1 <u>INTRODUCTION AND BACKGROUND TO REPORT</u>

1.1 INTRODUCTION

This document provides a response to the Third Party Submissions made by various parties on the response Jennings O'Donovan submitted (the Submissions Response Document) in response to the submissions received on the Strategic Infrastructure Development Application Reference ABP-317560-23 made to An Bord Pleanála by Mercury Renewables (Carrowleagh) Limited, for the construction of a wind farm and hydrogen plant and related works. This document addresses the submissions received individually. The responses on behalf of the Applicant are in blue while submission text is in black.

Some personal information, such as individual's health details, was included in these submissions, this has been blanked out where it has been deemed appropriate.

2 FORMAL SUBSTITUTION OF FIGURES

In the intervening period since the application was submitted, it has become apparent that a minor error in the location of two derelict and disused house locations was made in Figure 1.3; Hydrogen Plant Site House Locations and in Figure 11.9; Noise Contour Map for Hydrogen Plant.

House numbers HH10 and HH13 have been mapped in error approximately 500m west of their correct location. This does not affect the technical assessments. These are both derelict houses and the corrected locations are further from the Hydrogen Plant than the location assessed in Chapter 11 Noise. The noise impacts would therefore be expected to be slightly lower than those identified. The derelict house locations are both well outside the noise contours.

- HH10 was mapped as 600m to the southwest of the Hydrogen Plant, the correct location is 610m to the southeast of the Hydrogen Plant.
- HH13 was mapped 680m to the southwest of the Hydrogen Plant, the correct location is 830m to the southeast of the Hydrogen Plant.

For the avoidance of doubt Figure 1.3 and Figure 11.9 of the EIAR has been updated to include the corrected location of these two derelict houses.

3.17 THERESA AND PADRAIC MORRELL

Re: ABP -317560-2324

Proposed windfarm development including 13 no. wind turbines in Bunnyconnellan, Co. Mayo and hydrogen plant in Castleconnor, Co. Sligo.

To Whom It May Concern:

Thank you for sending us the Jennings O'Donovan Consulting engineers' response to third party submissions and observations, planning application, reference Re: ABP - 317560-23

Our house is HH15 on Figure 1.3 of the EIAR. We were not invited to any meetings organised by Mercury Renewables. We received the May 2022 and September 2022 newsletters. We did not receive any other correspondence from Mercury Renewables. We were not invited to the Hydrogen Plant Neighbours meeting in Muddy Burns on 25th May 2023 referred to on p53 response document.

Response:

The Newsletters were sent by Mercury Renewables and included contact details and an invitation to attend the Public Information Days – these were meetings organised by the Developer. Details of the consultations undertaken were outlined in Section 4.1 of the Response to Submissions.

The PACC report in Appendix 1.3 of the EIAR states;

"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant were invited to an informal meeting. Two individuals attended the evening."

There was no profile erected for the Hydrogen Plant buildings, and the virtual wireframe montage does not clearly represent the proposed development or topography. The scale of the building on the video on mercuryrenewables.ie/hydrogen is very misleading.

Response;

Queries regarding the Hydrogen Plant buildings visual representation in the montages is addressed in Section 4.10 of the Submissions Response Document. The video on the mercury website is not meant to be interpreted as to scale. The Planning Drawings submitted with the application show the scale.

I am concerned that no design report was submitted for the junction N59 / L66121. This was cited by the TII and referred to on p49 of the response document. The applicant stated that the design of the N59 L66121 has been carried out. However this was not the case.

Response;

The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix A; N59 / L66121 Priority Junction Design Report.

The applicant has only specified vehicles, transporting hydrogen, in relation to the quantity of hydrogen on board. It is their working assumption that lorries used will carry 1200kg of hydrogen. There are no specifications of the weight of these lorries loaded with cylinders of hydrogen. There are no dimensions given for these lorries.

Response;

Queries related to tube trailers and volumes were addressed in Section 4.2.2 of the Submissions Response Document. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube Trailers are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

There is no road safety audit for these vehicles on the L66121 or N59.

Response;

This was addressed in Section 4.6.2 of the Submissions Response Document; The layout of the proposed junction is shown on Drawing No. 6129-PL-121 included in the planning application drawings. The proposed junction has been subject to a Stage 1 road safety audit carried out by an independent audit team approved by the TII. The road safety audit report is included in Appendix 15.3 of the EIAR.

Traffic counts are based on this size vehicle only.

Response;

Traffic count methodology is described in Chapter 15 Traffic and Transport in Section 15.3.5. these were not limited to large vehicles.

These vehicles are not common and it cannot be assumed that they will be generally available and certified for use in Ireland/Europe, before the hydrogen plant could be operational.

Response;

This was addressed in Section 4.2.2 of the Submissions Response Document.



The working assumption is that the lorries holding 384kg will be used until such time as larger lorries will be available. In the case of these lorries 176 lorry movements will take place when the site is in full operation from the L66121 to the N59.

Response;

176 movements is not correct, queries over the number of traffic movements associated with the operational phase of the Development is outlined in Section 4.2.2 of the Submissions Response. 🨓

No specifications re weight, or dimensions have been estimated for these either.

Response;

Queries related to tube trailers and volumes were addressed in Section 4.2.2 of the Submissions Response Document. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube trailers are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

I am concerned as this traffic will make the N59 more dangerous for us exiting and entering our property from the N59

Response;

A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. Section 4.6 of the Submissions Response addresses the queries stated above in relation to the N59.

Concerns re devaluation of property were ignored by the applicant. There is no reference of this fact, when we query insurance in the future. Should any accident happen on site, it is an assumption that insurance prices may increase, or it may become impossible to get a quotation.

Response;

Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter.

Meetings and discussions by the Developer with insurance brokers regarding placement of private insurance on residences near the Hydrogen Plant, have indicated there is no evidence to

suggest that the location of the Hydrogen Plant will impact the ability for local residents to obtain insurance at normal market rates. Furthermore, the Developer has spoken with residents near Ballina Beverages, an Upper Tier COMAH site (note the Hydrogen Plant will be designated a Lower Tier COMAH site) and the presence of the Ballina Beverages facility has not impacted those residents' ability to obtain home insurance at normal market rates.

We are still concerned that the abstraction of water as we are avid gardeners

Response;

Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document =

We are concerned for the wildlife in the area as we feel there could be a potential water loss in the Brusna and Dooeighney rivers.

Response;

This was addressed in Section 4.5.1 of the Submissions Response Document.



Since the Dooeighney river passes close to our house, we are still not clear as to how the water storage or amounts of discharge will affect the groundwater in the area.

Response;

This was addressed in Section 4.5.1 and Section 4.5.3 of the Submissions Response Document.

I am worried that the applicant also plans to use mains water when short of water on site. In the event of a water shortage, all customers will be required to reduce usage so we cannot understand how Mercury Renewables could be allowed to use water for hydrogen when drinking water for the population potentially could be reduced.

Response;

This was addressed in Section 4.5.2 of the Submissions Response Document.



We use a telescope and enjoy viewing the night sky. We are concerned that there will be light pollution that will hinder this for us.

Response;

This was addressed in Section 4.13.2 of the Submissions Response Document.



Market for Hydrogen: See attached file.

Response:

Queries regarding the demand for hydrogen in Ireland were addressed in Section 4.2.4 of the Submissions Response Document.

Dust. The applicant has admitted that there will be dust during the construction phase. We have health issues and are very concerned about this.

Response;

This was addressed in section 4.7 of the Submissions Response Document.

Figure 1.3 in the EIAR shows Hydrogen plant site house locations. This is referred to in the Noise and Vibration chapter 11 of the EIAR. However, due to inaccuracies re houses Hh10 and HH13 detailed in this chapter, (which don't exist) I fear that other information in this chapter may also be incorrect.

Response;

House maps were prepared using Ordinance Survey maps, arial photography, a house survey based on Eircodes and periodic and repeated planning searches for new developments with planning permission. Section 2 of this report substitutes 2 Figures of the EIAR due to a minor error in the location of HH10 and HH13. The amended figure identifies these houses as the unused houses mentioned above.

- The correct location of HH10 is 610m from the Hydrogen Plant (compared to 600m in Figure 1.3).
- The correct location of HH13 is 830m from the Hydrogen Plant (compared to 680m in Figure 1.3).

These are both derelict and disused properties without Eircodes.

The distance and location corrections do not significantly change the impacts addressed in the noise assessment in Chapter 11 or any other technical assessments.

These properties are outside any noise contours. The difference between the location assessed and the correct location is minimal, the correct locations are both further from the location assessed and therefore the noise impacts would be lower.

Hydrogen Production/Demand: See attached file. Hydrogen Plant Operating Noise: See attached file. Finances/Funding: See attached file.

Response;

Queries regarding the demand for hydrogen in Ireland were addressed in Section 4.2.4 of the Submissions Response Document.

This area of Co. Sligo is not zoned for industry.



Response;

This was addressed in Section 4.12.1 of the Submissions Response Document.

We request that An Bord Pleanála holds an oral hearing in relation to this planning application.

Response;

An Oral Hearing has been organised by the Board.

Please acknowledge receipt of this correspondence.

P. and T. Morrell.

Hydrogen Production/Demand

P.65.66

Hydrogen has less energy per unit than Jet-A1 fuel.

The use of Hydrogen in commercial aviation is a long way off. Protocols processes and procedures have yet to be developed for this sector and safety is a huge issue. Maritime applications are also years away.

Just to be clear the timeline of 2024-20226 is to develop a road map to bring net zero dispatchable power solutions to market by 2030. It does not mean that there is a guaranteed market for the product even then.

Response;

This was addressed in Section 4.2.4 and in the Section on Ireland National Hydrogen Strategy in Section 2.1 of the Submissions Response Document.

If Eir Grid is unable to accept the Wind Farm output and the surplus energy is diverted to the Hydrogen Plant, what is the Applicant going to do with all his Hydrogen until that point? He cannot store more than a day's output so would have to remove it off site to a storage area which itself will have a capacity limitation. Either that or shut down the Wind Farm temporarily. This does not make business sense, so where the financial data is to justify the investment.

Statement implies that some of the time, some of the wind farm energy will be diverted to the EirGrid to satisfy demand. Other times, some of? Will be diverted to the hydrogen plant so that the Wind Farm is not idle. The Applicant does not advise how this very complex procedure is to be managed ie., The Hydrogen Plant will receive variable amounts of energy throughout the day and its various electrolysers will have to be shut down/started up as required. Is this technically feasible?

Response;

Queries in relation to Hydrogen Demand in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need for the Development. As per Chapter 2; Project Description, the Hydrogen Plant will be scaled up to meet demand. This was also stated in the Submissions Response Document, Section 4.7.1.2. The Hydrogen Plant will be designed, constructed and operated in line with the requirements set out by COMAH Regulations, including 24/7 monitoring. The maximum onsite storage of hydrogen (approximately 40.128 tonnes) classifies the Hydrogen Plant as a 'Lowertier' COMAH site as this is below 50 tonnes.

The use of intermittent renewable energy to power hydrogen electrolysis is at the heart of the EU RED III definition of what constitutes green hydrogen. Hydrogen production facilities around the world are already in operation utilising renewable energy, verifying the technical feasibility of the proposal.

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The Applicant seems to be advising that there is still a restriction in the EirGrid network? If so, there are no stated plans in the application to increase this capacity.

Response;

Plans to upgrade the national grid are beyond the control of the Applicant.



The Applicant advised that hydrogen fuel cells could be a potential market for his product. However, different applications demand different purities of hydrogen. The Applicant states the hydrogen produced will be 99.9% pure, this is a meaningless figure as different applications can tolerate differing types of, and differing levels of, impurities, all of which can have different consequences.

Response;



In Chapter 2 Table 2.4 the Applicant has made no reference to ISO 14687-2019. "Hydrogen fuel quality Product specification" which sets out impurity levels for different applications. E.g. boilers that burn hydrogen will generally tolerate higher concentrations of impurities than a road vehicle that uses a polymer electrolyte membrane fuel cell (PEMFC)

Response;

Table 2.4; Firlough Green Hydrogen Project Relevant Standards and Code Practice. Is not an exhaustive list and does not include all standards related to hydrogen.

The Applicant states that HGV's which will carry away the hydrogen tubes will be supplied and manned locally and expects the vehicles to use fuel cell technology fed from the output of Hydrogen Plant (when available- otherwise diesel HGV's will be used) Fuel-cell technology for HGN's is not mature. If Polymer electrolyte membrane fuel cell (PEMFC) technologies will be used they will require high-purity hydrogen, yet other anticipated markets such as industrial/domestic boilers or high-heat applications do not need such a high grade. The Applicant continuously quotes the mantra that Ireland has to produce more zero-emission products to meet Net Zero but this is not backed in the Application by the science of hydrogen production.,

Response;

Queries in relation to Hydrogen Demand and uses in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need for the Development. Ireland has released its National Hydrogen Strategy which provides further clarification on the demand pathways for hydrogen in Ireland. As outlined in Section 2.1 of the Submissions Response Document.

Finances/Funding

It has not been possible to find a funding statement in the Planning Statement or Environmental Impact Assessment. This is a concern, for the Applicant has not carried out, or is not willing to divulge, a complete analysis of costs and profitability.

There is no sensitivity analysis to determine the project's vulnerability to volatilities in for example:

- - 1. Demand for hydrogen
 - 2. Comparative costs of hydrogen generation compared to other sources
 - Feed-in tariffs to EirGrid
 - Material costs
 - Currency exchange rate fluctuations

There is no detail of capital recovery, renewal costs (e.g. electrolysers etc.) nor potential profit or loss assessment.

Response;

The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development, and a funding statement is not required.

The Applicant has spent a lot of money in submitting the original Planning Application in 2013 (without actually building anything!) and has spent even more money in the current Application.

Response;

As per Chapter 1; Introduction of the EIAR; Planning permission was granted on the 1st of August 2013 for the construction of 21 wind turbines under An Bord Pleanála Reference PL16.241592. Mercury is pursuing a re-permitting strategy following **delays in securing a grid connection** to reflect recent advancements in wind turbine technology and the emergence of green hydrogen as a significant component in the decarbonisation of our economy. The Project is a private development and the financial information which is not required to be made publicly available.

Chapter 1. Paragraph 1.10.5 also states — without a financial analysis:

Annual rates of between €650,000 — €780,000 payable to Mayo County Council over the Wind Farms 40 years of operation

Annual rates to Sligo County Council over the operational life of the Hydrogen Plant. Are these costs included in the €200 million?

Without a financial statement, we will never know, and that is why this project should never get the go-ahead. The Applicant has not provided any financial breakdown so clearly he is either incompetent or is hiding something......

Response;

The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development and a funding statement is not required.

Community Benefit:

Chapter 1 paragraph 1.10.5 states "Establishing a community benefit fund of €500,000 per annum for the first 15 years of operation that will be administered by a management committee.

As identified in Section 2.3 the Applicant does not demonstrate how he could generate enough profit to be able to put €500,000 per annum into a community fund, local

communities or shorities. Without a detailed financial analysis this sould appear as an

communities or charities. Without a detailed financial analysis this could appear as an inducement, purely to undermine opposition to the Applicants proposals.

Response;

This figure is based on renewable energy generation projections and modelling.

Furthermore, in Chapter 2 paragraph 2.10 the Applicant 'clarifies' by stating: The project has the potential (our emphasis) to make more than €500,000 available per annum in the local area for community funding for RESS period, consistent with Government Policy.

However, the above figure is indicative only and will be dependent on the generation capacity of the wind farm which is influenced by a number of factors including:

- Number and type of wind turbines permitted
- 2. Capacity and availability of energy production of the delivered turbines
- 3. Quantity of wind and wind conditions in any given year.
- 4. Timing of the electrolyser module phasing to full capacity as the hydrogen market grows

In other words, the windfall is not guaranteed, and the Applicant has introduced a new dependency — the full capacity of the Hydrogen plant. If capacity is not achieved the Applicant may not be liable to distribute funds. **Potential get-out clause**

The Applicant must be made to provide more concrete assurances that can be secured in any future permission

The absence of a detailed financial analysis would indicate that this is not a serious submission. Any investor worth the title would walk away from such a proposal as it stands.

Finally, the source of funding could be an issue, should the end result be the export of significant profits to unfriendly jurisdictions.

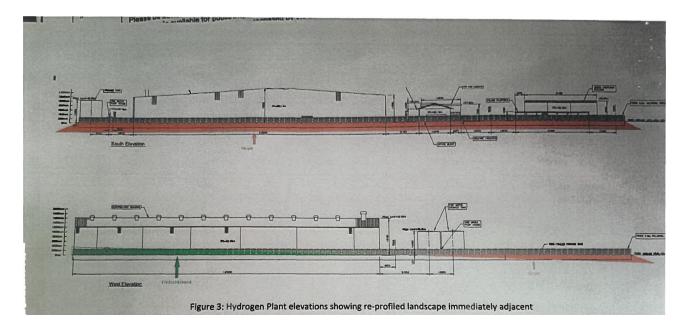
Response;

The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development and a funding statement is not required.

Hydrogen Plant Operating Noise

15.1 Chapter 11 paragraph 11.27.42 states: "The noise model accounts for the topography of the existing and proposed land in the vicinity of the site, where it is proposed that the Proposed Development will sit at a lower ground level in comparison to the existing land, where the raised land surrounding the site effectively acts as a barrier. "This is clearly untrue. Drawing 41035-1000- G1000 shows that the site has to be re-profiled, and that the whole of the south elevation is located on a 5m high slope. On the west elevation. The electrolyser plant has a low embankment in front of it, ranging from 3m at its highest point to ground level at the other end of the electrolyser building.

From there, a gradual slope descends some 5m below the plant's finished ground level. 15.2 A rough sketch is shown in Figure 3 below. This is not to scale. 15.3 Compared to the height of the electrolyser building, the low embankment (shown in green) will provide little noise attenuation, whereas the 5m slope (shown in brown) will only exacerbate the noise issue particularly to the south. 15.4 Chapter 11 Table 11.26 provides the output sound power level for site components and Figure 11.9 provides noise contours - presumably dBL Aeq ,24h because the plant will run continuously).



Response;

Note the above figure was part of the submission from Theresa and Padraic Morrell.

The Planning Drawings submitted with the application include the correct finished floor levels. These were used to inform the technical assessments.

The Applicant does not state how these contours have been modelled.

Response;

A Noise assessment was carried out and is detailed in Chapter 11; Noise and Vibration. This includes detailed explanation of the noise contour map and how the contours were modelled.

- 15.5 Mitigation measures are set out in Chapter 11.27.4.4 but are lacking in detail see paragraphs below.
- 15.6 The metal-clad Electrolyser building will be fitted with insulation that according to the Applicant -has a 'minimum RW 3 of 35dB. However, this is a building some 130m long and 110m deep and 16m high that will contain equipment with an output noise level of 83dBA.

Given that it has doors, there are vents in the roof, and given that this is a metal cladbuilding with resonance potential, how can the Applicant be sure that 3SdB attenuation will be achieved?

15.7 The noise contour for the Electrolyser building is shown as 40dB yet with perfect insulation and no resonance, this figure should be 83-35 = 48dBA !15.8

Response;

As per Table 11.23 of Chapter 11; Noise in the EIAR, – 83dB is an internal sound pressure level. The noise modelling assumes that 83 dB is the internal noise level which acts on all points of the internal building – this is a very conservative assessment. The sound insulation of the façade can be calculated, any vents or openings in the building are incorporated into the model as openings and considered in the predicted noise levels.

The internal sound pressure level is 83dB, the reduction from the façade is 35dB, this is relied upon to calculate the sound power level per square meter of the external building façade. This is the methodology relied upon in noise modelling.

The calculation as presented above in submission (83-35=48dB(A)), would not be applicable to show the external noise level as presented by the noise contour levels.

Fin-fan coolers produce 102dBA and the Applicant advises that they have an enclosure that attenuates by 12dB, giving a total of 90dB. Yet the highest noise contour shown on Figure 11.9 is 70dBA. The figure of 102dBA is similar to the noise output of a wind turbine yet if one studies Figure 11.2 (Wind Turbine Noise Contour Map) the noise contours are much more spread out with the best part of half a kilometer between the 45dB and 40dB contours. There appears to be an anomaly in the way these contour maps are modelled.

Response;

There are a lot of differences in how the models are set-up, depending on the standards you are seeking to comply with:

The source noise for wind turbines are at the hub height of the turbine, which means the attenuation is primarily due to distance and there are inherent conservatisms built into the noise calculations of wind turbine noise as required by the IoA GPG. In addition, the source of the noise i.e. the wind turbines, is spread out over a larger area and the contour levels from the turbines are set at a height of 4m (as required by the standards)

The fans are located much closer to the ground and much closer together, so in addition to the reduction due to the enclosure, the noise level is impacted by barrier and ground attenuation from the other structures in the model, with the contour lines set at a height of 1.5m from the ground.

As noted the highest contour line for the hydrogen model is 70dB, but for the wind farm it is on a scale that starts at 50dB.

15.9 Added to the Electrolyser building noise and the Fin fans, are the Compressors (60dBA =85dBA-25dB)., Transformer (88dBA), Water Treatment Pumps (85dBA) and Other Pumps, Fans etc. (85dBA). All this adds up to a considerable noise profile which Figure 11.9 does not fairly represent.

Response;

The noise assessment in Chapter 11 of the EIAR assumes all components are on all the time, with the number of units based on the site layout. This query was also addressed in Section 4.11 of the Submissions Response Document.

15.10 The palisade fence around the Plant is 2.4m high (compared to the electrolyser building at 16m) and is not an acoustic barrier therefore has little impact on noise emissions.

Response;

This is correct and a palisade fence was not relied upon to provide any sound reduction.

15.11 Consequently, Chapter 11 Table 11.26 Predicted Noise Level. Figures are not credible.

Response;

The noise assessment for the EIAR was completed by Brendan O'Reilly of Noise and Vibration Consultants Ltd and Shane Carr of Irwin Carr Ltd. Two highly qualified individuals who's statement of authority is included in Chapter 11 Section 11.1.1.

15.12 Chapter 11 Paragraph 11.27.4.6 states that "The level of ground vibration from the 3 (acoustic reduction figure) operation of the Hydrogen Plant is below human threshold of 0.2 mm/s for the operation of the plant including trucking from same". There are no calculations to back up this claim, nor stated mitigation measures such as antivibration (AV) mounts for equipment.

Response;

The paragraphs above the exert of text in the statement above explains exactly how this conclusion is reached. The full text is located in Chapter 11 Noise, Section 11.27.4.6.

Vibration is also dependent upon the construction of the concrete slabs and building.

There should be a formal system put in place as part of any permission stating exactly what the noise limits are, how they are monitored, how complaints are handled and what remedy/fines can be applied. It is a concern generally that there is so little proposed governance and over sight of this project during operational phase.

Response;

Queries regarding vibration at the Hydrogen Plant are addressed in Section 4.11 of the Submissions Response Document. This included how complaints are to be handled and reviewing noise during construction. Any Planning Conditions related to noise monitoring applied to the Project will be complied with.

