Appropriate Assessment – ERA review – Comments table

PA Reference no.: PA/06673/20

Project Title: To demolish existing building. It is proposed to construct Class 3A bungalows with pools for tourist accommodation, of the same area of existing building as per Rural Policy 6.2C including a car park.

Location: Garden of Eden, Triq il-Barrieri, Zurrieq.

Date: April 2022

No	Reference	ERA Comment/Request for clarification	Consultants' response/clarification (03 May 2022)	ERA Response (05 May 2022)
1	P44, para 5.7	Reference is made to the impacts from direct habitat loss. ERA notes that updated plans were uploaded by the Architect on EApps in January 2022 as per docs 874a-g, which slightly deviate from those included in the AA. In specific, the updated plans (notably doc 874a) indicate a relocation of the pool and associated hard landscaping of bungalow 12, as requested by ERA in its assessment (docs 871a-c). Kindly clarify whether such amendments reduce the significance of the impact assessed in para 5.7 and 5.9 (cumulative).	With the update to the plans, the loss in habitat 9320 is estimated to change from approximately 152 m^2 to a loss of 8 m^2. Thus, the approximate percetage loss in this habitat in the A of I changes from 2.5% to 0.1%. As a result, the assessment changes from a potential impact of minor significance to not significant. The cumulative impact described in paragraph 5.9 has also been assessed to be not significant in the context of the changes in plans. See Appendix for the latest Master Plan drawings.	Appendix and amended assessment results noted.
2	P46, para 5.12	This section addresses the impact from lighting on fauna, however both operational lighting and noise emissions were identified as sources of disturbance to fauna. Kindly identify and assess impacts from noise emissions on fauna.	The AA includes a quantitative assessment predicting the potential change in dB at a frequency below 5kHz. Apart from avifauna, other fauna of interest within the SAC, as mentioned in **Chapter 3** of the AA, include two species of butterfly (Lepidoptera), and the presence of various vertebrates is also considered likely (see **Table 4.2**). In terms of impacts, increased noise levels reduce the distance	Further information noted.

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			and area over which acoustic signals can be perceived by animals. Noise pollution has varying effects on diverse taxa. Documented impacts include changes in foraging and anti-predator behaviour, reproductive success, density and community structure in response to noise (Barber et al, 2010)[1]. Auditory function is currently documented in detail in relatively few invertebrate species, the ability to detect sound has evolved multiple times in insects alone, resulting in a diversity of auditory structures that can be found on nearly any segment of the body and with varying sensitivities. Figure 1 below, taken from Morley et al (2014)[2], illustrates at which frequency various invertebrate taxa are sensitive. Moreover, invertebrate species are known to produce sounds for a variety of reasons, in the same contexts as vertebrates. For example, Lepidoptera have been documented to produce sound in relation to predator avoidance. If these sounds are masked by significant anthropogenic noise, this could result in an impact on the population if more individuals are taken by predators because they could not detect warning signals. Since many invertebrates rely on communication at frequencies below 10kHz and are capable of hearing within the main frequency spectrum of much anthropogenic noise, they are vulnerable to anthropogenic noise pollution. However, strong conclusions about the impact of anthropogenic noise are often not possible because suitable controls are lacking. As a result, with the information available at this site, the potential impact related to noise each of the taxa (described below) is considered to be uncertain. However, baseline readings at a frequency below 5kHz (audible to Lepidoptera and other invertebrates, see Figure 1) were taken as part of the	

[1] Barber, J.R., Crooks, K.R., Fristrup, K.M. 2010. The costs of chronic noise exposure for terrestrial organisms. 25 (3). Trends in Ecology & Evolution.
[2] Morley, E.L., Jones, G., Radford, A.N. 2014. The importance of invertebrates when considering the impacts of anthropogenic noise. 281 (1776). Proc. Biol.Sci.

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			assessment on avifauna, as part of the AA, and predicted noise levels at these frequencies during both construction and operation were estimated at two locations, see **Figure 5.2** for predicted noise levels during construction and **Figure 5.3** for predicted noise levels during operation. Where the ambient levels (ranging from 22.5-31.5 dB) are exceeded, there is the potential for significant impacts i.e. during construction at the site (although this impact dissipates to not significant approximately 120 m away from the site), and during operation, where apart from impacts at the site, there could be significant impacts if amplified music is played, even approximately 120 m away from the site. It should be noted that this assessment, however, assumes that the predictions made at these frequencies are most relevant to allow a broad assessment to be made as provided here for the terrestrial faunal species considered relevant, in particular, the two species of Lepidoptera. Considering some of the other taxa that were identified as likely to be present in the Area of Influence, some reptile species are vocal, however, data is severely lacking with regards to how anthropogenic noise affects reptile social behaviours (Simmons & Narins, 2018)[3]. Slabbekoorn et al, 2018[4] state that the influence of noise exposure in terrestrial mammals ranges from overt trauma to cochlear structures, to nonauditory physiological effects, including outcomes associated with development and behaviour. Although most anthropogenic sounds are insufficiently intense or persistent to cause overt trauma to free-ranging terrestrial mammals, there have been studies showing that there hearing function could be affected.	

[3] Simmons, A.M., Narins, P. M. 2018. Effects of Anthropogenic Noise on Amphibians and Reptiles. 66. Springer Handbook of Auditory Research.

[4] Slabbekoorn, H. McGee, J, Walsh, E. J. 2018. Effects of Man-Made Sound on Terrestrial Mammals. In book: Effects of Anthropogenic Noise on Animals.

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			In summary, for the purposes of the assessment, it is assumed that the findings from the quantitative assessment carried out should be applied across taxa in terms of a precautionary approach, whereby it was identified that a significant increase in ambient noise will occur at the site during construction, which dissipates to not significant approximately 120m from the site. Operational noise could be potentially significant, even away from the site, if amplified music is played.	
3	P57-59, para 5.37 – 5.46	With reference to the impact significance criteria, there is no mention on how each significance level is likely to affect the integrity of the respective protected site(s). Kindly clarify for both construction and operational phases. Kindly provide the residual significance level for both phases, taking into consideration all mitigation measures that can be realistically implemented to offset the assessed impacts.	These significance criteria refer to noise levels that could affect avifauna populations, and are not related directly to site integrity, rather, population viability is of concern. It is difficult to predict with certainty the attenuation in construction noise levels, given the range of measures that can potentially and realistically be implemented to attenuate noise, including the scheduling and overlaps of the various activities and the choice and deployment of plant and equipment. Where there can be some certainty is in respect of the required adherence to the provisions of the *Environmental Management Construction Site Regulations* (S.L.552.09), as amended, which will include the enclosure of the site within a hoarding (of a solid, rigid material) to a height of at least 3 m. This solid barrier will have the effect of attenuating noise from the construction activity at all frequencies. The degree of the noise attenuation will be dependent on the height of the noise source (noise generating plant / machinery / activity) relative to the height of a hoarding. As a working approximation, if there is a barrier between the noise source and the receptor, an approximate attenuation of 5 dB can be assumed	Noted. Further information noted.

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			when the top of the noise source is visible to the receptor over the barrier, and of 10 dB when the barrier completely hides the noise source from the receptor. Having regard to the assessment predictions for construction noise levels immediately on the boundary of the construction site (in the range of 56 – 75 dBA), the residual impact would remain of minor significance in both cases (51 – 70 dBA and 46 – 65 dBA, respectively) where the noise level would still exceed the natural ambient noise level (22.5 – 31.5 dBA). In respect of the operational noise impacts, the restriction on the playing of amplified music, as recommended, and which could be realistically implemented, could result in there being a reduction in the significance of the noise level at the site boundary from outdoor activity, from moderate to minor impact. Hence, the residual impact from the implementation of this mitigation measure would be minor.	
		With respect to construction-phase mitigation, the works should consider the life cycle/seasonality of the proximate seabird colonies and avoid the most sensitive periods of the year.	As described in the AA, both Calonectris diomedea and Puffinus yelkouan breed in the adjacent Natura 2000 site. Table 1 below illustrates the lifecycle of each of the species and when each stage happens per species during the year. Table 1 shows that between the two species, there is activity throughout the year. The fledging period is, however, considered to be particularly sensitive in terms of survival. Therefore, extra caution is required in June-July and in October.	Further information noted.
4	P59, para 5.46	With respect to mitigation measures, kindly clarify further what measures can be implemented on site to avoid noise impacts on the surrounding protected area during	In respect of construction noise, as mentioned, there will be mitigation of noise impacts through adherence to the provisions of the Environmental Management Construction Site Regulations	Further information noted.

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		the construction works and operations (e.g. type and location of noise barriers, establishment of silent zones during operations where no music (or other noisy) equipment will be installed / allowed, sound limiters during operations, etc.), notably in those parts of the site bordering the sensitive natural area (e.g. bungalow 10). It should be noted that based on the information provided to date, the proposal does not require an environmental permit for operations on site, hence the above measures should be detailed at this stage.	(S.L.552.09), as amended. This will include: • The enclosure of the construction site within a hoarding (of a solid, rigid material) of a height not less than 3 m (the likely implications of this in respect of attenuating noise are explained above); and • The restriction of construction activity to between after sunrise and before dusk, for example 8.00 to 16.30. The Regulations also address noise emissions by requiring that all equipment used on site has functional exhaust or muffler systems and through site management, to avoid unnecessary noise, such as by not leaving noisy machinery on when idle or having engines revving, and controlling shouting and the use of loud radios. Adherence to the *Work Place (Minimum Health and Safety Requirements for the Protection of Workers from Risks resulting from Exposure to noise) Regulations*, will also serve to reduce noise emissions from the construction site. Furthermore, and as recommended, the management of noise emissions during the entire construction period should be monitored and reported, serving to ensure that noise levels are in line with the Regulations. Finally, in respect of construction noise, the restriction of demolition and excavation activity during the period June to July and during October would serve to avoid significant impacts on the most sensitive period in the life cycle of the seabird colonies in the area. In respect of the operational noise impacts, the restriction on the	

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			playing of amplified music beyond what can be considered as background noise would serve to avoid impacts on fauna. Having regard to the ambient noise levels in the critical frequencies for communication in the vicinity of the site (22.5 – 31.5 dB), it might be reasonable to restrict the level of background music throughout the site to 55 dBA SPL, as measured at source. Finally, restricting the playing of any amplified music in the vicinity of Cabana 10 during the period June to July and October would serve to avoid significant impacts on the most sensitive period in the life cycle of the seabird colonies in the area.	
5	P61, para 5.49 – 5.50	ERA would appreciate the inclusion of a summary table, clearly indicating the residual level of all assessed impacts, when taking into consideration all mitigation measures identified, that can be realistically implemented. The AA Report should also provide a final overall conclusion for each protected site, on whether or not the proposal will adversely affect the integrity of the respective protected site.	All this information has been provided in the text, however a summary table is included below in **Table 2**. The report states that no major impacts were identified – these should be related to the significance criteria and thereby noted that integrity will not be majorly affected.	Summary table noted. Overall conclusion noted.
Environmental Permitting				
6		The Applicant is to be informed that in view of proposed interventions on protected trees and works within a protected site, an Environmental Permit is required. In this regard, a block plan in conventional colours showing trees to be intervened upon including their scientific name, and	The request will be passed on to the Applicant.	Noted.

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		interventions proposed, shall be required as part of the application process. Application forms can be found on https://eris.eraportal.org.mt/.		

Figure 1: Approximate hearing ranges of insect orders and noise spectrum of road traffic recorded at 15m. Noise spectra taken from Schaub et al as cited in Morley et al (2014). (Asterisk indicates that species sensitive to particle velocity are also included.

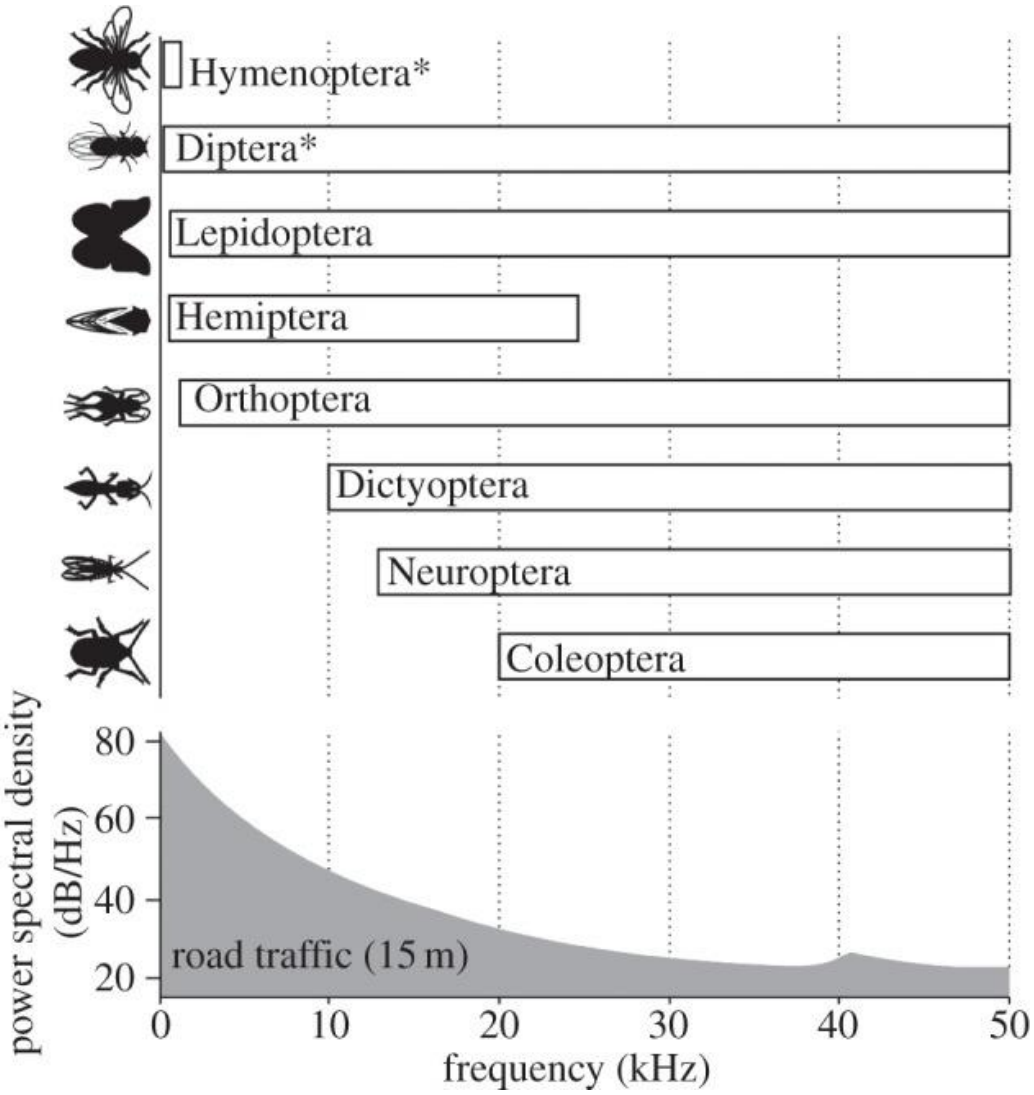


Table 1: Lifecycle stages during the year for *Calonectris diomedea* and *Puffinus yelkouan*

	Arrival at colonies	Egg laying	Hatching	Fledging
Puffinus yelkouan	mid October	early February	early May	midJune/early July
Calonectris diomedea	end February	end May	mid July	mid October

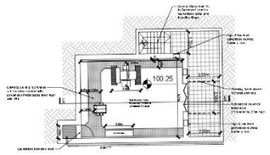
Table 2: Summary of impacts

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Direct habitat loss	Adverse	Constr'n	Local	Direct	L'term	Perm	Irrevers	Likely	Minor significance	Redesign to minimise habitat loss	Not significant
Disturbance and/or damage to habitats and wildlife during construction	Adverse	Constr'n	Local	Direct	S term	Temp	Revers	Likely	Minor to not significant	Good construction practices including cordoning off trees	Minor to not significanct depending on implementation of mitigation measures

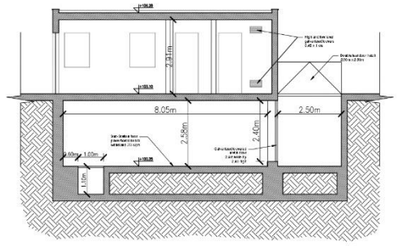
Risk of escapes of invasive species from new landscaping scheme	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Unlikely	Major (in absence of appropriate planning and mitigation)	Landscaping plan to be in accordance with MEPA Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (2002) – important to follow during site maintenance too.	Not significant
Disturbance to habitats and species populations of conservation significance from incresed numbers or trekkers/hikers	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Major to minor depending on extent of impact	Appropriate signage and information	Minor
Disturbance of Fauna	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Uncertain	Lighting plan in accordance with guidelines	Uncertain

Disturbance to avifauna: light	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Uncertain	Lighting plan in accordance with guidelines	Uncertain
Disturbance to avifauna: noise	Adverse	Constr'n	Local	Direct	L'term	Perm	Revers	Likely	Minor	Hoarding, screening effects of natural terrain and vegetation	Minor
Disturbance to avifauna: noise	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Moderate to Minor	Existing barriers	Minor

Appendix: Master Plan



F2296-A-P-003X2
PROPOSED LOCATION OF PLANT ROOM UNDER RECEPTION AREA
SCALE 1:200



F2296-A-P-003X
PROPOSED LOCATION OF RESERVOIRS UNDER CABANAS 8 & 9
SCALE 1:200

LEGEND :
- Proposed New Floor Level
- Site Boundary Line
- Existing Built Area Boundary Line
- Proposed Cabana Number
- Scheduled Area
- Roof Franks or Coraline pebble bedding
- Non-slip Hard Landscaping
- Natural Grass Landscaping
- Natural Herdstone Pathways
- Golf Cart for Servicing
- Plant Room/ Substation
- Parking Area
- Access for Disabled
- Land for Agricultural Use
- PV Panels
- Cesspit
- Water Reservoir

SCALE 1:500

SCALE 1:200

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General notes
1. This drawing is not to be scaled. All dimensions to be checked by the Contractor and are to be his responsibility.
2. Drawing, dimension errors and omissions are to be reported to the Architect immediately on discovery.
3. All dimensions are in millimetres.

Revisions

Rev	Description	Date/Initials	Rev	Description	Date/Initials
A	GENERAL	2020.11.18/JM	F	GENERAL	2021.07.19/JM
B	GENERAL	2020.12.18/JM	G	GRPD REQUIREMENTS	2022.01.26/ML
C	GENERAL	2021.02.19/JM	H	GRPD + ERA REQUIREMENTS	2022.04.12/ML
D	GENERAL	2021.03.08/JM			
E	GENERAL	2021.05.18/JM			

Project title: WIED BABU SANCTUARY
Drawing title: PROPOSED GROUND AND LEVEL -1 MASTERPLAN

Drawing no	Revision	Scale
F2296-A-P-003	H	1:500/1:200
Drawn: LF	Checked: RD	Date: 13/05/2020