

3 SCOPE OF THE ASSESSMENT

3.1 INTRODUCTION

This Section describes the scope of the assessment work undertaken in the EIA Study for the power station component of the Lamma Extension project. This component includes the reclamation, power station and associated facilities (eg gas receiving station, and light gas oil facilities) on the Lamma Extension, which are described in more detail in the previous Section.

The scope and contents of the assessments for the transmission system and gas pipeline components of the project are described in *Section 3* of Part C, and *Section 3* of Part D, respectively.

3.2 ASSESSMENT AREAS ADDRESSED

The EIA Study Brief requires assessments to be undertaken, where relevant and appropriate, for both the construction and operational phases of the overall project in the following technical areas:

- air quality impacts;
- water quality impacts;
- noise;
- landscape and visual impacts;
- waste management impacts;
- land contamination;
- aquatic (marine) and terrestrial ecological impacts;
- fisheries impacts; and
- hazards to life.

Each of these nine areas is relevant to the assessment of the power station component of the project.

Air Quality

The air quality assessment (*Section 4*) has five main components. Four of these relate to the impacts of emissions from the new power plant during its operational phase, while the fifth deals with the potential impacts of dust arising from construction work. The four operational areas of the assessment are:

- physical (ie wind tunnel) modelling of the combined impacts of emissions from the existing and proposed power stations;
- numerical modelling of the impacts of the proposed power station on air pollution levels throughout the SAR, especially photochemical pollution;
- a quantitative review of potential impacts on air quality in the wider Pearl River Delta Region; and
- an assessment of greenhouse gas emissions (which deals with HEC's *overall* operations in future years, so no separate assessment is provided in Part C of this Report of greenhouse gas impacts for the proposed transmission system for the Lamma Extension project).

Water Quality

The water quality assessment in *Section 5* included:

- hydrodynamic modelling of tidal flows associated with the proposed reclamation;
- modelling of sediment transport arising from dredging during the construction phase; and
- assessment of the impacts of discharges of heated cooling water and chlorine, and possible changes in sedimentation, associated with the operational phase of the power station.

Noise

Noise during both the construction and operational phases of the project has been assessed (*Section 6*). Noise from dredging and site formation, piling and other civil works, and structural building works was evaluated for the construction phase assessment. The operational phase considered all significant sources, including gas and steam turbines, generator plant, heat recovery systems, and a wide range of mechanical equipment items.

Landscape and Visual

The assessment in *Section 7* focused on the visual appearance and landscape impacts of the Lamma Extension project when it is operational, and the identification of landscaping, architectural and design measures to mitigate impacts.

Waste

Section 8 deals with the assessment of wastes arising from the construction and operational phases of the project. The construction phase assessment examined dredged and excavated material, general construction waste, chemical waste and general refuse. The operational assessment considered industrial and chemical waste, sewage and refuse.

Land Contamination

An assessment of the potential for contamination of land from spills, leakages and other events during the operation of the new plant is provided in *Section 9*. Particular attention was paid to the handling and storage of oil, chemicals and wastes, and standard operational and emergency procedures for the new plant.

Marine Ecology

Section 10 presents an assessment of potential impacts on marine ecological resources during the construction and operation of the project, including an evaluation of the results of field surveys in areas potentially affected by the project. Both direct (eg habitat loss) and indirect (eg water pollution) impacts were evaluated for both phases of the project.

Fisheries

As with marine ecology, the fisheries impact assessment (*Section 11*) considered both direct and indirect impacts on fisheries resources during construction and operation. Impacts associated with loss of fishery areas and increased pollution during construction, and the impacts of cooling water and chlorine discharges during operations, were evaluated. A red tide assessment was also undertaken.

Hazards to Life

Section 12 includes risk assessments for both the gas-related and non-gas hazards associated with operation of the proposed power station. The former assessment, (which examines loss of containment, internal explosion and mechanical failure events) is qualitative only at this stage, and a more detailed assessment will be undertaken at the detailed design stage. The non-gas hazards examined include the light gas oil system, use of hydrogen, and the handling of packaged dangerous goods

3.3

OTHER ENVIRONMENTAL ISSUES CONSIDERED

Since the proposed power station extension will be located on reclaimed land, potential ecology impacts will be confined to the marine environment. No terrestrial ecological impacts are expected on the power station site during construction.

Potential terrestrial ecological impacts during the operational phase have been considered, particularly with respect to the hot gas discharge from the new stacks on the natural environment in the South Lamma Site of Special Scientific Interest (SSSI) over 2km away.

As shown in the air quality assessment in *Volume 1 Part B Section 4*, the maximum flue gas temperature from the new units is 80°C. The gas will be diluted to at least 1,000 to 10,000 times before reaching the potential receptors on the SSSI. As a result, the maximum estimated temperature rise will be negligible i.e. below 0.05°C.

The air quality assessment also provides detailed air quality predictions at the Lamma SSSI for SO₂ and NO₂. Results show that the potential air quality impacts will be within the *Air Quality Objectives* (AQOs) criteria.

Together with the fact that the occurrence of northwesterlies is rare as shown in *Section 4.3*, no significant terrestrial ecological impacts are expected and the issue is not assessed further in *Part B* of this report.