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1 INTRODUCTION

1.1 The Glebe Option

Volume 4 of the Environmental Impact Statement (EIS) addresses the potential environmental impacts of the proposed Glebe Weir raising and pipeline (the Glebe Option), which is one of the three raw water supply options for the Wandoan Coal Project (referred to in this EIS as the 'Project').

The Glebe Weir is located approximately 70km directly north-east of the Project on the Dawson River. The pipeline is proposed to transport water from the Dawson River to the Project, primarily along the Nathan Road easement. **Figure 1-1** provides a location plan of the Glebe Option.

1.2 Project Proponent

The Proponent for the Project is the Wandoan Joint Venture (WJV). Contact details, environmental policies, experience and qualifications relevant to the WJV are provided in Volume 1 of the EIS.

SunWater Limited, the owner and operator of the Glebe Weir, has entered into commercial arrangements with the WJV to carry out the Glebe Option.

Volume 4 of the EIS has therefore been prepared on behalf of the WJV by SunWater, as the owner and operator of the existing Glebe Weir infrastructure.

SunWater has undertaken community consultation, and all investigation, assessment and design work, for the Glebe Option EIS. If the Glebe Option is ultimately selected for the Project's raw water supply, SunWater will carry out the work required to raise the weir and operate the pipeline.

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The Board of SunWater comprises:

- Phil Hennessy (Chair) BBus (Accountancy), FCA;
- Jane Bertelsen (Deputy Chair) BSc, MSBA;
- Julie Boyd (Director) FAIM;
- Tom Connor AO (Director) BE (Civil), MEngSc, PhD, HonFellowIE (Aust), MASCE, FTSE, CPEng (Civil), RPEQ;
- John Gibson (Director) BCom, MBA (Melb), FCPA, FAIM, FAICD; and
- Greg Moynihan (Director) BCom, GradDipSIA, MASA, Fellow FINSIA, MAICD.

SunWater owns and operates bulk water supply and distribution infrastructure throughout regional Queensland and supplies about 40% of the water used commercially in Queensland. SunWater has approximately 6,000 customers comprising mining, industrial, and manufacturing companies, local governments, power stations,

irrigators and local water boards. The SunWater mission is to enhance the value of the corporation by providing cost-effective water services that are valued by customers. Services include:

- bulk water storage and distribution;
- water treatment, reticulation, and drainage;
- water infrastructure development;
- water facilities management;
- water accounting and management services; and
- specialist consultancy services.

Corporate values are:

- delivering results;
- providing outstanding service;
- working together;
- taking responsibility;
- safety at work;
- respecting others; and
- being open to change.

SunWater's environmental policy aims to achieve a high standard of care for the natural environment in all activities including the storage of water, delivery and management of water services, investigation, planning, and design of new infrastructure, management of existing infrastructure, and provision of technical services. A copy of the policy is provided below.



SunWater

Environmental Policy

SunWater is Queensland's major bulk water supplier. In addition to planning, designing and developing our own water infrastructure, we also offer our expertise to a range of industry clients who require water infrastructure facility management and consultancy services.

SunWater is committed to minimising the environmental impact of these activities and preventing pollution for the benefit of current and future generations.

SunWater continues to maintain an Environmental Management System to meet the requirements of AS/NZS ISO 14001. We provide adequate financial, human and educational resources to support good environmental management.

SunWater complies with all relevant environmental management legislation, related standards, codes of practice, stakeholder agreements and other requirements. We set measurable objectives and targets for continual improvement, and report annually on our environmental performance.

SunWater management, staff and subcontractors exercise their environmental duty of care and take responsibility for minimising the environmental impact of their activities.

Through our systems and continual improvement processes, SunWater:

- Places uncompromising emphasis on risk management.

- Responsibly manages any environmental impacts, with due regard to community values and cultural heritage.

- Seeks out, and where practicable, uses products, designs and services which minimise the impact on the environment.

- Actively supports government and community initiatives for good environmental management.

- Applies research and development to identify other ways of improving our environmental performance.



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Peter Boettcher
Chief Executive Officer

June 2008

1.3 Project Description

1.3.1 The Existing Glebe Weir

Given that the subject of Volume 4 of the EIS is the raising of an existing weir, a description of that existing structure is appropriate. Glebe Weir is situated approximately 70 kilometres north of the Wandoan Coal Project and 32 km north-east of Taroom (**Figure 1-1**). It is located on the Dawson River at 326.2 km AMTD (Adopted Middle Thread Distance) upstream of its confluence with the Fitzroy River (310.3 km AMTD on the Fitzroy River). The weir is 576.9 km from tidal waters at the base of the Fitzroy Barrage in Rockhampton (59.6 km AMTD), and its total distance from the sea (at Keppel Bay) is 636.5 km AMTD (NRW, 2006a).

The weir was completed in 1971. It has a capacity of 17,700 ML at full supply level (FSL) including 600 ML of dead storage. The weir's current FSL is 170.54 m AHD, approximately 10 m above the streambed.

The existing weir structure comprises a mass-concrete central ogee spillway crest flanked by stepped rows of steel sheet piling to each bank protected by concreted rockfill, rock filled mattresses and sausages (**Plate 1-1**). The spillway is designed to confine lower flows to the centre of the stream channel downstream, while the stepped sheet piling is designed to be overtopped by higher flows and floods. Water is released from the weir to downstream customers through outlet works into a stilling pond in compliance with the *Water Resource (Fitzroy Basin) Plan 1999* (NRW, 1999). There is no provision for a fishway in the existing structure.

A camping and recreation area controlled by the Banana Shire Council is located immediately upstream of and adjacent to the weir on the left bank. Facilities include toilets, shelter sheds, a boat launching ramp, and a limited number of camping sites with power supply available.

The weir's catchment area is 19,423 km² (NRW, 2008a), with no significant on-stream storages upstream. The Dawson River rises in the south-east part of the Carnarvon National Park and adjacent catchments include:

- North: Comet River and Zamia Creek, a downstream tributary of the Dawson River (Fitzroy Basin);
- West: Maranoa River and Bungil Creek (Murray-Darling Basin);
- South: minor tributaries of the Condamine–Balonne River (Murray-Darling Basin); and
- East: Auburn River (Burnett Basin).

Land use in the catchment is predominantly grazing of native, sown or naturalised pastures but includes areas of National Park, State Forest and Timber Reserve. Much of the catchment area was cleared in association with the Brigalow Development Scheme in the 1960s. Substantial areas were cropped to aid regrowth control but most of this land is now under pasture. Satellite imagery indicates that vegetation has been cleared or substantially modified over approximately 70% of the catchment.

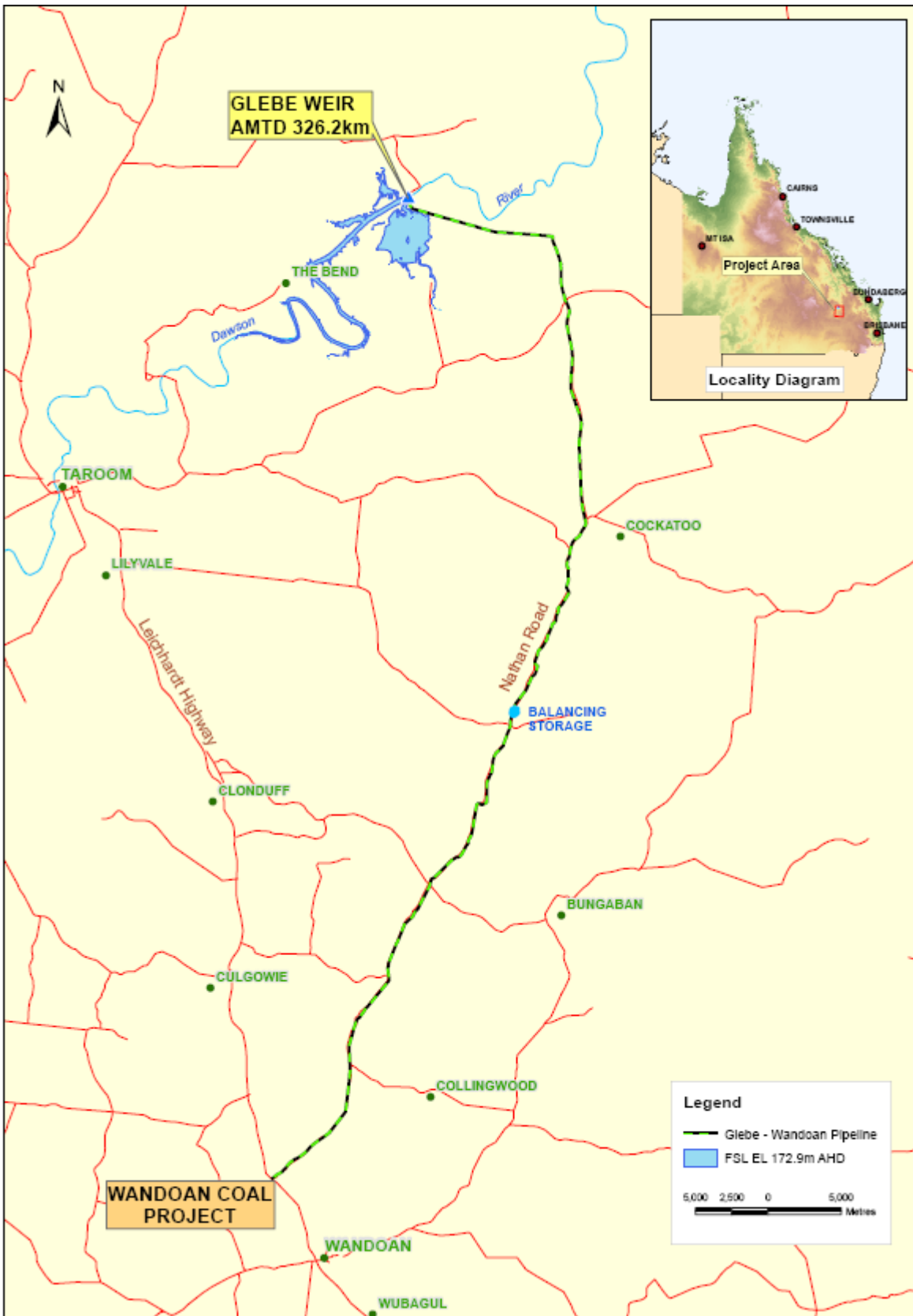


Figure 1-1. The raised Glebe Weir inundation area and pipeline route to the Wandoan Coal Project.



Plate 1-1. Glebe Weir showing central spillway flanked by stepped rows of steel sheet piling and with stilling pond downstream of the spillway.

1.3.2 The Glebe Option

The main elements and location of the Glebe Option are shown in **Figure 1-1**.

1.3.2.1 *The Raised Weir*

SunWater proposes to increase the maximum storage capacity of the existing Glebe Weir from 17,700 megalitres (ML) to 30,100 ML. This will be achieved by fitting three inflatable rubber dams across the existing structure to raise the weir FSL by 2.36 m to 172.9 m AHD. The raised Glebe Weir will be used to supply up to 8,500 ML/yr of high priority water for the Project. To achieve this additional demand from the system, hydrological modelling has shown that some of the existing medium priority water entitlements need to be purchased from the Dawson Valley Water Supply Scheme and converted to high priority to satisfy the objectives of the Fitzroy Water Resource Plan (WRP). 6500 ML/a could be provided without the need to purchase existing allocations. The additional storage volume is not intended to service any other demands.

The inflatable rubber dams will increase the FSL with minimal change to the spillway level and discharge characteristics under flood conditions. The inflatable dams will deflate progressively to mimic natural downstream river rises as closely as possible once they are overtopped by flows of approximately 0.15 to 0.2 m depth. When fully deflated, the rubber dams will collapse onto the modified spillway and weir crests, following the contours of these, and allowing flood flows to pass as they do at present. The proposed design will not increase overbank flooding above that which occurs with the existing structure. The difference between headwater level and tailwater levels at bank-full flow (the Afflux), will be less than 0.3 m and the weir will be effectively drowned out.

The weir raising will include a range of other components, including:

- earth levees on both sides of the weir structure to contain the storage at FSL;
- modification of outlet works;
- provision for a future fishway;
- a control building;
- power and telecommunications infrastructure;
- relocation of private infrastructure such as pumps and fences; and
- reinstatement or refurbishment of public infrastructure as necessary (e.g. the existing boat ramp and recreational facilities).

A detailed description of the Glebe Weir raising is provided in **Chapter 5**.

1.3.2.2 The Pipeline

An underground pipeline approximately 83 km in length will be constructed to transport water from Glebe Weir to the Wandoan Coal Project site.

The pipeline will commence at a pumping station on the bank of Cockatoo Creek near its confluence with the Dawson River, which is just upstream of the weir structure. The pipeline will run east across private property for approximately 11 km to join the Nathan Road reserve. From there, it will primarily follow the Nathan Road reserve. A single balancing storage is proposed at a high point along Nathan Road.

Water will discharge from the pipeline into a 400 ML storage dam on the Project site. The impact assessment of the mine site storage dam is covered in Volume 1 of the Project EIS.

A detailed description of the pipeline is provided in **Chapter 5**.

1.4 The Environmental Impact Assessment Process

1.4.1 Methodology of the EIS

The purpose of Volume 4 of the EIS is to report the findings of the environmental impact assessment for the Glebe Option to all interested stakeholders, community groups and relevant decision makers.

The detailed impact assessment process steps, timing and decisions for relevant stages of the overall Project EIS under the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO) are described in Chapter 1 of Volume 1 to the EIS.

The contents of Volume 4 of the EIS takes into account the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the SDPWO and the relevant Terms of Reference (ToR) issued under the SDPWO Act by the Coordinator-General (CG).

An Initial Advice Statement in accordance with Section 27 of the SDPWO Act for the overall Wandoan Coal Project was provided to the CG for consideration in December 2007, and the Project was declared a significant project under section 26(1)(a) of the SDPWO Act on 21st December 2007. The Project, including the Glebe Option (Volume 4), will primarily be assessed under Part 4 of the SDPWO Act.

The ToR for the Project prepared by the CG therefore apply to the Glebe Option as an alternative water supply option for the overall Project. In terms of the scope of the environmental impact assessment for the Glebe Option, section 2.6.3 of the ToR states that:

"If infrastructure is required for the purpose of supplying water to the Project, for example, pipelines from water supplies to the Project or the raising of the Glebe Weir, then the impacts of such infrastructure are to be assessed as part of the Project and discussed for each of the relevant 'Environmental values and management of impacts' subsections as outlined in Section 3 of these Terms of Reference."

Volume 4 of the EIS therefore considers the environmental values outlined in Section 3 of the ToR that are relevant to the Glebe Option, and assesses the potential (direct, indirect and cumulative) environmental, social and economic impacts of raising Glebe Weir and constructing the pipeline system to supply water to the Project.

The Glebe Option was also the subject of a referral to the Australian Government Minister for the Environment, Water, Heritage and the Arts under the EPBC Act on 6 June 2008. On 21 July 2008, the Federal Minister for the Environment determined that the Glebe Option was a controlled action under the EPBC Act. The following controlling provisions of the EPBC Act apply to the Glebe Option:

- 18 and 18A (Listed threatened species and communities); and
- 20 and 20A (Listed migratory species).

The Glebe Option environmental impact assessment has therefore been prepared in accordance with the requirements of the EPBC Act and the Bilateral Agreement between the Australian and Queensland governments as a separate (but inter-related) EIS to the overall Project EIS.

The Glebe Option will be evaluated by the CG as part of the overall assessment of the Project. The CG's evaluation report (which will take into account the Project EIS, any Supplementary Report and other related material) will be publicly notified and provided to the Federal Minister to enable the decision making process under Part 9 of the EPBC Act.

The Glebe Option will require separate approval from the Federal Minister for the Environment under the EPBC Act before it can proceed.

The Glebe Option will also require various approvals under State legislation. A detailed description of the Glebe Option approval requirements (in the context of the overall Project) is provided in **Chapter 3**.

1.4.2 Objectives of the Impact Assessment

The objectives of Volume 4 of the EIS are as follows:

- provide the Coordinator-General; Department of Infrastructure and Planning, the Commonwealth Department of Environment, Water Heritage and the Arts; and State Government agencies a framework for assessing the potential impacts of the Glebe Option;
- provide stakeholders, the public and interested bodies with a basis for understanding the Glebe Option;
- meet the terms of reference dated October 2008;
- describe the existing Glebe Option environment (including physical, biological, social and economic conditions);
- describe the components of the Glebe Option and its potential impacts;
- assess the significance of potential impacts;
- propose measures for avoiding, minimizing, managing and monitoring potential adverse impacts and enhance the potential benefits through the provision of a draft Environmental Management Plan (EMP);
- provide a Statement of Commitments in relation to the Glebe Option; and
- describe the outcome of consultation with the public and stakeholders about the Glebe Option and respond to issues raised.

1.4.3 Structure of the EIS

Volume 4 of the EIS is largely structured to align with the Wandoan Coal Project ToR, and addresses those ToR relevant to the Glebe Option.

In addition to the Project ToR, the Glebe Option (being a weir raising and water supply pipeline), raises specific environmental considerations that are distinct from mine impact assessment requirements. In order to fully

assess potential environmental impacts of the Glebe Option as part of the Project EIS, SunWater has identified and addressed numerous additional matters specific to such projects. This approach has been confirmed during consultation with the Department of Infrastructure and Planning.

MWH Australia Pty Ltd has been commissioned by SunWater to prepare the EIS for the Glebe Option. In preparation of the EIS, environmental assessment has been carried out for the following chapters:

- Project rationale and alternatives (costs and benefits)
- Approvals and legislative framework
- Description of the Project
- Climate and natural disasters
- Land
- Water resources and water quality
- Transport
- Air quality and greenhouse gas
- Noise and vibration
- Terrestrial ecology
- Aquatic ecology
- Matters of National Environmental Significance
- Waste
- Cultural heritage
- Economic environment
- Social environment
- Hazard and risk
- Cumulative impacts
- Draft Environmental Management Plan
- Summary of commitments

To address these areas, specialist technical contribution has been provided by:

- Alliance Resource Economics Pty Ltd;
- Archaeo Heritage Services Pty Ltd;
- Biodiversity Assessment and Management Pty Ltd;
- Environmental Hydrology Associates Pty Ltd;
- frc environmental;
- MarCom Communications Pty Ltd;
- WRM Water and Environmental Pty Ltd; and
- Vipac Engineers and Scientists Pty Ltd.

This Impact Assessment will be subject to public and agency review as a component of the EIS for the overall Wandoan Coal Project.

1.5 Public Consultation Process

The consultation program carried out by the WJV as part of the overall Project has included information on the raw water supply options, including the Glebe Option. The Project consultation program is detailed fully in Chapter 4 of Volume 1 of the EIS. The Project Consultation Plan is annexed to Volume 1 of the EIS.

In addition, given the location and nature of the Glebe Option, a separate Glebe Option community and stakeholder consultation program has been undertaken by SunWater, and is continuing independently of the overall Project consultation program.

Consultation activities have been undertaken with the Banana Shire Council and Dalby Regional Council, and Queensland and Commonwealth government agencies to inform government and assess the need for, and requirements of, the various Approvals, Licences, and Permits associated with the potential weir raising and pipeline.

Landholders riparian to Glebe Weir at its present and proposed FSLs have been identified and consulted to assess the impacts of the Glebe Option on their farming and grazing activities, and existing infrastructure such as pumps, fences, and tracks. Landholders along the proposed pipeline route have been identified and consulted with a focus on those where significant above-ground infrastructure, such as the pumping station, may be located and those where the pipeline route crosses their land away from road reserves, or existing or proposed easements. This consultation is ongoing.

During detailed design, the program will include engaging key stakeholders and the community in relation to the following issues:

- identifying preferred locations for permanent Glebe Option infrastructure and access tracks;
- identifying preferred locations for relocated farm infrastructure;
- establishing protocols for access during construction and, subsequently, operation;
- minimising impacts of works, such as temporary closure of farm and paddock access tracks, temporary opening of fences, and creation of hazards to livestock, during levee and pipeline construction on day-to-day farm operations;
- developing preferred ways of managing the lengthened storage perimeter and lands outside stream beds and banks inundated at the raised FSL;
- developing the proposed pipeline start-up program and associated initial monitoring of operations timeframes; and
- the location of construction camps and codes of behavior for camp residents.

During ongoing operations the landholder consultation program will focus on issues such as:

- resolving any unforeseen problems;
- advising landholders of any planned rapid draw-downs of the weir storage level; and

- advising landholders of significant maintenance works where machinery may require access to their land. SunWater will consult with the Department of Natural Resources and Water (NRW) to ensure that management of the storage and downstream releases not only complies with the requirements of the Fitzroy Basin Resource Operation Plan (ROP) (NRW, 2006a), but also produces the best possible outcomes. Traffic management and access during construction will be discussed primarily with the Department of Transport and shire councils.

Additionally, SunWater will consult with the Banana Shire Council to ensure that the camping and recreation facilities at the weir are fully reinstated at the end of construction works, as they will be closed for safety and security reasons during construction.

1.6 Sustainability of the Glebe Option and Significance of Environmental Issues

Chapter 18 of the National Strategy for Ecological Sustainable Development addresses water resource management. This chapter recognised that the major challenge in relation to water resource management was:

"To develop and manage in an integrated way, the quality and quantity of surface and groundwater resources, and to develop mechanisms for water resource management which aim to maintain ecological systems while meeting economic, social and community needs."

Glebe Weir has been an integral part of the Dawson Valley Water Supply Scheme (DVWSS) since it was completed in November 1971. As the largest, and furthest upstream of the storages supplying the DVWSS, the weir has played an important role in the development of the economy of the Dawson Valley. Supplies from the DVWSS serve urban, mining, industrial and agricultural developments. The storages serving the DVWSS provide recreational facilities and increase the size of permanent aquatic habitats in the former ephemeral stream. Weir operations currently fulfil the requirements of the Fitzroy Basin ROP developed under the *Water Resource (Fitzroy Basin) Plan* (NRW, 1999) in terms of both water allocation security objectives (a social perspective) and environmental flow objectives (an ecological systems perspective). Water quality within the storage and downstream is monitored and has not altered to the extent that ecosystem function has been impacted (**Section 8.5.1.4**). Observations show that the perimeter of the storage is stable and has been colonised by native species tolerant of alternating wet and dry conditions.

The current weir and its operations are therefore regarded as sustainable. This Impact Assessment specifically addresses how the Glebe Option might change the current weir and operations in relation to water resource management (**Chapter 8**), surface and groundwater quality and quantity (**Chapter 8**), ecological systems (**Chapters 12, 13, 14**), economic (**Chapter 18**) and social and community needs (**Chapter 17**). Other aspects of the physical and cultural environment are addressed in the remaining chapters. Where potential impacts on sustainability were identified, a mitigation strategy was developed.

The Glebe Option as described in Volume 4 of the EIS, including the draft EMP and Summary of Commitments, is regarded as meeting the challenge presented in Chapter 18 of the national strategy as described above.