



CHAPTER 11

SUSTAINABILITY CONSIDERATIONS

Nullinga Dam and Other Options Preliminary Business Case



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11 SUSTAINABILITY CONSIDERATIONS

CHAPTER SUMMARY AND CONCLUSIONS

- A sustainability assessment has been conducted to identify and document sustainability considerations relevant to the shortlisted options.
- Each option was assessed against its potential contribution to the thirteen sustainability goals listed in the Building Queensland BCDF.
- Option 2 Improve MDWSS rules and operation has been assessed as having the least impact on sustainability goals which is reasonable given the reform nature of that option.
- Option 3 Modernise MDWSS and convert losses and Option 4 Nullinga Dam for agricultural use have very similar impacts on sustainability as both options have a level of uncertainty, including positive and negative impacts.
- While Option 4 has stronger positive impacts on sustainability, this is offset by two major negative impacts in relation to preserving healthy landscapes and loss of habitats and biodiversity.
- Option 3 has fewer positive impacts and three medium negative sustainability goal impacts related to preserving healthy landscapes, biodiversity and the liveability and amenity of urban centres.
- On balance, the preliminary sustainability assessment has identified that Option 4 has a stronger positive impact on sustainability goals but would benefit from a detailed business case stage assessment.

11.1 Purpose

The purpose of this chapter is to identify sustainability considerations relevant to the shortlisted options.

11.2 Overview

Using a sustainability assessment assists with documenting the economic, social and environmental impacts of the project, not just its financial performance. This chapter outlines the:

- approach taken to complete the sustainability assessment
- results of the sustainability assessment for each shortlisted option, presented against thirteen sustainability goals to demonstrate the impacts of the options on key economic, environmental and social dimensions.

11.3 Approach

The sustainability assessment considered the extent the options contribute to the relevant sustainability goals presented in the Building Queensland BCDF. Information gathered in the economic, social and environmental chapters is used as the basis for this assessment.

Each option was assessed against each goal and scored according to the criteria in Table 1.



Table 1 Sustainability Contribution Rating Table

SUSTAINABILITY IMPACT CONTRIBUTION	DESCRIPTION
Uncertain Impact	Based on current data, there is significant uncertainty about the impact of the option on the goal
No Impact	Option makes no impact of the sustainability goal
Minor Positive Impact	Option makes a minor positive impact of the sustainability goal
Medium Positive Impact	Option makes a medium positive impact of the sustainability goal
Major Positive Impact	Option makes a major positive impact of the sustainability goal
Minor Negative Impact	Option makes a minor negative impact of the sustainability goal
Medium Negative Impact	Option makes a medium negative impact of the sustainability goal
Major Negative Impact	Option makes a major negative impact of the sustainability goal

11.4 Sustainability Assessment—Results

This section presents the sustainability assessment and outcomes (results) for each shortlisted option.

11.4.1 Assessment of Option 2: Improve MDWSS Rules and Operation

The assessment of Option 2 against each of the sustainability goals is presented in Table 2.

Table 2 Option 2 Sustainability Assessment

SUSTAINABILITY GOAL	RATING	COMMENT
1. A diverse and resilient economy	Minor positive	Implementation of option will marginally increase regional production.
2. Higher levels of productivity and economic efficiency	Minor positive	Implementation of option will increase level of agricultural production and efficient use of water allocations.
3. Increased trade or exports	Minor positive	Implementation of option will increase level of agricultural production and exports.
4. More competitive industries	No impact	No impact positive or negative expected.
5. Fairer distribution of income	No impact	No impact positive or negative expected.
6. Improved public safety	No impact	No impact positive or negative expected.
7. Social cohesion and inclusion	Uncertain impact	Dependent on implementation method of option may be socially divisive or inclusive.
8. Equity	No impact	No impact positive or negative expected.
9. Preserving healthy landscapes	No impact	No impact positive or negative expected.
10. Reducing the loss of habitat and biodiversity	No impact	No impact positive or negative expected.
11. Increasing the efficient use of energy and water resources	Medium positive	Will increase amount of production without changing allocation.
12. Protecting sites with heritage, indigenous and cultural values	No impact	No impact positive or negative expected.



SUSTAINABILITY GOAL	RATING	COMMENT
13. Enhancing the liveability and amenity of urban centres	No impact	No impact positive or negative expected.

11.4.2 Outcomes for Option 2

Option 2 has three medium positive impacts in relation to increasing productivity and efficiency, increasing exports and increasing the efficiency of energy and water use. Option 2 has one minor positive impact relating to a diverse and resilient economy.

The Option 2 impact on social cohesion and inclusion is considered unknown at this stage.

Option 2 is considered to have no impact on the majority of the sustainability goals assessed.

11.4.3 Assessment of Option 3: Modernise MDWSS and Convert Losses

The assessment of Option 3 against each of the sustainability goals is presented in Table 3.

Table 3 Option 3 Sustainability Assessment

SUSTAINABILITY GOAL	RATING	COMMENT
1. A diverse and resilient economy	Medium positive	Option 3 will add to the overall productivity of the region and may encourage the establishment of further diversification and processing options.
2. Higher levels of productivity and economic efficiency	Medium positive	Implementation of Option 3 will significantly boost production in the existing irrigation area.
3. Increased trade or exports	Medium positive	Implementation of Option 3 will significantly boost production in the existing irrigation area.
4. More competitive industries	Medium positive	Increases in water availability will add to the competitiveness of regional industries.
5. Fairer distribution of income	Uncertain	Dependent on hiring and employment practices of regional agriculturalists.
6. Improved public safety	Minor positive	Implementation of water loss reduction strategies may lead to some covered channels marginally increasing public safety in the irrigation area.
7. Social cohesion and inclusion	Minor positive	Loss reduction program appropriately implemented may add to sense of place and common cause.
8. Equity	Minor positive	Greater volumes of water availability may encourage greater long-term investment and intergenerational benefit.
9. Preserving healthy landscapes	Medium negative	Loss reduction activities will potentially impact on Mareeba wetlands.
10. Reducing the loss of habitat and biodiversity	Medium negative	Loss reduction activities will potentially impact on Mareeba wetlands.
11. Increasing the efficient use of energy and water resources	Major positive	Significant reduction in amount of water lost in irrigation scheme. Water and electricity efficiency gains.



SUSTAINABILITY GOAL	RATING	COMMENT
12. Protecting sites with heritage, indigenous and cultural values	Uncertain	Dependent on sites for additional infrastructure such as balancing storages.
13. Enhancing the liveability and amenity of urban centres	Medium negative	Any resulting additional water from efficiency gains being taken up within the existing MDWSS reduces the availability of this option as a future longer-term option for urban water supply in Cairns.

11.4.4 Outcomes for Option 3

Option 3 has three major positive impacts on sustainability goals related to increased levels of production, export growth and the efficient use of water and energy resources. Option 3 has two medium positive impacts related to a diverse and resilient economy and more competitive industries. Option 3 has two minor positive impacts related to social cohesion and equity.

The impact of Option 3 on income distribution and sites with heritage, indigenous and cultural values was considered uncertain.

Option 3 has three medium negative sustainability goal impacts related to preserving healthy landscapes, biodiversity and the liveability and amenity of urban centres.

11.4.5 Assessment of Option 4: Nullinga Dam for Agricultural Use

The assessment of Option 4 against each of the sustainability goals is presented in Table 4.

Table 4 Option 4 Sustainability Assessment

SUSTAINABILITY GOAL	RATING	COMMENT
1. A diverse and resilient economy	Major positive	Option 4 will potentially deliver a significant boost in agricultural production. The construction phase of the dam will add to economic diversity while additional production may support regional processing.
2. Higher levels of productivity and economic efficiency	Major positive	Option 4 will potentially deliver a significant boost in agricultural production.
3. Increased trade or exports	Major positive	Option 4 will potentially deliver a significant boost in agricultural production including goods for export.
4. More competitive industries	Medium positive	Increases in water availability will add to the competitiveness of regional industries.
5. Fairer distribution of income	Uncertain	Dependent on hiring and employment practices of regional agriculturalists.
6. Improved public safety	Minor negative	Large dam in upper catchment increases public safety risk in event of catastrophic failure. Failure considered unlikely.
7. Social cohesion and inclusion	Uncertain	Significant uncertainty in terms of degree of acceptance of dam locally, regionally, state-wide and nationally.
8. Equity	Medium positive	Greater volumes of water availability may encourage greater long-term investment and intergenerational benefit.
9. Preserving healthy landscapes	Major negative	Dam will inundate a significant area and create downstream impacts on existing aquatic habitats and biodiversity.



SUSTAINABILITY GOAL	RATING	COMMENT
10. Reducing the loss of habitat and biodiversity	Major negative	Dam will inundate a significant area and create downstream impacts on existing habitats and biodiversity.
11. Increasing the efficient use of energy and water resources	No impact	
12. Protecting sites with heritage, indigenous and cultural values	Uncertain	Based on current information significant uncertainty regarding the impact of the option on the goal exists. No indigenous heritage values study has been completed.
13. Enhancing the liveability and amenity of urban centres	No Impact	There is no identified need for Nullinga dam as a potential future option in Cairns water security strategy. However, Nullinga Dam may provide for a future longer term supply option if demand developed above what has been identified to date.

11.4.6 Outcomes for Option 4

Option 4 has three major positive impacts on sustainability goals in relation to a diverse and resilient economy, higher levels of economic productivity and increased trade and exports. Option 4 has three medium positive impacts in terms of more competitive industries, equity and enhancing the liveability of urban centres.

The impact of Option 4 on the distribution of income, social cohesion and inclusion and sites of heritage, indigenous and cultural values were considered uncertain.

Option 4 has one minor negative impact in terms of public safety. Option 4 has two major negative impacts on sustainability goals in relation to preserving healthy landscapes and loss of habitats and biodiversity.

11.5 Conclusion

Table 5 provides a summary of the sustainability assessment conducted on all three options.

Table 5 Summary of the Sustainability Assessment

SUSTAINABILITY IMPACT CONTRIBUTION	OPTION 2 – IMPROVE MDWSS RULES AND OPERATION	OPTION 3 - MODERNISE MDWSS AND CONVERT LOSSES	OPTION 4 – NULLINGA DAM FOR AGRICULTURAL USE
Uncertain Impact	✓	✓✓	✓✓✓
No Impact	✓✓✓✓✓✓✓✓		✓
Minor Positive Impact	✓✓✓	✓✓	
Medium Positive Impact	✓	✓✓✓✓	✓✓✓
Major Positive Impact		✓	✓✓✓
Minor Negative Impact			✓



Medium Negative Impact		✓✓✓	
Major Negative Impact			✓✓

The table above provides a summary of the sustainability assessment conducted on all three options as follows:

- Option 2 has been assessed as having the least impact on sustainability goals which is reasonable given the reform nature of that option.
- Option 3 and Option 4 have very similar impacts on sustainability as both options have a level of uncertainty, positive impacts and negative impacts.
- While Option 4 has stronger positive impacts on sustainability, this is offset by two major negative impacts in relation to preserving healthy landscapes and loss of habitats and biodiversity.
- Option 3 has fewer positive impacts but three medium negative sustainability goal impacts related to preserving healthy landscapes, biodiversity and the liveability and amenity of urban centres.

On balance, the preliminary sustainability assessment has identified that Option 4 has a stronger positive impact on sustainability goals but would benefit from a detailed business case assessment.