



Terrestrial Ecology Impact Assessment for the Redevelopment of the Ex-Jerma Hotel Site

As per ERA requirements for PA/00437/23

Report



TERRESTRIAL ECOLOGY IMPACT ASSESSMENT

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1 INTRODUCTION

A terrestrial ecology impact assessment is presented in relation to the construction and operation of the ex-Jerma Hotel Site.

The proposed development, herein after referred to as the “Scheme” incorporates the demolition of the ex-Jerma Palace Hotel, excavation of the Site and construction of a mixed-use resort consisting of residential units (Class 1), tourism accommodation (Class 3B) 5-star hotel, retail (Class 4B) and food and beverage outlets (Class 4C and Class 4D), a below grade shopping mall (Class 4B), parking spaces, and open space available to the general public. The proposal consists of the construction of a two-storey basement below the landscaped public plaza and two eight storey blocks above the plaza, extensive landscaping works, repairs and changes to the existing coastal defences and the construction of a swimming pool on the existing concrete platform below the project.

The assessment has been required to provide a terrestrial component of the ecology impact assessment from the construction and operation of the Scheme in conjunction with the requirements of the Environment and Resources Authority (ERA), a separate ecology assessment in relation to avifauna has been provided as an additional chapter.

2 SITE DESCRIPTION

2.1 LOCATION

The geographical location of the Scheme lies in the south-eastern region of Malta, in Marsascala as shown in Figure 1 below.



FIGURE 1: SCHEME LOCATION

2.1.1 Current Site

Further to the above, the footprint of the Site associated with the Scheme is approximately 44,812m² (of which 17,570m² are proposed to be developed) and currently comprises the ex-Jerma Palace Hotel. Figure 2 shows the approximate developable area of the Site.



FIGURE 2: SITE RED LINE BOUNDARY

2.1.2 Surrounding Area

The Site is predominantly surrounded by Torri San Tumas and residential properties to the west and the Mediterranean Sea to the north, east and south.

2.1.3 The Scheme in Greater Detail

The Scheme incorporates the demolition of the ex-Jerma Palace Hotel, excavation of the Site and construction of a mixed-use resort consisting of 155 residential units (Class 1), tourism accommodation (Class 3B) consisting of 258 serviced apartments and a 134-room 5-star hotel, retail (Class 4B) and food and beverage outlets (Class 4C and Class 4D), a below grade shopping mall (Class 4B) and 594 parking spaces. The development has a total developable footprint of 17,570 m², 1,325 m² of the site shall be soft landscaped, 7,785 m² shall be hard landscaped, and the remaining 8,460 m² shall be occupied by the proposed new structures and facilities. The proposal consists of the construction of a two-storey basement below the landscaped public plaza and two eight storey blocks above the plaza, extensive landscaping works, repairs and changes to the existing coastal defences and the construction of a swimming pool on the existing concrete platform below the project.

To provide some context for this Chapter, the proposed Scheme layout for Level 0 is shown in Figure 3



FIGURE 3: PROPOSED SCHEME LAYOUT

3 METHODOLOGY

3.1 AREA OF INFLUENCE

The Area of Influence (AoI) for the terrestrial ecology study includes the footprint of the Scheme and the immediate surroundings of the proposed scheme as indicated in Figure 4. 100m was chosen as the maximum limit for the terrestrial buffer zone since it includes both the footprint of the development and the extents of unpredictable encroachments of the Scheme into the surrounding natural terrain during the construction and operation.



FIGURE 4: AREA OF INFLUENCE FOR TERRESTRIAL ECOLOGY

3.2 DESKTOP STUDY

This study describes the existing ecology present within the project footprint and surrounding areas. This information was then used to assess the impact of the proposed project on the area's ecology.

The Consultant first carried out a thorough literature review of readily available data and previous studies in the AOI. This included a review of the following sources:

- South Malta Local Plan, 2006
- SPED (Strategic Plan for the Environment and Development)
- FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS S.L. 549.44
- Previous environmental studies carried out in the same area (if available)
- TREES AND WOODLANDS PROTECTION REGULATIONS, 2018 (L.N. 258/18)

Following on from the desktop study, the Consultant conducted a broad-brush terrestrial survey within the AOI in May 2026. The Consultant recorded the vegetation assemblages encountered during the surveys. The baseline survey also included a survey of all species present within the site and buffer zone, including their scientific and vernacular name to identify species protected in line with the TREES AND WOODLANDS PROTECTION REGULATIONS (S.L.549.123) and the FLORA, FAUNA, AND NATURAL HABITATS PROTECTION REGULATIONS (S.L.549.44). Photographic evidence was collected during the field survey.

The report details the conservation status and ecological condition of the area and the state of health of its habitats, species and ecological features. All protected, endangered, rare, unique, endemic, high-quality, keystone, invasive/deleterious, or otherwise important species, habitats, ecological assemblages, and ecological conditions found in the area under study were also noted.

3.3 IMPACT ASSESSMENT

The Consultant evaluated the potential impacts arising from the construction and operation of the proposed Scheme on the local terrestrial and marine ecology. The potential impacts also provided a basis for comparison between the existing conditions and the new conditions established during the operation of the Scheme.

The following information, where available, has been provided for each of the identified impacts:

- Project phase (construction or operational phase)
- Policy importance
- Extent of effect (local, national or international)
- Duration (temporary or permanent)
- Type (beneficial or adverse)
- Severity (low, moderate, high)
- Reversibility (reversible or irreversible)
- Sensitivity of receptors (high, medium or low)
- Probability of occurrence (certain, likely, uncertain, unlikely or remote)
- Scope for mitigation or enhancement (very good, good or none)

Based on the above criteria, the Consultants assessed the significance level of each of the identified impacts. Different criteria were used for the different components of the study, as summarised in Table 1 to Table 10. Table 1: Duration of Impact Criterion Description.

TABLE 1: DURATION OF IMPACT CRITERION DESCRIPTION

DURATION OF IMPACT

Permanent	Impact would still be detectable following decommissioning of project
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DURATION OF IMPACT

Temporary	Impact would persist throughout the phase of project under consideration only
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TABLE 2: EXTENT OF IMPACT CRITERION DESCRIPTION

EXTENT OF IMPACT

Widespread	Impact is expected to affect in the entire area of study and/or may extend beyond the boundaries of direct intervention into adjacent areas
Localised	Impact is expected to affect receptors in the immediate vicinity of its source

TABLE 3: CONSEQUENCES OF IMPACT CRITERION DESCRIPTION

CONSEQUENCES OF IMPACT

Direct	Changes that result from the cause-effect consequences of interactions between the environment and project activities
Indirect	Changes that result from cause-effect consequences of interactions between the environment and direct impacts
Cumulative	The cumulative consequences of ecological impact refer to the gradual and long-term effects that result from the combined impact of various ecological disturbances or stressors on an ecosystem over time.

TABLE 4: EFFECT OF IMPACT CRITERION DESCRIPTION

EFFECT OF IMPACT

Adverse	A negative effect on the sustainability of the resource under consideration, which are distinguishable from background fluctuations
Beneficial	A positive effect on the sustainability of the resource under consideration, which are distinguishable from background fluctuations

TABLE 5: SEVERITY OF IMPACT CRITERION DESCRIPTION

SEVERITY OF IMPACT

Low	The magnitude of the impact is considered to be minimal
Moderate	The magnitude of the impact is considered to be significant
High	The magnitude of the impact is considered to be catastrophic

TABLE 6: REVERSIBILITY OF IMPACT CRITERION DESCRIPTION

REVERSIBILITY OF IMPACT

Reversible	The state of the resource is expected to return to baseline state following cessation of the source of impact
Irreversible	The state of the resource is not expected to return to baseline state following cessation of the source of impact

TABLE 7: SENSITIVITY OF RESOURCES TO IMPACT CRITERION DESCRIPTION

SENSITIVITY AND RESILIENCE OF RESOURCES TO IMPACT

High	The resource under consideration is highly susceptible to a detectable deviation from the background state and its general dynamics
Moderate	The resource under consideration is vulnerable but able to tolerate a degree of detectable deviation from the background state and its general dynamics
Low	The resource under consideration is highly tolerant to a detectable deviation from the background state and its general dynamics

TABLE 8: PROBABILITY OF IMPACT OCCURRING CRITERION DESCRIPTION

PROBABILITY OF IMPACT OCCURRING

Inevitable	Impact will occur irrespective of any mitigation measures taken
Likely	Impact may occur despite the implementation of mitigation measures

PROBABILITY OF IMPACT OCCURRING

Unlikely	Impact would only occur in cases of major mitigation failure
Remote	Impact would only occur in exceptional circumstances
Uncertain	Probability of impact cannot be predicted reliably due to missing information or unknown factors

TABLE 9: IMPACT SIGNIFICANCE CRITERION DESCRIPTION

IMPACT SIGNIFICANCE

Major	The effect on the existing state of the feature under consideration will lead to a high or large-scale change in its resilience
Moderate	The effect of the existing state of the feature under consideration will lead to an observable but contextually restricted change, which is sufficiently important for its long-term resilience
Minor	The effect on the existing state of the feature under consideration will lead to no, low or small-scale change that will not alter its resilience

TABLE 10: RESIDUAL IMPACT SIGNIFICANCE CRITERION DESCRIPTION

RESIDUAL IMPACT SIGNIFICANCE

Major	The effect on the existing state of the feature under consideration will lead to a high or large-scale change in its resilience after application of mitigation measures (if any) and impact cessation
Moderate	The effect of the existing state of the feature under consideration will lead to an observable but contextually restricted change, which is sufficiently important for its long-term resilience after application of mitigation measures (if any) and impact cessation
Minor	The effect on the existing state of the feature under consideration will lead to low or small-scale change that will not alter its resilience after application of mitigation measures (if any) and impact cessation

RESIDUAL IMPACT SIGNIFICANCE

Negligible	The effect on the existing state of the feature under consideration will lead to no significant change that will alter its resilience after application of mitigation measures (if any) and impact cessation
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The technical report includes:

- A comprehensive list of mitigation measures to prevent, minimise and offset significant adverse effects of the proposed development;
- A description and quantification of any residual impacts remaining after the implementation of the recommended mitigation measures; and
- A monitoring plan for all phases of the project (before, construction, operational and decommissioning), if deemed appropriate.

4 BASELINE STUDY

4.1 DESKTOP STUDY

4.1.1 Local Plans

The SOUTH MALTA LOCAL PLAN recommended several areas for scheduling as of Areas of Ecological Importance (AEI) & Sites of Scientific Importance (SMCO 03), such recommended sites fall within the proposed scheme. The areas recommended for AEIs and SSI scheduling are located on the foreshore of the Scheme as indicated in Figure 5.

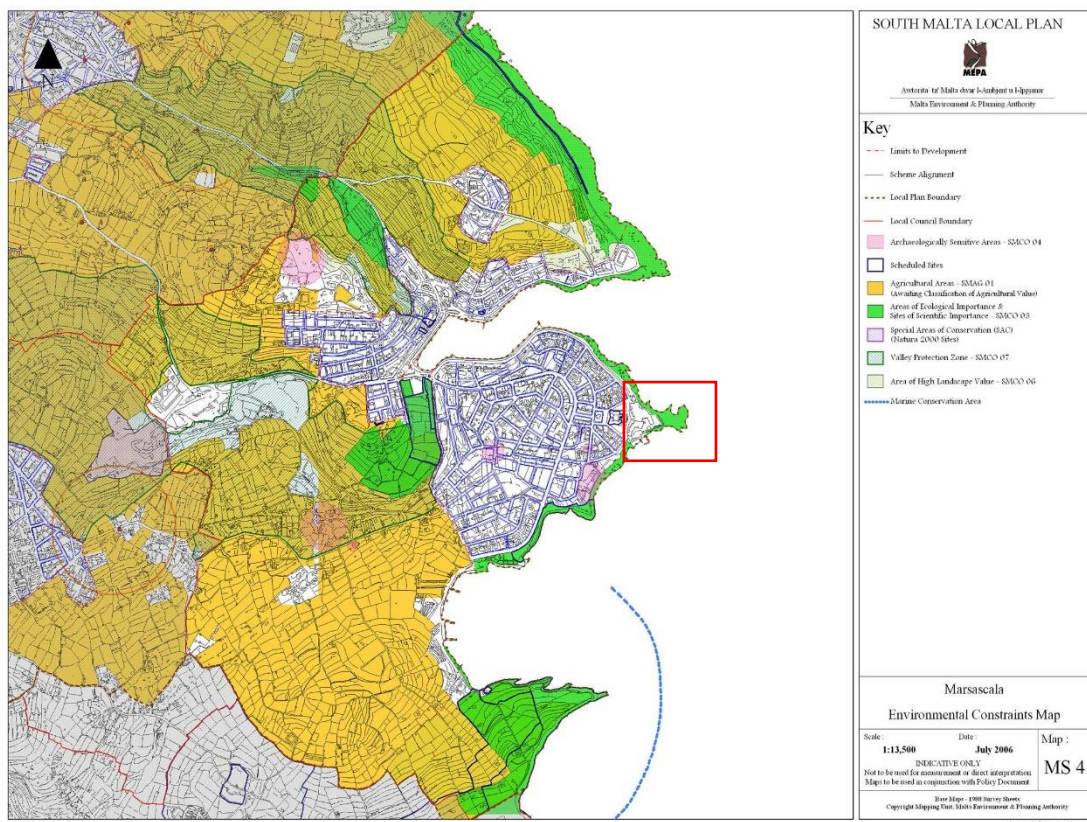


FIGURE 5: ENVIRONMENTAL CONSTRAINTS MAP FOR THE SOUTH MALTA LOCAL PLAN, RED BOX INDICATING GENERAL AREA OF PROPOSED SCHEME

Till this date, such areas have not yet been designated into such recommended scheduling.

4.1.2 The Strategic Plan for the Environment and Development (SPED)

The SPED issued by the Planning Authority in 2015, describes Malta's strategic vision on planning, environmental, economic and social matters to address overarching concepts of sustainable management of land and sea resources as well as the protection of the environment. A number of thematic objectives are directly applicable to the project and its effect on the biodiversity:

Socio-Economic Development, Thematic Objective 1: To manage the available potential space and environmental resources on land and sea sustainably to ensure that socio-economic development needs are met whilst protecting the environment and limiting land take up within the Rural Area by:

- Socio-economic development should ensure that rural areas are not exploited by uses which are not legitimate or necessary
- Socio-Economic Development, Thematic Objective 7: to promote the efficient use of resources including local stone, water and soil, and manage waste in a manner that safeguard natural processes, and minimises impacts on cultural heritage, landscape and human health by:
 - Supporting the implementation of the National Waste Management Plan and setting out site selection criteria for the location of waste to energy facilities
- Socio-Economic Development, Thematic Objective 8: To safeguard and enhance biodiversity, cultural heritage, geology and geomorphology by:
 - Controlling activities which might have an impact on areas, buildings, structures, sites, spaces and species with a general presumption against the demolition of scheduled and vernacular buildings

The development is at odds with the following SPED Objectives:

- Socio-Economic Development, Thematic Objective 7: to promote the efficient use of resources including local stone, water and soil, and manage waste in a manner that safeguard natural processes, and minimises impacts on cultural heritage, landscape and human health by:
 - Controlling the location of development to prevent soil sealing and erosion
 - Protecting agricultural land and gardens to prevent loss of soil and soil sealing

There are several justifications for this inconsistency. The centralisation of waste management in Malta brings about many operational advantages in terms of logistics and transportation. A centralised waste management system can counteract issues of economies of scale which would make multiple decentralised systems unfeasible.

Additionally, the grouping together of similar developments may reduce environmental impacts, as the take up of land and any other spill-over effects will affect only one location rather than being spread out across many areas in Malta. The proposed site for the TTF is adjacent to the existing Maghtab landfill, which has historically been significantly impacted by waste management of the past.

The proposed Thermal Treatment Facility will contribute to locate targets of Malta's Long-Term Waste Management Plan, by reducing the amount of unprocessed waste sent to landfill. The reduced pressure on landfilling will indirectly decrease the potential uptake of further land to accommodate future landfills.

4.1.3 S.L. 549.44 (repealing the FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS, 2006 [LN 311 of 2006])

This legislation establishes a National Ecological Network of special areas of conservation having National or International Importance. The Legal Notice transposes the obligations of the Habitats Directive which call for the establishment of a European Network of Special Areas of Conservation (Natura 2000) composed of sites having the natural habitat types and species listed in Annexes I and II to the Directive (listed under Schedule I and II of the same Legal Notice). Schedule III lists animal and plant species of community importance whose conservation requires the designation of Special Areas of Conservation, whilst Schedule IV lists the criteria for selecting sites eligible for identification as Sites of National Importance and of International Importance and Designation as Special Areas of Conservation. Schedule V lists animal and plant species of community interest in need of strict protection, whilst Schedule VI lists animal and plant species of national interest in need of strict protection.

Schedule VII lists animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures, whilst Schedule VIII lists animal and plant species of national interest whose taking in the wild and exploitation may be subject to management measures. Schedule IX includes provisions for identification and monitoring, whilst Schedule X lists endemic species not covered by Regulation 26 of the same Legal Notice.

There are no terrestrial Special Areas of Conservation within the scheme site or its 100 m Area of Interest.

4.1.4 S.L. 549.123 Trees and Woodland Protection Regulations

This legislation protects trees and woodlands in the Maltese islands to safeguard them from anthropogenic activity and to regulate the activities that may have an effect on them. The legislation identifies the areas and the species of trees which merit protection, subdividing them into distinct Schedules based on their level of protection.

The first Schedule Part A Table 1, lists the trees which are protected in all locations in Malta, Table 2 lists species which are protected within protected areas, in ODZ, green areas, in natural or rural/green enclaves in an urban area or in urban public open spaces only. The Second Schedule lists down the invasive, alien or environmentally incompatible species, whilst the Third Schedule lists down the fees to be paid for registration and permit applications. The Fourth Schedule lists down the penalties to be paid by offending contraveners against these regulations.

The proposal involves the removal and transplanting of several trees protected under the schedules of this subsidiary legislation. These will be explored in more detail in subsequent chapters.

4.1.5 Landscaping study

A separate report on Landscaping and maintenance has been prepared alongside this report. The report provides landscaping recommendations involving the planting of several salt-tolerant trees and shrubs within the site footprint taking up 1,325m² of the scheme footprint.

On the sea-facing side of the scheme, the following species are recommended within the proposed landscaping areas:

- Salt-tolerant species: African tamarisk *Tamarix africana*, Maltese salt tree *Salsola melitensis*.
- Salt-tolerant ground covers and low shrubs: *Limbarda crithmoides*, Maltese everlasting *Helichrysum melitense*, Silver ragwort *Jacobaea maritima*, Maltese centaury *Cheirolophus crassifolius*, Rock samphire *Crithmum maritimum*, and *Aloe vera*.

While on the south-side of the scheme facing the San Tumas tower the following species are recommended:

- Halophytic Shrubs: Caper bush *Capparis orientalis*, Mediterranean heath *Erica multiflora*, tree spurge *Euphorbia dendroides*, Jerusalem sage *Phlomis fruticosa*, rosemary *Rosmarinus officinalis*, tree germander *Teucrium fruticans* and the yellow germander *Teucrium flavum*.
- Large trees: Juniper tree *Juniperus phoenicea*, common myrtle *Myrtus communis*, olive tree *Olea europaea*, lentisk *Pistacia lentiscus*, Spanish broom *Spartium junceum*, chastle tree *Vitex agnus castus* and the New Zealand Christmas tree *Metrosideros excelsa*.

4.2 SITE SURVEY

4.2.1 Flora

A broad-brush terrestrial survey was conducted within the AOI in May 2026. Not all the scheme was able to be surveyed, the inner areas of the scheme were blocked by large blocks making the central and northern portion of the site inaccessible. The main ecological components of the scheme site and surrounding AOI comprise of:

- Small patches of disturbed ground with alien/invasive tree species
- Cultivated plants and trees
- Coastal garigue surrounding the scheme dominated by *Limbarda crithmoides* in the supralittoral zone

Such habitats have been mapped in Figure 6:



FIGURE 6 : TERRESTRIAL HABITATS PRESENT WITHIN THE PROPOSED SITE AND AOI

Disturbed ground

Within the proposed scheme site and the AoI exists patches of land dominated by invasive species such as Hottentot fig *Carpobrotus edulis*, Agave plant *Agave sp.* and the Great reed *Arundo donax*.



FIGURE 7: HOTTENTOT FIG *CARPOBROTUS EDULIS* LOCATED WITHIN THE SCHEME SITE



FIGURE 8: *ARUNDO DONAX* (MARKED AS “1”), PRICKLY PEAR (MARKED AS “2”) AND *AGAVE SP.* (MARKED AS “3”).

Cultivated plants/trees

Several cultivated plants were found within the scheme site and AoI such as canary island spurge *Euphorbia canariensis* (Figure 9), and Hoary stock *Matthiola sp.*

Moreover, several planted trees were found around the AoI as well as within the scheme such species were mainly protected tamarisk trees (*Tamarix sp.*) and as well as non-indigenous species including Daniella weeping fig tree *Ficus daniella*., date palms (*Phoenix dactylifera*), the invasive white lead tree *Leucaena leucocephala* and the invasive *Acacia sp.*



FIGURE 9: CULTIVATED CANARY ISLAND SPURGE *EUPHORBIA CANARIENSIS*



FIGURE 10: CULTIVATED HOARY STOCK PLANT *MATTHIOLA* SP. WITHIN AoI



FIGURE 11: DANIELLA WEEPING FIG TREE WITHIN PROPOSED SCHEME (*FICUS DANIELLA*).



FIGURE 12: *ACACIA* SP. WITHIN THE AOI



FIGURE 13: DATE PALM PLANTATIONS IN AOI



FIGURE 14: TAMARISK SP. PLANTATIONS IN AOI

Coastal garigue

Patches of coastal garigue were present on either side of the site, dominated by *Limbarda crithmoides*, which is an ecological indicator for the supralittoral zone (Figure 15). Within this zone other species were observed including silver ragwort *Jacopea maritima subsp. sicula* which is sub-endemic to Malta and other neighbouring islands (Figure 16). Moreover, several protected species under S.L. 549.44 FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS were observed including: caper plants *Capparis orientalis* (Figure 17) and the Maltese endemic Mediterranean sea chamomile *Anthemis urvilleana* (Figure 18)

Other species observed in this area included the barbary nut iris *Moraea sisyrinchium* (Figure 19) and the Maltese sand crocus *Romulea variicolor* (Figure 20).



FIGURE 15: *LIBBARDA CRITHMOIDES* FOUND WITHIN THE SCHEME SITE AND AOI



FIGURE 16: SILVER RAGWORT, *JACOBAEA MARITIMA* FOUND WITHIN AOI



FIGURE 17: CAPER PLANT *CAPPARIS ORIENTALIS* LOCATED WITHIN SCHEME SITE



FIGURE 18: MALTESE SEA CHAMOMILE *ANTHEMIS URVILLEANA* WHTIN AoI.



FIGURE 19: BARBARY NUT IRIS *MORAEA SISYRINCHIUM* WITHIN THE AoI



FIGURE 20: MALTESE SAND CROCHUS *ROMULEA VARIICOLOR* WITHIN THE AoI

A list of floral species encountered during the broad-brush survey within the AoI is provided in Table 11. The protected tree species found directly within the site footprint are listed in Table 12.

TABLE 11: SPECIES LIST OF PLANTS OBSERVED DURING BROAD-BRUSH SURVEY

SPECIES NAME	ENGLISH NAME	PROTECTION	TYPICAL HABITAT IN AoI
<i>Arundo donax</i>	Greater reed	None	Disturbed areas
<i>Capparis orientalis</i>	Caper bush	Schedule VIII of S.L. 549.44	Disturbed areas
<i>Piptatherum miliaceum</i>	Smilgrass	None	Agricultural land, disturbed areas
<i>Sonchus oleraceus</i>	Sow thistle	None	Disturbed areas
<i>Malva sylvestris</i>	Common Mallow	None	Disturbed areas
<i>Oxalis pes-caprae</i>	Bermuda Buttercup	None	Disturbed areas
<i>Carpobrotus edulis</i>	Hottentot fig	None	Disturbed areas
<i>Agave</i> sp.	Agave plant	None	Disturbed areas
<i>Acacia</i> sp.	Acacia	None	Disturbed areas
<i>Euphorbia canariensis</i>	Canary Island spurge	None	Disturbed areas
<i>Matthiola</i> sp.	Hoary stock	None	Disturbed areas
<i>Limbarda crithmoides</i>	Coastal fleabane	None	Coastal garigue, disturbed areas
Mediterranean Sea chamomile	Silver ragwort	Endemic, protected under S.L. 549.44 Regulation 26	Coastal garigue
<i>Mesembryanthemum crystallinum</i>	Common ice plant / Crystalline ice plant	None	Coastal garigue

SPECIES NAME	ENGLISH NAME	PROTECTION	TYPICAL HABITAT IN AoI
<i>Moraea sisyrinchium</i>	Barbary nut iris	None	Coastal garigue, disturbed areas
<i>Romulea variicolor</i>	Maltese sand crocus	Endemic, protected under S.L. 549.44 Regulation 26	Coastal garigue
<i>Tamarix sp.</i>	Tamrisk sp.	Schedule II under S.L. 549.44	Disturbed areas

TABLE 12: QUANTITY OF TREE SPECIES AND/OR PROTECTED SPECIES WITHIN THE SITE FOOTPRINT

SPECIES NAME	ENGLISH NAME	PROTECTION	RECORDED AMOUNT
<i>Capparis orientalis</i>	Caper bush	Schedule VIII of S.L. 549.44	Scattered individuals
<i>Tamarisk sp.</i>	Tamarisk tree	Schedule II under S.L. 549.44 and Protected tree species under S.L 549.13	23
<i>Nerium oleander</i>	Oleander tree	None	28
<i>Phoenix dactylifera</i>	Date palm	None	14
<i>Ficus daniella</i>	Daniella weeping fig	None	1
Total trees directly affected by the proposed development			16
Total <u>protected</u> trees directly affected by the proposed development			10

The trees and shrubs found within the AOI and site footprint have been mapped in Figure 21. The recommended interventions for the trees found directly in the site footprint have been mapped in Figure 24. Protected trees, all of which are *Tamarisk* sp., are recommended to be transplanted or compensated according to the ERA guidelines ¹. Non-indigenous tree species found within the footprint are recommended to be uprooted.

¹ Guidelines on Works involving Trees, Environment and Resources Authority, 2019



FIGURE 21: TREES AND SHRUBS IN AOI

4.2.2 Fauna

The only fauna species observed during the survey was the Filfla wall lizard *Podarcis filfolensis* (Figure 22). However, the habitat is likely to support several other species such as the Ocellated skink (*Chalcides ocellatus tiligugu*), Mediterranean Chameleon (*Chamaeleo chamaeleon*), western whip snake (*Coluber viridiflavus*), the Moorish wall gecko (*Tarentola mauritanica*), Maltese pygmy shrew (*Suncus etruscus*) the Algerian hedgehog (*Atlerichus algirus*) among others.^{2,3} Moreover, insects, molluscs, cats and rats are also likely to inhabit the area.



FIGURE 22: FILFLA WALL LIZARD WITHIN AOI

No faunal species were observed in the salt pans as most were dried-out or damaged, however typical species to occur in salt pans include crustaceans such as the Maltese Rock crab *Pachygrapsus marmoratus*, several molluscs including limpets *Patella* spp. and the black periwinkle *Littorina neritoides* and the sea-slug *Ligia italica*.

² SCIBERRAS A. SCIBERRAS J. 2013 Fauna at Pembroke Park-8-13. Malta Tourism Authority Nature Trust Malta publications.pdf

³ <https://birdlifemalta.org/wp-content/uploads/2021/10/WILDLIFE-FACTFILE.pdf>



FIGURE 23: SALT PANS OUTSIDE WITHIN THE AOI

The presence of bats cannot be excluded from this area, as old dilapidated buildings, including the scheme itself, can provide attractive roosting sites, and the coastal garigue may offer foraging opportunities. No roosts are documented publicly within the AOI at the time of writing.

The presence of avian species has been assessed and presented within a dedicated chapter of the EIA.

5 ASSESSMENT

5.1 CONSTRUCTION PHASE

5.1.1 Uprooting of trees

The project will involve the uprooting of approximately 16 individual trees, 10 of which are Tamarisk trees which are protected in accordance to Schedule II of S.L. 549.44 and S.L. 549.123. It is recommended that the 10 Tamarisks to be uprooted are to be transplanted on the sea-facing side of the scheme.

Notwithstanding the relatively low conservation value of the majority of the trees affected, the removal of approximately 16 individuals represent a substantial loss of established vegetation and associated habitat (See Figure 24). Mature trees provide important ecological functions irrespective of their protection status, offering feeding, nesting, roosting and shelter opportunities for a range of fauna. Their removal will therefore reduce the availability of suitable habitat for birds, bats, hedgehogs, reptiles, invertebrates and other species currently utilising the site. The extensive clearance of vegetation may also further increase habitat fragmentation for the currently dilapidated site, reducing ecological connectivity between the site and surrounding vegetated areas.

Tree removal will additionally result in the loss of ecological functions associated with established vegetation, including the contribution of leaf litter and decomposing organic matter to soil structure, nutrient cycling and soil-dwelling organisms. These functions cannot be immediately replicated through replacement planting, particularly where mature specimens are removed, as newly planted trees require considerable time to establish and develop comparable ecological value.

Given that an extensive soft landscaping plan is to be incorporated in the proposed scheme (as detailed in Section 1.1.1) which includes the planting of several indigenous trees and vegetation, any habitat lost will be replaced. Therefore, such impacts are expected to be of **moderate adverse impact**, especially since indigenous halophytic flora capable of withstanding coastal erosion and hypersaline environments are to be planted.



FIGURE 24: PROTECTION STATUS OF TREES PRESENT, THEY SHOULD EITHER BE RETAINED, TRANSPLANTED OR REPLACED BY ERA APPROVED COMPENSATORY PLANTING RATIO STANDARDS

5.1.2 Demolition of dilapidated building - habitat loss for bats

The existing dilapidated ex-Jerma building serves as an important habitat and refuge site for bat species. The demolition of this structure could result in the loss of valuable and attractive roosting sites⁴ and could significantly disrupt the ecological functionality of the area for bats. Consequently, the proposed demolition has the potential to result in a **major adverse impact** on the local bat population, particularly if suitable alternative roosting habitats are not available.

5.1.3 Removal of soil

The removal of soil associated with the proposed works is expected to result in the loss of the ecological community of ruderal vegetation that has developed over time as a consequence for the site's neglected and dilapidated condition. Such disturbed habitats can provide important refuge and foraging opportunities for wildlife. The proposed removal of soil would lead to the direct loss of these established biological communities of soil-dwelling organisms, including invertebrates, microorganisms and other infauna. These communities contribute to essential ecological processes such as decomposition, nutrient cycling, soil aeration and the maintenance of soil structure and fertility. The soil layer may also contain seeds, bulbs, rhizomes and other propagules that facilitate the natural regeneration of vegetation on site. Its removal will therefore result in the direct disturbance or loss of these communities and temporarily interrupt the ecological functions associated with the existing soil environment and dilapidated building. However, given that most of the site is already mostly built-up, an insignificant amount of soil is anticipated to be removed from the dilapidated landscaped areas. Moreover, all soil excavated for the construction of the scheme is to not be discarded and is instead to be used for soft-landscaping. Therefore, the overall impact of the removal of soil is anticipated to have a **negligible to minor adverse impact** on terrestrial flora and fauna.

5.1.4 Spillover effects

Excavation and construction activities may result in additional indirect impacts, particularly through the generation of fine particulate matter. This particulate matter can disperse beyond the boundaries of the development site due to wind and stormwater runoff. The dust carried by wind has the potential to adversely affect nearby trees and vegetation by obstructing and damaging their respiratory and photosynthetic surfaces. Such interference can lead to compromised physiological processes, which may result in decreased plant health and alterations in community structure, contingent upon the varying susceptibility of different species. Consequently, the dispersal of wind-borne particulates is expected to have a temporary yet significant negative impact on the vegetation within the study area. Such impacts are further magnified for coastal vegetation as they are already exposed to harsh xeric and saline environments. Therefore, significant quantities of

⁴ Voigt, C. C., Phelps, K. L., Aguirre, L. F., Corrie Schoeman, M., Vanitharani, J., & Zubaid, A. (2015). Bats and buildings: the conservation of synanthropic bats. In *Bats in the Anthropocene: Conservation of bats in a changing world* (pp. 427-462). Cham: Springer International Publishing.

dust may influence the overall functioning of coastal vegetations such as their photosynthetic ability and seed propagation.

The nearest terrestrial Natura 2000 site, MT000023 - *Il-Maghluq tal-Baħar ta' Marsaskala* designated, is located at a considerable distance from the scheme therefore significant impacts from wind-borne dust dispersal on these protected areas are not anticipated.

Moreover, particulate matter may also contaminate surface runoff which would end up in the surrounding salt pans, soil areas and the sea. This may adversely affect species inhabiting the nearby salt pans, ecosystems that are already characterised by extreme and fluctuating conditions of drought and salinity. As these shallow basins tend to retain and concentrate pollutants rather than effectively flush them away, contaminated runoff could place additional stress on resident species and potentially disrupt ecological functions. Moreover, contaminated surface run off is likely to impact marine fauna such as photosynthetic organisms like *Posidonia oceanica* which is a highly important species and habitat playing a vital role in the marine ecosystem.

Therefore the suspension of dust in the air and as run off is expected to have a **moderate adverse impact** on the surrounding vegetation and marine environment.

Additional anticipated spillover affects include the trampling of vegetation outside the scheme boundary by staff and construction vehicles resulting in the physical crushing, bruising and destruction of plants. If trampling activities are repetitive this can result in a decrease of plant cover and impaction of soil over time reducing the overall biodiversity of the area. The impact of trampling by staff and construction vehicles is expected to have a **minor adverse impact** on the surrounding vegetation.

5.1.5 Lighting impacts

Activities related to the construction phase will be strictly confined to daylight hours. Any emergency/safety-related night-time activities will be conducted with the minimum required lighting and implement appropriate mitigation measures such as the use of down-turned luminaries. Therefore, impacts to be inflicted on terrestrial ecological receptors are expected to be **negligible** as night-time lighting will not be implemented during the construction phase.

5.1.6 Noise and vibration impacts

According to a separate Noise and Vibration study conducted alongside this assessment, significant increases in noise and vibration levels are predicted during the construction phase. Such levels will likely be highest during the demolition and excavation phases. Excessive noise generation can be a deterrent for faunal species, particularly if carried out during periods which are generally quiet (ex. during the night). Long-term increased noise and vibration generation may cause certain species to leave the site's surrounding area temporarily or even permanently. Therefore, the overall impact of noise and vibration on faunal species is expected to be **moderate to major adverse**.

5.2 OPERATIONAL PHASE

5.2.1 Lighting

The proposed development will introduce exterior lighting in an area that is currently relatively dark and likely frequented by nocturnal species, which may be deterred following the proposed development such as bats and hedgehogs. Light pollution is known to alter behaviour in bats such as in their natural foraging, navigation and roosting and have been found to avoid lit areas⁶. Similar displacement behaviour is observed with the European hedgehog which have been found to favour lower lit areas⁷. Such impacts are therefore expected to be **minor to moderate adverse**. Mitigation measures such as sensor-operated lights, down-turned light fixtures and other measures as indicated in the GUIDELINES FOR ECOLOGICALLY RESPONSIBLE LIGHTING⁸ should be implemented to the extent possible to minimise the potential light spillover into the adjacent patches of natural land.

5.2.2 Increased vehicular traffic

The scheme will bring about a significant increase in vehicular trips in nearby and connecting roads, Triq is-Salini is predicted to face an increase of 1136 average annual daily trips by 2035 and therefore adding a significant increase of vehicles on the road (as detailed in the TIA). This will inevitably increase the deposition of particulate matter and gases related to the combustion onto the surrounding land such as of heavy metals which are known to alter soil microbial activity⁹ and therefore affecting plant growth. However, given the surrounding vegetated areas are generally disturbed and rich in non-indigenous species, the impact on surrounding flora is expected to be **minor adverse**.

In the case of fauna, the increase in vehicular traffic associated with the proposed development could result in a higher likelihood of road mortality through vehicle collisions. This risk would be greatest during periods of low light, particularly at dusk and during nighttime hours, when nocturnal species such as hedgehogs are most active. Increased traffic volumes may therefore result in occasional direct impacts on individuals attempting to cross access roads and nearby transport routes. However, given that the road between St. Tumas Tower and the Proposed development is to be

⁶ Christian C Voigt, Jasja Dekker, Marcus Fritze, Suren Gazaryan, Franz Hölker, Gareth Jones, Daniel Lewanzik, Herman J G A Limpens, Fiona Mathews, Jens Rydell, Kamiel Spoelstra, Maja Zgamažster, The Impact Of Light Pollution On Bats Varies According To Foraging Guild And Habitat Context, *BioScience*, Volume 71, Issue 10, October 2021, Pages 1103–1109

⁷ Berger, A., Lozano, B., Barthel, L. M., & Schubert, N. (2020). Moving in the dark—evidence for an influence of artificial light at night on the movement behaviour of European hedgehogs (*Erinaceus europaeus*). *Animals*, 10(8), 1306.

⁸ Source: <https://birdlifemalta.org/wp-content/uploads/2020/07/Guidelines-for-Ecologically-Responsible-Lighting.pdf>

⁹ Kuklová, M., Kukla, J., Hniličková, H., Hnilička, F., & Pivková, I. (2022). Impact of car traffic on metal accumulation in soils and plants growing close to a motorway (Eastern Slovakia). *Toxics*, 10(4), 183.

pedestrianised, this would decrease the likelihood of vehicle collisions with fauna in this area. Therefore, the overall impact of traffic collisions on fauna is expected to be **minor adverse**.

5.2.3 Shading effects

The increase from four to seven storeys results in only a limited incremental change in the spatial extent and/or duration of shadowing. This additional shadowing predominantly affects disturbed, developed or sparsely vegetated areas. Where vegetation is affected, the duration is limited principally to periods shortly after sunrise or before sunset; and no appreciable additional shadowing of sensitive garigue habitat is anticipated¹⁰. Any incremental shadowing effect is likely to be confined largely to already developed surfaces and unvegetated coastal areas, the impact caused by shading is therefore expected to be of **negligible adverse impact**.

During the shortest days of the year, the proposed Scheme is expected to result in shadowing predominantly to the north of the development. During the early morning hours, shadowing is anticipated in the vicinity of St. Tumas Tower. This area is largely characterised by disturbed ground supporting ruderal vegetation and invasive tree species, with the exception of a single Tamarisk (*Tamarix* sp.) individual. During the late afternoon, shadowing is expected to extend to the eastern side of the Scheme site, where vegetation is sparse to absent.

During the longest days of the year, the extent and duration of shadowing are expected to be more limited. For approximately the first hour following sunrise, shadows are anticipated to extend towards the south-west of the Scheme site, while during approximately the final hour before sunset, shadowing is expected to occur towards the south-east.

Overall, the areas affected by shadowing are predominantly characterised by disturbed ground and limited vegetation cover. The duration of shadowing affecting these areas is also generally restricted to the early morning and late afternoon periods.

5.2.4 Noise and vibration impacts

According to the noise and vibration technical study, operational road traffic noise is expected to significantly alter the noise climate of the relatively quiet residential area. Excessive noise generation can be a deterrent for faunal species, particularly if carried out during periods which are generally quiet (ex. during the night). Long-term increased noise and vibration generation may cause certain species to leave the site's surrounding area temporarily or even permanently.

¹⁰ According to Shading calculating software (<https://www.suncalc.org/#/35.8611,14.5737,18/2026.07.08/19:05/30/3>) when comparing a building of a height of 7 storeys (proposed) and 4 storeys (current development) the shading effects are casted on developed areas/disturbed ground throughout the year.

The increased commotion brought about by the scheme such as an increase in tourism, traffic and social events is expected to cause a **moderate adverse impact** on ecosystems during the operation phase.

5.3 DECOMMISSIONING PHASE

The impacts brought about by the decommissioning phase are expected to be of similar nature to the construction impacts.

6 MITIGATION MEASURES

The LEGAL NOTICE 340 OF 2022 - CONSTRUCTION MANAGEMENT SITE REGULATIONS, 2022 should be enforced to avoid the impacts from being generated in the first place and to ensure that environmental degradation is kept as low as possible. These regulations provide details on the containment and transportation measures for loose construction material on site and in transit, and other measures to prevent carrying out and/or depositing particulate matter.

Some of the proposed mitigation measures related to construction best practices are highlighted below:

- Chemical spillages from machinery should be avoided by storing wastes and chemicals in bunded areas within the construction site
- Negligence during construction activities can be mitigated through regular and effective environmental monitoring to ensure that the construction impacts are not spilling over into the adjacent habitats.
- Hoarding should be set up (in line with the L.N.340 OF 2022 - CONSTRUCTION MANAGEMENT SITE REGULATIONS, 2022) along the construction site to minimise dispersion of particulates. This should be covered with suitable mesh or material that precludes dispersion of particulate matter.
- Pre-soaking, dust suppressors and covered stockpiles are considered good practices to minimise dust emissions.
- The use of wheel-washing facilities, installation of silt curtains at nearby coastlines and wetting down any exposed stockpiles should be adopted to minimise dispersion of dust into the air and surrounding sea.
- No additional land take-up should be used for the storage of materials and equipment or manoeuvring of construction vehicles.
- Construction vehicles and machinery should be well-maintained and serviced such that they can be operated at the best of their environmental performance.

The following measures are related to the minimising of impacts on protected flora and fauna directly within the proposed scheme site and AOI:

- Heavy machinery should not trample on natural areas located outside of the scheme site boundary
- All construction debris and soil should not be stockpiled near the base of trees and/or natural areas, but should be hauled away for proper recovery or disposal in designated waste management areas
- Any compensatory planting should **not** be carried out during the summer period
- The necessary environmental permits to carry out interventions on protected species are obtained from the ERA
- Uprooting of invasive alien species should follow the recommendations in the ERA Guidelines on Works Involving Trees (2019) on managing non-native

plant invaders and restoring native plant communities in terrestrial settings in the Maltese islands

- Species to be used for landscaped areas are recommended to be native species from local stocks able to tolerate coastal environments (as detailed in Landscaping study Section 4.1.5)
- Any activities creating excessive noise levels in the area, such as boat parties, speed boat, jet ski and quad bike rentals, loud music from bars or lido clubs, festivals, fireworks etc. would need to be avoided to mitigate the expected permanent and significant impact of noise disturbance on sensitive receptors in the AoI.
- Demotion of single-use car use within the area such as by offering airport shuttle bus services for tourists and use of public transport and the construction of electric vehicle charging bays for hotel guests/residents.
- To mitigate the impact of the proposed development on the ambient temperature and to reduce the urban heat island effect, it is highly recommended to reduce the overall volume of the project, the number of air-conditioning units, reduce sealed surface areas exposed to the sun, and seek alternative building materials that have a lower climate impact. Effective landscaping with green open areas, green roofs and green walls as well as large evergreen trees are proposed as potentially suitable measures.
- Works should not be carried out during the night time due to the recorded presence of nocturnal species in the area
- Although rodent control is encouraged when setting up a construction site, care must be taken not to negatively influence any resident fauna in the immediate surroundings
- If lighting is required, downward facing luminaires should be installed within the facility to reduce light pollution and spilling during the operational phase
- Activities making use of bright lights are to be avoided
- Alternative sustainable building material to reduce impact of climate change: Effective landscaping with green open areas, green roofs and green walls as well as large evergreen trees are proposed as potentially suitable measures, reduce sealed surface areas exposed to the sun and utilising renewable energy sources such as PV panels.
- Excessive noise levels are to be avoided with pre-set sound system levels not exceeding the recommended noise dB levels according to the ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL NOISE REGULATIONS (S.L. 549.37).

Tamarisk sp. is recommended to be considered for transplanting, replacement and/or compensatory planting. If such interventions are to be carried out the following mitigation measures are to be applied:

- Should transplanting of trees be necessary, they should be pruned (not more than 25% of overall crown) to stimulate growth and reduce water loss. The trees should be watered for two consecutive days before removal, and the branches should be tied together during the transplantation phase.

- Before transplanting mature trees, the soil depth needs to be determined. For trees which are within soil less than 75cm deep, transplanting is not recommended as the majority of the root ball will be within the bedrock
- Root pruning is recommended to ensure the root ball is of equal size to the tree canopy
- For trees found within soil of adequate depth, an excavator or hand-held tools are necessary to dig a trench around the tree which is of equal depth to the tree height. Should the root ball be confirmed by the ecological monitor to be of smaller size, a shallower excavation would be acceptable as long as the root ball is not damaged. The excavator/manual tools should also dig a new pit which is around twice the original size of the root ball
- Transplanting should ideally be carried during the wet season and when soil depth is determined and trees earmarked for transplanting are subjected to root pruning. In the second year, the same trees are relocated to the transplanting area

7 RESIDUAL IMPACTS

Residual impacts are those impacts which are bound to remain after taking into consideration the proposed mitigation measures. Despite the comprehensive adoption of the recommended mitigation measures, a number of unavoidable residual impacts are still expected to arise. These are expected to vary between negligible and moderate to major adverse as listed in Section 5. These include:

- Permanent loss of terrestrial ecosystems and assemblages falling directly within the footprint of the site including uprooting of Tamarisk trees and protected caper plants.
- The removal of a potential roosting sites for bat species through the demolition of the abandoned ex-Jerma building.
- Temporary accumulation of dust, vibration and noise impacts within the immediate terrestrial and marine ecosystems abutting the construction site boundary
- Trampling of vegetation and soil outside the scheme boundary during the construction phase by staff and vehicles.
- Increase in pollutant deposition on the surrounding vegetation through vehicular emissions.
- Increase of noise levels during both the construction and operation phase.

8 MONITORING PROGRAMME

Should the Scheme be permitted to be developed, a monitoring programme should be set up and implemented during the construction phases of development. The construction management plan prepared at project planning phase will be updated by the chosen contractor in order to ascertain that the best practicable environmental options available are followed through.

A bat specialist is recommended to carry out a pre-construction survey to determine the presence of any bat species within the dilapidated building in order to safely remove individuals from the site if such species are observed.

During the construction phase, periodic monitoring is being recommended to ensure that mitigation measures are in place and working as they should. Constant/longer monitoring is also recommended during dust generating activities. This would ensure that no unwarranted impacts arise due to deviations from proposed working practices. Such deviations could have additional impacts over and above those originally predicted. All monitoring data should be presented to the relevant authorities at pre-agreed frequencies.

A tree specialist is recommended to oversee/enact interventions directly related to the pruning or relocation of the native tree species. All interventions related to native trees are subject to permits provided by the Environment and Resources Authority.

9 SUMMARY OF IMPACTS TABLE

TABLE 13: SUMMARY IMPACTS TABLE FOR TERRESTRIAL ECOLOGY

IMPACT TYPE AND SOURCE			IMPACT RECEPTOR		EFFECT & SCALE							PROBABIL ITY OF IMPACT OCCURRIN G	OVERALL IMPACT SIGNIFICANCE	PROPOSED MITIGATION MEASURES	RESIDUAL IMPACT SIGNIFICANCE	OTHER REQUIREME NTS
IMPACT TYPE	SPECIFIC INTERVENTI ON LEADING TO IMPACT	PROJECT PHASE	RECEPTOR TYPE	SENSITIV ITY & RESILIEN CE TOWARD IMPACT	DIRECT/ INDIRECT / CUMULATI VE	BENEFICI AL/ ADVERSE	SEVERIT Y	PHYSICAL / GEOGRAP HIC EXTENT OF IMPACT	SHORT -/ MEDIU M-/ LONG- TERM	TEMPORAR Y/ PERMANE NT	REVERSIBL E/ IRREVERSI BLE					
Loss of terrestrial species – Circa 10 protected tree individuals	Uprooting	Construction	Vegetatio n	High	Direct	Adverse	High	Localise d	Long- term	Permane nt	Irreversib le	High	Moderate	Relocation of species, compensat ory planting in landscaped areas	Minor	N/A
Removal of potential roosting sites for bat species	Demolitio n of the existing Ex-Jerma hotel	Construction	Fauna (Bat species)	High	Direct	Adverse	High	Localise d	Long- term	Permane nt	Irreversib le	High	Major	Installation of bat boxes or dedicated bat roosting areas	Moderate	N/A
Removal of soil	Removal of soil during excavatio n of natural land	Construction	Vegetatio n	Moderat e	Direct	Adverse	Low	Localise d	Short	Tempora ry	Reversibl e	High	Negligible to Minor	Re-use of soil for landscapin g	Negligible	N/A

IMPACT TYPE AND SOURCE			IMPACT RECEPTOR		EFFECT & SCALE							PROBABIL ITY OF IMPACT OCCURRIN G	OVERALL IMPACT SIGNIFICANCE	PROPOSED MITIGATION MEASURES	RESIDUAL IMPACT SIGNIFICANCE	OTHER REQUIREME NTS
IMPACT TYPE	SPECIFIC INTERVENTI ON LEADING TO IMPACT	PROJECT PHASE	RECEPTOR TYPE	SENSITIV ITY & RESILIEN CE TOWARD IMPACT	DIRECT/ INDIRECT / CUMULATI VE	BENEFICI AL/ ADVERSE	SEVERIT Y	PHYSICAL / GEOGRAP HIC EXTENT OF IMPACT	SHORT -/ MEDIU M-/ LONG- TERM	TEMPORAR Y/ PERMANE NT	REVERSIBL E/ IRREVERSI BLE					
Air emissions from dust generating activities	Demolition, excavation and other dust generating activities	Construction	Flora and surrounding marine environment	High	Direct	Adverse	High	Localised	Short-term	Temporary	Reversible	Likely	Moderate	Dust suppression techniques, regular clearing of affected areas, construction monitoring	Minor	N/A
Trampling of vegetation by humans and vehicles	Construction staff and vehicles trampling over vegetation outside scheme boundary	Construction, decommissioning	Vegetation	Moderate	Cumulative	Adverse	Low	Localised	Short-term	Temporary	Irreversible	Likely	Minor	Vehicles to be parked in designated areas onsite, construction staff are to walk on paths and non-vegetated areas as much as possible	Negligible	N/A

IMPACT TYPE AND SOURCE			IMPACT RECEPTOR		EFFECT & SCALE							PROBABIL ITY OF IMPACT OCCURRIN G	OVERALL IMPACT SIGNIFICANCE	PROPOSED MITIGATION MEASURES	RESIDUAL IMPACT SIGNIFICANCE	OTHER REQUIREME NTS
IMPACT TYPE	SPECIFIC INTERVENTI ON LEADING TO IMPACT	PROJECT PHASE	RECEPTOR TYPE	SENSITIV ITY & RESILIEN CE TOWARD IMPACT	DIRECT/ INDIRECT / CUMULATI VE	BENEFICI AL/ ADVERSE	SEVERIT Y	PHYSICAL / GEOGRAP HIC EXTENT OF IMPACT	SHORT -/ MEDIU M-/ LONG- TERM	TEMPORAR Y/ PERMANE NT	REVERSIBL E/ IRREVERSI BLE					
ALAN on nocturnal species	Exterior lighting remaining switched at nighttime.	Construction	Nocturnal fauna	Moderate	Direct	Adverse	Moderate	Localised and near vicinity	Medium	Permanent	Reversible	Likely	Negligible	Night time works are not permitted unless deemed absolutely necessary	Negligible	N/A
Noise & Vibration	Excavation, building construction	Construction	Fauna	High	Direct	Adverse	Moderate	Localised and near vicinity	Short-term	Temporary	Reversible	Likely	Moderate to Major	Equipment to be well maintained to avoid excessive noise.	Negligible	N/A
Air pollution by vehicular emissions	Increase in vehicle trips and air pollution including deposition of toxins into the soil	Operation	Vegetation	Moderate	Cumulative	Adverse	Moderate	Localised	Medium	Temporary	Reversible	Likely	Minor	Promotion of bus shuttle services for tourists, construction of electric vehicle charging bays	Negligible	N/A

IMPACT TYPE AND SOURCE			IMPACT RECEPTOR		EFFECT & SCALE							PROBABIL ITY OF IMPACT OCCURRIN G	OVERALL IMPACT SIGNIFICANCE	PROPOSED MITIGATION MEASURES	RESIDUAL IMPACT SIGNIFICANCE	OTHER REQUIREME NTS
IMPACT TYPE	SPECIFIC INTERVENTI ON LEADING TO IMPACT	PROJECT PHASE	RECEPTOR TYPE	SENSITIV ITY & RESILIEN CE TOWARD IMPACT	DIRECT/ INDIRECT / CUMULATI VE	BENEFICI AL/ ADVERSE	SEVERIT Y	PHYSICAL / GEOGRAP HIC EXTENT OF IMPACT	SHORT -/ MEDIU M-/ LONG- TERM	TEMPORAR Y/ PERMANE NT	REVERSIBL E/ IRREVERSI BLE					
ALAN on nocturnal species	Exterior lighting remaining switched at nighttime.	Operation	Nocturnal fauna	Moderate	Direct	Adverse	Moderate	Localised and near vicinity	Medium	Permanent	Reversible	Likely	Minor to moderate	Limit night-time lighting to the bare minimum, light fixtures to be installed downward facing emitting warm coloured light waves.	Negligible	N/A
Shading effects	Increase of building height compared to the current ex-Jerma site	Construction and Operation	Vegetation	Moderate	Direct	Adverse	Low	Localised	Long-term	Permanent	Reversible	Unlikely	Negligible	N/A	Negligible	N/A
Noise and vibration	Activities including social events, parties, increased traffic and general	Operation	Fauna	Moderate	Direct	Adverse	Low	Localised	Long-term	Temporary	Reversible	Likely	Moderate	Installation of acoustic barriers, pre-set sound system levels, implement quiet hours	Negligible	N/A

Impact Type and Source			Impact Receptor		Effect & Scale							Probabil ity of Impact Occurrin g	Overall Impact Significance	Proposed Mitigation Measures	Residual Impact Significance	Other Requireme nts
Impact Type	Specific Interventi on Leading to Impact	Project Phase	Receptor Type	Sensitiv ity & Resilien ce Toward Impact	Direct/ Indirect / Cumulati ve	Benefici al/ Adverse	Severit y	Physical / Geograp hic Extent of Impact	Short -/ Mediu m-/ Long- term	Temporar y/ Permane nt	Reversibl e/ Irreversi ble					
	human activity															

APPENDIX I

TERMS OF REFERENCE

The ERA issued the Terms of Reference related to the study on Ecology for the EIA in June 2023. They are replicated hereunder.

3.0 A DESCRIPTION OF THE SITE AND ITS SURROUNDINGS (I.E. ENVIRONMENTAL BASELINE)

The existing environmental features, characteristics and conditions, in and around the proposed development site as well as in all locations likely to be affected by the development or by ancillary interventions and operations, are to be identified and described in sufficient detail, with particular attention to the aspects elaborated further in the next sections.

The consultants should also identify (and justify) wherever relevant:

- 1. The geographic area (e.g. viewshed or other area of influence) that needs to be covered by each study;*
- 2. The relevant sensitive receptors vis-à-vis the environmental parameter under consideration (e.g. residential communities, other users, natural ecosystems, specific populations of particular species, or individual physical features);*
- 3. The location of the reference points or stations (e.g. viewpoints, monitoring stations, or sampling points (including depth of multiple sampling points at a single sampling point in the case of water media and sediment, where applicable) to be used in the study; and*
- 4. Other methodological parameters of relevance, also noting that the assessment will normally require both desk-top studies and on-site investigations (including visual observations and sampling, as relevant).*

Note: *It is recommended that these details are discussed in advance with the ERA prior to commencement of the relevant parts of the studies, in order to pre-empt (as much as possible) later-stage issues.*

Wherever relevant to the environmental aspects under discussion, reference to legislation, policies, plans (including programmes and strategies) standards and targets, should also be made, such that the compatibility (or otherwise) of the proposal therewith is also factored into the assessment required by Section 4 below. The discussion should cover the following aspects, in the appropriate level of detail:

- 1. Supra-national (e.g. European Union; United Nations; or other international or regional) legislation, directives, policies, conventions, protocols, treaties, charters, plans and obligations;*
- 2. National legislation, policies and plans (e.g. Structure Plan; National Environment Policy); and*

3. *Sub-national legislation, policies and plans (e.g. local plans, site-specific regulations, action plans, management plans, and protective designations such as scheduling or Natura 2000).*

Note: *In addition to already in-force legislation, policies and plans, the discussion should also cover any foreseeable future updates (or new legislation, policies and plans) likely to be fulfilled, affected or compromised by the proposed project. Furthermore, it should be noted that some cross-cutting legal/policy instruments (e.g. Water Framework Directive and Marine Strategy Framework Directive) may need to be factored into more than one aspect of the discussion.*

3.5 Ecology (including Terrestrial Ecology, Avifauna & Marine Ecology, as relevant)

The assessment should include:

1. *An investigation of the ecology of the site and its surroundings (including, as relevant: flora, fauna, avifauna, fish and other aquatic organisms, benthic, burrowing and pelagic organisms, and their habitats and ecosystems, including shallow reefs), duly covering the relevant seasons (e.g. wet and dry seasons, in the case of terrestrial ecology) to ensure adequate coverage of all relevant species and ecosystem components;*
2. *A reporting of the conservation status and ecological condition of the area and the state of health of its habitats, species and ecological features;*
3. *A reporting of all protected, endangered, rare, unique, endemic, high-quality, keystone, invasive/deleterious, or otherwise important species, habitats, ecological assemblages, and ecological conditions found in the area under study; and*
4. *A prediction of the potential impacts of the proposed project on the ecology of the site and its surroundings, including loss, damage or alteration of habitats and species populations (including potential increases in ambient noise levels in the marine environment, disturbance of the shallow reef as feeding ground) including alteration in the habitats and species' condition/state of health as measured through indicators used/specified for assessment of status in relevant EU policy.*

In particular, the study should identify all relevant species and assemblages (e.g. protected species or habitats, key species relevant to habitat characterisation, and monitoring indicators), and assess their abundance and distribution patterns as well as the species' ecological niches. The findings should be supported by adequate maps and photographs. Classification of habitat types and species should be conducted in accordance with recognised classification systems (e.g. EUNIS and Palaearctic), to ERA's satisfaction.

Note 1: *This proposal requires a stand-alone Appropriate Assessment in terms of the Flora, Fauna and Natural Habitats Protection Regulations. In this regard, separate Terms of Reference are being issued for the Appropriate Assessment.*

Note 2: Where the area of influence encompasses both marine and terrestrial environments, one or more of the sections indicated in these specimen TORs may need to be restructured accordingly to reflect the specific circumstances (e.g. separate reports for marine and terrestrial ecology).

4.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND ENVIRONMENTAL RISKS

All likely significant effects and risks posed by the proposed project on the environment during all relevant phases (including construction/excavation/demolition, operation and decommissioning) should be assessed in detail, taking into account the information emerging from Sections 1, 2 and 3 above. Apart from considering the project on its own merits (i.e. if taken in isolation), the assessment should also take into account the wider surrounding context and should consider the limitations and effects that the surrounding environmental constraints, features and dynamics may exert on the proposed development, thereby identifying any incompatibilities, conflicts, interferences or other relevant implications that may arise if the project is implemented.

In this regard, the assessment should address the following aspects, as applicable for any category of effects or for the overall evaluation of environmental impact, addressing the worst-case scenario wherever relevant:

- 1. An exhaustive identification and description of the envisaged impacts;*
- 2. The magnitude, severity and significance of the impacts;*
- 3. The geographical extent/range and physical distribution of the impacts, in relation to: site coverage; the features located in the site surroundings; whether the impacts are short-, medium- or long-range; and any transboundary impacts (i.e. impacts affecting other countries);*
- 4. The timing and duration of the impacts (whether the impact is temporary or permanent; short-, medium- or long-term; and reasonable quantification of timeframes);*
- 5. Whether the impacts are reversible or irreversible (including the degree of reversibility in practice and a clear identification of any conditions, assumptions and pre-requisites for reversibility);*
- 6. A comprehensive coverage of direct, indirect, secondary and cumulative impacts, including:*
 - interactions (e.g. summative, synergistic, antagonistic, and vicious-cycle effects) between impacts;*
 - interactions or interference with natural or anthropogenic processes and dynamics;*
 - cumulation of the project and its effects with other past, present or reasonably foreseeable developments, activities and land uses and with other relevant baseline situations; and*
 - wider impacts and environmental implications arising from consequent demands, implications and commitments associated with the project (including: displacement of existing uses; new or increased pressures on the environment in the surroundings of the project, including pressures which may be exacerbated by the proposal but of which effects may go beyond the area of influence; and impacts of*

any additional interventions likely to be triggered or necessitated by situations created, induced or exacerbated by the project);

- 7. Whether the impacts are adverse, neutral or beneficial;*
- 8. The sensitivity and resilience of resources, environmental features and receptors vis-à-vis the impacts;*
- 9. Implications and conflicts vis-à-vis environmentally-relevant plans, policies and regulations;*
- 10. The probability of the impacts occurring; and*
- 11. The techniques, methods, calculations and assumptions used in the analyses and predictions, and the confidence level/limits and uncertainties vis-à-vis impact prediction.*

The impacts that need to be addressed are detailed further in the sub-sections below.

5.0 REQUIRED MEASURES, IDENTIFICATION OF RESIDUAL IMPACTS, AND MONITORING PROGRAMMES

5.1 Mitigation Measures

A clear identification and explanation of the measures envisaged to prevent, eliminate, reduce or offset (as relevant) the identified significant adverse effects of the project during all relevant phases including construction, operation and decommissioning [see Section 1.2.3 above].

As a general rule, mitigation measures for construction-phase impacts should be packaged as a holistic Construction Management Plan (CMP). Whilst the detailed workings of the CMP may need to be devised at a later stage (e.g. after the final design of the project has been approved and/or after a contractor has been appointed), the key parameters that the CMP must adhere to for proper mitigation need to be identified in the EIA. Broadly similar considerations also apply vis-à-vis operational-phase impacts [which may need to be mitigated through an operational permit] and decommissioning-phase impacts [see Section 5.4 below], where relevant.

Mitigation measures for accident/risk scenarios should be packaged as a holistic plan that includes the integration of failsafe systems into the project design as well as well-defined contingency measures.

The recommended measures should be feasible, realistically implementable to the required standards and in a timely manner, effective and reliable, and reasonably exhaustive. They should not be dependent on factors that are beyond the developer's and ERA's control or which would be difficult to monitor, implement or enforce. The actual scope for, and feasibility of, effective prevention or mitigation should also be clearly indicated, also identifying all potentially important pre-requisites, conditionalities and side-effects.

5.2 Residual Impacts

Any residual impacts [i.e. impacts that cannot be effectively mitigated, or can only be partly mitigated, or which are expected to remain or recur again following exhaustive implementation of mitigation measures] should also be clearly identified.

5.3 Additional Measures

Compensatory measures (i.e. measures intended to offset, in whole or in part, the residual impacts) should also be identified, as reasonably relevant. Such measures should be not considered as an acceptable substitute to impact avoidance or mitigation.

If the assessment also identifies beneficial impacts on the environment, measures to maximise the environmental benefit should also be identified.

In both instances, the same practical considerations as indicated vis-à-vis mitigation measures should also apply.

5.4 Decommissioning Plan

A decommissioning plan (DP) should also be proposed to address the following circumstances, as relevant:

- 1. Removal of any temporary or defined-lifetime development (or of any structures, infrastructure or land use required temporarily in connection with it) upon the expiry of their permitted duration; and*
- 2. Removal of the development (or of any secondary developments, infrastructure or land use ancillary to it) in the event of redundancy, cessation of operations, serious default from critical mitigation measures, or other overriding situations that may emerge in future.*

The DP should also include, as relevant, a phasing-out plan, proposals for site remediation or decontamination, and methodological guidance on site reinstatement or appropriate after-use.

5.5 Monitoring Programme

A realistic and enforceable programme for effective monitoring of those works envisaged to have an adverse or uncertain impact. The monitoring programme should include:

- 1. Details regarding type and frequency of monitoring and reporting, including spot checks;*
- 2. The parameters that will be monitored, their units of measurement, the monitoring indicators to be used; and standard analytical methods in line with relevant EU policy;*
- 3. An effective indication of the required action to address any exceedances, risks, mitigation failures or noncompliances for each monitoring parameter;*
- 3. An evaluation of forecasts, predictions and measures identified in the EIA; and*
- 4. An indication of the nature and extent of any additional investigations (including EIAs or ad hoc detailed investigations, if relevant) that may be*

required in the event of any contingencies, unanticipated impacts, or impacts of larger magnitude or extent than predicted.

The programme should address all relevant stages, as follows:

- a. Where relevant, monitoring of preliminary on-site investigations that may entail significant disturbance or damage to site features (e.g. archaeological excavations, geological sampling, or any works that require prior site clearance or any significant destructive sampling); [Note: Official written consent from the competent authorities (e.g. Superintendence of Cultural Heritage) may also be required for such interventions.]*
- b. Monitoring of the construction phase, including the situation before initiation of works (including site clearance), during appropriate stages of progress, and after completion of works;*
- c. Monitoring of the operational phase, except where otherwise directed by ERA (e.g. where monitoring would be more appropriately integrated into an operating permit); and*
- d. Where relevant, monitoring of the decommissioning phase, including the situation before initiation of works, during appropriate stages of progress, and after completion of works.*

5.6 Identification of required authorisations

The assessment should also identify all environmentally-relevant permits, licences, clearances and authorisations (other than the development permit to which this EIA is ancillary) which must be obtained by the applicant in order to effectively implement the project if development permission is granted. Any uncertainty, as to whether any of these pre-requisites is applicable to the project, should be clearly stated.

Note on Sections 5.1 to 5.6 above:

The expected effects, the proposed measures, the residual impacts, the proposed monitoring etc. should also be summarised in a user-friendly itemised table that enables the reader to easily relate the various aspects to each other. An indicative specimen table is attached in Appendix 3 – attached to Method Statement as Appendix 1.