

1.0 Purpose

This instruction sets out the control requirements that address the significant environmental aspects associated with the design and material specifications of WBC projects.

This instruction set out requirements for appropriate measures to be included by the Design Personnel / Consultant (if required) in the design stage to address significant environmental aspects (SEA).

This instruction establish procedures and guidelines for the Technical Services Manager (TSM) to review the design details and ensure that the Significant Environmental Aspects (SEA) have been addressed in the design.

2.0 Scope

This instruction applies to construction project that is involved with design of building and civil engineering works.

3.0 Procedure

3.1 Design of Permanent Structures/Works

3.1.1 *Communication with Design Personnel on Environmental Considerations in Design*

3.1.1.1 The Technical Services Manager (TSM) shall provide Design Personnel with all relevant design data and requirements, which include significant environmental aspects of the concerned project identified.

3.1.1.2 Upon appointment of the Design Personnel, the TSM shall provide the *Guidelines on Environmental Considerations for Building/Civil Engineering Design (EG-EI03-01)* to the Design Personnel for reference. Environmental considerations shall address those SEA relating to the design of the concerned project. The Design Personnel shall indicate in the design output how they will address the environmental issues during the design stage.

3.1.1.3 In order to encourage the use of environmentally friendly products/materials in the site development, the TSM shall provide Design Personnel with the *Guidelines on Environmental Considerations for Selection of Products/ Materials (EG-EI03-02)*. Although the Guidelines are not conditions/terms set by WBC to comply, the Consultants are required to use them as a reference and to demonstrate that they have been duly considered in the detailed design. The Design personnel are encouraged to consider the recommended environmental considerations and/or initiatives in selecting and specifying the products/materials used for the project development.

The TSM shall communicate the above requirements (3.1-3.3) to relevant project personnel and ensure they clearly understand that they are expected to produce environmentally friendly designs for any project development of WBC. The TSM shall keep relevant records as evidence.

3.1.2 *Design Review on Environmental Considerations by the Project Manager*

3.1.2.1 The TSM shall check the preliminary design and review the Design Output to ensure that it have proactively adopted suitable environmental measures to address the SEA. The Project Manager shall complete the *List of Significant Environmental Aspects for Construction Activities (refer to EP-01)* at the beginning of Design Stage.

3.1.2.2 The TSM shall review the design based on, but not limited to:

- the SEA identified for the Project;
- the *Guidelines on Environmental Considerations for Building/Civil Engineering Works Design*

3.1.2.3 The TSM shall closely monitor and review the preliminary and detail design to ensure that the environmental considerations are incorporated and satisfied. Records of meetings and design outputs shall embrace all environmental considerations. If any action or further information on a particulate issue is suggested, they shall then be addressed and reported in the next meeting or reports as appropriate.

3.2 Design of temporary Structure / Works

3.2.1 For the design of temporary structures, the design personnel shall also consider environmental design and with reference to the guidelines wherever practicable. The TSM shall closely monitor and review the design to ensure that the environmental considerations are incorporated and satisfied.

4.0 Monitoring and Checking

TSM shall closely monitor and review the design to ensure that the Design Personnel has referred the provided checklist and guidelines as parts of the environmental consideration throughout the design stage.

5.0 Records

Record Description	Record Location / Retention Responsibility	Minimum Retention Time
Communication records with Subcontractors on environmental design requirements	TSM	3 years after the date of completion of project
Meeting Minutes (meeting involving review on environmental design)	TSM	3 years after the date of completion of project
Design outputs / Subcontractor's reports (demonstrating environmental design / considerations)	TSM	3 years after the date of completion of project

6.0 Appendix

Appendix 1 : Guidelines on Environmental Considerations for Building / Civil Engineering Design (EG-EI03-01)

Appendix 2 : Guidelines on Environmental Considerations for Selection of Products/Materials (EG-EI03-02)

Aspect considered	Environmental Considerations Recommended
Innovative design concept	<ul style="list-style-type: none"> Embrace any innovative design into the building design, so as to enhance environmental performance of the development.
Waste minimization design	<ul style="list-style-type: none"> Consider the use of prefabricated building elements.
Flexible design	<ul style="list-style-type: none"> Consider minimising waste through flexible design.
Plantation	<ul style="list-style-type: none"> select native plant species; incorporate existing plants and ecological features into the new landscaping ; and if required replant or replace vegetation soon after construction.
Land decontamination	<ul style="list-style-type: none"> For EIA designated projects, comply with EIA requirements and commission environmental consultants to devise mitigation measures for land contamination and adopt them accordingly. For non-EIA designated projects, if land contamination is suspected (e.g. site previously used for industrial applications), environmental consultants should be employed to undertake a contaminated land survey and if appropriate, adopt the recommended mitigation measures.
Building / Structural appearance	<ul style="list-style-type: none"> The appearance of the building / civil structure should blend in with the surrounding environment with attention given to its shape, colour, texture, etc.
Block design, orientation and massing effects for energy efficiency	<ul style="list-style-type: none"> To optimise building design for solar heat gain and day lighting and adopt appropriate recommendations as feasible.
Noise produced by the machinery and equipment installed in the development during occupation / operation	<ul style="list-style-type: none"> For EIA designated projects, comply with EIA requirements and consider the recommended measures in the building design.
Indoor noise experienced by occupants	<ul style="list-style-type: none"> Consider undertaking assessments to predict the indoor noise levels to be experienced by occupants, and adopt appropriate building design measures to comply with the Hong Kong Planning and Standards Guidelines.
Air pollution produced by the development during occupation / operation	<ul style="list-style-type: none"> For EIA designated projects, comply with EIA requirements and consider the recommended measures in the building design. For non-EIA designated projects, consider undertaking assessments and evaluation of the local air quality impact resulting from the development (centralised A/C Plant, kitchen exhaust), and consider appropriate building design measures to minimise the impact on the nearest Air Sensitive Receiver in compliance with the Hong Kong Air Quality Objective.

Aspect considered	Environmental Considerations Recommended
Air pollution experienced by occupants	<ul style="list-style-type: none"> Consider undertaking assessments to evaluate the ambient air quality experienced by the building occupants, and incorporate appropriate measures in the design in compliance with the Hong Kong Air Quality Objective.
Natural ventilation	<ul style="list-style-type: none"> Consider undertaking feasibility studies to maximise natural ventilation for individual residential units and common areas, e.g. corridor, lobby, etc. and consider appropriate recommendations.
Clothes Drying Area and Facilities	<ul style="list-style-type: none"> Provide suitable areas and facilities, which utilise the natural environment for clothes drying, and are distant from kitchen exhausts.
Cycle parking	<ul style="list-style-type: none"> Allocate adequate space and facilities for cycle parking and provide pathways and linkage to local cycling paths if appropriate.
Waste segregation	<ul style="list-style-type: none"> Provide adequate waste segregation or recycling facilities on ground floor or each floor if possible for the sorting of waste and the recovery of recyclable materials, and also provide a centralized location for permanent storage purpose.
Maintenance workshop	<ul style="list-style-type: none"> Provide adequate areas and facilities for future building/facilities maintenance purposes. If appropriate, provide chemical storage facilities with secondary containment and adequate mechanical ventilation.
Water conservation	<ul style="list-style-type: none"> Consider employing rainwater/greywater collection and treatment system(s) for future use in cleaning, flushing and irrigation of the building. Consider optimum flow rate in the design of water supply devices to avoid over-design of the flow rate.
Prevention of Legionnaires Disease in centralized air conditioning systems and water systems	<ul style="list-style-type: none"> Adopt suitable measures in the design of centralized air conditioning systems and water systems to prevent <i>Legionnaires Disease</i>. Refer to EMSD's Code of Practice for <i>Prevention of Legionnaires Disease</i>.
Pedestrianised areas	<ul style="list-style-type: none"> Provide sheltered facilities for pedestrian pathways within the development and to adjacent facilities

Environmental Aspects on Products/Materials Specifications in Buildings	Environmental Considerations Recommended
Use of environmentally friendly alternatives for cement	<ul style="list-style-type: none"> Consider the use of Pulverised Fuel Ash (PFA) as partial cement replacement as recommended in the Works Branch Technical Circular No.14/90.
Use of environmentally friendly alternatives for aggregates in concrete	<ul style="list-style-type: none"> Consider the use of recycled aggregates.
Use of environmentally friendly materials in brickwork, blockwork, masonry, pavers, plasters, etc	<ul style="list-style-type: none"> Consider the use of recycled aggregates.
Use of ozone depleting agents in thermal insulation in building fabrics and services	<ul style="list-style-type: none"> Consider the use of non-ozone depleting thermal insulation in building fabrics and services.
Use of solid & panel timber in permanent carpentry and joinery (floors, doors, skirtings, frames, etc)	<ul style="list-style-type: none"> Use timber from a sustainable source.
Use of structural steel work, metal work and ironmongery	<ul style="list-style-type: none"> Apply re-usable metal formwork systems where possible.
Use of paints and adhesives containing volatile organic compounds	<ul style="list-style-type: none"> Consider the use of water-based and lead-free paint and adhesives.
Use of materials/finishes which cause radon emissions	<ul style="list-style-type: none"> Consider selection of materials/finishes which minimize radon emissions
Use of hazardous materials (e.g. formaldehyde, lead paints, timber preservatives, etc)	<ul style="list-style-type: none"> Minimize the use of hazardous materials and use alternatives as far as possible.
Provision of interior/exterior lighting (lamps, installed loads, controls) in occupied/public areas	<ul style="list-style-type: none"> Provide energy efficient lighting for installations of public interior and exterior lighting systems e.g. compact fluorescent lamps Comply with the EMSD's <i>Code of Practice for Energy Efficiency of Lighting</i> Adopt timer or photo-electric switching systems as appropriate.
Provision of window and/or split type AC units, where applicable (coefficient of performance, controls)	<ul style="list-style-type: none"> Locate air conditioners in walls where air is not easily drawn in from pollution sources such as catering and commercial activities. Provide slab as support and cover. Provide appropriate means for drainage of condensate. Allow design provisions for safe and convenient removal during the installation of the unit.

Environmental Aspects on Products/Materials Specifications in Buildings	Environmental Considerations Recommended
	<ul style="list-style-type: none"> Provide air-conditioning units, which are labelled as Grade 1 or Grade 2 under the EMSD's energy efficiency labelling scheme for room coolers.
Provision of appliances in occupied / public areas (e.g. refrigerators)	<ul style="list-style-type: none"> Provide electrical appliances (e.g. refrigeration units) which are labelled as Grade 1 or Grade 2 under the EMSD's energy efficiency labelling scheme.
Provision of water heating systems (fuel, insulation, controls) for occupant / public services	<ul style="list-style-type: none"> Consider the use of energy recovery devices, e.g. heat pumps and other energy recovery equipment.
Provision of lifts and escalators (power loads and controls)	<ul style="list-style-type: none"> Comply with the EMSD's <i>Code of Practice for Energy Efficiency of Lift & Escalator Installations</i>.
Provision of centralised HVAC systems for public areas	<ul style="list-style-type: none"> Consider the use of more energy efficient systems, e.g. water cool chillers, heat pumps and heat exchangers, etc.. Comply with the EMSD's <i>Code of Practice for Energy Efficiency of Air Conditioning Installations</i>.
Provision of electrical installations and EL voltage systems	<ul style="list-style-type: none"> Comply with the EMSD's <i>Code of Practice for Energy Efficiency of Electrical Installations</i>.
Provision of fire protection systems	<ul style="list-style-type: none"> Use non-ozone depleting fire extinguishers.