



TERMS OF REFERENCE

FOR THE PREPARATION OF AN

ENVIRONMENTAL IMPACT ASSESSMENT UPDATE

- (i) PA 1892/19 - To demolish the Go-Exchange building and excavate same site. To construct a 23 storey multi-purpose block housing 92 residential apartments, a hotel (Class 3B), swimming pool and amenities, retail (Class 4B), office (Class 4A) spaces and public open spaces. To restore and refurbish the underground vaults housing a Spa and extend the approved underground car park. To reorganise uses approved in PA 6955/17 to incorporate the addition of a residential floor at level 31, an amenity floor at level 32, a bar and swimming pools at roof level; resulting in an increase in the approved height of 8.11m to reach an overall height of 121.06m above street level, the re-organisation of approved uses and lowering the height of the podium to 4 storeys.
- (ii) PA 0055/17 - To demolish the Go-Exchange Building and excavate the site as part of the phase 1 works forming part of the Mercury Towers Project.

Site at Mercury House Site and Go-Exchange Building, Triq San Gorg, Triq Sant Andrija, Triq Elija Zammit, Triq Gdida fi, Triq Sant'Andrija, San Giljan

October 2019

- 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 second draft 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) Update Report is to be prepared as required by the Schedule I, Category II, Section 7.1.2.1 (*Projects which have: (ii) a gross floor area of 30,000m² or (iii) a gross floor area of 10,000m² or more for commercial use, including shops, shopping centres, offices or other business.*); and Section 13.0.2.1 (*Any change to, or extension of, projects (even if the project is already authorised, executed or in the process of being executed), particularly projects covered by Category I or Category II, where the change or extension itself does not fall under Category I but: (i) meets the thresholds or criteria set out in Category II;* of the Environmental Impact Assessment Regulations, 2017 (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 the identification of consultants and contributors, and 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 Update 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.

Wherever any other study not forming part of the EIA (e.g. Feasibility Study) is also envisaged, this is to be submitted separately from the EIA. Cross-referencing between the EIA and any such study 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 study;
and
2. Enabling the reader to easily follow both the EIA and the other studies as stand-alone documents.

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 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 (including impulsive underwater noise), vibration, light, heat, radiation etc. resulting from the proposed project; the parameters to be reported should be in line with relevant EU policy;
- The expected annual and total emissions, including Greenhouse Gases (GHG), and the contribution to total national GHG emission on an annual basis; and
- Any environmental risks (such as contamination, spillages, flooding etc.) from the project during construction and operation, likely to result in environmental damage or deterioration

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, and type 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 (including the source of ventilation), 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, collection, storage, overflow and use 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). An evaluation report on the increase in the volume of sewage in the public sewerage system should be prepared. It should clearly state if the present infrastructure would cope with this increase and that it would not cause any overflows and/or blockages which may be of health hazard and nuisance to the nearby residents, commercial premises and general public.
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; and
- The method of transportation and frequency,

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.

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

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:

- 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 Uses

A description of the land cover and land uses 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, Water and Soils

A comprehensive investigation of:

1. The geology and geomorphology of the site and its surroundings, including: existing lithological, stratigraphical, palaeontological, hydrogeological and physiographic features and soil types;
2. The geo-technical properties and considerations relevant to the site and its area of influence, including: land stability; mechanical, erosional and structural properties of the terrain and land mass; any relevant fissures, faults, hollows, or weak points; the vulnerability of the site to natural forces such as, erosive elements, landslides and mass movements; and 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; and
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.

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.

3.4 Architectural, Archaeological, Historical & Cultural Heritage

Refer to Appendix 2.

3.5 Air Quality

This study should clearly establish the current background levels of pollution (including PM10 and NO₂) 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 attached terms of reference:

[https://era.org.mt/en/Documents/TORs%20-%20Air%20Quality%20Study%20-%20for%20website%20\(003\)%20\(002\).pdf](https://era.org.mt/en/Documents/TORs%20-%20Air%20Quality%20Study%20-%20for%20website%20(003)%20(002).pdf)

3.6 Noise, Vibrations and Exterior Lighting

This study should provide sufficiently detailed information on representative background levels of noise, vibration and nocturnal lighting, as a baseline for assessing the levels and effects expected to result from the development, including any short- and long-term changes, peaks and fluctuations as well as their acute or chronic impacts. The study should also take into account other relevant factors such as:

- Construction noise impact generated from machinery and equipment used on site;
- Noise impact from the underground parking and the level of noise on the nearest sensitive receptor;
- Cumulation with other existing sources including traffic and with other predicted sources such as new developments;
- Additional effects of road traffic associated with operations on the site;
- Sensitive receptors (e.g. residents, schools, hospitals, 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.*

The study results should include measurable parameters (e.g. frequency, intensity) as relevant, and should be evaluated against appropriate reference values¹. The reference points and measurement locations used should be approved by ERA prior to commencement of studies and, unless otherwise indicated, should be at ground level.

The methodology to be used should be submitted for ERA's evaluation prior to commencement of the studies. The Noise Assessment shall be conducted in accordance with the terms of reference attached in **Appendix 3**.

3.7 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

¹ Unless otherwise specifically indicated, it is recommended that: ISO 1996 and ISO 9613 (all series) standards are used for the noise assessment; BS6472 (relating to human exposure to vibration) and BS7385 (covering the effects on buildings) are used when studying vibration; BS 5228 is used for the assessment of construction noise; and BS 4142 is used vis-à-vis noise complaints.

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.

3.8 Public Access

The assessment should identify the current public access arrangements, including existing footpaths and other public access routes, and should clearly indicate whether these would be affected and how.

Wherever any new or altered arrangements are proposed, these should be clearly identified and their environmental implications should also be indicated.

3.9 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.

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.

4.4 Effects on Human Populations resulting from impacts on the environment

This assessment should also identify any impacts of the development on the surrounding and visiting population (e.g. effects on public health or on socio-economic considerations), that may result from impacts on the environment. In the case of health-related effects, reference should be made to published epidemiological and other studies, as relevant, and the views of the Environmental Health Directorate should be sought. A description of the measures envisaged to prevent, minimise and where possible offset any significant temporary or permanent adverse health effects and nuisances on the Area of Influence and the general public should be included. In addition, the possible health effects of any residual impacts that cannot be mitigated should be identified, and discussed in detail.

4.5 Other Environmental Effects

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

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

5.1 Mitigation Measures

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

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

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

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

5.2 Residual Impacts

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

5.3 Additional Measures

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

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

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

5.5 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 4**.

Signed Declaration: Identification of consultants and contributors

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

Attn: Director of Environment and Resources (ERA).

I _____, who carried out the study (or part thereof) on
_____ for the EIA for the proposed
_____, hereby declare that I take responsibility for
the study any statement and conclusion contained therein.

Date

Signature

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 of Environment and Resources (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

1.0 Preamble

The proposed project would involve excavation and the construction of a tower block and the formation of public open spaces. Development also includes the restoration and refurbishment of underground vaults to house a spa. Development on site may have an impact on the structural stability of known above-ground and underground cultural heritage features, as well as other possible unknown features/remains.

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 consist of:

- Mercury House;
- Underlying Cold War period tunnels and command centre; and

Paleontological remains ca. 70m due north west of the ex-Go exchange, within the same perimeter of the block. The above cultural heritage definitions and considerations are not to be considered as exclusive. 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 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 3: TERMS OF REFERENCE FOR A NOISE ASSESSMENT

Below TORs are to be applied to development permit proposals submitted to ERA and describe the key components of noise assessment; the stages involved in identifying sources; quantifying emissions; and assessing control requirements.

1. Introduction to the Noise Assessment

The below methodology is to be submitted as part of the method statement prior to undertaking the study, and should be agreed upon between the developers, and ERA, on all relevant noise generating sources and noise sensitive receptors (NSRs).

The collection of baseline data in order to determine the ambient noise level at the proposed area of development are determined via noise monitoring, in accordance with current ISO Standards and British Standards² such as:

- ISO 1996-1:2016 Acoustics -- Description, measurement and assessment of sound pressure levels -- Part 1: Basic quantities and assessment procedures
- ISO 1996-2:2017 Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of environmental noise levels
- BS 4142:2014 -- Methods for rating and assessing industrial and commercial sound
- BS 7445-1:2003 – Description and measurement of environmental noise. Guide to quantities and procedures.
- BS 7445-2:1991 -- Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use
- BS 7445-3:1991 -- Description and measurement of environmental noise. Guide to application to noise limits.
- IEC 61672 -- 2013 Electroacoustics - sound level meters Parts 1, 2 and 3
- IEC 61260 -- Ed. 1.0 (1995-08) plus Amendment 1 (2001-09), 1/1 and 1/3-octave Bands (octave-band and fractional-octave-band filters)
- IEC 60942:2018 Electroacoustics - sound calibrator

2. Baseline Study

- a. The noise monitoring report shall include details of the standards used for monitoring, equipment used including calibration details and calibration certificates, resultant monitoring data, and assessment methods.
- b. The study is to be commissioned according to the latest revisions of ISO1996 and the rating of operational noise affecting residential areas shall be according to BS4142:2014.
- c. The study should include baseline noise survey of sensitive receptor sites, noise impact on site sensitive receptors including day and night background levels.
- d. The baseline noise monitoring study, as proposed by the commissioned consultant should address the following issues:
- e. Maintenance and field calibration checks: The monitoring shall be performed exclusively using a calibrated and accredited type 1 sound level meter, conforming to BS6698/IEC 61672 Class 1. The use of type 2 sound level meters or less is not considered acceptable and will not be considered. The consultant shall ensure that:
 - Prior to the initial data collection and at the end of the monitoring day, all acoustic instrumentation system such as the sound level meters are calibrated, and checked immediately before and after each series of monitoring readings.
 - Results must be within $\pm 1.0\text{dB}$, otherwise discarded and read again.
- f. Measurement locations: The location for monitoring of ambient noise levels should be between:
 - 1.2 and 1.5m above the ground for a single storey development and;
 - Between 1.2 to 1.5m above the proposed internal floor level for each additional storey.

² In the case that the consultant proposes to use equivalent standards (ex. European or ISO) that are not covered by these TORs, the assessment methodology to be adopted is to be proposed for the approval of ERA together with the Method Statement.

- g. For noise mapping the following microphone heights must be used:
 - 4.0 ± 0.2 m in residential areas with multistorey buildings;
 - 1.2 ± 0.1 m or 1.5 ± 0.1 in residential areas with one floor buildings and recreational areas.
- h. To minimize the influence of reflections, the monitoring should either be taken under free-field conditions (more than 3.5m from any reflecting surface) or at 1m from the façade of a building and results treated accordingly.
- i. When a noise source is incident on a façade, the effect of reflected noise from the façade is generally to increase the “façade level” measured at 1m by 3 dB.
- j. Measurement settings
 - The recommended time periods over a twenty-four hour period are categorized in terms of daytime, from 07:00-23:00 ($L_{Aeq,[16h]}$) and night-time from 23:00-07:00 ($L_{Aeq,[8h]}$).
 - A number of different noise indices are used due to the variation of different noise levels and frequency content over time in accordance to BS 4142:2014. Equivalent continuous noise level over a period of time index, $L_{Aeq,T}$ is to be used for measuring the specific sound and the residual sound. For traffic noise, $L_{A10,18h}$ is more widely used and $L_{A90,T}$ is an appropriate noise metric to measure background noise at the noise sensitive receptor or location.
 - When monitoring for a specific noise level at assessment location it should be adjusted over reference time intervals such as a period of 1 hour during the day, $L_{Aeq,1hour}$ and 15min during the night, $L_{Aeq,15min}$.
 - The measurement time interval should be sufficient enough to obtain a representative value of a typical background when the specific noise source will be operating.
- k. All noise monitoring results and any derived averages should be rounded to the nearest whole integer, with 0.5 being rounded up.
- l. All meteorological conditions and weather effects such as wind speed and direction, temperature gradient, relative humidity and cloud cover, are to be documented in the beginning of each monitoring period and monitoring point location. The following two points shall be considered, where relevant:
 - Measurements should ideally be carried out under dry conditions; when the road surface is dry; and the wind velocity is of up to $2ms^{-1}$. (At this wind speed the noise levels are enhanced by up to 2dB(A) when compared to still conditions).
 - Monitoring should not be performed if wind speed exceeds $5ms^{-1}$ or wind gusts exceed $10ms^{-1}$ or if it is raining as stipulated in ISO standard.
- m. The background noise measurements shall be accompanied by a critical listening of all the other noise sources present in the background.
- n. Adjustments: Due to certain acoustic features such as tonality, impulsivity and intermittency the inclusion of specific noise level plus any adjustment for the different noise characteristic features, the rating level, $L_{Ar,Tr}$ should be reported in accordance with BS 4142:2014, depending on the subjective assessment made while taking the readings.

3. Construction Noise Study

The study on noise impacts by the use of equipment and machinery during all construction phases are to be evaluated and assessed using Standard BS 5228-1:2009 +A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, or any update thereof, where in particular Annex C and F are to be used for methodology and Annex E for assessment.

The methodology for assessing the impact of construction noise involves predicting the noise levels at the sensitive receptors at the various phases of construction, such as site clearance and demolition, excavation and construction works. Constructional site noise is produced by a wide range of activities including various machinery and equipment. The character and intensity as well as the location and duration of the use of such machinery will reflect on the noise generated during the various stages of construction.

The noise levels of constructional noise sources can be determined by the method outlined in BS 5228-1 Annex F, where the estimation of noise from sites at the sensitive receptors can be predicted. The equivalent continuous sound level LAeq is used to predict the noise levels at the sensitive receptors. It is established using the A-weighted sound pressure levels at 10m (dB) as obtained from BS 5228-1 Annex C, which provides a sound level data in relation to typical construction site activities, plant and machinery. Correction needs to be made where there is a potential that multiple equipment will be operating simultaneously in order to generate the combined noise from the different noise sources.

A distance adjustment should also be considered to account for the distance of the noise sensitive receptors from the noise source using reference to BS 5228-1 Figure F.2 and also adjusting for soft ground or hard ground. Attenuation, when taking into account screening or reflection can also be considered as long as it is done in accordance with the standard.

This study must detail the particular activities that are likely to give rise to noise; an assessment of how loud they are likely to be at the receptors, and where they exceed levels detailed in BS 5228, the scheme of mitigation that will be put in place should be included.

4. Report

The report shall include the following:

- a. A description of the surrounding areas within approx. 1km radius from the site– this shall include identification of the types of activities, whether residential or commercial, roads and other amenities. These shall be location-specific taking into account their location with respect to the site.
- b. Identification of the closest noise sensitive receptors – this shall be carried out after assessing the noise levels in the plant's perimeter and in the other locations under normal operating conditions of the plant. The various measurement points shall be identified with a unique code and an analyses of the ambient noise to which each monitoring point is subjected. The consultant, in collaboration with ERA, may seek advice from the Local Council during the selection of the sensitive receptors.
- c. A summary of the data obtained after the survey has been commissioned in relation to the noise sensitive receptors identified above shall be submitted.
- d. A noise map maybe required both for baseline studies and for prediction showing the sensitive receptor exposure to noise. The maps will be generated using the above highlighted standards.

5. Impact Significance

The criteria for assessing the significance of construction noise impacts are outlined in BS 5228-1 Annex E.

(i) The ABC method³

The significance criteria for the construction noise study are based on 'The ABC Method' from BS 5228-1:2009. An extract describing this method is provided below.

³ BS 5228-1:2009 E.3.2

Example Method 1 – The ABC Method

Table E.1 shows an example of the threshold of significant effect at dwellings when the total noise level rounded to the nearest decibel, exceeds the listed value. The table can be used as follows: for the appropriate period (night, evening/weekends or day), the ambient noise level is determined and rounded to the nearest 5 dB. This is then compared with the total noise level, including construction. If the total noise level exceeds the appropriate category value, then a significance effect is deemed to occur.

Table E.1 Example threshold of significant effect at dwellings

Assessment category and threshold value period (L _{Aeq})	Threshold value, in decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00-07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00-19.00) and Saturdays (07.00-13.00)	65	70	75

NOTE 1 A significance effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3 dB due to construction activity.

NOTE 3 Applied to residential receptors only.

^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

^{B)} Category B: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

^{C)} Category C: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

^{D)} 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays.

(Source: BS 5228-1:2009, Page 119)

(ii) 5dB(A) change method⁴

The 5 dB(A) change method is based upon the premise that a significant effect for public open spaces is deemed to occur, if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by 5dB or more. The criterion is subject to lower cut-off values of 65dB, 55dB and 45dB LAeq for the daytime, evening and night-time periods respectively. The criteria further requires that for a significant effect to occur the total noise level must exceed the pre-construction ambient noise for a duration of one month or more, unless works of a shorter duration are likely to result in significant impacts.

Furthermore, the significance of impact of the constructional noise on the noise climate can be assessed from what is generally accepted in terms of human perception of changes in sound pressure levels. A 3 dB change in sound level is just perceptible as an increase (or decrease) in perceived loudness, a 5 dB change is perceived as a noticeable difference, and that a 10 dB change is perceived to be twice or half as loud.

6. Mitigation for onsite impacts

A summary report of findings from the noise impact study and any remedial action and/or mitigation measures which are to be implemented by the developer in order to reduce impacts resulting from the construction site should be included.

Noise control at construction site should be assessed for the noise levels, take all necessary actions to eliminate and remove noise sources, put in place measures to control and prevent exposure and review the study and amend control measures in place. If recommendations are to be proposed, then this could be included as a permit condition and the Building Regulations Office or the Planning Authority (PA) should ensure enforcement.

The following is a non-exhaustive list of actions to achieve good site practices:

⁴ BS 5228-1:2009 E.3.3

- Inform potentially noise-affected neighbours about the nature of construction stages and of the proposed timing of the specific works and where practicable any times which are particularly sensitive for neighbours will be avoided in order to reduce complaints.
- All mechanical plant and construction equipment is to be silenced by best practical means including silencing measures such as compressor panels and mufflers should be properly maintained and utilised.
- Noise enclosures should always have all doors or hatches closed when the equipment is in use.
- Avoid unnecessary noise, such as leaving noisy idle machinery operating, shouting, loud radios or excessive revving of engines.
- Stationary equipment such as pumps and generators should be located away from neighbours.

