Non-Technical Summary (English) in Relation to the Environmental Impact Assessment (EIA) for a new Materials Recovery Facility (MRF)

WASTESERV MALTA LIMITED

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SERVICE TENDER FOR THE ENGINEERING, PROCUREMENT AND CONSTRUCTION OF A NEW MATERIALS RECOVERY FACILITY

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1.0 THE PROPOSED DEVELOPMENT

This Non-Technical Summary outlines the findings of the Environmental Impact Assessment (EIA) that has been undertaken for EA/00042/20. The project, herein referred to as the "Scheme" involves the construction of a new Materials Recovery Facility at the ECOHIVE complex, henceforth referred to as the MRF project (Figure 1).

Figure 1: Proposed site for the new materials recovery facility

1.1 Project Characteristics

The site lies within the outskirts of the Magħtab suburb, eastwards of the Zwejra landfill. The Scheme Site falls within the Maghtab Environmental Complex (also known as ECOHIVE Complex), managed by Wasteserv. The area is dominated by various waste management facilities including recycling plants, the Zwejra and Għallis engineered landfills, along with other commercial, industrial and residential areas in the surroundings.

The footprint of the entire site earmarked for development is around 21,373m^2, whereby the MRF building shall occupy 11,900m^2, welfare, which includes facilities which are not involved in the processing of waste such as reception building, canteen etc. shall occupy 400m^2 whilst the remaining 5,500m^2 shall be used for manoeuvring and access of vehicles.

The development of a new Material Recovery Facility (MRF) is crucial for Malta's efforts to reduce landfill use and improve recycling rates. This project supports the nation's goal to meet its recycling targets of 60% by 2030 and 65% by 2035, in line with European

Commission directives. As of April 2023, waste separation is legally required for all entities, including businesses and homes (S.L.549.40).

The new MRF will manage separated recyclable materials like paper, cardboard, plastics, and metals, which are currently sorted manually. Processing of such feedstock takes place through an automated process, leading to the refinement of the material stream and the extraction of specific recyclable materials. The investment in this facility is expected to result in high-quality recycled materials.

The need for the MRF is driven by the expected increases in waste production due to local development and population growth, and the necessity to upgrade waste management facilities. By 2030, the MRF is expected to process around 70,000 tonnes of recyclables annually, including various plastics, mixed paper, and cardboard. This will involve about 160 refuse collection vehicle trips per week.

Construction works shall be divided into five distinct phases:

- Phase 1: Site Clearing and Preparation
- Phase 2: Excavation and Building Foundations
- Phase 3: Backfilling
- Phase 4: Landscaping
- Phase 5: Structure Build up

The MRF shall be designed to operate for a lifetime of 20 years. Significant technological upgrades would be necessary to extend the lifetime of the facility further.

1.2 Waste Management

The total quantity of excavated waste is expected to be roughly equal to 51,500m^3. A significant portion of this material shall be reused for backfilling the site to ground level (21,500m^3).

Minimal waste quantities shall be generated during the operation stage. Waste generated during the operational phase will be mostly limited to maintenance and office waste. The type and quantities of waste will depend on the maintenance work required and is therefore impossible to specify and quantify at this point.

2.0 ASSESSMENT OF ALTERNATIVES

2.1 Do-Nothing Scenario

Malta must achieve a 60% recycling rate by 2030, but it has struggled with recycling targets since 2013, worsened by a fire at the SAWTP in 2017. To meet EU targets, building a new Material Recovery Facility (MRF) is essential. This plan is supported by the LONG-TERM WASTE MANAGEMENT PLAN 2021-2030, aiming for a 60% recycling rate by 2030. A temporary MRF has been set up at Malta North. Without this project, Malta will not be able to meet its recycling obligations.

2.2 Downscaling

Designing the new MRF faced challenges due to a limited and non-ideal site size. The plant was optimized to fit within these spatial limits while meeting operational needs. Downsizing any part of it isn't possible without harming performance. Any extra space will be reserved for future recycling technology upgrades, such as increased automation. These advancements would be evaluated for cost and reliability to ensure they improve the quality of the recycled materials.

2.3 Location

Four alternative sites were shortlisted:

- Site 1: North East of the proposed WtE facility
- Site 2: West of the Zwejra landfill
- Site 3: East of the Zwejra landfill
- Site 4: Replacement of the previous MRF at Sant' Antnin

Site 4 was found unsuitable due to space constraints, traffic issues, and its proximity to residential areas. Sites 1 and 2 also had significant drawbacks, such as the need for major road works and their closeness to residential zones.

Site 3 was identified as the most suitable location due to its proximity to other waste treatment facilities, minimal social inconvenience, and fewer environmental impacts. It also allows for better design to mitigate visual impacts and takes up less agricultural land.

2.4 Layouts and Configurations

MRF layouts can be linear, centralized, or modular. In a linear layout, the recycling process stages are arranged in a straight line, with waste moving from the receiving area to the storage area sequentially. A centralized layout has all processing equipment in one area, with materials moving to and from this central hub, and smaller sorting stations scattered around. A modular layout uses prefabricated units that can be rearranged as needed. This modular approach was chosen for the ECOHIVE Complex MRF due to space constraints and includes compartmentalization to meet strict fire safety measures.

3.0 LAND COVER AND LAND/SEA USES

The site comprises of agricultural land with low trees and remnants of local vegetation, featuring shallow terraced fields separated by rubble walls, some of which are degraded. These walls are protected under local regulations. The terraced fields slope down toward the coastal area of Qalet Marku.

Nearby, to the northwest and west, lie the engineered Għallis and ta' Żwejra landfill sites. The Anaerobic Digestion Plant is 100 meters to the north. To the east, the land consists of small agricultural parcels divided by rubble walls. An access road runs along the south and west sides of the site, and a dirt track connects the road to the site.

The new development will permanently change the current land use from agricultural and natural areas to commercial land, affecting the space occupied by indigenous tree plantations, rubble walls, and agricultural land. This change is considered significantly adverse. However, the impact on the tree plantation will be mitigated by including a landscaped area with some of the original trees.

Temporary land use changes will also occur during construction for storing materials and providing access for vehicles and construction personnel. These impacts are expected to be minor and reversible with proper mitigation measures.

Dust from construction, especially during excavation and backfilling, may temporarily affect nearby agricultural land, trees, and roads, potentially reducing crop yields. This impact can be mitigated with site hoarding and is considered minor and temporary.

During operation, the land use could be further impacted by rare incidents like fuel spills or fires. These risks are of low probability but could have major consequences. With an appropriate Emergency Response Plan, these impacts can be mitigated to a minor level.

4.0 LANDSCAPE AND VISUAL ASSESSMENT

Construction activities will be noticeable from all seven viewpoints assessed. Large cranes, excavation machinery, fencing, and stockpiles will negatively impact the visual landscape from these viewpoints, with the severity ranging from moderate to major adverse depending on location and obstructions. Viewpoints close to the site, especially VP3 and VP4, will have a pronounced impact due to detailed, short-distance views of the construction. VP1 and VP7 will also experience significant impacts because their vantage points easily capture tall machinery intersecting the skyline, affecting many observers. Viewpoints 2, 5, and 6 will see less impact, as the rugged terrain and partial shielding by walls, trees, or structures help to conceal some construction activities. However, the impact here is still moderate adverse.

Four viewpoints (VP1, 2, 6, and 7) fall within areas of high landscape sensitivity according to the Central Malta Local Plan. The simultaneous construction of the waste-to-energy (WtE) and OPP facilities will further diminish landscape quality, especially as agricultural land near the landfill is affected. The construction impact on these viewpoints is significantly adverse.

The MRF building will significantly alter the landscape when viewed from various perspectives. Its large size and mass will directly impact the immediate surroundings, though its prominence diminishes when compared to nearby Waste-to-Energy (WtE) and Organic Processing Plant (OPP) facilities. At Viewpoint 1, the MRF will partially obscure views of the sea when viewed from a distance due to its location near the Ta' Zwejra landfill. This impact is considered minor adverse. Viewpoints 2 and 3 provide closer views of the MRF within the context of the surrounding waste management facilities. Despite its size, the MRF blends reasonably well into the existing infrastructure, resulting in minor to moderate adverse impacts.

Viewpoints 4 and 5 will experience significant adverse impacts due to the MRF's size and stark industrial appearance alongside the WtE and OPP facilities. Viewpoints 6 and 7 offer broader panoramas of the ECOHIVE complex, where the MRF's presence is integrated with other structures but still stands out due to its scale. These viewpoints also experience major adverse impacts, highlighting the need for careful design considerations to mitigate visual intrusions.

While the MRF itself is not situated in a highly sensitive landscape area, several viewpoints (1, 2, 6, and 7) fall within such designated zones. The concurrent operation of multiple waste facilities will further degrade landscape quality, particularly affecting agricultural land near the landfill.

Concerns about light pollution during the MRF's operational phase are also noted, but classified as minor adverse with mitigation measures in place. These include installing appropriate external lighting (will remain operative to ensure H&S and security requirements) to minimize disruption to nocturnal environments and nearby residents.

5.0 GEOLOGY, GEOMORPHOLOGY, HYDROGEOLOGY AND SOILS

The area under study is a low, broad agricultural spur situated at the base of a significant landfill hill, ascending from approximately 40 meters above sea level to reach a height of about 100 meters. This rounded hillslope extends to the Baħar iċ-Ċagħaq and Għallis shoreline and is characterized by distinct geomorphological features including the saddle at Ta' San Pietru, the Il-Qadi – Ta' Ħammud uplands, Wied Għallis Valley, Wied ta' Kieli Valley, the pocket beach of Qalet Marku, and the Baħar iċ-Ċagħaq – Għallis rocky coastline.

The geology of the area predominantly comprises Lower Globigerina Limestone and Lower Coralline Limestone. The Lower Globigerina Limestone typically supports a soil layer, making it suitable for terraced agricultural land, whereas the Lower Coralline Limestone forms a bare rocky landscape with no soil cover. The landfill, which spans approximately 500,000 square meters, has already transformed the area's geomorphology, and further excavation will likely exacerbate the degradation.

A prominent fault runs through the landfill, with additional minor faults observable along the Coast Road, where a thin bed of Lower Globigerina Limestone is exposed in a shallow graben bounded by normal faults with minimal displacement. The site itself consists of terraced fields underlain by Lower Globigerina Limestone, leading to a specific soil type known as the L-Inglin man-made complex.

During the proposed excavation, dust emissions are a concern, particularly on dry, windy days, as they could negatively impact the coastline, coastal waters, and the l-Għadira S-Safra site. Moreover, stone material could spill during transportation, necessitating that loaders are not overfilled and that protective covers are used to prevent dust emissions. The excavation might lead to stability issues due to intersecting joints in the rock, creating unstable wedges that could arise during the excavation. Managing these stability risks will require monitoring and timely interventions.

To effectively manage these environmental challenges, it is crucial for construction works to follow stringent environmental regulations and best practices. This includes implementing proper sediment and erosion control measures, using silt fences, managing stormwater runoff, and maintaining well-managed construction sites to prevent pollution. Rock face instability should be mitigated through continuous monitoring and proactive measures to address any unstable conditions. These efforts are essential to protect the delicate coastal and agricultural ecosystems in the area.

6.0 WATER BODIES

The hydrological features around the proposed site include the catchment of Wied Ta' Kieli, the downstream catchment, nearby coastal waters, the mean sea level aquifer, private and public water boreholes, and adjacent wetlands. Potential environmental impacts from the construction and operation of the site include contamination of the mean sea level aquifer, degradation of coastal waters, and loss of natural runoff.

During construction, activities such as demolition of existing structures, excavation of rock, and construction of new structures could release dust and fine particles into the environment. Storage of excavated stone material and soil could also contribute to dust dispersion, particularly on windy or rainy days. To prevent contamination, harmful substances should not be handled on site. The use of heavy machinery and vehicles might generate dust, negatively impacting runoff and coastal waters. Paving the site will render it impermeable, increasing runoff and reducing the recharge of the mean sea level aquifer. Additionally, the use of pesticides and fertilizers for landscaping may contaminate the aquifer, which is already affected by nitrate pollution.

To mitigate these impacts, several dust-suppression measures can be implemented, such as using silt fences, collecting fine particulates during stone working, covering stored materials, and controlled water-spraying of active areas. During the operational phase, regular inspections of effluents can help prevent accidental leakages into coastal waters. The development is expected to result in high runoff and negligible aquifer recharge, which could exacerbate saltwater intrusion into the aquifer and negatively affect nearby terrestrial water bodies. However, the area under consideration comprises a small fraction (0.011%) of the total potential recharge area of the Maltese Islands. Collecting uncontaminated runoff water for irrigation can indirectly support aquifer recharge, compensating for the impermeability of the site.

Adhering to environmental regulations and best practices is crucial for mitigating the impacts of construction projects. Proper sediment and erosion control measures, stormwater management, and adequate site management are essential to prevent pollution. Periodic inspections of sewer systems and other outlets will ensure there are no leakages. Handling waste in a closed system with an impermeable floor will prevent discharges to the underlying rock or surroundings. Regular checks of effluents and waste disposal systems will help ensure that no harmful substances leak into the ground. Baseline groundwater analysis will establish a reference point for future water quality monitoring.

7.0 ECOLOGY

The project requires clearing all trees and vegetation within the site. This will affect around 244 protected trees. Mature trees may be moved to the west side of the site, which will have a landscaped area of about 2,690 square meters. Whether trees are relocated or removed depends on soil depth, which will be assessed during excavation. If the soil is too shallow to remove the tree roots safely, the trees will be removed rather than transplanted due to low survival chances.

Compensation for removed trees will follow guidelines from the Environment and Resources Authority (ERA) and will involve planting species typical of the local maquis habitats in the site or nearby. Excavation might also cause dust and noise, but this can be managed with barriers around the site, wheel-washing facilities, and keeping dust down by wetting exposed materials.

During construction, several breeding territories of the Sardinian Warbler and the Zitting Cisticola will be disturbed or lost if the work occurs between March and August. Additionally, up to two breeding pairs of the Blue Rock Thrush will be disturbed if the work occurs between March and July. This disturbance could temporarily displace these birds, reduce their breeding success, and potentially lead to the loss of nest sites, causing reproductive failure for all three species.

Artificial light at night (ALAN) is known to harm birds, including seabirds. The proposed development is not directly visible from any seabird nest sites. However, a significant colony of *P. yelkouan* seabirds on St. Paul's Island is within 5 kilometres of the construction site. Increased sky glow from ALAN during night-time construction, especially from February to July, could negatively impact 45-70 breeding pairs in this colony. ALAN also negatively affects nocturnally migrating birds in general.

The waste separation and treatment inside the proposed MRF as well as the recovery of the waste and (preparation for) recycling – if carried out appropriately – can have several indirect beneficial impacts on avifauna as compared to the current open landfill at Magħtab. It can lead to a reduction in the amount of plastic waste that is openly accessible to birds at the landfill and that can be blown or washed into the sea.

Small and lightweight plastic pellets, known as nurdles, can easily escape into the environment during production, handling, and shipping. Once in the environment, these pellets absorb toxins and harmful chemicals, which can then enter the food chain and negatively impact birds and other wildlife. Additionally, transporting, handling, and storing large quantities of flammable material increases the risk of fire. Processing and storing of these materials further heighten the fire hazard.

It is recommended that the footprint of the construction sites is kept as small as possible and no works will be carried out during the night. These measures should prevent significant impacts on the seabird populations in the nearby sites.

8.0 AGRICULTURE

An agricultural assessment of the MRF site reveals it has severe limitations for farming due to a shallow rooting zone, presence of stones, very low moisture-holding capacity and low soil fertility.

These conditions limit agricultural productivity and can lead to land abandonment. The site's proximity to the sea makes it vulnerable to sea spray, and large amounts of dust from a nearby waste management complex worsen the situation. With no available water supply, the land is only suitable for growing hay. The poor soil and inconsistent rainfall further reduce the potential for crop production.

The environmental impact of expanding waste management facilities in Maghtab is significant for sustainable rural land use. Converting agricultural land and nearby natural areas into buildings reduces the available natural space and disrupts the ecosystem. This change not only decreases ecological areas but also leads to problems such as local temperature increases, more runoff and flooding, increased pollution, and a reduction in fodder production.

Whilst the construction and operation of the proposed development will lead to a loss of agricultural land, the impact is minimal given the limited area and poor quality of the land involved.

9.0 ARCHAEOLOGY & CULTURAL HERITAGE

The area of interest includes agricultural land that has been transformed into terraced fields over time, featuring structures such as dry-stone walls and huts. There are megalithic remains nearby, indicating that the area has been inhabited since prehistoric times. Some of these ancient stones were used to build other rural structures. However, there is little historical documentation about land use in the area.

The main heritage feature within the area is the 'Taż-Żebbuġija' Megaliths, located about 100 meters from the proposed development, which will not be directly affected by the proposed works. However, it is important to remark that the area is flagged as a potential archaeological zone.

Several dry-stone huts within the area of interest are likely to be damaged by the development. These huts, once common throughout Malta and now mainly found in the northern part of the island, provided shelter to farmers and livestock. They are protected by law due to their architectural, cultural, and ethnic value. Regulations prohibit the alteration or demolition of rubble walls and rural structures to preserve their integrity.

The study indicates that the proposed development will directly and adversely impact the cultural features within the area, while having minimal or no direct impact on the known cultural features at the edge of the area.

Given the potential for undiscovered cultural remains beneath the overgrowth and soil, it is recommended to have an archaeological monitor present during any ground-disturbing activities. This will help ensure the preservation of any cultural features that might be uncovered. Additionally, it is advisable to maintain a distance of at least 50 meters from the identified cultural heritage sites during these activities to ensure their protection.

10.0 NOISE & VIBRATIONS

The assessment follows relevant noise standards and guidelines. For construction activities, the assessment concluded that daytime noise levels at the nearest receptors are not expected to exceed the set limits. Since construction noise will be temporary and predicted for worst-case scenarios, no significant long-term effects are expected.

To further minimize potential noise impacts, various construction mitigation measures, recommended as good practice, should be implemented where appropriate. Noise emissions should be considered when selecting on-site plant and equipment. All equipment should be kept in good working condition and equipped with appropriate silencers, mufflers, or acoustic covers where applicable. Stationary noise sources must be placed as far from noise-sensitive areas as reasonably possible, and acoustic barriers will be used to screen them if necessary. Vehicle movement to and from the site will be controlled, and employees will be instructed to comply with noise control measures.

Operational noise, including on-site vehicle movements, was predicted using sound modelling software. For residential areas, daytime and night-time noise surveys showed that operational noise levels at the nearest homes would be at or below current background levels, indicating no significant effects. For ecological areas, the established threshold values were not predicted to be exceeded, indicating no significant impact.

A cumulative noise assessment, considering other nearby developments, concluded that overall noise levels from both construction and operation would not have a significant effect when the context is taken into account. In summary, noise is not expected to be a significant issue for the construction and operation of the proposed project.

11.0 INFRASTRUCTURE AND UTILITIES

During the construction works, care will be taken to avoid damaging existing infrastructure and utilities near the development site. While there are no utilities directly within the footprint of the facility, nearby infrastructure includes utilities like pavements, crash barriers, fire hydrants, street lamps, and fencing within the buffer area.

The planned route for the second interconnector runs close to the site but is separated by a landfill. Construction vehicles accessing the site from the south gate, where works on the interconnector are also planned, will adhere to precautions to protect existing infrastructure.

Within the ECOHIVE complex, where the facility encroaches on agricultural land, existing infrastructure owned by Wasteserv Malta includes various utilities like street lamps and fencing around adjacent buildings. These utilities may need repairs or replacement; therefore, the contractor will need to coordinate with Wasteserv Malta to avoid accidental damage during construction. Any such damage will be promptly repaired at the contractor's expense.

Setting up connections to water and electricity amenities within the ECOHIVE complex during construction may cause temporary local interruptions to services. These interruptions are expected to be minor and localized.

Third-party utility companies confirmed that, aside from Enemalta's second interconnector cable, there are no utilities within the proposed site or its buffer zone, minimizing potential impacts.

Once operational, the Materials Recovery Facility will enhance ECOHIVE's capacity to process recyclable waste, contributing positively to Malta's recycling targets. Increased traffic to and from the site is not anticipated to affect surrounding infrastructure and utilities.

12.0 OTHER IMPACTS

12.1Climate Change and Climate Change adaptation

The construction of the Materials Recovery Facility (MRF) can have both direct and indirect impacts on climate change. One concern is the loss of rural land to cemented surfaces, which reduces natural groundwater recharge and increases runoff during heavy rainfall, potentially leading to more frequent flooding exacerbated by climate change impacts.

However, building and operating a new MRF also offers significant benefits in combating climate change. Recycling materials at the facility reduces the demand for raw materials, lowers energy consumption, and decreases greenhouse gas emissions associated with manufacturing new products. By diverting waste from landfills, the MRF helps reduce methane emissions, a potent greenhouse gas produced during organic waste decomposition in anaerobic conditions.

To ensure sustainable development, it's crucial to implement measures that mitigate the MRF's negative impacts on climate change. This could include installing Sustainable Urban Drainage Systems (SUDSs) to enhance groundwater recharge and reduce runoff.

Looking forward, the MRF's role in Malta's waste management strategy and its ability to increase recycling rates are key factors in assessing its adaptability to future climate change effects. By focusing on recycling and material recovery, the facility supports a circular economy approach where waste is minimized, resources are reused, and sustainable practices are promoted. This not only reduces the carbon footprint of waste management but also enhances resilience to extreme weather events by improving overall environmental management and disaster preparedness. Integrating the MRF into national waste systems can strengthen community resilience and contribute positively to climate change adaptation efforts.

12.2Environmental Risk

The environmental risk study assesses any relevant risks, including major accident scenarios like contamination, emissions, explosions, blasts, flooding and major spillages, which could occur during the phasing of the proposed Scheme.

One-Time Environmental Risks

1. Contamination of geological layers through the spillage of chemicals, oils and fuels
2. Contamination of the Malta Mean Sea Level Aquifer through spillage of oil or fuels
3. Contamination of the surrounding marine environment through the spillage of chemicals, oils and fuels
4. Generation of dust from works which may affect surrounding sensitive receptors
5. Rock/soil instability which could impact nearby ecological/agricultural features of land uses
6. Spillage of excavated material during transportation

7. Dust emissions from transportation of waste rock material
8. Loss of protected endemic vegetation species

Exceptional Environmental Risks

1. Instability of the facility due to earthquakes
2. Damage to surrounding environment from explosion/fire

The environmental risk assessment evaluates the majority of risks to be moderate. High-risk activities are one-time environmental risks associated with exceptional weather events and/or natural phenomena. The assessment concludes that the overall environmental risk associated with the project is of a moderate level. The implementation of appropriate mitigation measures can reduce the severity of the risks.

12.3Human Population

The study identified a number of impacts on human populations. Predicted impacts during the construction phase include:

- **Generation of dust:** Reduction in air quality for nearby residents.
- **Generation of noise and vibrations:** Increase in noise and vibration levels in the surrounding area affecting local residents and nearby commercial premises.

Predicted impacts during the operational phase include:

- **Air quality & climate change**: The potential for the facility to increase the country's recycling rates would reduce the overall GHGs emitted on a national scale.
- **National waste management sector:** New MRF will achieve better recycling results and reduce pressures on landfilling

12.4Project Decommissioning

The proposed MRF is slated to operate for 20 years, after which decommissioning considerations will be initiated. Key components of the decommissioning planning include preparing initial and final decommissioning plans, gathering necessary data, estimating costs, and securing financial resources for the project. These plans will be submitted for regulatory review and public consultation as per national requirements, ensuring transparency and compliance. Cleanup, removal, and disposal of materials will also be carefully considered.

Various decommissioning options are suitable for the MRF. Facility mothballing involves preserving structures and machinery for potential future use, with government oversight to ensure compliance and environmental rehabilitation. Partial facility decommissioning allows for closure of specific sections while retaining reusable components and managing environmental impacts. Complete site decommissioning entails a comprehensive shutdown to mitigate hazards and prepare the site for safe future use or redevelopment, aligning with health, safety, and environmental regulations. Each approach aims to minimize disruption and ensure responsible handling of the facility's end-of-life phase.