics, sound and vibration.

When producing this chapter for the EIAR, various forms of policy and guidance was followed and taken into account in relation to the potential effects of noise and vibration in the surrounding area. National Planning Framework 3 was used, which brings together Scotland’s plans and strategies in economic development, environment, climate change etc and how the country should evolve over the next two or three decades. This framework is helpful as it helps by informing on the current and future policies in relation to this development and it also helps with investment decisions, however it has no specific noise criteria within the document.

Planning Advice Note 1/2011 was a form a guidance documentation used in this EIAR and it provides useful guidance on how the planning system helps to prevent and limit the adverse effects of noise. It also gives valuable knowledge of the principles of good acoustic design and location of a new development in relation to noise pollution.

Planning Advice Note 1/2012 was also used and provided Sweco with relevant issues for noise pollution for their proposed development with issues such as: the type of development and likelihood of significant noise impact, sensitivity of the location, existing noise level and likely change in noise levels and possible dose-response relationships involving noise and those that are exposed to it.

Further information and advice on noise impact assessment methods was obtained by Sweco in the Technical Advice Note (TAN) ‘Assessment of Noise’ where useful and relevant details of legislation, technical standards and codes of practice for specific noise issues were read and taken into account for this development as well as being provided with guidelines as to what appropriate forms of methodology are for noise pollution as well as guidance in relation to mitigation measures for noise. By using TAN as a form of guidance, Sweco were also able to carry out effective quantitative and qualitative assessments in relation to the development, where the quantitative assessment successfully identified the impacts and significance of the noise pollution and the qualitative assessment was able to provide additional information to support the quantitative assessment used.

Sweco followed The Strategic Development Plan (SDP) for Edinburgh and South East Scotland (June 2013) and Midlothian Local Development Plan (November 2017) as forms of regional and local planning policy and were suitable choices as they set the strategic policy framework and development strategy for growth and environmental protection of the area chosen for development up until 2032 as well as the development strategy for Midlothian for the next 10 years.

For standards and guidance, British standard 5228 was one standard used and it provided an effective method for measuring and predicting noise from construction works, in which the method considers the noise emission level of the construction activity, the distance between the source and receiver and the effect of any intervening topography and structures. Due to the guidance received from TAN, is was also advised to use British Standard 4142 as it gave the suggested application of this standard to recreational sound such as that from the new attractions within the proposed development. World Health Organization (WHO) Guidelines and British Standard 8223 were also used and they provided appropriate standards and guidance involving health effects of community noise as well as guidance on sound insulation and noise reduction for buildings.

For guidance on road traffic noise, The Technical memorandum Calculation of Road Traffic Noise 1998 (CRTN) was used as it sets out the UK standard methods to predict and measure road traffic noise and was effective in examining the effects of additional traffic generated by the development.

Sweco undertook an environmental noise survey for this proposed development and they used suitable noise measurement equipment that was configured to log sound pressure level in each octave frequency band every 125ms. They took short term attended measurements during the daytime and this proved to supplement the measurements gathered at the long-term measurement locations and they were also able to observe existing noise climate. They also observed prevailing weather conditions during the attended measurements to ensure the reader was appropriately informed of the weather that was occurring during the measurements. They ensured accurate readings by calibrating each meter in a UK accredited laboratory within the previous 24 months as well as having the calibration levels checked at the start and end of the survey using field calibrators.

**Discussion**

Upon reviewing the policy and legislation followed by Sweco in relation to their EIAR of Destination Hillend, it showed that they used and followed the relevant and applicable legislation relevant to the development as they stated that The Control of Pollution Act 1974, which covers a pollution including both noise and vibration was followed as well as The Environmental Protection Act 1990 which empowers local authorities to issue a noise abatement notice where a noise nuisance can be proven. In relation to both national and regional planning policy, the company proved to also make sufficient decisions when aiming to achieve environmental sustainability with regards to the development as policy and guidance such as NPA 3, PAN 1/2011, TAN was used as well as The Strategic Development Plan for Edinburgh and South East Scotland and The Midlothian Local Development Plan. All relevant and mandatory guidance and standards were also met in this EIAR for the development, including: national guidance, assessment of noise and vibration from construction/road traffic/new attractions, assessment of the effects of noise affecting residential receptors etc.

In terms of the assumptions and limitations outlined in the EIAR, it is said that there is an uncertainty in predicting the future noise environment and as such, a precautionary approach was forced to be taken. In relation to construction it is assumed that no percussive piling is required for the development and that construction traffic movements on the local road network will be minimal and restricted to daytime hours only. For operation, it is a assumed that there will be no activity during the hours of 11pm - 7am and that noise activity from inside the buildings will be insignificant due to the minimal noise break out design of the building envelope. It is also assumed that the main source of potential noise pollution will occur on more thrill-seeking rides/activities (e.g. Alpine coaster and zipline) due to the shouting and screaming of participants, which can potentially reach a sound pressure level of 90dB. For the measured baseline noise levels, it is suggested that Access Road/A702 will receive the loudest prevailing noise levels due to the proposed development, in comparison to the other sites measured being: Swanton Village and Calderstones.

The report outlines the potential temporary and permanent significant effects that may arise from the development and for potential effects due to the construction of the development, there will be effects due to noise and vibration from construction activities which includes demolition and earthworks and effects due to noise and vibration from construction traffic on the local road network. The noise and vibration levels are attenuated by distance from the source and the greater the distance between the source and the receptor, the lower the noise and vibration of that receptor. Obstructing the transmission and passage of the noise can be aided by the buildings and other intervening structures in between the source and the receptor. It is showed that overall, the construction noise impact and significance will be negligible and insignificant for areas in and around the proposed development.

The potential permanent effects due to the operation of the development are: effects due to changes in road traffic noise on the local road network due to traffic induced by the development, effects due to noise from the operation of the new attractions and effects due to noise from the operation of fixed building services plant associated with the new or amended buildings. In relation to the various receptors of the development (Swanston Village, Calderstones, properties adjacent to A702 and east of development and south properties near A702), it is shown in the report that during the peak operational hours of the new development, the sound levels absorbed by these receptors will not pass a level of 55dB of sound with the average sound level being at around 47dB for the receptors during the day.

The potential effects due to changes in noise at nearby residential receptors include sleep disturbance, adverse health effects from long term noise exposure, interference with activities and speech communication and annoyance and loss of amenity. The potential effects of the noise at the new sensitive receptors of the development are the same as listed above, however, these adverse effects can be avoided through good acoustic design of the development.

The effects of operational road traffic in relation to the development has shown to be mostly insignificant with regards to the noise generated by road traffic, the Hillend Development access road is the only link that has been labelled as having substantial adverse effects due to the development.

The TAN assessment with consideration of all operational noise sources suggests that at daytime there will only potentially be a slight change in effect significance due to the new development apart for at the proposed hotel where it will be deemed as a moderate change in effect significance and at night time all the receptors will be at a slight or neutral change in effect significance due to the new development. The TAN assessment also concluded that for proposals where significance of effects are slight, effects may be raised but are unlikely to be of importance in the decision making process and no mitigation beyond standard best practicable measures of noise control are required as part of the proposal.

For combined and cumulative effects, the report has shown that there is in fact no significant combined effects related to noise and vibration anticipated as a result of the proposals and for residual effects, the external noise climate is considered to be of low risk and the site is acceptable for the proposed residential accommodation from a noise perspective and that overall, no significant residual effects for noise and vibration are anticipated as a result of the development.

**References**

Jha-Thakur, Fischer. (2016). 25 Years of the UK EIA System: Strenghts, Weaknesses, opportunites and threats. Environmental Impact Assessment Review. 1 (1), p1-8.

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