

Achieving Sustainability

Chapter 2 described how the sustainability assessment model for the Project was developed. This included identification of the suite of performance indicators for use, to varying degrees, over the life of the Project. This chapter reviews the anticipated performance of the Project with respect to the indicators of relevance to the design and construction of the Project.

20.1 Introduction

Sustainable development (or ESD as it is commonly known in Australia) is an important concept recognised in international and domestic policy and legislation. The concept recognises that securing economic equity and social well-being for current and future generations is invariably linked to ecosystem health.

ESD is underpinned by a number of key principles:

- intra- and inter-generational equity
- the precautionary principle
- conservation of biodiversity and ecological integrity
- improved valuation and pricing of environmental resources
- stakeholder participation.

HWC is adopting a proactive approach to monitoring the sustainability performance of the Tillegra Dam project. This is underpinned by the sustainability assessment model described in Chapter 2.

As indicated, the sustainability assessment model comprises the following two ESD goals:

- to provide an equitable, reliable and efficient water source for present and future generations while ensuring environmental protection and neutralising contributions to
- to leave a positive economic, social and environmental legacy to the community.

It also encompasses:

- five ESD themes or principles
- 12 indicator categories
- 31 key indicators.

An overview of the sustainability assessment framework and the sustainability assessment model is provided in Figure 2.1.

The following section describes how the sustainability assessment model would operate for the Project.

20.2 Methodology

The sustainability assessment model would be supported by an implementation strategy to facilitate the effective assessment of the sustainability performance of the Project. The strategy would involve HWC reporting on the selected key indicators as part of its operational activities, ie the requirements under its operating licence and the HWC annual catchment report.

Senior management within HWC will be assigned the responsibility of overseeing the implementation of the model and its integration into the existing HWC Environmental Management System. This work will include:

- obtaining and responding to feedback on the sustainability assessment model
- assigning responsibility to implement parts of the model to various staff
- interfacing between stakeholders and HWC
- auditing implementation of the sustainability assessment model.

As the sustainability assessment model would be implemented through a dynamic, iterative process, further details of implementation would be made available to relevant internal and external stakeholders as the Project develops.

An important consideration in the application of the sustainability assessment model would be adequate and effective monitoring. This would be achieved through preparation of a monitoring program which would allow internal and external stakeholders to measure progress in achieving the Project's sustainability goals.

The key indicators relevant to design and construction would be reviewed and reported on annually. All indicators would be reviewed and reported on every five years. Details of the monitoring program would be made available as the Project progresses.

20.3 Sustainability assessment

The indicators relevant to the key issues and other issues associated with the Project are discussed as follows. This is intended to demonstrate how the indicators are likely to be measured. Definitive measurement of indicators has not been undertaken as presently there is little available data, the collection of this being dependent on the implementation of the sustainability assessment model. All indicators would be measured using the appropriate measurement units and reported on every five years in conjunction with HWC's general reporting requirements.

20.3.1 Water quality and hydrology

There are currently two indicators identified as relevant to water quality and hydrology:

- water quality (guidelines and routine sampling)
- environmental releases from Tillegra Dam (megalitres per year and appropriate timing of environmental releases).

The purpose of the above indicators is to confirm the environmental flows assigned to the Project are appropriate and successful in achieving their intended purpose, and that water quality complies with required standards.

20.3.2 Fluvial geomorphology

While there are no indicators that directly relate to fluvial geomorphology, there is a relationship with other environmental aspects notably water quality, hydrology and aquatic ecology. Therefore, the indicators relevant to these issues would indirectly measure performance related to fluvial geomorphology.

20.3.3 Aquatic ecology

The key indicators relevant to aquatic ecology are as follows:

- ecological community health and improvement (descriptive)
- catchment health and management (annual HWC CMA report)
- environmental releases from Tillegra Dam (megalitres per annum and appropriate timing of environmental releases).

These key indicators would be used to monitor the effectiveness of mitigation and management practices employed during the construction and operation of the Project in conserving aquatic ecology. These results would be incorporated into an overall sustainability assessment to indicate whether the sustainability goals of the Project are being achieved.

20.3.4 Environmental flows

The key indicator of relevance to the issue of environmental flows is:

- environmental releases from Tillegra Dam (megalitres per annum and appropriate timing of environmental releases).

Measurement of this indicator would facilitate assessment of the suitability of the adopted environmental release strategy. This indicator would be measured using the above appropriate measurement unit and reported on every five years in conjunction with HWC's general reporting requirements.

20.3.5 Terrestrial ecology

The key indicators relevant to terrestrial ecology are:

- ecological community health and improvement (descriptive)
- catchment health and management (annual HWC CMA report)
- total number of trees planted (number/yr and descriptive).

The measurement of the first key indicator is descriptive or qualitative. This would be achieved using best available information on which to base this measurement. Information that may be of value for measuring this indicator may include increase/decrease in flora and fauna species, communities, habitats.

The third indicator relates in part to the establishment of the habitat corridor along the eastern and southern margins of the storage. It should be noted that this refers to trees that reach maturity, allowing for losses such as through bush fire. As indicated in Chapter 11, tree planting and direct seeding would be undertaken where required to supplement natural regeneration. It is expected that the effectiveness of this mitigation strategy would be measurable by all three indicators.

20.3.6 Socioeconomic issues

The key indicators relevant to socioeconomic considerations are as follows:

- total revenue from Project (\$)
- operating cost (\$)
- tourism economy (\$/descriptive)
- indirect economic impacts (descriptive).

The necessary economic information to support the measurement of these indicators would be acquired as the Project develops. It is noted that the potential tourism economy generated by the Project and indirect economic impacts may be difficult to quantify in which case best estimates may have to be provided in a qualitative manner.

20.3.7 Contemporary heritage

The key indicator of relevance to the issue of contemporary heritage is:

- protection of non-Aboriginal heritage (descriptive).

The effectiveness of the Project in protecting contemporary heritage is largely dependent on the success of the mitigation measures in Chapter 13. The descriptive measurement of this indicator is therefore likely to include a discussion of the success of the proposed mitigation measures, for example through a review of community and stakeholder opinion.

20.3.8 Aboriginal heritage

The key indicator of relevance to the issue of Aboriginal heritage is:

- protection of Aboriginal archaeological and ethnographic sites (descriptive).

As indicated in Chapter 14, some recorded sites and areas of archaeological potential are likely to be subject to some impact from the Project. Chapter 14 also identifies management strategies that would be implemented to mitigate impacts on Aboriginal heritage. This indicator would be used to measure the success of mitigation measures and measurement would be qualitative. This indicator could also be used as a tool to report on results from any further investigations relating to Aboriginal heritage.

20.3.9 Landscape and visual amenity

While there are no indicators that directly relate to landscape and visual impact there is an indirect relationship between these impacts and other potential impacts. For example, mitigating impacts on items of heritage value would indirectly mitigate against impacts to visual amenity by preserving the visual amenity values of the heritage items. The establishment of the habitat corridor (to offset GHG emissions and ecological impacts) would also serve to mitigate visual impact.

In view of this, no specific indicators have been assigned to landscape and visual amenity. This aspect

would be indirectly accounted for under other environmental aspects such as heritage, ecology and air quality. It should be noted that the indicators are based on preliminary information and would therefore be subject to review at a later stage of the Project.

20.3.10 Sustainable resource use

There are a number of key indicators that relate directly to sustainable resources use and which are therefore important in measuring the sustainability performance of the Project. In particular, the objective of achieving carbon neutrality for the Tillegra Dam project can be measured through key indicators relating to energy and emissions.

The five key indicators relevant to energy and emissions include:

- potential climate change impacts on Project (descriptive)
- net GHG emissions (net tonnes CO₂)
- GHG emissions reductions achieved (net tonnes CO₂)
- electricity consumption from renewable resources (kW/h)
- electricity energy efficiency of water assets (kWh/ML water supplied).

The estimated quantities of GHG emissions for the Project are provided in Working Paper F. This key indicator would be used to assess the ongoing performance of the Project, measured on an annual basis. Measurement of GHG emissions reductions achieved would be instrumental in assessing the success of the reduction and offset strategies likely to be implemented during the construction and operation phases of the Project. HWC would also report on renewable electricity purchasing policies and on electricity energy efficiency through these key indicators.

The two key indicators that relate to the sustainable use of water for the Project are:

- total water use (m³/yr)
- infrastructure Leakage Index.

During construction, water would be used for production of concrete, cooling of plant and earthworks compaction. Total water use can be measured in m³/yr. Measurement of this indicator could be undertaken on a yearly basis and reported annually. The data required to assess the Project against this indicator would become available after the first year of construction. Estimated quantities for water use for construction and operation activities are provided in Working Paper F.

The three key indicators relevant to sustainable resource use include:

- proportion of recycled materials (net tonnes)
- total material resource (descriptive/net)
- product durability (descriptive).

The provisions of HWC's existing WRAPP would be incorporated into the Project. The WRAPP specifies a purchasing policy for recycled materials thus allowing the first indicator to be measured. Total material resource consumption can be measured in net tonnes and reported on a yearly basis for construction and a five yearly basis for operation (as part of HWC's operating licence). Product durability relates to the longevity of materials used for construction and operation. HWC is aiming to purchase durable materials that would minimise replacements costs. This may include a minimum lifespan of products. For both construction and operation phases of the Project, HWC would report on product durability.

20.3.11 Other issues

Noise and vibration

The key indicator of relevance to the issue of noise and vibration is:

- noise (total number of complaints).

HWC already has facilities in place which could be used for operation of the dam. A functionally similar system would be put in place by the construction contractor to address the construction stage.

Air quality

The indicators relevant to this aspect are discussed in Section 20.3.10 and relate to GHG emissions.

Traffic and transport

Traffic and transport issues are not explicitly covered by any key indicators identified in the sustainability assessment model. An appropriate indicator could be integrated into the model as the implementation of the sustainability assessment model progresses.

Resource management

The key indicator of relevance to waste management is:

- total weight of waste by type and disposal method (descriptive–net tonnes).

The measurement of this indicator would require collection of appropriate data during construction and operation.

Contamination

Contaminated land is not explicitly covered by any of the key indicators identified in the sustainability assessment model. However, key indicators relevant to water quality, waste management and resource use directly or indirectly affect the issue of contaminated lands. These could be used to assess the performance of the identified mitigation and management measures.

Other issues

A number of indicators which have been identified as key indicators for the Project but have not been discussed in detail. This is due principally to the social, economic and project management-related nature of these indicators. They are, however, still of relevance in assisting in providing a balanced sustainability assessment. A number of these indicators are already assessed in HWC operational processes, including in HWC's operational licence.

The key indicators not discussed in the EA Report are as follows:

- public safety (descriptive)
- labour practices on project (descriptive)
- OH&S manual and training (number of OH&S incidents/yr).
- environmental performance of suppliers and contractors (summary of assessments/ descriptive)
- employment and local hiring (descriptive)
- total urban water supplied (ML)
- total extraction of water from Tillegra Dam(ML)
- non-revenue water loss (L/day/kL)

- improved recreational facilities (descriptive)
- recognition of relevant legal obligations (descriptive)
- completion of risk assessments (descriptive).

These would be measured at the implementation stage of the sustainable assessment model.

20.4 Overall Project performance

Measuring the sustainability performance of the Tillegra Dam project will be a dynamic, iterative process whereby the progress toward achieving the sustainability goals of the Project would be measured and reported over time. At this early stage in the life of the Project, it is not possible to assign a meaningful level of performance with respect to achieving the sustainability goals – due in part to the unavailability of suitable data as noted previously. Continual improvement however, would be a primary objective of the process once suitable data becomes available and benchmarks are set.

