



Landscape Character & Visual Assessment in Relation to an Environmental Impact Assessment (EIA) for a new Materials Recovery Facility (MRF)

WASTESERV MALTA LIMITED

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AND CONSTRUCTION OF A NEW MATERIALS RECOVERY
FACILITY

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1.0 INTRODUCTION

This report describes the landscape character & visual amenity impacts arising from the construction and operation of the proposed Materials Recovery Facility (MRF). The facility is being proposed to treat source-separated and co-mingled dry recyclables collected in Malta, and is hereafter referred to as 'the Scheme'. The proposed development will form part of the ECOHIVE Complex and will operate in conjunction with the other waste management facilities at Magħtab.

This technical study identifies the landscape character & visual amenity of the area and assesses the impacts caused in relation to the EIA for the proposed development, in line with the requirements issued by the ERA for EA/00042/20.

Source separated recyclable waste streams including paper, cardboard, plastics and metals were previously processed at a Material Recovery Facility at the Sant' Antnin Solid Waste Treatment Plant in Marsascale. This MRF operated between February 2008 and May 2017 but was destroyed during a fire. In the absence of such a facility, the processing of the aforementioned waste streams has been restricted to a manual sorting line and a more recent makeshift line at the Malta North Facility within the ECOHIVE complex.

The Scheme is being proposed to meet the provisions of Malta's Waste Management Plan and achieve recovery and recycling targets stipulated in the Circular Economy Package. The proposed Scheme aims to minimise as much as possible all landfilling and increase the recovery efficiency of recyclables' thus rendering them more suitable for sales and/or export. The facility has also been designed in such a way to ensure that any emissions and environmental impacts arising from operations are in conformity with the latest requirements and standards stipulated in the EU INDUSTRIAL EMISSIONS DIRECTIVE 2010/75/EU (IED). The Scheme also intends to have: a low processing cost per tonne of waste; good tolerance to contaminants in feed stock; low down time between failures; minimise extended periods when waste cannot be processed, and sufficient contingency planning for planned (or unplanned) maintenance and downtime.

The total processing capacity of the proposed MRF is 70 kilotons per annum to meet future waste demand projections. The site forms part of the ECOHIVE Master Plan and lies eastwards of the Zwejra landfill, adjacent to the existing Anaerobic Digester (AD) Plant. The development footprint of the entire site is around 21,373m². It currently comprises agricultural land, a dense cover of low-lying trees and remnants of local maquis/advanced garigue community.



Figure 1: Proposed site for the new material recovery facility

2.0 TERMS OF REFERENCE

The Terms of Reference related to the study on visual amenity for the EIA were issued by the ERA in April 2023.

Appendix 1 of this report contains a copy of the ToR for ease of reference.

3.0 METHODOLOGY

3.1 Area of influence

The zone of theoretical visual influence (ZTVI) within a range of 3.0Km from the Scheme was identified using Arc GIS Software as indicated in Figure 2. The ZTVI was based on the highest structure on site +57.1m above MSL. The software illustrates a theoretical area where a human receiver (sensitive receptor) would be able to see the highest point of the proposed development. The basemap used incorporates a Digital Terrain Model for the Islands with a 1m resolution, thus taking into consideration all topographical features, excluding trees, buildings and other forms of visual intrusions.

The receptors found along the chosen viewpoints are:

- Residents who can view the Scheme from their homes or residences;
- People walking in the streets, roads which have views of the Scheme or parts thereof;
- Passengers and drivers in vehicles on the roads who would have views of the Scheme;
- Farmers working their fields

Due to the popularity of the Coast Road area and its associated coastal areas, it is likely that the proposed development will be viewed by thousands of sensitive receptors on a daily basis.

The viewpoints related to the Scheme are shown in Figure 2. These include:

- Short distance views;
- Long distance views.

The author also tried to identify viewpoints which are located within the nearby urban settlements (particularly on the western and northern sides), but most of these viewpoints were blocked by buildings and boundary walls overlooking the bay.

The chosen viewpoints also considered the viewpoints taken for the visual & landscape assessment of the Organic Processing Plant (OPP) which is proposed within the ECOHIVE complex in close proximity to the Scheme site. Therefore, the same seven baseline photos were used as shown in Figure 2 to assess the cumulative impacts of all the proposed waste management infrastructure in the area. Each photograph was taken at a height of 1.8m above ground level and with a horizontal angular field of view of 39.60. The photographs for all baseline viewpoints were taken on the 29th October 2022 between 10:00hrs and 11:45hrs. Each viewpoint will be analysed to assess the characteristics of each view, and the key visual elements that make up the sites visual character.

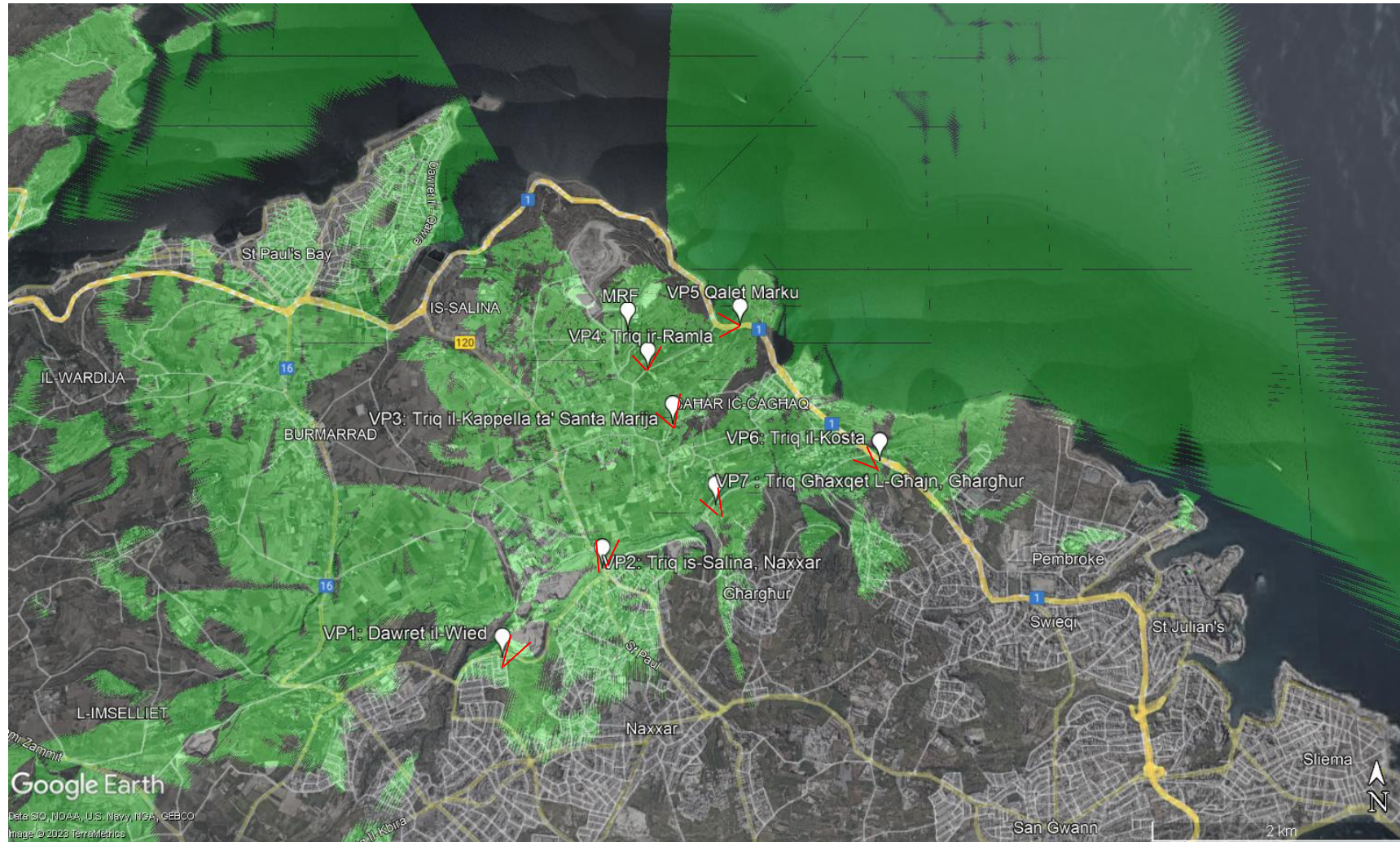


Figure 2: Viewshed analysis (in green) showing the selected viewpoint locations

The seven baseline photos were taken from the selected viewpoints. The viewpoints were chosen based on their proximity to the site and the sensitivity of the nearby receptors.

- VP1: Triq Dawret il-Wied, Mosta
- VP2: Triq is-Salina, San Pawl tat-Targa
- VP3: Triq il-Kappella ta' Santa Marija, Maghtab
- VP4: Triq ir-Ramla, Maghtab
- VP5: Qalet Marku, Naxxar
- VP6: Triq il-Kosta, St Andrew's
- VP7: Triq Ghaxqet l-Ghajj, Gharghur

3.2 Assessment Methodology

The comprehensive field survey followed the GUIDELINES FOR LANDSCAPE AND VISUAL IMPACT ASSESSMENT (The Landscape Institute and IEMA, 2013). The survey provided a delineation of visual amenity in the AoI and served to confirm the identification of potential sensitive receptors in accordance with the Guidelines. The assessment focused on how the surroundings of such sensitive receptors may be *"affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements"* (Landscape Institute and IEMA, 2013)

The baseline photos were taken according to the ERA Terms of Reference and the aforementioned guidelines. The expert compiled photomontages of how the proposed development will look from each of the viewpoints. The assessment of the visual impacts was based on these photomontages. Even though some of the nearby facilities are still under construction or still at permitting stage, such buildings were included within the photomontages to assess the cumulative impacts. The selection of the viewpoints ensured that the Scheme would be clearly visible.

Following a thorough desktop study and field survey, the expert formulated a detailed description of the site's landscape character and each viewpoint's visual amenity. Subsequent analysis involved the identification of the number of receptors and their sensitivity to the Scheme at each viewpoint.

The desk study incorporated a review of the following literature:

- A review of the features present within satellite images (aerial photographs) of the area to analyse land use trends;
- Reference to land use maps presented in the PDS and EIA;
- Research on previous environmental and planning studies undertaken in the area, historic maps and legislation and policy documents;

Since the landscape covered by the Scheme overlaps significantly with the landscape assessment documented in the EIA for the Organic Processing Plant (OPP) and the Waste-to-Energy Facility (WtE), reference to such documents is made extensively in this chapter.

The analysis involved:

- A review of the Landscape Assessment Study of Maltese Islands report, the Central Malta Local Plan (CMLP), and the Strategic Plan for Environment and Development (SPED),
- Identification of the key landscape elements in the area.
- Conducting a field survey and taking photos from selected viewpoints.
- Identification of sensitive receptors, such as physical landscape elements directly affected by development.
- Assessment of the condition and value of the existing landscape.

3.3 Compilation of Photomontages

The baseline photographs at each of the seven viewpoints formed the base for the photomontages. The following method was adopted:

- » A 3D model of the proposed development was created with 3D software (3D Studios Max). The model was created from scaled plans and drawings submitted by the project architects.
- » Materials and lighting were applied to the model to obtain photo realistic renders of the model
- » Virtual cameras were set up on the 3D software to replicate the same field of view and lens properties as recorded when the original baseline photos were taken
- » The virtual cameras were positioned in place, relative to the object, using coordinates in world space equivalent to the coordinates taken on site. Camera angles and heights were also set accordingly.
- » After rendering the model, a 2D image of the model was created to replicate the position of the scheme with respect to the location of the baseline viewpoints.
- » The image of the 3D model was imported into a 2D photo editor and layered on top of the baseline viewpoint photo.
- » Alpha channels were used to replace the background of the object with the photo of the site
- » The model was positioned in the photo using reference geographical points. Hidden parts of the structure were erased to fit the object in the environment of the photo
- » Additional effects and colour correction were used to blend the object with the photo.

3.4 Impact Significance Criteria

For each potential impact, the following information has been provided:

- Description of impact
- Policy importance of impact (Local, National, International)
- Extent of effect
- Duration of impact (temporary/permanent)

- Adverse or beneficial impact
- Reversible/irreversible impact
- Sensitivity of receptors
- Probability of impact occurring (certain/likely/uncertain/unlikely/remote); and
- Scope for mitigation/enhancement (very good/good/none)

Based on the above criteria, a summary of the significance of the impact was judged in terms of whether the impact is considered not significant, of minor significance, or of major significance:

- **Not significant:** the proposed development is not expected to give rise to any effects on the existing landscape and visual amenity of the area within the AoI.
- **Minor adverse:** the Scheme is envisaged to have an adverse impact on the landscape and visual amenity and the relevant receptors in the AoI. The degree of impact is minimal in scale and is not likely to cause any complaints.
- **Moderate adverse:** the Scheme is envisaged to adversely impact the landscape and visual amenity of the area and the relevant receptors in the AoI. The degree of impact is noticeable but not excessive, thus potentially inducing some complaints. Some work is required to improve the proposal and integrate it within the proposed development.
- **Major adverse:** the Scheme will severely affect the landscape and visual amenity of the area and the relevant receptors in the AoI. The degree of impact is significant and excessive, with severe disturbances to visual amenity being predicted. Major planning and works are required to reinvigorate the visual amenity of the area.
- **Minor beneficial:** the Scheme is envisaged to partially improve the landscape and visual amenity of the area within the AoI to a minimal extent.
- **Moderate beneficial:** the Scheme is envisaged to positively improve the landscape and visual amenity of the area within the AoI when compared to the current scenario.
- **Major beneficial:** the Scheme is envisaged to considerably improve the landscape and visual amenity of the area within the AoI, such that all sensitive receptors would be able to notice the improvements from the current scenario.

This assessment considers the proposed development in its entirety, thus including construction phases, operational phases and all ancillary operations. The assessment of the significance of the impact of the proposed development is also justified in detail.

The Visual Amenity Impact Assessment also takes into consideration any committed development within the Area of Influence or Viewshed that is likely to cause residual effects on the quality of the visual amenity of the Application Site (without and with the proposed development).

The impacts on the quality of the visual amenity of the proposed site as viewed from the approved viewpoint and an assessment of the effects of such changes on the previously identified sensitive receptors of the visual amenity are incorporated within the report. The predicted magnitude of the effects on the sensitive receptors are also justified. The

sensitivity of the visual receptors depends primarily on the location and context of the viewpoint, the strategic relevance and importance of the view and the expectations of the receptor based on the activities being carried out in the area.

The report describes any mitigation measures envisaged to prevent, minimise and where possible offset any significant adverse effects on the environment of the project. The assessment also includes a list and quantification of any residual impacts expected following the implementation of the mitigation measures. The compilation of a feasible monitoring programme has also been included, for the pre-, during and post-construction phases, including frequency of the proposed monitoring.

4.0 BASELINE DATA

4.1 Landscape setting

Two comprehensive evaluations of the landscape in the ECOHIVE complex area have been previously submitted as part of the recent Environmental Impact Assessment Studies for the Organic Processing Plant (OPP), the Thermal Treatment Facility (TTF) and the Waste to Energy (WtE) facility. As the Scheme site overlaps significantly with these areas, it was deemed necessary by the ERA to consolidate the key conclusions from the earlier assessments and adapt them to the specific context and elements of the Scheme. Consequently, the baseline vistas and panoramic shots taken from each viewpoint are identical to the ones considered in the OPP EIA.

According to the Structure Plan of the Maltese islands, Landscape is defined as the “*visual aesthetic component of the surrounding environment – that is, the views as appreciated and interpreted through the sense of sight*”¹. The Landscape Assessment Study of the Maltese islands² divides the islands into 61 landscape character units. Each unit encompasses a number of characteristic features that are confined to a particular tract or region of land. The landscape units falling within the areas of influence of the Scheme are listed and described in Table 1.

Table 1: Landscape units

SITE	GENERAL FEATURES	ENHANCING FEATURES	DETRACTING FEATURES
M9, M57, M58 St' Paul's Bay – Bugibba-Qawra	Formerly agricultural, now a densely built tourist area between St. Paul's Bay and Salina Bay. It features tall holiday flats, restaurants, and hotels, making it highly urbanized. The core area is less developed and visually hidden by taller buildings.	The entire coastline, especially the northeastern tip, is experiencing rapid development. However, the area near Il-Mahruq and Il-Ponta tal-Qawra remains relatively unspoiled. The promenade and colorful boats add vibrancy, while the villas in the north offer a break from mass tourism.	The area faces issues like excessive development, disorganized layout, and low-quality architecture. Construction debris litters the coast, dominated by unattractive structures and cluttered skylines. Traffic, waste, and pollution further degrade the area's appeal.
M14 Maghtab	This flat area near the eastern coast combines agriculture,	The area is dotted with churches, chapels, coastal towers, and historical	The Maghtab waste disposal site dominates the area, visually

¹ Landscape Assessment Study of Maltese Islands (MEPA)

² <https://era.org.mt/wp-content/uploads/2019/05/LandscapeAssessment-MalteseIslands-MEPA-2004.pdf>

	garrigue, and scattered buildings. It's bordered by the coastal road, a key link between north and south, and is home to many farms and industrial units.	sites, adding character when seen up close. Though not prominent, archaeological remains are present. Well-kept farmland and carob tree groves enhance the area's positive attributes.	impacting it and emitting unpleasant odors. Industrial activities, farms, concrete processing plants, and quarries further degrade the scenery. Additionally, scattered tipping and the Maghtab Earth Station's contrast contribute to the negative visual impact.
M21/M22 Gharghur – San Gwann hinterland	An elevated area with a dramatic north-western escarpment merging into Bahar ic-Caghaq. Gharghur and Madliena are the main settlements, surrounded by picturesque valleys. Moderate slopes are developed with dwellings, while San Gwann is mostly flat with former quarries. The area features transmission towers and valleys draining towards Bahar ic-Caghaq and St. Julians.	Gharghur is surrounded by beautiful scenery and historic buildings, including military fortifications, caves, chapels, and country houses. Terraced fields with large carob trees adorn the valley sides intersecting the great fault escarpment. Additionally, there are archaeological sites in the area, best appreciated up close.	New developments at the edge of Gharghur and Madliena starkly contrast with the rural valleys. Dereliction occurs in rural and newly constructed areas, with little amenity. Industrial plants, storage depots, greenhouse complexes, and former quarries exist in the area, impacting the scenery.
M58 North-Eastern rocky coast	Stretching from Bugibba to Tigne Point, this low-lying coast features shallow bays, some ending in sandy beaches. The area around Pembroke-St. Julians-Sliema is heavily developed, while the Bahar ic-Caghaq stretch remains largely free from permanent residential settlements. Natural coastal rock formations vary from rugged to smooth.	The undeveloped coast, including Qawra and Sliema, remains pleasant, offering a break from nearby development. The bays are splendid with colorful underwater features and marine activity. Upgraded promenades, coastal parks, and facilities enhance the area, but some beach facilities limit public enjoyment. Historic features have suffered from surrounding development. Recent coastal projects and	The extensive development at Sliema, St. Julians, and Paceville detracts from the coastal stretch, with construction sites obstructing public access and beach facilities becoming eyesores. Coastal areas are marred by construction debris, littering, and degrading features like the nearby landfill and caravan sites.

		landscaping are of higher quality than the early 1990s development.	
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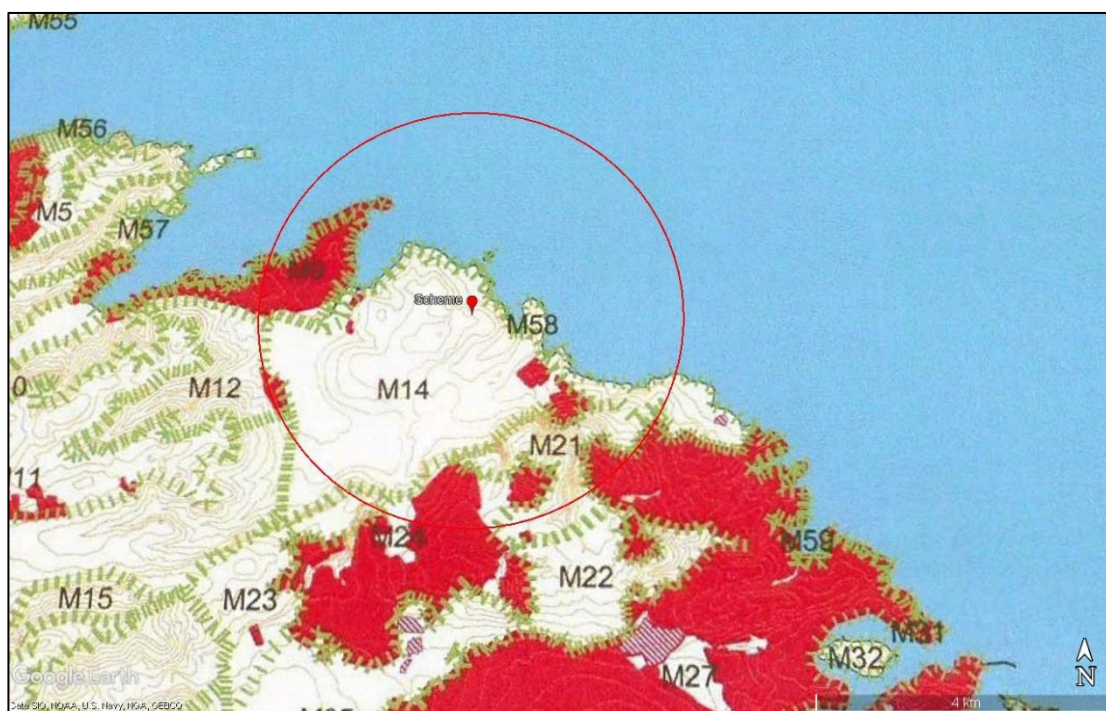


Figure 3: landscape character areas within 3km from the ECOHIVE complex³

The Scheme falls under the provisions of the CENTRAL MALTA LOCAL PLAN, 2006 (CMLP). CG22 defines a number of rural environments which are given protection due to their environmental and landscape importance. Of particular interest is the designation of Areas of High Landscape Sensitivity (AHLs) forming part of CG22 (see Figure 4).

CG22 states: *“Proposed development located within AHLs...are also to adhere to all the relevant provisions of MEPA’s Supplementary Guidance document entitled ‘Landscape Assessment Study of the Maltese Islands’. A general presumption against development will apply on sites listed within the Local Plan as...AHLs, particularly on crests and sides of faults, valleys and the edges of the coast...A general presumption also exists against any activities likely to introduce pollution and damage risks to...AHLs. These listed sites also include buffer zones to further regulate development near and adjacent to...AHLs. Development that affects AHLs will be considered by MEPA following the requirements set by the Draft Landscape Assessment Study of the Maltese Islands (2004) and relative Structure Plan Policies.”*

³ Appendix IV Landscape and Visual Assessment OPP, 2023

Despite the Scheme site not being located within an Area of High Landscape Sensitivity, some of the viewpoints are located within such AHLs.

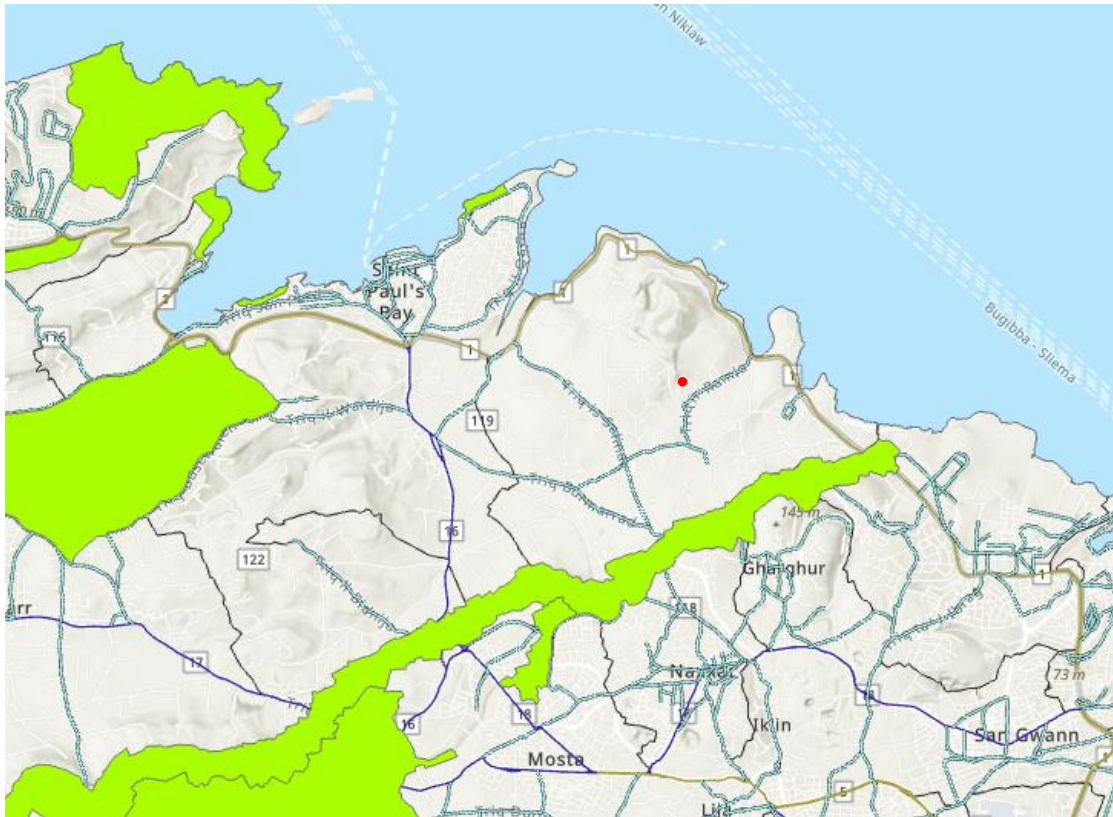


Figure 4: Areas of High Landscape Sensitivity (AHLs) around the scheme site (red circle) (Source: PA Mapsserver, 2024)

The identification of the viewpoints was carried out using the Zone of Theoretical Visual Influence (ZTVI) and walkover survey in the area surrounding the Scheme site. The potential visual receptors that may be affected by the proposed development include:

- Motorists/passengers travelling with their own vehicles and other means of transportation along the nearby roads.
- Residents residing within the ZTVI of the Scheme site. Residents living in high-altitude areas such as the outskirts of Gharghur, San Pawl tat-Targa and Madliena, as well as the nearby Maghtab hamlet are more exposed to the proposed development. The impact may also extend to short-stay tourists occupying nearby guest-houses and hotels.
- Swimmers, divers, fishermen, vessel users/owners, and/or visitors at the Bahar ic-Caghaq area.

The identified receptors in the ZTVI are not equally exposed to the potential impacts from the proposed development. The degree of exposure depends on the strategic location of the receptor when compared to the proposed Scheme, and the duration of the impact on the receptor. Shifting (non-fixed) receptors, such as motorists, passengers, pedestrians are less

exposed to visual amenity impacts when compared to workers, residents and frequent visitors to the area.

4.2 Viewpoint 1

4.2.1 Visual Elements & Intrusive Features



Figure 5: Viewpoint 1 – Triq Dawret il-Wied, Mosta⁴



Figure 6: Panoramic shot indicating the areas surrounding at viewpoint 1⁴

Viewpoint 1, located near Triq Dawret il-Wied in Mosta, provides a scenic overlook of Wied il-Ghasel and a large adjacent quarry. This area, on the outskirts of Mosta near San Pawl tat-

⁴ Taken from OPP EIA: <https://era.org.mt/era-project/ea00019-22/>

Targa, includes the ecologically and scientifically important Tal-Wej area, featuring a Dolmen and forming part of a protected high landscape value area. From this point, one can see long-distance views of Mellieħa and parts of Buġibba and St Paul's Bay, while the area is mainly dominated by the quarry and industrial complexes. Additionally, the view encompasses the plains of Burmarrad, part of the Magħtab Landfill (ECOHIVE Complex) including the future WtE, TTF and OPP plants, and a glimpse of the sea. On the opposite side, the viewpoint faces the Tal-Wej housing estate.

The view presents a mix of natural, historical, and industrial elements. Around fifty years ago, the area was a tranquil valley with distant sea views. The industrialization began with the establishment of a quarry complex, followed by the gradual expansion of a landfill near the coast. Agricultural land has given way to industrial and residential buildings, making it difficult to discern the fields. Ongoing construction, especially around the Magħtab complex, has further altered the landscape. The forthcoming waste management plants are expected to dominate the area. Unfortunately, these changes have led to the gradual degradation of the landscape. Notably, the historic Qalet Marku Tower and the Military Gunpost stand out as enduring historical features within the current surroundings.

The current state of the landscape can be characterized as ranging from poor to moderate. The once predominant agricultural land has largely succumbed to various developments, although the presence of sizable trees scattered throughout the valley mitigates the visual impact of these changes to some extent. The imposing presence of the Magħtab Complex in the background, coupled with the prominent large quarry complex in the foreground, significantly influences the overall landscape.

The key visual elements (non-intrusive and intrusive) observed at this location are summarized hereunder:

1. Blue sea
2. Blue sky
3. ECOHIVE complex
4. Garrigue habitats
5. Large trees
6. Tower cranes
7. Quarry complex
8. Qalet Marku tower
9. Gunpost
10. Greenhouses & solar panels
11. Agricultural land
12. Boats
13. Residential buildings
14. Poles and cables

Noise from passing vehicles and the occasional birds chirping comprise the main non-visual elements at Viewpoint 1.

4.2.2 Sensitive receptors

This viewpoint lies in an Area of High Landscape Sensitivity (AHLs). The landscape receptors include vegetation features and physical areas which provide an aesthetic appeal to the rural setting of the landscape.

Hundreds of visitors and residents who frequent this area via driving, walking or running along the road enjoy uninterrupted views. The MRF project will be clearly evident from this view point and would become a dominant feature complementing the WtE, TTF and OPP projects at the ECOHIVE complex.

4.3 Viewpoint 2

4.3.1 Visual Elements & Intrusive Features



Figure 7: Viewpoint 2 – Triq is-salina, San Pawl Tat-Targa⁴



Figure 8: Panoramic shot of the surroundings at viewpoint 2⁴

Viewpoint 2 is situated atop the hill at Triq is-Salina, I/o Naxxar, and falls within an Area of High Landscape Sensitivity due to the presence of the Victoria Lines. The foreground view is characterized by numerous fields, while the background is dominated by the ECOHIVE Complex, including the WtE, TTF and OPP plants, with a conspicuous heap of excavated material adjacent to the landfill, creating a stark contrast with the surrounding landscape. Between the Complex and the viewpoint, there is a noticeable proliferation of buildings over time.

The sea provides a scenic backdrop, and the views while descending the hill offer an impressive vista of the northern parts of Malta, albeit marred by scattered construction amidst the agricultural fields. Clusters of large trees dot various areas, and glimpses of Mellieħa and Gozo are also visible. The historical elements in the vicinity comprise the Qalet Marku Tower along the Coast Road, the Military Gunpost further downhill, and the Il-Widna telecommunications center, originally utilized during the war. Additionally, the upper part of the hill adjacent to the viewpoint features several large villas overlooking the valley. On the left side of the steep hill, there is a sizable operational quarry that at times causes episodes of dust dispersion.

The presence of the landfill and associated waste management structures, along with ongoing expansion of various types of development in recent years, has led to the deterioration of the landscape from Viewpoint 2. Most of the buildings in this area are industrial, including those related to construction, alongside agricultural farms and sporadic farmhouse developments, creating a mixed environment. The construction activities in the area are also impacting air quality through the dispersion of dust, affecting visibility, agricultural output, and public health. Overall, the landscape can be considered to be in a moderate condition.

The key visual elements (intrusive and non-intrusive) observed at this location are summarized hereunder:

1. Blue sea
2. Blue sky
3. Agricultural fields
4. Garigue habitats
5. Trees and vegetation
6. ECOHIVE complex
7. Residential buildings
8. Industrial buildings
9. Military gunpost
10. Qalet Marku tower
11. Tower cranes
12. Storage yards
13. Vessels
14. Poles, signs and cables

The most prominent non-visual landscape feature observed in the area is the noise from vehicles.

4.3.2 Sensitive receptors

The rural landscape setting provided by this viewpoint, which is also designated as an AHLS, offer the most sensitive feature. This includes various landscape sensitive receptors such as vegetation and other geomorphological features.

The area is frequented by motorists, residents and persons enjoying a stroll in the rural areas of San Pawl tat-Targa. Since this viewpoint is located at a higher altitude than the Scheme, the proposed MRF will be clearly noticeable.

4.4 Viewpoint 3

4.4.1 Visual Elements & Intrusive Features



Figure 9: Viewpoint 3 – Triq il-kappella ta' Santa Marija, Maghtab⁴



Figure 10: Panoramic shots of the surroundings at Viewpoint 3⁴

Viewpoint 3 is situated along a road that connects Triq is-Salina and Triq il-Kosta. The view from this vantage point encompasses the ECOHIVE Complex, and clearly indicates the sites of the WtE, TTF and OPP plants. In the foreground, one can note an abandoned field with a farmhouse on one side and several garages on the other side. Beyond the field, the Magħtab Interconnector building and the landfill are easily noticeable, along with a substantial heap of excavated waste deposited adjacent to the complex, creating a stark contrast. The rear of the viewpoint is characterized by a lengthy, tall wall belonging to a construction-related facility, with various metal structures visible in the facility's yard. Additionally, a small field and other buildings are observable on the same side of the road.

The primary features dominating the viewpoint are the ECOHIVE complex, and the walls of the nearby garages in the foreground. The overall condition of this landscape can be considered moderate.

The key visual elements (intrusive and non-intrusive) observed at this viewpoint are summarized hereunder:

1. Blue sky
2. ECOHIVE Complex
3. Trees & vegetation
4. Agricultural fields
5. Industrial garages
6. Interconnector building

Because the viewpoint is situated near a public road, the predominant non-visual aspect experienced in the area is the noise from passing vehicles. The scent of soil, manure, and recently cut vegetation from the nearby fields constitutes the olfactory attributes of this viewpoint.

4.4.2 Sensitive receptors

In terms of landscape receptors, these mainly comprise the terraced agricultural land elements enclosed by rubble walls, interspersed with patches of vegetation, and the

components of the ECOHIVE Complex. These features contribute to the unique essence, aesthetic appeal, enduring attributes, and overall character of the landscape.

This view is roughly at the same elevation as the Scheme, thus the MRF will be immediately noticeable. The area is mostly frequented by the residents of Maghtab, farmers, owners of nearby industrial operations, as well as the general public travelling towards and from the Civic Amenity site.

4.5 Viewpoint 4

4.5.1 Visual Elements & Intrusive Features



Figure 11: Viewpoint 4 – Triq ir-ramla, maghtab⁴



Figure 12: Panoramic shots of the surroundings at view point 4⁴

Located along Triq ir-Ramla, Viewpoint 4 offers a view of the landfill's rear entrance, adjacent to the Interconnector building. The area features two prominent material heaps within the ECOHIVE Complex: the old landfill and a contrasting heap of excavated waste. Additionally, the sites comprising of the future waste management plants and several disused stepped agricultural fields are notable in the immediate surroundings. The Interconnector building marks the road's end before reaching one of the ECOHIVE entrances. The backside of the viewpoint comprises agricultural land forming part of Wied Kieli, where various shielded industrial activities are observed.

The landscape in this area is primarily defined by a blend of agricultural and industrial activities. However, the WtE & TTF plants will emerge as the primary distinctive feature from this vantage point. The fields surrounding the expansive landfill are relatively unproductive, and in several instances, they have been repurposed for more lucrative uses. While some fields are still utilized by small-scale farmers, the area exhibits a degree of degradation.

The current state of the landscape is fairly satisfactory, particularly when taking into account the diverse range of activities taking place on the surrounding land.

The key visual elements (intrusive and non-intrusive) observed at this viewpoint are summarized hereunder:

1. Blue sky
2. Agricultural fields
3. Vegetation and trees
4. Rubble walls
5. ECOHIVE Complex

The main non-visual features observed at this viewpoint include, the noise from passing vehicles, birds chirping and noise from agricultural machinery.

4.5.2 Sensitive receptors

The landscape receptors encompass vegetation characteristics and physical spaces that contribute to the unique essence, aesthetic appeal, enduring attributes, and overall character of the landscape. These elements play a pivotal role in shaping the landscape's identity and visual appeal, influencing how it is perceived and experienced by individuals.

Viewpoint 4 is located at a lower altitude than the Scheme hence it will only be partially visible from this vista. The terraced fields and the existing AD plant are noticeable from the baseline photograph. The main sensitive receptors in the area comprise farmers, residents of Maghtab, casual strollers along Triq ir-Ramla, as well as the occasional passengers and drivers accessing and/or leaving Maghtab through Triq il-Kosta.

4.6 Viewpoint 5

4.6.1 Visual Elements & Intrusive Features



Figure 13: Viewpoint 5 – Triq il-Kosta, Qalet Marku⁴



Figure 14: Panoramic shots showing the surroundings at Viewpoint 5⁴

Viewpoint 5 along Triq il-Kosta, next to the Qalet Marku peninsula, offers a clear perspective of the area. The ECOHIVE Complex, including the landfill and a large heap of excavated waste, stands out behind a small hill. Once built, the WtE, TTF & OPP plants on the seaward side will become a noticeable feature. The recently reconstructed Triq il-Kosta has left visible marks in the form of excavated sides of the road and seaward concrete walls. Several caravans have taken up space alongside the road. The area is rocky with small bushes, and the bay of Qalet Marku is part of the foreground.

The Qalet Marku peninsula is mainly characterized by the historic Tower at its far end, and the opposite side is dominated by a rocky area with low bushes and trees. The road experiences heavy traffic, especially during the hot summer months when beach visitors contribute to the congestion.

In this landscape, anthropogenic evidence is evident through various caravans now occupying an area that was previously part of the road, further degrading the scenery. These caravans have become a common sight throughout the year, though not all of them are occupied at all times. The absence of retaining walls along the roads reflects a disregard for natural resources during the construction process, which may eventually impact the surrounding vegetation. The old landfill, covered with both wild and planted vegetation as part of a site rehabilitation process, blends relatively well with the surroundings. However, the addition of another heap of white excavated material contrasts with the semi-arid environment, further degrading the area. The forthcoming WtE, OPP and TTF plants, partially overshadowing the old landfill, will become a prominent feature in the existing landscape.

The current state of the landscape is fair but has worsened somewhat due to incomplete work during road construction. The new additions, also contribute to the deterioration. Additionally, the year-round parking of numerous caravans creates a makeshift village atmosphere, further contributing to the decline.

The key visual elements (intrusive and non-intrusive) observed at this viewpoint are summarized hereunder:

1. Blue sea
2. Blue sky
3. Vehicles & caravans
4. Coastal garigue
5. Shrubs and trees
6. ECOHIVE complex
7. Road infrastructure

The noise from passing vehicles and the sound of the waves crashing along the coastline comprise the non-visual elements of this viewpoint.

4.6.2 Sensitive receptors

Most of the landscape receptors in this case consist of natural garrigue and ermes communities, along with other anthropogenic elements that have been gradually added and have now become part of the existing landscape. These receptors encompass vegetation features and physical areas that define the landscape's aesthetic and enduring qualities, as well as its overall character.

The viewpoint encompasses Qalet Marku Bay alongside the Qalet Marku peninsula which abuts Triq il-Kosta. The scheme will be visible from this point influencing thousands of vehicles traversing Triq il-Kosta on a daily basis, as well as a number of recreational activities

in the area including: campers, swimmers, joggers, cyclists and motorcycle enthusiasts stopping at a nearby kiosk on weekends.

4.7 Viewpoint 6

4.7.1 Visual Elements & Intrusive Features



Figure 15: Viewpoint 6 – Triq il-Kosta, St Andrew's⁴



Figure 16: Panoramic shots of the surroundings at viewpoint 6⁴

Viewpoint 6 encompasses an Area of High Landscape Sensitivity and provides a downhill perspective from the side of the Coast Road at St Andrew's. When vehicles travel downhill through this route, they will have a clear view of the scheme and the adjacent WtE, TTF and OPP plants. The view on land from this point mainly includes the Splash and Fun Park on the

seaward side, several buildings on the opposite side of the road, and the ECOHIVE landfill heap. Additionally, the area features the Qalet Marku peninsula and Tower, the sea, and a small part of Gozo in the background.

The recently rebuilt road is divided by a metal guardrail and electricity pylons, with a high "rubble wall" dominating the upper part near the viewpoint. The road experiences heavy use throughout the week and year.

The view includes a wide road with urban structures on the sides, contrasting with the Splash and Fun Park at the bottom. The old part of the ECOHIVE landfill has a similar texture to the surroundings, but recent interventions have exposed fresh surfaces. The large WtE & OPP structures will stand out, depending on the colour schemes used, against the massive landfill behind it. There's a striking contrast between the earth colours of the dry land and the fresh colours of the blue sea and sky.

The existing landscape is in moderate to poor condition, lacking elements of high-quality characteristic landscapes. Over the years, interventions, especially the massive landfill and the proposed waste facilities at the ECOHIVE complex, have significantly altered the topography. Other human-made changes, such as buildings along the left side of the road and the colourful structures of the Splash and Fun Park, also impact the landscape, although not fully visible from this viewpoint.

The key visual elements (intrusive and non-intrusive) observed at this viewpoint are summarized hereunder:

1. Blue sea
2. Blue sky
3. ECOHIVE complex
4. Splash and Fun complex
5. Residential buildings
6. Qalet Marku tower
7. Road infrastructure and utilities
8. Large trees and vegetation
9. Agricultural land
10. Rubble walls
11. Traversing vehicles

The noise from vehicles passing along the Coast Road Ten-T network contribute to the non-visual landscape elements observed at this viewpoint.

4.7.2 Sensitive receptors

The viewpoint offers panoramic views from the areas of Madliena, comprising an Area of High Landscape Sensitivity. The sensitive receptors at this viewpoint encompass natural vegetation features and various natural and human-made physical areas that define the landscape's aesthetic qualities and character.



Thousands of motorists descending towards the Coast Road from St Andrew's will be observing the vistas offered by Viewpoint 6. Similar views are also observed from the adjacent villas located at the outskirts of Madliena. Whilst the landfill is the most prominent feature, the additional waste management infrastructure at the ECOHIVE complex will be noticeable from this viewpoint.

4.8 Viewpoint 7

4.8.1 Visual Elements & Intrusive Features



Figure 17: Viewpoint 7 – Triq ghaxqet il-ghajn, Gharghur⁴



Figure 18: Panoramic shots of the surroundings at viewpoint 7⁴

Situated at an area known as Top of the World due to its elevated position, this viewpoint offers a commanding outlook over Baħar ic-Cagħaq, the ECOHIVE Complex, and the distant Buġibba area, with views extending as far as the island of Gozo. The area below, primarily agricultural, also features various constructions interspersed among the fields, comprising residences, industrial garages, agricultural buildings, and the rapid expansion of the formerly seasonal residential area of Baħar ic-Cagħaq. The viewpoint, with its dominant views and associated heritage as part of the Victoria Lines, falls within an Area of High Landscape Sensitivity.

On the opposite side, the viewpoint overlooks a largely untouched garrigue area, with minimal human presence represented by parked vehicles, benches, and a small section of the Madliena residential area.

This panoramic view encompasses a blend of elements that have shaped the area over recent decades. Various constructions, including farms, industrial facilities, and residential buildings, have emerged throughout the valley, while the anaerobic digester at the ECOHIVE complex and preparations for the WtE plant are also visible from this vantage point. The impending WtE, OPP and TTF plants will notably alter the landscape, collectively contributing to the degradation of the area's natural elements. In the absence of these developments, the view from this point would have been exceptional, owing to its expansive vistas and sense of openness.

The existing landscape condition is currently moderate but declining. The area's once notable natural elements are rapidly diminishing due to the aforementioned intrusions. The activities at the ECOHIVE complex have played a part in this deterioration, further exacerbated by sporadic development across the valley floor.

The key visual elements (intrusive and non-intrusive) observed at this viewpoint are summarized hereunder:

1. Blue sea
2. Blue sky
3. ECOHIVE complex
4. Industrial buildings
5. Agricultural land
6. Large trees and vegetation
7. Agricultural buildings
8. Residential buildings
9. Long distance views of the Maltese islands

The non-visual elements comprising this landscape include the sound of birds chirping, recreational activities, people talking and noise from agricultural activity.

4.8.2 Sensitive receptors

As an Area of High Landscape Sensitivity, various elements contribute to the landscape receptors of Viewpoint 7. It encompasses both natural components like garrigue and ermes

communities, as well as anthropogenic features such as residences, farms, and industrial units. These receptors encompass vegetation characteristics and physical spaces that evoke specific perceptions of the landscape, including its aesthetic appeal, enduring qualities, and distinctive essence.

Hundreds of people visit Triq Ghaxet l-Ghajn (Top of the Word) on a daily basis for their recreational walks, jogs, cycling routes and occasional hikes and picnics. Similar views are also observed from the Victoria lines which are located in close proximity.

4.9 Photomontages

As described in Section 3.3, seven photomontages were created for each baseline viewpoint taken within the ZTVI. The following figures present the photomontages generated from this process.



Figure 19: Viewpoint 1 – Triq Dawret il-Wied, Mosta⁴



Figure 20: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint 14



Figure 21: Viewpoint 1 – The MRF project superimposed on the TTF, OPP and WTE photomontages at Triq Dawret il-Wied, Mosta



Figure 22: Viewpoint 2 – Triq is-Salina, San Pawl tat-targa⁴



Figure 23: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint2⁴



Figure 24: Viewpoint 2 – the MRF project superimposed on the TTF, OPP and WTE photomontages at Triq is-Salina, San Pawl tat-targa



Figure 25: Viewpoint 3 – Triq il-Kappella ta' Santa Marija, Maghtab⁴



Figure 26: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint3⁴



Figure 27: Viewpoint 3 -The MRF project superimposed on the TTF, OPP and WTE photomontages at Triq il-Kappella ta' Santa Marija, Maghtab



Figure 28: Viewpoint 4 – Triq ir-Ramla, Maghtab⁴



Figure 29: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint4⁴



Figure 30: Viewpoint 4 -The MRF superimposed on the TTF, OPP and WTE photomontages at Triq ir-Ramla, Maghtab



Figure 31: Viewpoint 5 – Triq il-Kosta, Qalet Marku⁴



Figure 32: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint5⁴



Figure 33: Viewpoint 5 -The MRF project superimposed on the TTF, OPP and WtE photomontages at Triq il-Kosta, Qalet Marku



Figure 34: Viewpoint 6 – Triq il-Kosta, St Andrew's



Figure 35 : Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint6⁴



Figure 36: Viewpoint 7 -The MRF projects superimposed on the TTF, OPP and WTE photomontages at Triq il-Kosta, St Andrew's



Figure 37: Viewpoint 7 - Triq Ghaxet il-Ghajn, Għargħur



Figure 38: Cumulative view showing photomontage of TTF, WtE and OPP plant only at viewpoint6⁴



Figure 39: Viewpoint 7 -The MRF superimposed on the TTF, OPP and WTE photomontages at Triq Ghaxet il-Ghajj, Gharghur

5.0 IMPACT ASSESSMENT

5.1 Construction Phase

Construction operations will be discernible from all seven viewpoints examined in this analysis. The utilisation of sizable cranes, excavation machinery, fencing, stockpiles, and other construction equipment will degrade the visual landscape quality across all seven viewpoints. The evaluation anticipates the degree of impact to range from moderate to major adverse, contingent upon the vista's location and the presence of obstructive elements that may obscure or impede the views.

The visibility of on-site construction activities is heightened at viewpoints situated in close proximity to the scheme, particularly when these activities intrude upon or alter the skyline. This effect is most pronounced at VP3 and VP4, where observers experience short-distance views, exposing them to a more detailed perspective of the ongoing works. Moreover, VP1 and VP7 are susceptible to heightened visibility due to their vantage points, which may easily capture the presence of tall machinery or construction elements that intersect with the skyline. The variety and quantity of receptors subjected to such viewpoints also amplifies the impact of the construction activities to major adverse on the overall visual amenity.

The construction activities would also be discernible at Viewpoints 2, 5, and 6, albeit to a lesser degree compared to the aforementioned vistas. This can be attributed to several factors. Firstly, the works at these viewpoints may not significantly alter the skyline due to the rugged terrain of the landfill in the backdrop, which naturally dominates the view. Additionally, these sites also benefit from partial shielding provided by the surrounding walls, dense vegetation such as trees, or nearby structures, which help to partially conceal the visual impact of the construction activities. Thus, while still noticeable, the construction works at these viewpoints are somewhat subdued compared to other locations and are defined as moderate adverse.

When assessing landscape impacts, one should consider the sensitivity of the viewpoints under examination. Although the Scheme site itself is not situated within an Area of High Landscape Sensitivity, Viewpoints 1, 2, 6, and 7 fall within such designated areas according to the CENTRAL MALTA LOCAL PLAN, CG22. The potential occurrence of simultaneous construction activities alongside the works on the WtE, TTF and OPP facilities will continue to diminish the landscape quality of the region by encroaching upon agricultural land parcels near the landfill. Consequently, the construction-related impacts on the landscape are anticipated to be significantly adverse for these four viewpoints.

The immediate landscape vistas at Viewpoints 3 and 4 will be characterized by the presence of construction machinery, potential dispersion of dust, and the influence of non-visual landscape attributes, including noise and vibrations. Similarly, at Viewpoint 5, the construction activities will be readily apparent to the thousands of individuals traveling along Triq il-Kosta daily. The combined effect of simultaneous construction at all three waste

management facilities cannot be overlooked, resulting in significant adverse effects also observed from these three viewpoints.

Although featuring an array of short, medium, and long-range perspectives, as well as diverse levels of landscape sensitivity, the planned construction endeavours are visible from all of these points. Given the frequent visitation by a large number of individuals to these viewpoints on a daily basis, the resultant impact is substantial, affecting a considerable segment of the population.

5.2 Operational Phase

The proposed MRF building commands a substantial presence, especially when viewed in isolation. Its sheer scale and massing have a direct impact on the immediate landscape. However, when juxtaposed against the adjacent WtE and OPP facilities, the MRF's size becomes somewhat subdued, as it pales in comparison to the prominence of its counterparts. The extent of its visual impact varies, ranging from minor to potentially significant adverse effects. These effects hinge on multiple factors, including the observer's vantage point and the presence of intervening elements that either obscure or integrate the MRF into the surrounding scenery.

At Viewpoint 1, the vast majority of the MRF building would superimpose the existing and proposed WSM facilities which lie in the background. This includes the lower levels of the WtE facility that is yet to be constructed and the existing reactor tanks located within the confinements of the AD plant. While the side of the MRF facing the Ta' Zwejra landfill might minimally obstruct views of the sea, such obstruction would be imperceptible to the naked eye at such a considerable distance, merely hinting at its existence. Consequently, the impact has been classified as minor adverse.

Viewpoint 2 offers a perspective akin to Viewpoint 1 but with a closer proximity to the project, thereby amplifying slightly the MRF's presence in the landscape. The intervening presence of the topographical contours of Ta' Zwejra landfill masks the MRF building. The MRF effectively obscures the entirety of the existing AD plant and swathes of the lower levels of both the WtE and OPP plants. The MRF blends reasonably well with the existing and planned ECOHIVE infrastructure and the loss of vegetation and trees within its footprint is barely noticeable at such distances. In fact, within the broader context of the waste management infrastructure in the area, this alteration is not immediately evident to casual observers from this location. Consequently, the overall impact registers as minor adverse.

Viewpoint 3 grants a close-up encounter with the proposed MRF, albeit within the imposing presence of the WtE and OPP facilities dominating the skyline. The WSM buildings, while architecturally distinct, seamlessly blend together from this angle, potentially misleading observers into perceiving them as interconnected buildings, devoid of spatial segregation. The MRF, with its horizontal footprint and partial elevation surpassing that of the existing AD plant, entirely shrouds the latter from view. Placed amongst a backdrop dominated by various WSM facilities, the MRF's addition to the ECOHIVE complex appears seamlessly integrated, yielding no major visual disruptions. While the loss of trees and vegetation is

perceptible upon comparing the photomontage to the baseline photograph, its visual impact remains moderate in significance, given the broader context of the surrounding infrastructure.

Viewpoint 4 offers a close-up encounter with the proposed MRF, its presence eclipsing both the AD plant and the landfill in the background. The sheer massing of the MRF is evident from this perspective, as the existing trees on site would no longer provide any semblance of cover for the existing WSM infrastructure. Furthermore, the adjacent WtE, TTF and OPP facilities stand out, exacerbating the visual intrusion and resulting in significant adverse impacts. Such infrastructure contrasts with the rural and characteristic landscape features of the foreground, which are characterized by fields, rubble walls, extensive vegetation, and pockets of tree plantations. Consequently, the visual impact is deemed majorly adverse at this vista, reflecting the stark contrast with the area's natural aesthetic.

At viewpoint 5, the proposed MRF facility stands out prominently to all observers utilizing the Coast Road en route to Bugibba. While the MRF does not pierce the skyline due to the dominating presence of the landfills in the background, this building along with the adjacent OPP, TTF and WtE facilities command attention and contribute to a landscape marked by industrial activity. The spatial separation between these facilities and the MRF is clearly delineated from this vista. The greyish façade of the MRF asserts dominance since it is devoid of any architectural or visual features that mitigate its appearance. Consequently, the impact is categorized as major adverse.

Viewpoint 6, situated along the initial stretch of the Coast Road, provides a perspective where the MRF building is just apparent. Its visibility is obstructed by walls, buildings, and trees, which partly conceal its presence. The MRF seamlessly integrates into the surroundings without disrupting the skyline, as it is enveloped by the imposing backdrop of the Ta' Zwejra landfill. The relationship between the MRF and adjacent OPP, AD, TTF and WtE facilities is evident, contributing to a cohesive industrial landscape. To further harmonize with the natural surroundings, efforts should be made to mitigate the color contrast of the MRF's greyish façade against the earth-toned landfill and adjacent fields. Consequently, the visual impact from Viewpoint 6 remains moderately adverse, reflecting the limited disruption to the vista along this segment of the road network.

Viewpoint 7 offers a comprehensive panorama, encompassing all four existing and/or proposed structures within the eastern section of the ECOHIVE complex, arranged from left to right: the MRF, AD, TTF, OPP, and WtE facilities. This viewpoint attracts numerous visitors seeking to admire the sprawling coastal vistas, albeit amidst ongoing landfilling and waste management operations that currently mar the scenery. The introduction of the MRF stands out at this high viewing angle since it clearly shows its occupation of rural land. Its massing takes up a considerable portion of the horizontal plane of view, merging seamlessly with the adjacent WSM structures. Despite this, the MRF building avoids breaking the skyline, courtesy of the expansive backdrop provided by the landfill, thus mitigating its visual impact to some extent. The grey tones adorning the MRF's facade stand in contrast to the earth-coloured hues of the surrounding landscape, necessitating a more harmonious color scheme to blend the structure seamlessly into its environment. Consequently, the impact is major

adverse, however thoughtful design adjustments could further mitigate its visual intrusion on this coastal viewpoint.

When evaluating landscape impacts, it's essential to consider the sensitivity of the viewpoints being analysed. While the Scheme site itself doesn't fall within an Area of High Landscape Sensitivity, Viewpoints 1, 2, 6, and 7 are designated as such according to the CENTRAL MALTA LOCAL PLAN, CG22. The presence of multiple waste management facilities concurrently will further degrade the landscape quality observed from these viewpoints, encroaching upon agricultural land adjacent to the landfill. As a result, operational landscape impacts on the MRF are expected to be major adverse from these four viewpoints.

Viewpoints 3 and 4 will feature the prominent presence of the MRF building dominating the immediate landscape. Similarly, at Viewpoint 5, the building will be conspicuous to the numerous individuals commuting along Triq il-Kosta daily. The collective impact of concurrent construction activities at all three waste management facilities cannot be understated, leading to significant adverse effects also noted from these three viewpoints.

The operational phase of the facility may introduce concerns regarding residual light pollution during nighttime hours. Without the implementation of effective mitigation strategies, this could result in nightscape glare, potentially disturbing residents' sleep patterns, disorienting avifauna, attracting pests and vermin, and disrupting the behaviour of nearby fauna. However, the impact assessment cautiously categorizes these concerns as minor adverse, since the facility's operational hours are not anticipated to extend beyond 16 hours daily. Furthermore, proactive measures will be implemented to address these concerns, including the installation of appropriate light fixtures designed to minimize light pollution and its associated impacts, thereby ensuring the new development operates harmoniously within its nocturnal environment.

6.0 MITIGATION MEASURES, RESIDUAL IMPACTS AND MONITORING

6.1 Mitigation Measures and Residual Impacts

As part of the finishing works, it is imperative that the MRF building facades and structures are painted using neutral earth-toned colours that harmonize with the natural aesthetics of the surrounding terrain. These measures are essential to mitigate the visual impact of the proposed development, facilitating seamless integration into the landscape.

Additionally, the Contractor must strategically install all on-site light fixtures to pre-empt any potential complaints or adverse impacts on nearby residents and fauna. The selection of outdoor lighting systems by the Applicant should prioritize shielded fixtures directed downwards onto internal road areas. This precaution is crucial in minimizing spillover lighting effects that could otherwise result in undesirable glare and disturbances to the nightscape.

6.2 Monitoring

The Applicant should engage an environmental expert to monitor the works during the construction phase to ensure compliance with the ENVIRONMENTAL CONSTRUCTION SITE REGULATIONS OF 2007 (S.L.552.09). Attention should be given to the erection of appropriate site boundary walls, the mitigation of dust dispersion and the containment of stockpiles and machinery within the site boundaries. This will ensure that the Contractor manages the works effectively to reduce the visual impacts.

6.3 Residual impacts

Despite the Applicant's implementation of a monitoring program and mitigation measures, it is expected that some residual impacts will persist. These are mainly due to the permanent nature of the building and the utilization of rural land in the vicinity.

7.0 SUMMARY OF IMPACTS

Table 2: Summary of expected impacts of the proposed Scheme

IMPACT TYPE AND SOURCE			IMPACT RECEPTOR		EFFECT AND SCALE							PROBABILITY OF IMPACT OCCURRING	OVERALL IMPACT SIGNIFICANCE	PROPOSED MITIGATION MEASURES	RESIDUAL IMPACT SIGNIFICANCE	OTHER REQUIREMENTS
IMPACT TYPE	SPECIFIC INTERVENTION LEADING TO IMPACT	PROJECT PHASE	RECEPTOR TYPE	SENSITIVITY & RESILIENCE TOWARDS IMPACT	DIRECT/INDIRECT/ CUMULATIVE	BENEFICIAL/ ADVERSE	SEVERITY	PHYSICAL/ GEOGRAPHIC EXTENT OF IMPACT	SHORT/ MEDIUM/ LONG TERM	TEMPORARY/ PERMANENT	REVERSIBLE/ IRREVERSIBLE					
Deterioration of the landscape value during construction works at VP1 to VP7	Presence of construction and excavation machinery, cranes; dust; noise; vibration and associated works	Construction & Excavation	Landscape elements	High	Direct	Adverse	Medium	Site and immediate surroundings	Medium	Temporary	Irreversible	Certain	Major	Adherence to Construction Site Regulations S.L.623.08 to reduce visual and landscape inconveniences such as dust dispersion, noise & vibration	Moderate	N/A
Reduced visual amenity during construction works at VP1, VP3, VP4, & VP7	Presence of construction and excavation machinery, cranes; dust; noise; vibration and associated works	Construction & Excavation	Residents, Farmers, Workers, Motorists, Passengers,	High	Direct	Adverse	Medium	Site and immediate surroundings	Medium	Temporary	Irreversible	Certain	Major		Moderate	N/A
Reduced visual amenity during construction works at VP2, VP5 & VP6		Construction & Excavation	Recreational activities: campers, joggers, cyclist, casual strollers	High	Direct	Adverse	Medium	Site and immediate surroundings	Medium	Temporary	Irreversible	Certain	Moderate		Minor	N/A
Deterioration of the landscape value during operations at VP1 to VP7	Presence of MRF Building at ECOHIVE complex and take up of agricultural land	Construction & Excavation	Landscape elements	High	Direct	Adverse	Medium	Site and immediate surroundings	Medium	Permanent	Irreversible	Certain	Major	Earth-toned colours which blend with the surroundings should be used on the building façade.	Major (slight reduction)	N/A
Reduced visual amenity during operations at VP4, VP5 & VP7	Presence of MRF Building at ECOHIVE complex and take up of agricultural land	Operation	Residents, Farmers, Workers, Motorists,	High	Direct	Adverse	Medium	Site and immediate surroundings	Long	Permanent	Irreversible	Certain	Major		Major (slight reduction)	N/A
Reduced visual amenity during operations at VP3 & VP6		Operation	Passengers, Recreational activities: campers, joggers, cyclist, casual strollers	High	Direct	Adverse	Medium	Site and immediate surroundings	Long	Permanent	Irreversible	Certain	Moderate		Moderate (slight reduction)	N/A
Reduced visual amenity during operations at VP1 & VP2		Operation		High	Direct	Adverse	Medium	Site and immediate surroundings	Long	Permanent	Irreversible	Certain	Minor		Minor (slight reduction)	N/A
Sustained light pollution at VP1 to VP7	External lighting	Operation	Residents & nearby fauna	High	Direct	Adverse	High	Site and immediate surroundings	Long	Temporary	Reversible	Unlikely	Minor	Strategic placement of external light systems; Shielded and	Negligible	N/A



LANDSCAPE & VISUAL

														downward lights to avoid residual light pollution.		
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APPENDIX 1

TERMS OF REFERENCE

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:

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

3.2 Visual Amenity

The following need to be identified and submitted for prior ERA approval:

- The Zone of Theoretical Visibility (ZTV; also known as Zone of Visual Influence) of the site and the development under consideration; and
- Assessment viewpoints representative of short-, medium- and long-distance views towards the site. A baseline photograph taken from each proposed viewpoint is also required. The submission should cover all the important views of the site, whilst avoiding the inclusion of superfluous or inappropriate viewpoints (e.g. positions from which the site is not visible, or where the view is obstructed or dominated by physical obstacles in the foreground).

Thereafter, for each approved viewpoint, the projected situation and appearance of the site (i.e. as it would look with the proposed development in place) should be compared to the current baseline situation (i.e. without the proposed development). The following should be predicted and assessed accordingly:

- The expected changes to visual amenity as a result of the proposed development;
- The effects of such changes on the quality of the visual amenity of the site; and
- The effects of such changes on relevant receptors. (The receptors should also be duly identified and their degree of sensitivity should also be indicated and justified).

Note: The baseline photographs and the photomontages should, unless otherwise directed by ERA, satisfy the following:

- The location of each viewpoint should be shown on a map that also depicts the viewshed for the proposed site as described above. The visual angle of the photograph should also be indicated and should not be greater than 50°. Stitched photos that illustrate the field of vision towards the site from each viewpoint are acceptable as long as they are additional to the 50-degree photograph.*
- The photographs and photomontages submitted should:*
 - *Be at least A3 in size. Strips which are A3 in width but not in length are not appropriate except as supplementary illustrative material;*
 - *Include the date and time at which the photo was taken;*
 - *Be of good quality, with faithful reproduction approximating as much as reasonably possible what would normally be visible to the naked eye. The photos should be taken in good weather, and should be taken at least 2 hours after sunrise and 2 hours before sunset. Colours should not be digitally or otherwise manipulated. As a guideline, the image should have a printing density of 200 dots per inch or better. In some instances, digital images having a resolution of 1024 x 728 or better may be required for multimedia presentation purposes;*
 - *Be taken in such a manner that near-field objects do not overpower or dominate features near the image plane passing through the project area;*
 - *Be taken from a height above ground level that is representative of the eye level of the viewer, and such height should be duly documented; and*
 - *Ensure that all additional/replacement structures and features depicted in the photomontages have a scale which proportionately tallies with the existing nearby features.*



- (c) *Wherever relevant, the photomontage(s) should cover the following scenarios: - The development without the proposed landscaping scheme, representing the worst-case scenario; - The development complete with the proposed landscaping scheme as it is expected to look when the trees reach maturity, also providing an indicative timeframe as to when such maturity is expected to be attained; and - (where relevant in relation to impact of nocturnal lighting) the development and its ancillary lighting as it would appear during night-time.*

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.

4.1 Effects of the environment aspects identified in Section 3

The assessment should thoroughly identify and evaluate the impacts and implications of the project on all the relevant environmental aspects identified in Section 3 above, also taking into account the various considerations outlined in the respective sections.

With regards to Section 3.4 and 3.5 above, the ecological status of the area in question is to be evaluated, taking into consideration the definition of status by relevant EU Policy, and assessing the extent to which the project will cause deterioration in status or compromise the achievement of good status in line with Article 4(7) of the EU Water Framework Directive.

4.2 Impacts related to Climate Change and Climate Change Adaptation

The assessment should address the following aspects, as relevant:

1. *The contribution of the project to greenhouse gas (GHG) emissions and climate change, including:*
 - i. *The direct, indirect and off-site GHG emissions and related impacts during all relevant phases of the project, including those arising as a result of the electrical power demand of the project;*
 - ii. *Any massive GHG emissions that may occur as a consequence of accidents or malfunctions;*
 - iii. *The impacts of the proposal on carbon sinks (e.g. wooded/afforested areas, agricultural soils, landfills, wetlands, and marine environments);*
 - iv. *The components of the project that are expected to contribute to renewable energy generation on site or to a reduction in GHG emissions through substitution of current generation facilities, including a quantification and critique of their reliability and actual net contribution to climate change mitigation as well as an identification of the impacts of such components on other aspects of the environment (e.g. landscape, land take, avifauna); and*

The implications of the project and its operations and ancillary demands on National GHG emission targets.

2. *The implications of climate change on the proposal, including:*
 - i. *The aspects/elements of the project that are likely to be affected by changes or variability in climate-related parameters (e.g. temperature, humidity, weather patterns, sea level, etc.);*
 - ii. *The potential impacts that such changes may have on the proposal, including any possible impacts resulting from changes to multiple parameters; and*
 - iii. *The adaptability of the project and its components and operations vis-à-vis the relevant climate change parameters and trends.*

4.3 Environmental risk

The assessment should also address, in sufficient detail, any relevant environmental risk (including major-accident scenarios such as contamination, emissions, explosions, blast, flooding, major spillages, etc.) likely to result in environmental damage or deterioration. The range of accident scenarios considered should exhaustively cover, as relevant:

1. *one-time risks (e.g. during construction or decommissioning works);*
2. *recurrent risks during project operation; and*
3. *risks associated with extreme events (e.g. effect of earthquakes or natural disasters on the project).*

The assessment should include, as relevant: a quantification of the risk magnitude and probability; and risk analysis vis-à-vis any hazardous materials stored, handled, or generated on site or transported to/from the site.

4.4 Effects on Human Populations resulting from impacts on the environment

This assessment should also identify any impacts of the development on the surrounding and visiting population (e.g. effects on public health or on socio-economic considerations), that may result from impacts on the environment. In the case of health-related effects, reference should be made to published epidemiological and other studies, as relevant, and the views of the Environmental Health Directorate should be sought.

4.5 Other Environmental Effects

Any other environmental effects deemed relevant to the project but not fitting within any of the above sections should also be identified and assessed.

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

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 non-compliances for each monitoring parameter;*
4. *An evaluation of forecasts, predictions and measures identified in the EIA; and*
5. *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.