*FINAL*

# Terms of Reference for the preparation of an

## *ENVIRONMENTAL IMPACT ASSESSMENT*

## PA 6096/23
## EA/00020/22:
## Proposed Thermal Treatment Facility in the ECOHIVE Complex, including plant building, storage building, administration building, waste water treatment, tank farm and cisterns.
## Site at: ECOHIVE Complex, Magħtab, Naxxar

***10/06/2024***

**Note 1**: The Environment and Resources Authority (ERA) reserves the right to modify these Terms of Reference according to any relevant environmental and planning considerations that may emerge at any relevant stage of the EIA or the permit application process, as well as in the event of any changes or updates to the proposed development. ERA also reserves the right to request additional or amended studies should the findings of the EIA be insufficient to adequately inform the decision-making process or if the EIA identifies matters which should be subject to further investigation.

**Note 2**: Unless otherwise agreed with ERA, all requirements set out in these Terms of Reference are to be complied with. If there are any aspects that the consultants deem irrelevant to this study, or if at any stage the consultants discover any environmentally-relevant aspect (not included in these TORs) that needs to be studied, the consultants shall inform ERA immediately, justifying their reasoning.

**Note 3**: Difficulties, including technical difficulties and lack of information, encountered by the consultants in compiling the required information shall be made clear in the EIA. All references to published works and sources of information shall be duly acknowledged in a manner that enables tracing of the information source and verification. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the consultation period and thereafter, and for record-keeping and unhindered perusal by ERA. Any material which is based on unavailable proprietary data shall not be incorporated by reference.

**Note 4:** Any requirement for confidentiality of any section or detail of the EIA must be strongly justified and a formal request in this regard must be submitted to ERA. Should ERA grant confidentiality, alternative material that is still adequate for proper assessment, public consultation and decision-making must be provided.

**Note 5:** Agreement on method statements, and ancillary liaison with ERA, is not mandatory but is recommended. Nevertheless, ERA reserves the right to disagree with the methodology proposed, including proposed areas of influence, and with the EIA submissions in general, and to factor such disagreement in its critique of the EIA.

**Note 6:** During review of the EIA, ERA will submit comments for the consultants' consideration, as relevant. Following the consultants' response to ERA satisfaction, a revised version of the EIA, addressing the comments, will normally be required. This may take the form of a complete resubmission or of an Addendum detailing the revisions to the previous submissions, as deemed most expedient by ERA, taking into account continuity and traceability of the information, and overall user-friendliness vis-à-vis subsequent review, presentation, public consultation, record-keeping and decision-making. A complete resubmission will generally be required if changes are numerous or complex, whereas an Addendum may be preferred if changes are more limited.

**Note 7:** The consultants are not exonerated from obtaining any formal authorisation from ERA, and from other relevant entities, vis-à-vis any activity ancillary to the EIA (*e.g.* collection, sampling, capture, or waiver of access restrictions) wherever such authorisation is legally required.

**Note 8:** These Terms of Reference, and all ancillary correspondence, are issued without prejudice to ERA's position on the project. Accordingly, their issuing (even when customised to address specific project details) should not be construed as evidence in favour or against the project or any component thereof, unless the contrary is clearly stated.

**Note 9:** Wherever relevant, references to land also include the sea, and ancillary terms such as land-take, ground cover, landscape, vehicles, access roads, etc. should be interpreted accordingly.

**Note 10:** Wherever any baseline studies required by these Terms of Reference is covered by already-existing data, such data should be used in preference to unnecessary duplication of baseline studies, unless the consultants or ERA or both are of the opinion that the existing data is unavailable, incorrect, outdated, unreliable, insufficient, or otherwise inadequate for the purpose of the EIA.

An Environmental Impact Assessment (EIA) Report is to be prepared as required by the Schedule I, Category I, Section 5.0.1.1 of the Environmental Impact Assessment Regulations (S.L. 549.46). The required components of the EIA are:

i. A **Coordinated Assessment Report**, in conformity with the following Sections of these Terms of Reference. This report should assess the project in its totality;
*[**Note:** The coordinated assessment should seek to analyse and integrate the main considerations emerging from the technical reports, rather than just reproducing excerpts from the reports].*

ii. A separate **Appendix (or Appendices)** containing all technical studies and original survey reports as prepared by the individual specialist consultants for specific topics;
*[**Note:** Experts contributing to the EIA should be specifically asked to consider impact interactions and cross-cutting issues, and to communicate information between each other accordingly].*

iii. A separate **Non-Technical Summary** of the EIA, in both the Maltese and English languages. This should have enough details for the public to understand the project and the related environmental considerations, and should be written in reader-friendly language (*e.g.* avoiding unnecessary technical jargon);

iv. A **declaration of conformity** with regards to conflict of interest, in accordance with sub-regulations 17(3) of the EIA Regulations (refer to Appendix 1 to these Terms of Reference); and

v. An addendum detailing the **feedback received from stakeholders, from the public, and from ERA** during the relevant consultation stages of the EIA, and how they were addressed.

Wherever relevant and appropriate, all components of the EIA should include tables and figures (*e.g.* maps, plans, photographs, photomontages, charts, graphs, diagrams, cross-sections) and quantifications**.**

The complete EIA Report (including all the above components) should be submitted as a printable digital copy (in .pdf format, with copying fully enabled throughout) and as a printed copy. Likewise, in case further revisions are to be made to the EIA Report, both a printable digital copy (in .pdf format, with copying enabled throughout) and a printed copy of the revised EIA Report, or an Addendum, is to be submitted to ERA.

Any other assessments, including Appropriate Assessment [as required by the Flora, Fauna and Natural Habitats Regulations (S.L. 549.44)] are to be submitted separately from the EIA. Cross-referencing between the EIA and any such assessment should be clear and reasonably limited, such that both of the following considerations are duly satisfied:

1. Alerting the reader to the fact that the aspect in question is also being addressed in another parallel assessment; and
2. Enabling the reader to easily follow both the EIA and the other assessments as stand-alone documents.

Any other technical studies/ reports which are of direct environmental relevance to the project or are cross-referred to in the EIA report, should be submitted together with the EIA, and made available to the public. Should these documents not be made available upon submission of the EIA report, ERA reserves the right to re-open the public consultation for an additional 30-days, over and above the timeframe stipulated in Regulation 19(1), as deemed fit.

More detailed specifications are identified in the following pages.

## 1.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT AND ITS CONTEXT

The description of the proposal is to include the aspects outlined below, and should take into account the entire proposal and any ancillary facilities and infrastructure connected with, or arising due to, the project.

### 1.1 Justification for the Proposal

#### 1.1.1 Objectives

The purpose and objectives of the development and whether these are related to current legal obligations, policies or plans.

#### 1.1.2 Demand

The current and expected requirement or demand for the proposed land uses, also explaining how the proposal will address the requirement/demand.

### 1.2 Description of the Physical Characteristics of the Whole Project and the Land Use Requirements during the Construction, Operational and Decommissioning Phases

The following aspects should be addressed for all phases of the project, clearly distinguishing between aspects relating to construction phase, operational phase, decommissioning phase, or more than one phase. References to the construction phase and decommissioning phase also include ancillary site preparation, clearing, excavation, demolition/dismantling, and site reinstatement works, as relevant.

#### 1.2.1 General characteristics

Description of the proposed development including size, area, height, volume, configuration/layout, general design, location and proposed elevations of buildings/structures/installations, hard and soft landscaping, access arrangements, boundary demarcation arrangements, land use requirements, and land take of ancillary facilities (including infrastructure, storage, servicing, security etc.). The description is to be consistent with the details submitted in the relevant permit applications, throughout both the EIA process and the development permission application process.

#### 1.2.2 Construction, Operational and production processes

The relevant construction, operational and production processes and their main characteristics, including:

- The nature and quantity of materials used or generated;
- The source, type, quantity, composition and concentration of residues and emissions including water, air, soil pollution, noise, vibration, light, heat, radiation etc. resulting from the proposed project; the parameters to be reported should be in line with relevant EU policy; and
- The expected annual and total emissions, including Greenhouse Gases (GHG), and the contribution to total national GHG emission on an annual basis.

#### 1.2.3 Project management

An indicative framework outlining the key parameters and site management arrangements during construction, operation and decommissioning phases, including:

- Works methodology, including any mineral processing plants such as batching plants within the construction site;
- Expected duration of all phases, as well as season, frequency and duration of interventions;
- Depths and volumes of excavation, type and fate of material to be excavated; and
- Types and quantities of raw materials and primary resources to be consumed, including water, energy, stone and other resources, and measures to reduce such consumption.

### 1.2.4 Access, transportation and related infrastructure

1. A forecast of the type, quantity and size of vehicles (and/or vessels) envisaged during each phase and their respective frequency of use, as well as an identification of the routes that vehicles will use to/from and within the site. The required arrangements should also be compared with the relevant existing situation (in terms of structural considerations, stability and state of roads, road width and gradient, turning circles and junctions, type of surfacing, and other physical or environmental constraints, etc). Interventions that would need to be carried out to accommodate the required vehicles (*e.g.* new or altered access roads), and sites/buildings/structures/features likely to be affected as a result, should be identified accordingly.

2. Facilities for the storage, parking, on-site servicing, loading/unloading of equipment, vehicles and other machinery.

### 1.2.5 Water, sewerage, runoff management, energy, telecommunications, and ancillary infrastructure

1. Estimates of water management specifications of the development and the identification of the sources of water to be used, including the following:
   - The features and processes of the proposed development and its ancillary facilities which consume water, including estimates of water consumption and runoff/effluent generation during operation;
   - The sources of water (*e.g.* second-class water, public potable water mains, on-site production) envisaged to meet the projected demand;
   - The water-saving measures, where applicable, that are envisaged (*e.g.* use of low-flow fittings, reuse of harvested storm water runoff and rainwater, treatment and reuse of grey water/sewage), and details as to how such water will be used/managed; and
   - The facilities and structures to be installed in connection with the above (*e.g.* water production, purification, collection, storage, distribution and saving) including estimates of the sizing of pipelines, reservoirs and equipment.

2. Estimates of the energy-related specifications, including:
   - The features and processes of the proposed development and its ancillary facilities which consume energy, including estimates of consumption during operation. The analysis should consider, as relevant, the connected load (in MW or MVA), the overall power factor, the annual MWh split in terms of end-use (lighting, climate cooling/heating/ventilation, plant etc.) which reflects the expected use of the facilities;
   - The energy sources envisaged to meet the projected demand;
   - The facilities and structures to be installed in connection with the above (*e.g.* energy production, storage, distribution and saving) including estimates of the sizing of cables, buildings and equipment; and
   - The expected energy performance of the proposal, including building orientation, natural ventilation, construction materials, integration of low/zero-carbon technologies to meet energy needs; avoidance of features which increase energy consumption; and energy efficiency measures in the finishing and operation of the development.

3. Infrastructural services and utilities related to water and power supplies, sewerage, telecommunications and runoff management, and ancillary works (*e.g.* trenches, tunnels, culverts, switching/transformer stations, pump houses, inspection chambers).

4. The extent to which the project can realistically be self-sufficient with regard to its energy and water needs, through appropriate measures such as the efficient use of energy and water, collection of rain and storm water for reuse, reuse of treated wastewater/sewage, technologies that reduce energy consumption, and the integration of alternative energy sources. Alternatives in terms of design, fabric and orientation of the buildings should also be explored and assessed.

### 1.2.6 Waste management

1. A sufficiently detailed indication of the waste management implications likely to arise from the project, including wastes generated by ancillary facilities and wastes which may arise from accidental spillages and leakages and from repair works. Wastes should be subdivided according to the relevant project phases.

2. The following information is to be provided for each waste stream, as relevant to each phase:
   - Identification of processes or activities that would result in waste generation;
   - European Waste Catalogue Codes for each waste stream, as per relevant legislation;
   - The projected quantities and rate of generation for each type of waste;
   - Information on waste handling and storage, on site as well as off site;
   - The method of transportation and frequency; and
   - The method of characterizing the chemical composition of dredged waste; where applicable.

   This information should be presented in table format as follows, and should also include cross-references to the relevant regulations, particularly The Waste Regulations (S.L. 549.63):

| Phase | Type of waste | EWC Code | H-Code | Activity (*e.g.* sanding, scraping, power washing etc.) | Estimated quantities | Final permitted disposal location |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |

3. The envisaged waste management arrangements using the Best Practicable Environmental Options (BPEO) available, and the envisaged efforts to minimise waste generation and to divert waste to reuse or recycling rather than disposal.

4. Layout plans (to scale) clearly showing all relevant waste management infrastructure and related facilities (*e.g.* bunded areas for storage of waste fuels, wheel-wash facilities, etc.), clearly distinguishing between temporary and permanent structures for each phase.

### 1.2.7 Longer-term developments

Additional future developments, land uses and other commitments that are ancillary or consequent to the project or are likely to arise in relation to the same project or its expansion, as well as longer-term needs of the proposal, including: ancillary infrastructure not accounted for in the previous sections; any consequent interventions/arrangements required to accommodate the development; any foreseeable extensions or updates to the proposal; any displacement of existing uses; and decommissioning.

***Note:*** *Details in relation to the maturation area and areas that might be required during the construction phase are to be included in the EIA Report.*

## 2.0 ASSESSMENT OF ALTERNATIVES

An outline of the main alternatives studied and an indication of the main reasons for this choice, taking into account the relevant environmental effects and their prevention (or optimisation) at source. The following alternatives need to be duly considered, as relevant to the development itself (or to one or more phases thereof) and its requirements and constraints:

2.1 Alternative sites

2.2 Alternative technologies including BAT and any relevant abatement measures[1]

2.3 Alternative layouts (including building heights, where relevant)

2.4 Downscaling of the project, or elimination of project components

2.5 Zero option (do-nothing scenario) - *i.e.* an assessment of the way the site would develop in the absence of the proposed project.
*[**Note:** The zero option should be considered in sufficient detail as a plausible scenario in the EIA, wherever relevant, and not discarded upfront without proper discussion of its implications.]*

2.6 Hybrids/combinations of the above

The findings of the assessment of alternatives should be summarised in a table format for ease of comparison.

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

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

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

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

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

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

[1] The technology employed and any infrastructure requirements are to be catered for at the design stage and is to be in line with *all applicable Best Available Techniques (Best available techniques in the slaughterhouses and animal by-products industries & Best available techniques waste incineration)*. Other horizontal BREFs may be applicable (emissions from storage/ energy efficiency/ industrial cooling systems).

- 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.*

## 3.1 Land Cover and Land/Sea Uses

A description of the land cover and land uses (and/or sea uses, as relevant) within the area of influence of the project, including roads, footpaths and public access routes. Details including nature, magnitude, proximity to site, etc. should be included.

## 3.2 Landscape Character and Visual Amenity

### *3.2.1 Landscape Character*

The study should describe the landscape-related area of influence and landscape setting of the proposed site, identifying the component character areas and local landscape tracts, and the landscape elements, characteristics and degree of sensitivity thereof, so as to enable the prediction and assessment of:

- The changes to the landscape attributable (in full or in part) to the proposed development;
- The implications of such changes on the quality and perception of the landscape and its elements, in each of the identified landscape character areas and local landscape tracts; 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).

Reference should also be made to the '*Draft Landscape Assessment Study, 2004,*' and to the *Guidelines for Landscape and Visual Impact Assessment* (*The Landscape Institute* & *IEMA*), as relevant.

### *3.2.2 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:*

*(a) 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.*

*(b) 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.*

## 3.3 Geology, Geomorphology, Hydrogeology, and Soils

A comprehensive investigation of:

1. The geology and geomorphology of the site and its surroundings, including:
   (i) existing geology, stratigraphy, structure, lithology, physiography and geomorphology features;
   (ii) palaeontological features;
   (iii) hydrogeological features; and
   (iv) soil types.

   Each feature shall be listed in a table, together with a short description and if any of the features are absent, this shall be stated. A scaled map, clearly depicting the feature occurrence within the area of influence, shall also be provided.

2. The geo-technical properties and considerations relevant to the site and its area of influence, including:
   (i) land stability;
   (ii) mechanical, erosional and structural properties of the terrain and land mass;
   (iii) any relevant fissures, faults, hollows, or weak points;
   (iv) the vulnerability of the site to natural forces such as wave action, erosive elements, landslides and mass movements; and
   (v) any other considerations affecting the implications and risks posed by the proposed development or by any of its ancillary interventions such as site clearance, earth-moving, and excavations.

   Each of the above shall be listed in a table along with a short description and if any of the features are absent, this shall be stated. A scaled map, clearly depicting the feature occurrence within the area of influence, shall also be provided.

3. The quality of the material that will be excavated (including soil, rock/mineral resource, and any existing fill material) and its potential for reuse.

4. Sampling and testing should comply with the relevant standards (unless otherwise agreed, BS standards or other recognised equivalents should be used), and should extend to a sufficient depth below the deepest level of the proposed development (taking into consideration all proposed excavations and underground structures). Wherever the study involves the drilling of core samples, the number, depth and location thereof should also be submitted for ERA approval prior to carrying out of any *in situ* tests.

5. A method statement for land and groundwater testing in line with the ERA's 'Terms Of Reference for site clearance and land contamination investigations' in Appendix 2 shall be submitted.

The method statement is part of the baseline report pursuant to the Industrial Emissions (Integrated Pollution Prevention and Control) Regulations and in accordance with the European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions 2014/C 136/03 which is to be submitted to ERA. Such a baseline is to be carried out prior to start of operations.

### 3.4 Water bodies (including Terrestrial, Underground and Marine water bodies, as relevant)

The study should identify the hydrological, hydromorphological and physicochemical characteristics of the water bodies, water resources and aquatic environments in the area under investigation, including (as relevant):

1. The hydrology of the site and its surroundings, including all relevant features and dynamics, such as: aquifers; springs; surface waters; wetlands; watercourses; valley catchments; etc, including a description of any potential linkages between different water bodies (i.e. groundwater linkages to surface waters, coastal water linkages to inland surface waters), also cross-referring to hydrogeological factors (see ***Section 3.3*** above) as relevant;
2. The type, size and physical characteristics of any aquifers and surface water bodies within the area of influence of the site, including: the nature of the water body (*e.g.* aquifer, flowing surface water, marine, etc.); whether the water body is ephemeral or permanent; and other characteristics such as depth/bathymetry; type of bottom and topography; prevailing currents and wave exposure; as well as physical and chemical characteristics of the water column which are deemed relevant for determination of hydrological characteristics such as nutrient status, temperature, salinity, dissolved oxygen and pH;
3. Natural and anthropogenic dynamics including groundwater recharge patterns; pumping and abstraction patterns; on-site and off-site drainage patterns; pipe/culvert connectivity between water bodies, run-off patterns; and flood risks;
4. Water quality (salinity, pollutant load, sediment load and characteristics, microbiological load, BOD & COD, transparency, temperature, etc.), with particular reference to any established quality parameters (*e.g.* legally-established bathing water quality parameters; effluent discharge parameters; objectives and requirements of the Water Framework Directive, Marine Strategy Framework Directive and related instruments); and
5. The study should provide a sufficiently detailed baseline to enable assessment of the effects of the proposal on the quality of the water body (terrestrial, underground and marine), the extent of area affected by hydrographical changes (terrestrial and marine), the nature of the changes (whether temporary or permanent) and effects of such changes on the ecological features and functions as described in line with Section 3.5. Such assessment should be undertaken in line with indicators used/established by relevant EU policy.

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

The assessment should include:

1. An investigation of the ecology of the site and its surroundings (including, as relevant: flora, fauna, avifauna, and their habitats and ecosystems), duly covering the relevant seasons (*e.g.* wet and dry seasons, in the case of terrestrial ecology) to ensure adequate coverage of all relevant species and ecosystem components;
2. A reporting of the conservation status and ecological condition of the area and the state of health of its habitats, species and ecological features;

3. A reporting of all protected, endangered, rare, unique, endemic, high-quality, keystone, invasive/deleterious, or otherwise important species, habitats, ecological assemblages, and ecological conditions found in the area under study; and
4. A prediction of the potential impacts of the proposed project on the ecology of the site and its surroundings, including loss, damage or alteration of habitats and species populations (including potential increases in ambient noise levels in the marine environment) including alteration in the habitats and species' condition/state of health as measured through indicators used/specified for assessment of status in relevant EU policy.

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

***Note 1:*** *A stand-alone Appropriate Assessment in terms of the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549,46) is required, for which separate Terms of Reference are issued.*

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

## 3.6 Agricultural land

The study should identify any agricultural land within the area of influence of the development, and should provide a clear and reasonably detailed indication of:

1. The physical quality and productivity of the land, justifying the indicators used in this regard. Soil depths, textures, and properties should also be described in the relevant level of detail;
2. Whether the land is dry land, irrigated land, recently reclaimed land, long-abandoned land with an established trend toward regeneration of natural vegetation, or otherwise;
3. The main crops and trees cultivated in the surrounding area, as a meaningful indicator of longer-term quality and potential of the cultivable fields. In this regard, emphasis is to be laid on appropriate and representative indicator crops, avoiding overly precise but superficial field-by-field snapshots of all crops that happen to be under cultivation at a given point in time. For similar reasons, superficial indicators based on transitory factors (*e.g.* fallow land, currently abandoned land; or underutilised land) are insufficient and potentially distortive, and for a more representative baseline the investigation needs to look more deeply into how the land was used over the past years;
4. Any agroecosystems and related interactions including the living and non-living components (*e.g.* dry-stone rubble walls, associated natural and man-made habitats etc) that are currently coexisting with established agricultural activity or are being maintained in connection with such activity;
5. All relevant ancillary aspects (*e.g.* irrigation water sources, access routes, land drainage patterns, exposure and microclimate, holding sizes and configurations) that may be lost, displaced or otherwise affected by the proposed development; and
6. Any baseline environmental pressures and exceedances (*e.g.* pollution) resulting from agricultural activity, that may be directly or indirectly relevant to the proposed development, particularly any aspects that will be displaced, abated or compounded as a result of the development.

## 3.7 Architectural, Archaeological, Historical & Cultural Heritage and related Material Assets

Refer to Appendix 3.

## 3.8 Air Quality

This study should clearly establish the current background levels of pollution (including dust, chemical emissions such as VOCs, and odours) and should include a clear comparison to the relevant reference and limit values as specified in the relevant legislation as well as in any other relevant guidance documents. Details on prevailing wind and climate conditions should also be included, amongst other relevant parameters.

The methodology to be used should be submitted for ERA's evaluation prior to commencement of the studies. The Air Quality Study shall be conducted in accordance with the terms of reference in Appendix 4.

### 3.9 Noise, Vibrations and Exterior Lighting

A qualitative statement providing sufficiently detailed information from noise generating equipment, vibration and nocturnal lighting (as relevant). This should also take into account other relevant factors such as:

- Sensitive receptors (*e.g.* residents, recreational areas, fauna and avifauna, natural ecosystems); and
- The potential for attenuation or exacerbation by 'environmental' factors (*e.g.* topography, vegetation, physical barriers etc.), and for mitigation (*e.g.* shielding, muffling/soundproofing, reduced lighting, etc.).

***Note 1:*** *In the case of light pollution, the study needs to consider, among others, glare (e.g. the blinding light which is a danger to motorists/pedestrians and to fauna), light trespass (light straying into an area where it is not desired or required) and sky glow ('wasted' light directed upwards), together with any other relevant variables which are relevant to the determination of impact on the surrounding receptors.*

*Note 2: ERA's request for a qualitative study does not need to include baseline monitoring. The study should consist in a desk study outlining the qualitative impact from the operations of the plant on the nearby receptors.*

### 3.10 Infrastructure and Utilities

The assessment should investigate the currently available infrastructural services (including water supply, energy supply, sewerage, telecommunications infrastructure, access roads, parking, *etc.*), including details about their carrying capacity, physical condition and other relevant practical considerations. It should also compare this information to the infrastructural demands of the project as identified in ***Section 1*** above, so as to clearly indicate:

1. whether the current utilities are adequate to meet the demand arising from the proposed development;
2. whether any significant loading, congestion or damaging of the infrastructural or transport network is envisaged; and
3. whether any new or upgraded services/arrangements will be rendered necessary, both in the short-term and in the longer-term. If any requirement for new infrastructure (or upgrading, alteration or extension of the existing infrastructure) is envisaged, the relevant details including associated works and their environmental implications should also be indicated.

The assessment should also identify any existing or projected infrastructural services located within the area of influence of the development (even if not related to the demands of the development) that might be affected by the development or which may need to be displaced or diverted as a consequence of the development or its ancillary operations and interventions.

### 3.11 Other relevant environmental aspects and features

Other relevant environmental features or considerations not identified in the preceding sections should also be identified and described, as relevant.

## 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 on the environmental 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
(v) 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.

***Note:*** *Should the proposal fall within the scope of the Seveso/COMAH regulations, a stand-alone Risk Assessment may be required, to the satisfaction of the relevant Competent Authority. In such instances, separate Terms of Reference are issued for the Risk Assessment.*

### 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), 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.

*Cumulative impacts*

The cumulation of the effects of the project with those of other existing and/or approved projects and other waste management facilities as identified within the Waste Management Plan (2021-2030). This shall take into account existing environmental problems, areas of particular environmental importance likely to be affected, and the use of natural resources.

## 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 Works Method Statement (WMS). Whilst the detailed workings of the WMS 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 WMS 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 5***.

## APPENDIX 1 REQUIRED DECLARATION

### Signed Declaration: Conflict of interest

**Signed declaration in accordance with sub-regulation 17(3):**

This declaration is to be submitted with each environmental survey report forming part of the EIA.

Attn: Director Regulatory Affairs (ERA).

I, _____, hereby declare that, I have no personal or financial interest in the proposed development. Moreover, I declare that I am not in any way associated with any individual, company, association or grouping that has any direct or indirect, personal, professional or financial interest in the proposed development.

| | |
|---|---|
| Date | Signature |

## TERMS OF REFERENCE FOR SITE CLEARANCE AND LAND CONTAMINATION INVESTIGATIONS (VERSION 6; NOVEMBER 2021)

The following terms of reference have been compiled on the basis of BS 10175:2011+A2:2017

In view of the current state of the site and activities carried out to date which could potentially have led to land and groundwater contamination, clearance of the site and preliminary investigations for contamination are required. The documents detailed in the terms of reference below are to be approved by ERA prior to the commencement of any works on site. Malta Resources Authority (MRA) and Energy and Water Agency (EWA) shall also be notified of the activities on site so they will be able to take any action from their end that they may deem necessary. Should the site bear any legal restrictions / protections, consultation should be carried out with the relevant authorities.

### 1. Land and groundwater investigations

A proposal for land and groundwater investigations is to be submitted, prepared by experts in the field upon consultation with MRA and EWA (in relation to groundwater), which should include a chemist and/or a hydro geologist, with at least three years' experience in designing land and groundwater monitoring proposals and assessing land and groundwater contamination. Collection of samples should also be carried out by suitably qualified / certified persons familiar with the required methods.

CVs of the persons involved in developing and carrying out the land contamination survey, including assessment of the results, are to be submitted for approval by ERA prior to development of the proposal detailed below.

The proposal for land and groundwater investigations is to include the following:

a. An overview of the site history including details on the activities carried out (such as illegal dumping and incineration of wastes) and the type of wastes that have been deposited on site and that could have led to land contamination. If information is not available, expert judgment should be used regarding assumptions on the type of activities and wastes associated with such sites and directly associated contaminants.

b. A conceptual site model (CSM) is to be developed indicating:
    i. Which areas have been used for the different activities (known / assumed);
    ii. Which areas could have been potentially contaminated by said activities (clearly indicating the sources of contamination identified through the site history, related information and/or assumptions on activities and materials handled / deposited / incinerated), and
    iii. The extent of areas that could have been affected through the different potential pathways of contamination identified; this needs to take into consideration sub-surface soils, groundwater and surface waters, potentially contaminated through direct exposure, leaching and run off, within and outside the site.
    iv. The ecology, geology, hydrogeology and topography of the site and surrounding area shall be taken into account during the development of the CSM.
    v. The proximity of the site to other potential sources of contamination that could have an impact on the site.

c. A risk assessment evaluating the environmental setting of the site and identifying any sensitive receptors that may be impacted by potential contamination present within the site.

d. Provide rationale / justification for the area of influence proposed for the preliminary investigation, and the number, location and depths of sampling points, making reference to the CSM. It should be noted that the number of sampling points should be statistically representative for the area under investigation, and ensure adequate coverage of the site as well as the greater area of influence (in line with requirements in Table 1 below). In view that groundwater could potentially have been contaminated; sampling of

groundwater also needs to be included, preferably making use of existing boreholes[2]. Consultation with the MRA and EWA is required in this regard.

e. Based on the CSM developed, sampling locations shall be set to target locations being of a known or suspected source of contamination (ex. existing tanks, waste storage areas etc.) or observed environmental impact. Sampling locations may be set to target potential migration routes of mobile contaminants from such sources. The authority may instruct the person to carry out sampling from specific points in the case where reasonable suspicion persists on potential land contamination.

   Should defined sources of contamination as described above not be identified by the CSM, the sampling locations proposed are to be evenly distributed to cover the entirety of the site.

f. The following table is an indication of the expected sampling effort. Sampling locations shall not be set at a distance greater than 50m from each other. This may require modification based upon the CSM developed.

**TABLE 1: SAMPLING REQUIREMENTS PER AREA OF INVESTIGATION.**

| SITE (square m²) | LAND | GROUNDWATER | |
|---|---|---|---|
| | DRILLING/ TRENCHES | DRILLING WELLS | SAMPLING |
| < 5,000 | At least 2 points | At least 1 point | n. 1 samples per point |
| 5,000 - 10,000 | At least 5 points | At least 3 points | n. 1 samples per point |
| 10,000-50,000 | From 5 to 15 points | From 4 to 6 points | n. 1 samples per point |
| 50,000-250,000 | From 15 to 60 points | From 6 to 10 points (subject to a risk analysis )[3] | n. 1 samples per point |

g. Samples from various depths are to be taken from each sampling location identified[4]. The first sample is to be within 0.5m from the surface, subsequent sampling depths are to be set at intervals of 1m. The extent of investigation for each sampling location is to be:

   i. A minimum depth of 4m

      OR

   ii. until the target depth has been reached if this extends beyond the boundaries set in (i) above.

      OR

   iii. until proposed excavation depth is reached

      OR

   iv. a different geological stratum has been encountered.

[2] To note that drilling of any borehole requires authorization from the Competent Authority, and drilling works must comply with the provisions of S.L. 423.32; drilling rigs must also be registered with the Competent Authority as per S.L. 545.06.

[3] If such plants are located inland, the drilling of 6 to 10 monitoring points per plant is considered to increase the pollution potential of the plants and acceptability would need to be assessed on a case by case basis.

[4] The Authority may amend sampling depths on a case-by-case basis.

h. Provide information on sampling procedure to be followed including:

i. The drilling/coring equipment to be used;
ii. Any *in-situ* testing that may be required (ex. PIF / FID)
iii. Methods to be followed during sampling to ensure cross-contamination does not occur and that samples are handled/stored appropriately until delivery to the lab for testing;
iv. Proposed method for backfilling of voids left by extraction of cores including the use of appropriate impermeable compounds such as bentonite.

It should be noted that dry-drilling is recommended to avoid flushing and dispersion of the contaminants which may be present

i. Provide rationale / justification for contaminants selected for analysis of land and groundwater samples based on the site history and CSM developed. Consultants are to provide a list of contaminants to be investigated in this regards. Proposed omission of analytes is to be duly justified.

The assessment should consider analysis for:

- Heavy metals
- Total organic carbon (TOC)
- Hydrocarbons
- BTEX
- Dioxins & furans
- Cyanide
- Fluoride
- MTBE
- PAHs[5]
- PCBs
- Chlorinated aliphatic hydrocarbons
- Halogenated aliphatic hydrocarbons
- Asbestos

ERA may request testing for additional contaminants other than those proposed depending on the results obtained during the works on site as well as following consultation with MRA and EWA.

j. EPA, ISO, EN or equivalent standards to be used to test for the different contaminants shall be provided, together with the detection limits. Certification of the laboratory/ies chosen for testing is to be provided; Laboratory is to be accredited to at least EN ISO 17025:2005/Cor 1:2006 and accredited for each and every analysis[6].

k. Sample containers are to be sealable and of the appropriate material so as not to cause contamination of the sample, absorb any sample components nor allow losses of volatile compounds. Routinely, wide-mouth amber glass containers are used for analyses of non-volatile organic compounds and PET containers for water-soluble analyses. Containers with a pierceable-septum screw cap can be used to allow for head space analysis for VOCs as required. Any container pretreatment is to be specified. The use of appropriate containers is to be determined in conjunction with the instructions provided by the analyzing lab.

l. Collected samples are to be maintained at 4°C - 8°C and retained in darkness at all times up to delivery to the analyzing lab. Samples collected from land are to be maintained under such conditions upon immediate retrieval from the ground and dispatched for analysis at the earliest. Samples to be kept for long-term storage pending further testing shall be maintained at -20°C.

m. Drilling logs and photographs are to be taken of the collected cores in their entirety and presented in the final report.

n. Locations of core samples are to be confirmed with the Authority on-site prior to initiation of works.

[5] 16 PAHs: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k fluoranthene, Benzo(g, h,i) perylene, Chrysene, Naphthalene, Anthracene, Phenantrene, Fluoranthene, Dibenzo(a, h)anthracene, Indeno (1,2,3 – c,d) pyrene, Pyrene, Acenaphythylene, Acenaphthene, Fluorene

[6] Unless substantiated that accreditation is not technically feasible for certain analytes.

o. The results of the investigation and their interpretation are to be presented in a report which includes:

   i. Description of ground conditions encountered at the site, including groundwater regime and surface water features
   ii. Cross-sections showing site strata and shallow and deep groundwater levels
   iii. Summary tables of chemical analyses and site monitoring
   iv. Description of type, nature and spatial distribution of contamination, with plans where appropriate
   v. Statistical analysis of the data set and derivation of representative concentrations for individual contaminants to a suitable level of statistical significance
   vi. Evaluation of site investigation results against the outline conceptual model

p. Further to (o), presentation of the raw data is to be included as an Annex to the report including:

   i. Plans showing monitoring and sample point locations including the GPS coordinates
   ii. Description of site works and on-site observations
   iii. Exploratory borehole (where applicable), core or drilling logs including the GPS coordinates (UTM WGS 84).
   iv. Details of response zone and other construction details of borehole monitoring installations
   v. Monitoring results
   vi. Description of samples submitted for analysis
   vii. Relevant Quality Assurance/Quality Control (QA/QC) data – this may include accreditations of staff, calibration certificates of equipment, laboratory accreditations (national and international standards)
   viii. Laboratory analytical reports, completed in accordance with the relevant QA/QC data, including relevant
   ix. international analytical or test method standards

**2. <u>Clearance of the site</u>**

Method Statement is to be submitted outlining how clearance of the site shall be carried out, including:

a. Details of when site is planned to be cleared.
b. How all wastes shall be identified and separated according to the different waste streams as per European Waste Catalogue (EWC) codes defined in Commission Decision 2000/532/EC. A list of these wastes and projected quantities is to be included.
c. How all wastes shall be characterised according to the hazard properties (HP) codes as per The Waste Regulations - S.L. 549.63, Schedule 3.
d. Indicate disposal facilities for all wastes stream identified on site. In this regard it should be noted that:
   i. All wastes leaving the site after storage and/or processing must only be sent to facilities licensed to accept the individual waste stream, either locally or abroad.
   ii. Only registered waste carriers as per activity 38 of Schedule 1 in S.L. 549.45 - Waste Management (Activity Registration) Regulations, 2007 are allowed to transport waste to and from this site.
   iii. The applicant shall keep records for every consignment of wastes removed from the site indicating the EWC Code, description, quantities, date of removal, contractor name (including for transport), consignment note number (where applicable) and manner and place of final disposal/recovery. Such records will need to be submitted as part of the final report submitted to ERA for approval documenting the site clearance.
   iv. Contaminated excavated material are to be managed and disposed of as waste.
   v. Wastes identified as inert are to be tested if suspected to be contaminated by other deposited material.
   vi. Should any of the excavated material from the contaminated land be destined for disposal in a landfill, in addition to the abovementioned characterisation analysis, leaching tests should be carried out according to the Waste Acceptance Criteria

set out in Council Decision 2003/33/EC.

vii. Should any of the excavated material from the contaminated land be destined for disposal at sea, testing for additional parameters may be requested in addition to the abovementioned characterisation analysis, in line with ERA's Terms of Reference for the Management and Disposal of Dredged Material.

**Aspects indicated in Parts 3 and 4 below will need to be included in the final report submitted to ERA (post survey/analysis), which should include the results of the investigation and assessment thereof.**

## 3. Way Forward following site clearance and land/groundwater investigations

Action may be required by ERA depending on the levels and location of contamination found. The requirement for remediation will depend on the eventual associated risk to human health and the environment from any contamination of land and groundwater, which would need to be assessed following a preliminary screening of the results obtained from the preliminary investigations.

The engagement of experts for further investigations/assessments and proposals for land decontamination and remediation may be required following the preliminary assessment of contamination. Consultation with MRA will also be required in the event of risks to groundwater.

## 4. Documents to be submitted

a. List of consultants to be commissioned for approval by ERA
b. Land investigation proposal for approval by ERA
c. Method Statement for site clearance for approval by ERA
d. Site clearance report following works
e. Land investigation report.

Further assessment may be required depending on the results obtained.

## APPENDIX 3: TERMS OF REFERENCE FOR A CULTURAL HERITAGE ASSESSMENT (AS PROVIDED BY THE SUPERINTENDENCE OF CULTURAL HERITAGE, AS REVISED IN OCTOBER 2013)

### *1.0 Preamble*

The proposed project would involve development over an extensive area and may lead to intensification of activity over a larger area. Potential impacts may occur within the footprint of the project, in the immediate environs, and along access routes to the site. Potential impacts may include direct and immediate material impacts, as well as subsequent impacts that might arise from the modification of the existing situation.

### *2.0 Scope and Definitions of the EIA*

For the purposes of this document, cultural heritage is defined by Article 2 of the Cultural Heritage Act (2019). This includes movable or immovable objects of artistic, architectural, historical, archaeological, ethnographic, palaeontological and geological importance.

2.1 The study area shall include the total footprint of the proposed development.

2.2 In the context of this particular application, cultural heritage considerations may include:

- Features of archaeological value and potential;
- Military or civil architecture from the Knights period to British period;
- Vernacular structures; and
- Field systems and agricultural features such as irrigation systems.

The above cultural heritage definitions and considerations are not to be considered as exhaustive. The EIA must consider all other forms of cultural heritage, both known and unknown.

2.3 The Environmental Impact assessment will:

- Describe the Cultural Heritage assets within the study area;
- Analyse the cultural heritage features within the context of the cultural landscape;
- Assess the physical, spatial and visual impacts of the proposed development on the cultural heritage assets; and
- Propose corrective measures for the protection of the cultural resources.

### *3.0 Methodology*

In quantifying the cultural heritage assets within the study area, and assessing the impacts of the proposed development, the EIA will undertake:

- Description and assessment of the property;
- Desktop and archival research limited to the study area;
- Fieldwork and research, including “field walking”, topographic survey and remote sensing as may be necessary within the site. All fieldwork has to be authorised by the Superintendence of Cultural Heritage as defined below under point 4;
- Consultations with any relevant bodies, including the Superintendence of Cultural Heritage, Heritage Malta, the University of Malta, NGOs and Local Councils;
- Compilation of an inventory of the cultural heritage assets identified within the study area. The features of cultural heritage are to be described and plotted with grid references, on Data Capture Sheets, the design of which should be approved in advance by the Superintendence of Cultural Heritage. The Data Capture Sheets will be presented as an appendix to the EIS. The analysis of the features will be included in the main report; and
- A cultural heritage Risk Assessment Map examining the various impacts of the proposed project is to be included in the EIA.

### *4.0 Authorisation by the Superintendence of Cultural Heritage*

As per Cultural Heritage Act 2019, any form of investigation or prospection required for the identification of cultural heritage (including excavation, field walking, topographic survey and remote sensing) may only be undertaken by the Superintendence of Cultural Heritage or with its written approval.

| PROTECTIVE INVENTORY OF THE MALTESE CULTURAL HERITAGE<br>HERITAGE DATA CAPTURE SHEET | | Ref. No. |
|---|---|---|

| Location | Category | Type | Site Location ( Address ) |
|---|---|---|---|
| Eastings | Northings | Feature | Period - Year |

| S.S. No. 1 | S.S. No. 2 | Description |
|---|---|---|
| S.S. No. 3 | S.S. No. 4 | |
| Date | | |
| Negative No. | Film No. | |
| Present Utilization | | |

| Existing Legal Protection | GN. Number | GN. Date |
|---|---|---|
| Comments | | |

| Buffer Zone | A | B | C | D | E | Others |
|---|---|---|---|---|---|---|
| Eastings | | | | | | |
| Northings | | | | | | |

Site Map

Scale 1 : 2500

| Archaeological Characteristics – Sketch/Scaled drawings: | |
|---|---|
| Condition: | Degree of Protection (Structure Plan policies UCO7 or ARC 2): |
| State of Security: | Proposed Utilization: |
| Basic Bibliography: | |

| Compiled by: | Revised by: |
|---|---|
| Checked by: | Checked by: |
| Date: | Date: |

## APPENDIX 4: TERMS OF REFERENCE FOR THE DISPERSION MODELLING OF INCINERATOR EMISSIONS

### Part A. Stack height and effect of stack emissions on deposition rates and emissions loads

#### A.1 SCOPE

To use dispersion modelling suites, in order to assess for the likelihood of significant effects on ambient air quality (including exceedances of the ambient limit values in SL.549.59) as well as on the deposition levels of particular components, due to the operation of a Thermal Treatment facility. The analysis should focus on the area of influence of the facility, and should include the sensitive receptors in this area. For the deposition levels, the sensitive receptors shall include ALL farms within this area.

The study shall be repeated at predetermined intervals and using in-stack emissions data from the plant.

#### A.2 DEFINITION

The "area of influence - AOI" means the contour around the plant in which the contribution of the plant to the annual ambient levels of $NO_2$, $PM_{10}$ or $PM_{2.5}$ is 0.3 µg/m$^3$ for $NO_2$ or 0.3 µg/m$^3$ for $PM_{10}$ or 0.19 µg/m$^3$ for $PM_{2.5}$, whichever results in the largest AOI. If the area of the AOI is < 113 km2 then the AOI shall be assumed to be a circle of radius 6 km centred on the chimney.

#### A.3 TECHNICAL SPECIFICATIONS

##### A.3.1 Point source modelling

The modelling suite used throughout this exercise shall be capable of incorporating all the substances included in these terms of reference. Any emission factors used shall be European emission factors preferably based on plants similar (same manufacturer and operating conditions) to the one under study. The model must be capable of predicating the dispersion and deposition of pollutants under variable meteorological conditions ranging from the most favourable to the least favourable.

The modelling suite shall model annual levels of the required parameters.

A few examples of acceptable dispersion models are ADMS, AERMOD, and IMMIS. Other dispersion models may be accepted provided that the requirements in this document are met. The spatial resolution achievable by the model shall be 5 × 5 m$^2$, to enable the identification of impacts at sensitive receptors.

The model shall include a meteorological processor and a terrain processor (i.e. capable of modelling dispersion over a complex terrain).

Rather than using the Pasquill-Gifford stability classes, the model shall rely on the use of the Monin-Obukov lengths.

The model shall be capable of modelling the effect of the interaction of the pollutant(s) from the plant with natural or man-made structures (e.g. aerodynamic downwash, cavity and wake effects, amongst others).

The consultants shall provide documentation that the chosen model has been utilised in any one of the 27 EU member states, for regulatory applications involving the local scale effects of point sources on air quality.

For particulate matter, both primary and secondary particulate shall be modelled.

In addition, the total deposition of certain pollutants shall be modelled.

The consultants shall be obliged to follow industry best practice standards in respect of quality assurance requirements of the dispersion model and in order to ensure that the final report satisfies its intended objectives in respect of resolution, accuracy and reliability.

The dispersion modelling study shall assume that the incinerator[7] always operates at full capacity assumed to be operating at the maximum input load, 24 hours/day over the course of a full year, and the reference conditions are 273.15 K, 101.3 kPa, 0% water and 11% oxygen.

### A.3.2 Specific requirements

The dispersion modelling study shall establish the AOI.

The dispersion modelling study shall establish the combination of chimney height and abatement measures required in order to ensure that the contribution of the plant to annual levels of $PM_{2.5}$, $PM_{10}$, $NO_2$ and benzo(a)pyrene in $PM_{10}$ within the AOI is nowhere higher than the value indicated in
Table 2 below. These values represent 3% of the respective annual limit or target values, where these are available.

The model shall also be used in order to determine the likelihood of exceedances of the limit values for $PM_{10}$, $PM_{2.5}$ and $NO_2$ at the sensitive receptors within the AOI, due to the operation of the plant. In this context, the consultants will be required to carry out at their own expense any baseline monitoring studies for these pollutants. The sites used for these studies as well as the monitoring methods are to be agreed upon with ERA. For $PM_{10}$, the consultants shall also estimate the 90.4$^{th}$ percentile of the daily readings using the following equation:

$$P = (1.46 \times A) + 0.03$$

Whereby P is the 90.4$^{th}$ percentile of the daily readings and A is the annual average of the daily readings.

In addition, the dispersion model shall establish chimney height and abatement measures required in order to ensure that ambient levels of dioxins and furans within the AOI are kept below the level indicated in
Table 2.

Furthermore, the dispersion model shall establish the chimney height and abatement measures required to ensure that annual bulk deposition rate for dioxins and furans as well as for the metals, particularly in any nearby farms and these shall be below the limit in Table 4.

The dispersion model shall establish the points at which the annual averaged daily bulk deposition rates are the highest.

The model shall determine the appropriate in-stack limit values, which would enable the achievement of the limits in
Table 2 and Table 4 below and those set out in
Table 3 which are based on Schedule 2 of S.L.549.81 - The Industrial Emissions (Waste Incineration) Regulations, and Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration, whichever is the strictest. The proposed technology should strive to achieve the strictest achievable level within the BAT-AEL range (or lower). These concentrations shall be expressed at the reference conditions mentioned above.

Emissions from the site shall be assessed initially considering typical operations, which shall be determined by the expected throughput of the facility. Secondly, they shall be assessed under maximum operating conditions. Lastly, emissions shall be assessed under abnormal operating conditions as detailed in footnote 3.

[7] 'Task 6 – Basic Design report for Maghtab Hazardous waste incineration facility, May 2023'- A common stack shall be installed. The stack shall be with three separate flue gas ducts.

**TABLE 2[8]: LIMIT VALUES TO BE COMPLIED TO AND WHICH REFER TO 3% OF THE LIMIT VALUES OR TARGET VALUES ESTABLISHED IN DIRECTIVE 2008/50/EC ON AMBIENT AIR QUALITY AND CLEANER AIR FOR EUROPE**

| Pollutant | Limit |
|---|---|
| Fine particulate matter ($PM_{2.5}$) | 0.6 µg/m$^3$ |
| Coarse particulate matter ($PM_{10}$) | 1.2 µg/m$^3$ |
| Nitrogen dioxide ($NO_2$) | 1.2 µg/m$^3$ |
| Benzo(a)pyrene (B[a]P) in $PM_{10}$ | 0.36 pg/m$^3$ |
| Lead (Pb) in $PM_{10}$ | 15 ng/m$^3$ |
| Cadmium (Cd) in $PM_{10}$ | 0.15 ng/m$^3$ |
| Arsenic (As) in $PM_{10}$ | 0.18 ng/m$^3$ |
| Nickel (Ni) in $PM_{10}$ | 0.60 ng/m$^3$ |
| Chromium (Cr) in $PM_{10}$ | 0.50 ng/m$^3$ |
| Hexavalent chromium (Cr (VI)) in $PM_{10}$ | 51 pg/m$^3$ |
| Mercury (Hg) total | 1.5 ng/m$^3$ |
| Polychlorinated dibenzo-p-dioxins/ polychlorinated dibenzofurans (PCDD/F) | 70 fg WHO-TE/m$^3$ |

**TABLE 3: TENTATIVE LIMIT VALUES UNDER NORMAL OPERATING CONDITIONS BASED ON BAT AND IED**

| Daily Average Values | Limit | |
|---|---|---|
| Total dust | 5 mg/Nm$^3$ | |
| Total volatile organic carbon (TVOC) | 10 mg/Nm$^3$ | |
| Hydrochloric acid (HCl) | 6 mg/Nm$^3$ | |
| Hydrogen fluoride (HF) | 1 mg/Nm$^3$ | |
| Sulphur dioxide ($SO_2$) | 30 mg/Nm$^3$ | |
| Nitrogen oxides ($NO_x$ expressed as $NO_2$) | 120 mg/Nm$^3$ | |
| Ammonia ($NH_3$) | 10 mg/Nm$^3$ | |
| **Half-hourly Averages Values** | **Limit** | |
| | **(100%)** | **(97%)** |
| Total Dust[9] | 30 mg/Nm$^3$ | 10 mg/Nm$^3$ |
| Total volatile organic carbon (TVOC) | 20 mg/Nm$^3$ | 10 mg/Nm$^3$ |
| Hydrochloric acid (HCl) | 60 mg/Nm$^3$ | 10 mg/Nm$^3$ |
| Hydrogen fluoride (HF) | 4 mg/Nm$^3$ | 2 mg/Nm$^3$ |
| Sulphur dioxide ($SO_2$) | 200 mg/Nm$^3$ | 50 mg/Nm$^3$ |
| Nitrogen oxides ($NO_x$ expressed as $NO_2$) | 400 mg/Nm$^3$ | 200 mg/Nm$^3$ |
| **Average value over 30 min to 8 hours[10]** | **Limit** | |
| Cadmium and Thallium and their compounds, expressed as Cadmium (Cd) and Thallium (Tl) | Total: 0.02 mg/Nm$^3$ | |
| Total Metals and their compounds, expressed as their native elements (As, Cr, Co, Cu, Mn, Pb, Sb, V & Ni) | Total: 0.03 mg/Nm$^3$ | |

[8] It is to be noted that, the Ambient Air Quality Directive is currently under revision. The ambient air quality limit values indicated in such are subject to change and will become stricter as of 2030.
[9] Total dust emissions may not exceed 150 mg/m$^3$ as a half-hourly average under any circumstance.
[10] These average values cover also the gaseous and the vapour forms of the relevant heavy metal emissions as well as their compounds.

| | | |
|---|---|---|
| Mercury and its compounds, expressed as Mercury (Hg) | 0.02 mg/Nm$^3$[11] | |
| **Average value over 6 to 8 hours[12]** | **Limit** | |
| Polychlorinated dibenzo-p-dioxins/ polychlorinated dibenzofurans (PCDD/F) | < 0.06 ng I-TEQ/Nm$^3$ | |
| Polychlorinated dibenzo-p-dioxins/ polychlorinated dibenzofurans (PCDD/F) + dioxin-like polychlorinated biphenyls (PCBs) | < 0.08 ng WHO-TEQ/Nm$^3$ | |
| **Average value** | **Limit** | |
| | **Daily** | **30 min** |
| Carbon monoxide (CO) | 50 mg/Nm$^3$ | 100 mg/Nm$^3$ |

**TABLE 4: LIMIT VALUES FOR BULK DEPOSITION**

| Pollutant | Limit |
|---|---|
| Polychlorinated dibenzo-p-dioxins/ polychlorinated dibenzofurans (PCDD/F) | 4 pg WHO-TE/m$^2$·day (bulk deposition) |
| Cadmium (Cd) | 2 µg/m$^2$ day (bulk deposition) |
| Arsenic (As) | 4 µg/m$^2$ day (bulk deposition) |
| Mercury (Hg) | 1 µg/m$^2$ day (bulk deposition) |
| Nickel (Ni) | 15 µg/m$^2$ day (bulk deposition) |
| Lead (Pb) | 100 µg/m$^2$ day (bulk deposition) |
| Thallium (Tl) | 2 µg/m$^2$ day (bulk deposition) |

The model used shall incorporate terrain, land coverage and wind speed and wind direction (at least a year's data) ideally from the site. However, if this is not possible data should be sourced from a weather station nearby.

Various meteorological conditions, ranging from most frequently occurring to the most adverse, shall be modelled for both ambient air quality and deposition levels.

### A.3.3 Emissions in tons

The consultants shall also estimate the annual emission loads in tons based on the envisaged daily emission contribution of the TTF for Dust, $SO_2$, $NO_x$, TVOC and $NH_3$.

The emission loads will assist ERA in setting a cap on the emission loads of $PM_{2.5}$, $SO_2$, $NO_x$, NMVOC and $NH_3$ from the incinerator in order to ensure compliance with Malta's 2025 and 2030 obligations under both European and International environmental law.

### A.3.4 Submission of report

The final report shall as a minimum contain the following sections:

1. Non-technical summary
2. Introduction
3. Scope of work
4. Site description
5. Methodology
6. Identification of sensitive receptors
7. Dispersion models
8. Comparison with limits in legislation
9. Limitations of study
10. Conclusions and recommendations
11. Appendices.

[11] Daily average or average over the sampling period. Continuous monitoring may be imposed, half-hourly averages 35µg/Nm$^3$

[12] Either the limit for PCDD/F or PCDD/F+ dioxin-like PCBs applies

The consultants may also be required to present the methodology and results of these studies to *inter alia* members of the public, the ERA Board Members, etc.

**Part B. Effect of stack on compliance with the air quality limit values**

This part of the study should be carried out once the AOI for emissions from the stack has been determined. The total effect of all stacks within the ECOHIVE complex, including the Waste-to-Energy facility, must be computed based on the assumption that they operate at maximum input load 24 hours a day for an entire year. Once this is completed, the consultants should revert to ERA for direction.

**Part C. Qualifications of the person carrying out the Dispersion study**

At least an MQF Level 7 in Atmospheric Physics/Chemistry, Environmental Engineering, Air Quality Modelling or similar with experience in modelling for regulatory applications. Should have a demonstrable knowledge of the requirements of Directives 2008/50/EC and Directive 2010/75/EU (Chapter IV).

Modelling experience to be specifically related to the modelling of the effect of large combustion sources on air quality and on deposition rates and should be accompanied by a list of completed projects.

## APPENDIX 5: SPECIMEN IMPACT TABLE

| **Impact type and source** | | | **Impact receptor** | | **Effect & scale** | | | | | | | **Probability of impact occurring** (Inevitable, Likely, Unlikely, Remote, Uncertain) | **Overall impact significance** | **Proposed mitigation measures** | **Residual impact significance** | **Other requirements** (monitoring, authorisations, etc) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Impact type** | **Specific intervention leading to impact** | **Project phase** (construction/ operation/ decommissioning) | **Receptor type** | **Sensitivity toward impact** | **Direct/ Indirect/ Cumulative** | **Beneficial/ Adverse** | **Severity** | **Physical / geographic extent of impact** | **Short-/medium- / long-term** | **Temporary** (indicate duration)**/ Permanent** | **Reversible** (indicate ease of reversibility) **/ Irreversible** | | | | | |
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***[Insert definition of relevant criteria used to describe the impacts]***