14 SUSTAINABILITY ASSESSMENT

CHAPTER SUMMARY AND CONCLUSIONS:

Criteria	Achievement level	Description
Context	Compliant	The Reference Project/s would be able to meet (or contribute to) the identified service need/opportunity
Strategic planning	Moderate	A full range of options were considered in the PBC and further interrogated in the DBC. There are two Reference Projects for the NDMIP (with two sub options for Reference Project 1 and three sub options for Reference 2), each contributing to or meeting the service need/opportunity. This DBC responds to government commitments to assess the viability of a Nullinga Dam solution.
Leadership, knowledge sharing and innovation	Compliant	Sunwater operates under environmental management systems that incorporate environmental considerations into day-to-day operations
Procurement and supply chain	Advanced	The procurement policies of the project proponents are consistent with the Queensland Government's Procurement Policy, which includes a requirement to conduct business with ethical and socially responsible suppliers
Material use	Basic	A green procurement strategy will be developed that will include strategies such as re-use of by-products and a commitment to source materials from the closest possible location
Climate-change mitigation	Basic	The potential risks of climate change will be addressed through design construction scheduling and measures within the CEMP.
Water management	Compliant	The Reference Project/s are not a highly intensive water use project. Operational plans will need to consider the potential impacts of and requirement for environmental flows throughout the life of the asset
Resource recovery	Compliant	It is acknowledged that any subsequent EIS will need to comply with the relevant legislative and regulatory obligations in relation to waste management and appropriate mitigation measures will need to be enacted. The DBC accounts for these activities to be undertaken.
Land selection	Compliant	Proposed site is a greenfield site and therefore is not located on disturbed land. The required approvals and activities have been identified and would need to be managed throughout planning and delivery.
Ecology	Compliant	The Environmental Assessment has adequately identified the matters of national and State environmental significance to be impacted by the Reference Projects. An EMP, species management programs and offsets would be managed by Sunwater
Green infrastructure	NA	Not applicable
Sustainable procurement	Compliant	Procurement policies are in accordance with State procurement policy requirements including consideration of the Queensland Government's environmental and social objectives
Employees	Basic	Procurement policies are in accordance with State procurement policy. A recruitment plan would be developed as part of any subsequent planning

CHAPTER SUMMARY AND CONCLUSIONS:

Criteria	Achievement level	Description
Social returns	Moderate	Social outcomes will be improved primarily through increased water security and reliability (long-term)
Heritage	Compliant	Activities associated with the Reference Projects may disturb yet to be identified indigenous cultural heritage. CHMPs will need to be established, approved and registered.
Equity	Basic	Existing landholders have been identified as the group most adversely impacted by the Reference Project/s.
Whole-of-life impacts	Advanced	The detailed social, economic, environmental and financial metrics are utilised in the findings and conclusions of the DBC. The NPV assessment of the Reference Projects, coupled with the BCRs are critical to support the recommendations of the DBC.
Valuing externalities	Basic	Material externalities have been identified and valued in the economic appraisal where appropriate, including recreational benefits. Qualitative discussion of impacts that have not been monetised has also been provided.

14.1 Purpose

This Chapter presents the sustainability assessment undertaken on the Reference Projects for the NDMIP. The sustainability assessment supports an understanding of the economic, social and environmental impacts of the Reference Project, providing an overall assessment of the project's sustainability impact.

14.2 Approach

The sustainability assessment was completed using the tool developed for Building Queensland and a review of environmental, social, economic and governance assessments for the Nullinga Dam and interviews with professional consultants supporting each work stream and representatives of Sunwater and Building Queensland.

Due to the staggered approach to making appointments for each specialist assessment, the Sustainability Workshop has not been undertaken in a single event; rather the conclusions of sustainability have been drawn through the review of the assessments which inform the DBC process and consideration of the BCDF guidance on sustainability principles:

- environmental assessment
- economic assessment
- stakeholder engagement assessment
- social impact assessment
- Sunwater Annual Report (2017/2018)
- Nullinga Dam Type Selection Multi-Criteria Assessment
- Queensland Procurement Policy 2018.

This assessment documents the sustainability considerations relevant to the Reference Project/s in order to acknowledge sustainability strategies and understand and, where possible, avoid or mitigate immediate and long-term impacts.

The Sustainability Assessment considers the quadruple bottom line (QBL) (governance, environmental, social and economic) impacts and opportunities.

14.3 Sustainability Assessment Criteria

Table 14-1 Sustainability Assessment Rating

SUSTAINABILITY ASSESSMENT RATING	
Level	**Criteria**
Advanced	▪ Generates significant additional value and new opportunities not previously evident, such as changing a liability into an asset ▪ 'Designs out' the problem up-front rather than relying on managing impacts later ▪ Solutions generate flow-on benefits outside the project boundary
Moderate	▪ Solutions to significant issues result in multiple benefits through economic, social and/or environmental outcomes ▪ Meets immediate community and user needs and will be resilient and efficient into the future ▪ Significant innovation and leading practice incorporated into the project
Basic	▪ Avoids harm and negative effects ▪ Solutions create project efficiencies ▪ Solutions have an immediate or short-term focus
Compliant	▪ Meets legislative and regulatory requirements
Poor	▪ Fails to meet legislative and regulatory standards ▪ Solutions may result in dis-benefits and negative effects

Increasing project sustainability

It is assumed that all projects will meet this level. Sustainable solutions are therefore expected to go beyond legislative and regulatory compliance.

14.4 Sustainability Assessment Response

Table 14-2 Sustainability Assessment Template

SUSTAINABILITY ASSESSMENT	
Demonstrate how the project fulfils the following sustainability principles *Succinctly outline the major initiatives or elements of the approach that will achieve each principle, plus the most significant outcomes or benefits. Specific, quantitative information should be included where available.* Information should be succinct (dot points encouraged) and no more than half page per principle.	**Achievement level of the principle:** (indicate level achieved) **Advanced, moderate, basic, compliant, or poor**
GOVERNANCE	
1. Context	**Compliant**

SUSTAINABILITY ASSESSMENT	
All infrastructure projects sit within a broader context, and should be planned, designed and operated to connect with the wider system (including other infrastructure, economic activity, landscapes, population hubs and movements, flows of resources, materials, goods and people). This could occur at neighbourhood, town, city, region or state scales.	

What is the service need being addressed by this project? Have social, environmental and economic issues been considered?

The service need has considered two social and economic factors in its service need:

- Supporting irrigated agriculture in the MDWSS
- Addressing future (long term) urban water needs for Cairns.

The total baseline water demand of (approx.) 83,000 ML per annum is based on these two projected needs and takes a series of channel upgrades into account.

Environmental risks have been identified in the assessment, but not in the context of the service need.

What are the key elements, interrelationships and interdependencies of the wider system or network for this project that are fundamental to its long-term effectiveness?

There are several inter-dependencies identified within the project assessment and relating to service need assessment:

- the urban growth projections for Cairns, other Cairns water supply augmentation options and the associated long-term water demand projection
- agricultural trends and constraints on margins for lower value crops and potential to progress to higher value products in the region
- industry growth (including potential expansion plans of local producer/s)
- inter-catchment water transfers and infrastructure.

How will the project integrate with, or respond to, these elements?

The DBC addresses how the proposed dam options integrate with the current distribution infrastructure. The Context Theme is assessed as Compliant for the following reasons:

- while Cairns urban water needs are in the future (mid-2060's), the primary service need is ongoing lack of access to additional water allocations is impeding agricultural production opportunity in the region.
- the system interdependencies are limited to the technical inter-dependencies of water management systems, with limited discussion on social or environmental dependencies.

2. Strategic planning Design infrastructure as the solution to the identified service need, taking into consideration the strategic goals and objectives. Focus on longer term use and outcomes so that the infrastructure leaves a positive legacy. Consider adaptability to respond to future changes, challenges and trends.	Moderate

Has a full range of options been considered including non-infrastructure solutions?

As identified in Section 7.2, the PBC considered a long list of options, including non-infrastructure solutions. The four preferred options from the PBC included:

- do minimum (continue water trading and on-farm efficiency measures)
- improve the MDWSS rules and operations

- modernise the MDWSS and convert loss allocations (an infrastructure solution to reduce distribution losses in the system and convert this water for sale; and
- build Nullinga Dam.

Several other options have also been revisited / considered during the development of the PBC and DBC, noting some of these options require (or are subject to) additional / ongoing investigation, these include:

- Trading temporary losses (Refer Section 7.4)
- North Johnstone Diversion (Refer Section 7.4)
- Tinaroo Falls Dam raising (Refer Section 7.4)

Several variations of the Nullinga Dam were assessed against the service need, with estimated yield ranging from 37,000 to 82,000 ML per annum (refer Section 7.2.4). The Reference Projects selected for the DBC include:

The Nullinga Dam Reference Projects for the DBC have been identified as follows:

- Reference Project 1: Nullinga Dam with 54,000 ML/a yield
- Reference Project 2: Nullinga Dam with 73,300 ML/a yield

How will the project solve the identified service need? How does it align with departmental and/or state goals and objectives?

Two dam sizes have been considered in the DBC process – the Small Nullinga Dam (Reference Project 1) meets service need without potential expansion plans of local producer/s, and a Large Nullinga Dam (Reference Project 2) which meets the service need with potential expansion plans of local producers included.

Both state and federal government policies documents identify the need for a business case or feasibility study for a potential Nullinga Dam.

It is noted that a Nullinga Dam would fail to meet the pricing principles outlined in NWI and QBWOS, as no full cost recovery model is commercially viable for the existing customers and known crop types.

Does the project respond to the most significant drivers of change over the next two decades (i.e. those with greatest impact and most probable) including technological, demographic, political, environmental, and economic trends?

The service need assessment considers a broad range of future drivers, including:

- Population
- Climate change impacts on temperature, rainfall, evaporation and demand
- Market trends and producer margins
- Land availability and suitability

Importantly, the service need consider the future agricultural demand from existing customers who responded to the RFIs.

3. Leadership, knowledge sharing and innovation The leadership team is responsible for implementing, measuring and reporting on the sustainability performance as well as creation of a culture of innovation and knowledge sharing.	Compliant

How will this project engage a committed leadership team to embed sustainability into the planning, design, building and operation of this infrastructure project?

The Sunwater Environmental Objectives are stated on its website as follows:

"To optimise project management and operational procedures that minimise Sunwater's ecological footprint and to ensure full compliance with environmental legislation. To minimise Sunwater's impacts on native fish populations and prevent the spread of pest fish. To proactively manage weeds on Sunwater owned and managed property and investigate alternate, more sustainable methods of weed control."

The Sunwater Environmental Policy states that Sunwater Group will:

- manage and improve its operations with the object of preventing environmental harm and continuously reducing environmental risk
- seek to understand and act to address all its environmental risks as soon as practical according to these priorities:
  - environmental risks identified with appropriate controls put in place
  - delivering on any Shareholder directions
- seek to develop and deliver its environmental program in a sound and efficient manner in accordance with current accepted legislation and accepted good practice in Australia
- track the trends and scale of lower risk environmental incidents and ensure that they are incorporated as an indicator of increasing environmental risk.

These principles are supported with a policy statement – "We Take Responsibility, We Work Together and We Value People" – and apply across the leadership team for the project.

How will a culture of innovation be created across the project life cycle and include both proponent and contractor?

The Sunwater annual report shows how innovation is supported across the organisation with achievement and innovation awards. Each year the Achievement and Innovation Awards recognise teams and individuals who excel in their area and consistently demonstrate the Sunwater values.

How will knowledge and lessons be shared with the project team, other projects and the supply chain? How will lessons learnt from previous projects be incorporated?

The Sunwater annual report includes reporting on the dam improvement program – the DIP. The case studies for a range of Dam projects are available for the NDMIP DBC team to draw upon:

- Paradise Dam Improvement Project
- Fairbairn Dam Improvement Project
- Burdekin Falls Dam Foundation Drainage Improvement Project
- Burdekin Falls Saddle Dam and Monoliths Improvement Project

Capital infrastructure projects are also referenced and available for knowledge sharing, including:

- Rookwood Weir
- Burdekin Falls Dam Raising

- Burdekin Falls Dam Hydro-electricity
- Burdekin Haughton Water Supply Scheme Upgrade Feasibility Study
- Burdekin Haughton Main Channel Augmentation Project
- Boondooma Dam Spillway Repairs

How will the supply chain be prepared for the sustainability and innovation requirements of this project?
The Queensland Procurement Policy includes sustainability considerations and has undergone extensive industry engagement in this development.

How will you consider and respond to local Indigenous and other cultural elements in the design, delivery and operation of this project?
Engagement with local Indigenous groups has been initiated in accordance with the Social Impact Evaluation. However, there is insufficient evidence that Indigenous or cultural elements have been included in the design, delivery or operational plans for the project. Sunwater will seek to achieve the Queensland Indigenous Procurement Policy target of awarding three per cent of the project spend to Indigenous businesses.

4. Procurement and supply chain Procurement activities are responsible and they consider human rights, society and the environment.	Advanced

How will sustainable procurement, including human rights, society and the environment be incorporated into the project's procurement activities?
All the Reference Projects would be procured under the Queensland Procurement Policy. The policy aims consider issues that affect society and the environment:

- focus on the economic benefit to Queensland – by applying a local benefits test for all significant procurement
- supporting secure and fair employment outcomes, and showcasing Queensland's food and beverage industry
- maximise Queensland suppliers' opportunity to participate – by ensuring that for each procurement opportunity, at least one regional and one Queensland supplier, where possible, is invited to submit a quote or tender
- support regional and remote economies – by allowing agencies to procure outside of whole-of-government supply arrangements for regional and remote locations
- support disadvantaged Queenslanders – by increasing procurement with genuine, quality social enterprises
- stimulate the ICT sector and drive innovation – by doubling the ICT pre-qualification exemption to $1 million.

The second-highest priority principle for procurement is the advancement of economic, social and environmental objectives. The targets and commitments relevant to these outcomes include:

- achieving net zero emissions by 2050
- delivering 3000 MW of rooftop solar PV by 2020
- increase spend with genuine, quality, social enterprises, providing award-based wages (using the Supported Wage System where appropriate) and pathways to mainstream employment for disadvantaged Queenslanders
- take into account workplace policies and practices aimed at ending domestic and family violence as part of supplier evaluation and selection
- Ensure that all Queensland Government procurement activities are compliant with the Disability Discrimination Act 1992 (Cwlth).

ENVIRONMENT	
5. Material use Materials used on the project have a low life cycle impact and low toxicity.	Basic

How will this project assess the materials used in terms of their environmental life cycle impact and toxicity?

The dam type multi-criteria analysis includes opportunities for material selection and material re-use in its assessment of environmental risk, which carries a 5% weighting in the overall assessment.

The preferred dam type is not the option that minimises material use, but excavation rock re-use and reduced wastage of materials was a consideration in design selection.

There is insufficient evidence to assess how lower-impact concrete (including supplementary cementitious materials or embodied emissions reduction) or material toxicity have been considered in design.

6. Climate-change mitigation The project will mitigate climate change through identifying an infrastructure solution to reduce global carbon emissions.	Basic

How will this project mitigate climate change?

This project does not have a material impact on operational GHG emissions.

Considering climate adaptation and risk management as well as mitigation, the service need assessment has undertaken a review of the likely impacts a changing climate will have; including:

- temperature
- rainfall
- evaporation
- drought, flood and cyclone intensity.

In response to these factors a range of scenarios have been assessed, against which risks relating to the service need have been considered. Reference Projects 1 and 2 provide a long-term water security benefit to Cairns, supporting the principles of climate adaptation.

7. Water management Managing water consumption and discharge according to local conditions now and in the future.	Compliant

Will this project use large amounts of water in construction and operation?

The water consumption of the dam construction has not been referenced in the Environmental Assessment or considered in the design. Material impacts could include;

- water during construction for dust suppression
- water used in the making of concrete
- operational water consumption.

There is insufficient information to assess the degree to which the construction of either Reference Project would impact local water availability.

Is this project located in an area of water scarcity? If not, how will water scarcity in the future affect its construction and operation?

Water scarcity and water availability for commercial and domestic use are the core of the DBC assessment.

Future water scarcity and changes to water demand patterns due to climate change have been addressed through a series of scenarios in the assessment of the service need. Increased evaporation and annual and seasonal rainfall variability all contribute to the predicted performance of the dam. The Cairns Water Security strategy is supported by the Refence Projects (noting need for access to additional water in 2060's.

Will this project discharge water into sensitive environments during construction and/or operation?

The dam will have an impact on sensitive environments in how discharges are managed to maintain environmental flows. Further investigation is required to advise what flow requirements are required to for downstream wetland function.

8. Resource recovery Reducing waste generated and increasing re-use in construction and operation.	Compliant

How will this project manage waste and resource recovery?

The dam type multi-criteria assessment considered environmental factors, and specifically the re-use of excavation aggregate in the dam construction. However, the preferred dam construction (RCC) resulted in the least re-use of excavated rock and the largest material wastage. IT did however have smaller footprint and less immediate environmental disturbance than the other options.

Construction waste management has not been assessed in detail at this stage. Opportunities for construction waste diversion from landfill is an opportunity that could be considered in future stages.
Considerations for future design stages could include:

- development of a waste hierarchy
- consideration of procurement of materials that are waste products from other processes
- waste contracting to include diversion from landfill targets
- procurement to reduce waste streams that end up in landfill.

The resource recovery theme is assessed as Compliant as the Environmental Assessment has not identified any compliance concerns relating to resource recovery consumption.

9. Land selection The project is located on previously disturbed land and limits impacts to local habitat.	Compliant

Will this project be located on previously disturbed land?

The dam inundation area for all dam options currently supports natural vegetation and irrigate cropping. It includes areas of:

- National Environmental Significance
- State Environmental Significance
- existing native title claims and future native title rights
- cultural heritage.

The Environmental Fatal Flaws assessment for the Nullinga Dam Options identifies a complex approval environment due to significant environmental effects. The approvals requirements are identified in the Legal and Regulatory chapter of the DBC and the final approvals list will depend on the ultimate detailed design of the relevant project. The land selection theme is assessed as Compliant as the impacts are considered material, but the approval pathway has been clearly identified.

10. Ecology The local and regional habitat and ecology will be enhanced.	Compliant

How will this project improve ecology within the local region?

The Reference Projects do not improve the ecology of the local region. One ecological benefit of the dam compared to other service need options is the reduction in inter-catchment flows and its associated ecological impacts.

Will this project impact on critical natural capital (irreplaceable natural features, species, habitats, etc.)?

The Reference Projects do impact critical natural capital. The dam inundation area impacts listed threatened and migratory flora and fauna species, remnant vegetation, high value regrowth vegetation and fisheries.
The cost of biodiversity offsets has been factored into the capital cost assessment of the dam options.
The ecology theme is assessed as Compliant as the impacts are considered material, but the approval pathway has been clearly identified and biodiversity offsets have bene budgeted.

11. Green infrastructure Traditional infrastructure is replaced with natural processes to do the same job. The term 'green infrastructure' refers to an interconnected network of landscape assets that is intertwined with engineered (grey) infrastructure and buildings (all the natural, semi-natural and artificial networks of multifunctional ecological systems within, around, and between urban areas, at all spatial scales).	Not Applicable

Describe the opportunities to replace traditional infrastructure (grey) with green infrastructure.
NA

The application of green infrastructure for a dam is not a suitable to meet the functional requirement for the dam. It is not clear that opportunities for grey infrastructure replacement with green infrastructure have been considered for supporting network infrastructure. Provisioning has been made for recreational facilities within the Reference Projects and future design stages could assess opportunities for including green infrastructure such as:

- camping facilities
- boardwalks
- cycling trails
- wetland habitat
- ecological interpretation.

12. Sustainable procurement Creating positive social outcomes through procurement spend and processes.	Compliant

How will this project use procurement spend to create socially and environmentally beneficial outcomes (e.g. the procurement of environmentally friendly products and services)?
Sunwater procurement policies align and are in accordance with the Queensland Government's Procurement policy. Principle 4 of this policy states that procurement will be used to advance the government's economic, environmental and social objectives and support the long-term wellbeing of the community. Principle 4.1 expands on this point and states that business will be conducted with ethical and socially responsible suppliers.

Should the project proceed, the project procurement plan will consider the engagement of local businesses to provide services to the project.

A green procurement strategy would be developed, acknowledging that remoteness of the site and availability of supplies/suppliers, together with financial feasibility, will dictate procurement strategies.

13. Employees Supporting and improving the lives of all employees, including sub-contractors of the infrastructure project.	Basic

How will this project support and improve employee outcomes especially for marginalised and disadvantaged groups?

The Queensland Procurement Policy includes targets to:

- Increase spend with genuine, quality, social enterprises, providing award-based wages (using the Supported Wage System where appropriate) and pathways to mainstream employment for disadvantaged Queenslanders.
- Take into account workplace policies and practices aimed at ending domestic and family violence as part of supplier evaluation and selection.
- Ensure that all Queensland Government procurement activities are compliant with the Disability Discrimination Act 1992 (Cwlth).

SOCIAL	
14. Social return The project will have a positive social return on investment meaning that for every dollar spent, there will be over one dollar worth of social outcomes.	Moderate

What will be the social return of this project? Describe how this project will benefit society (e.g. reduced travel times, increased well-being, improved air quality, increased social cohesion).

The social return on investment was not assessed explicitly for the Reference Projects. Where practicable, social benefits have been monetised and included in the economic analysis for the DBC.

The Social Impact Evaluation identified that, with appropriate enhancement measures in place, the project is anticipated to generate significant long-term benefits for a wide range of stakeholders, including economic development and industry groups, agricultural water users, industrial water users, recreational users and residents of the regional study area and wider area of influence. A total of six benefits were identified as having a residual rating of 'high', with no difference in social value identified between Reference Projects 1 and 2. Identified benefits include:

- improved agricultural productivity supporting the local and regional economies
- increased agricultural employment opportunities for region
- creation of direct employment
- increased indirect employment opportunities for the regional area
- improved recreational facilities for residents and tourists
- increased employment and business supply benefits for Aboriginal and Torres Strait Islander persons and businesses
- improved local access and connectivity in regional study area for residents and road users.

In contrast, significant negative impacts on local communities are anticipated to be temporary and would occur during the construction phase. A total of four negative social impacts were assessed as being potentially significant (with an initial risk rating of high). These impacts would predominantly affect local landholders and relate to:

- the displacement of landholders and their families from properties located in the inundation area of the dam
- a reduction in the size of land available for farming and other land use activities on properties surrounding the dam footprint due to the introduction of a flood margin easement
- a reduction in the size of land available for farming and other land use activities due to new road construction
- restricted use of and access to land on properties within the pipeline easement.

15. Community and stakeholders	Basic

Understanding and incorporating community and stakeholder views including marginalised and affected groups, to increase the social license to operate.	

How will community and stakeholder views be considered and incorporated into the decision-making processes throughout the project?

Building Queensland and Sunwater have engaged with a range of stakeholders and community members during the preparation of the DBC.

Building on activities undertaken during the PBC in 2017, engagement targeted state and local government bodies, industry and agriculture groups, regional economic development groups, likely water customers, Traditional Owners, environmental groups, and impacted landowners. The views of the broader community have also been considered through community engagement activities and information dissemination

Several activities were undertaken to inform the DBC. These ranged from collaborative SRG meetings and stakeholder briefings, to information displays and advertising campaigns. The project team liaised directly with potentially impacted landowners, key stakeholders and the Mareeba and Atherton communities to provide information on the project and answer questions.

How will marginalised and affected groups be included in the engagement?

Contact was made during engagement as part of the DBC with Kowanyama Aboriginal Shire Council and the North Queensland Land Council with an invitation to the SRG to gather feedback, address concerns and realise any opportunities.

In response to low engagement rates with these groups, efforts have been reiterated with an offer for further project briefing to determine whether any issues or opportunities could be addressed.

The regional study area has an Aboriginal and/or Torres Strat Island population rate of two and a half times than that of Queensland. If the Reference Project/s proceed to the environmental approvals process, further consideration will be given to the ability of elderly, non-English speaking and disadvantaged community members to participate in engagement activities.

What is the legacy left behind beyond the legacy of the project itself (e.g. a bike path to connect two existing bike paths, enhanced community space, restoration of a heritage area etc.)?

The legacy aspects to the project are still to be assessed, but potentially include improved roads and access, improved water security and community benefits through recreational use of Nullinga Dam.

The Community and Stakeholders Theme is assessed as Basic for the following reasons:

- A broad range of stakeholders have been consulted in relation to the project
- However, there is insufficient evidence of the engagement with stakeholders being considered within the dam design.

16. Heritage Protecting Indigenous and non-Indigenous heritage and sites highly valued by the community.	**Compliant**

Will this project affect heritage site or areas highly valued by the community? Are there any opportunities to enhance heritage?

There are existing native title claims, potential future native title rights and sites of cultural significance within the dam inundation area. The need for a complex approvals process has been addressed in the Environment and Heritage Fatal Flaws Assessment Report.

There is no evidence of initiatives to enhance the local heritage through the project.

The Heritage Theme is assessed as Compliant as the environmental assessment has identified the compliance framework. However, in Sustainability terms, there is no consideration of how the project can support and celebrate heritage in design, construction and operation.

ECONOMIC

17. Equity Share the benefits and costs of infrastructure development in a fair and equitable way.	**Basic**

Who will be disadvantaged or made vulnerable through this project? How is this being addressed?

Each of the Reference Projects are primarily providing an economic benefit to local agricultural businesses. Distributional considerations have been considered in the economic assessment but are not considered material to the DBC assessment. The primary costs and impacts of this project relate to local sensitive species and Indigenous and Cultural Heritage. These impacts are noted as a complex approval environment.

How are the benefits shared equitably?

The primary beneficiaries of the project are water users and any recreational users of the dam.
There is only a marginal overlap between those communities impacted by the project and those who stand to benefit. Distributional impacts of costs and benefits have not been considered material to the Economic assessment methodology.

18. Whole-of-life impacts Making decisions based on the whole-of-life impacts and benefits of a project.	Advanced

How will the whole-of-life impacts and benefits be incorporated into the project's decision-making processes?

The long-term operational benefits of the dam are the primary justification for investment – providing water for economic activity and water security for Cairns. The economic assessment includes the considerations of costs and benefits at both the construction and operational stages in the costs and benefits mapping:

- capital and operating costs
- environmental benefits/costs
- recreational costs/benefits
- water user benefits
- flooding benefits/costs
- peripheral infrastructure benefits/costs.

The methodology specifically allows for economic, social and environmental benefits.

19. Valuing externalities Putting a value on material externalities and incorporating them into the decision-making process.	Basic

What are the material externalities of this project? How will they be valued (including monetised and non-monetised values) in the decision-making process?

Material externalities have been identified in the Economic Assessment Methodology:

- recreation
- environmental health
- flooding; and
- peripheral infrastructure.

The framework for assessing externalities is identified in the Economic Assessment methodology as:

- finalise the identification of potential social and environmental impacts and consolidate to avoid double counting
- complete a risk assessment to determine the likely materiality of impacts based on likelihood and consequence
- prioritise the identified impacts based on findings from the risk assessment

- identify a suitable threshold to determine which social and environmental impacts will be quantified within the economic analysis based on their potential to influence the analysis (including potentially focussing on material, unmitigated risks).
- social and environmental impacts that are not quantified will be discussed qualitatively.

The Valuing Externalities Theme is provisionally assessed as Basic as social and environmental externalities of the project have been considered, but there is no assessment that are substantially benefited through the economic analysis.