

Gulf draft amended plans

Overview report

December 2014

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Foreword

We are pleased to release this overview report on the proposed amendments to the *Water Resource (Gulf) Plan 2007* and the Gulf Resource Operations Plan 2007 (draft amended plans). The proposed amendments build on the commitment by the Queensland Government to expand the irrigated agricultural industry in the Flinders and Gilbert river catchments.

The draft amended plans have been released for public review to enable all stakeholders to have further input prior to their finalisation.

The proposals in the draft amended plans have been guided by the following imperatives:

- To identify unallocated water volumes of sufficient quantity and reliability to enable the significant expansion of irrigated agriculture in the Flinders and Gilbert river catchments.
- To avoid significant impacts to existing water entitlement holders, the riverine environment and to the Gulf's commercial fisheries sector.

The development process has been well-informed by findings from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Flinders and Gilbert Agricultural Resource Assessment in addition to further technical assessments undertaken by CSIRO and the Department of Science, Information Technology, Innovation and the Arts, along with input from the community.

We would like to thank all of the groups and individuals who contributed to the development of the draft amended plans, particularly members of the Local Water Consultation Group for their valuable input and advice.

The draft amended plans provide a total of 755 gigalitres of unallocated water in the Flinders and Gilbert river catchments to be made available for general use as well as strategic and indigenous purposes. The ecological values and the viability of the commercial and recreational fishing industry will be supported by retaining freshwater discharges to the Gulf of Carpentaria, particularly at the start of the wet season.

This overview report provides a guide to the draft amended plans and summarises the key outcomes and provisions and the reasoning behind them.

We encourage anyone with an interest in the Flinders and Gilbert river catchments of the Gulf to study this document to assist in making a formal submission on the accompanying draft amended plans. All properly made submissions will be considered in finalising the plans.

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1. Introduction

1.1 The role of the overview report

Preparation of an overview report is required under the *Water Act 2000* (the Act). It is intended to promote understanding about the water planning process and provide information to support the preparation of submissions on the draft amended plans. It serves as a guide to the development of the draft amended plans and describes the matters that were considered by the Minister and chief executive in their development.

The overview report should be viewed alongside the draft amended plans to provide appropriate context and to allow for consideration of both strategic and operational issues when preparing a submission.

1.2 Submissions on the draft plans

The draft amended plans are available for public review and can be accessed online at www.dnrm.qld.gov.au.

Feedback in the form of written submissions is invited from all interested parties. This includes those that support the draft amended plans 'in whole or in part', as well as those that have concerns or suggest improvements. All properly made submissions will be considered in finalising the plans.

The submission period will close at 5pm, 10 February 2015. Further details for making a submission are included in sections 7 and 9, and appendix A of this document.

2. Background

2.1 The plan area and the water to which it applies

The total plan area is approximately 315 000 km² and comprises eight catchments that drain to the Gulf of Carpentaria (Figure 1). The largest catchment in the plan area is the Flinders covering approximately 109 000 km² and the smallest is the Morning Inlet covering approximately 3700 km². The eight catchments are:

- Staaten River
- Gilbert River (including the Einasleigh River)
- Norman River
- Flinders River (including the Cloncurry River)
- Morning Inlet
- Leichhardt River
- Nicholson River (including the Gregory River)
- Settlement Creek.

This amendment focuses on unallocated water in the Flinders and Gilbert river catchments. These two catchments are highlighted in figure 1.

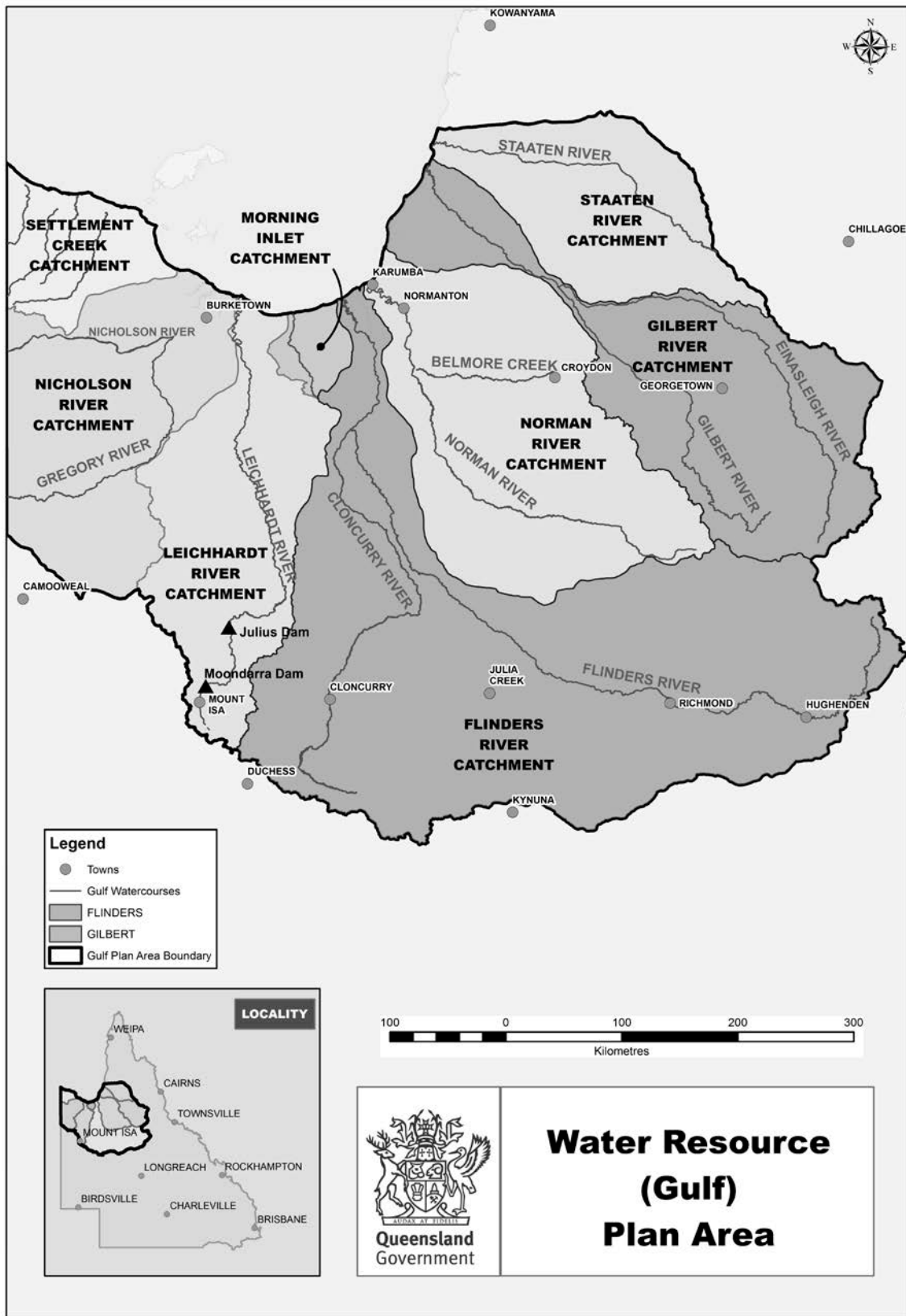


Figure 1: Water Resource (Gulf) Plan area

2.2 History of water planning in the Gulf

Water planning in the Gulf WRP area has been a dynamic process that has resulted in continuous improvements being made to the way water is shared and managed. The strategies contained in the *Water Resource (Gulf) Plan 2007* (Gulf WRP) have been progressively implemented through the Gulf Resource Operations Plan (Gulf ROP). Table 1 summarises key planning milestones.

Table 1: Water resource planning milestones in the Gulf WRP area

Date	Milestone
November 2007	<p>The Gulf WRP was released and applied to water in a watercourse, lake or spring, groundwater and overland flow water and provided:</p> <ul style="list-style-type: none"> • water for future water requirements • water users, including towns, with clearly defined entitlements • a framework for establishing tradeable water allocations for Julius and Moondarra dams • recognition of the cultural value that water holds for Traditional Owners.
June 2010	<p>The Gulf ROP was released implementing many of the objectives specified in the WRP including:</p> <ul style="list-style-type: none"> • improved specification for existing water entitlements, including converting area based licences to volumetric licences • implements strategies to support a range of ecological outcomes and natural ecosystem monitoring requirements • operating rules and management arrangements for water infrastructure operators • rules for seasonal water assignment and permanent transfer of water licences in selected areas of the Gilbert River catchment.
November 2011	<p>Amendment of the Gulf WRP to establish indigenous reserves of unallocated water to support aspirations of indigenous people in the Cape York Peninsula Region, Morning Inlet, Settlement Creek and Staaten River catchments and the Gregory River subcatchment.</p> <p>Amendment to the Gulf ROP to allow water licences granted from the indigenous reserves to be seasonally assigned.</p>
May 2013	<p>Water licences granted in the Flinders and Gilbert river catchments via the unallocated water tender process:</p> <ul style="list-style-type: none"> • three licences granted in the Flinders River catchment totalling 80 000 ML (all available volume was allocated) • three licences granted in the Gilbert River catchment totalling 14 220 ML (of an available 15 000 ML)
February 2014	<p>Water licences granted to Burke, Cloncurry and Flinders Shire Councils from the strategic unallocated water reserves after an expression of interest process. A total of 2266 ML was granted.</p>
June 2014	<p>Stated amendment to Gulf WRP finalised to remove redundant provisions and provisions that were duplicated in the <i>Water Act 2000</i>.</p>
July 2014	<p>Finalisation of the amendment to the Gulf ROP to allow licences in the Flinders and Gilbert river catchments to be permanently and seasonally transferred.</p>
August 2014	<p>Water licence granted to Carpentaria Shire Council from the strategic unallocated water reserve after the expression of interest process.</p>
December 2014	<p>Draft amendment to the Gulf WRP and ROP to provide for additional unallocated water reserves in the Flinders and Gilbert river catchments.</p>

The Act requires both draft amended plans be developed and released concurrently, which provides stakeholders with an opportunity to comment on both strategic and operational components of water planning at the same time.

2.3 Water availability and use in the plan area

Water entitlements in the Flinders and Gilbert river catchments are used primarily for irrigation with smaller amounts used for town water supply and industry. There are currently 34 entitlements to take surface water in the Flinders River catchment and 30 entitlements to take surface water in the Gilbert River catchment.

Table 2 shows the current surface water entitlement volumes in megalitres (ML) for the Flinders and Gilbert river catchments.

Table 2: Current surface water entitlement volumes

Purpose	Flinders (ML)	Gilbert (ML)
Irrigation	109 014	28 309
Town water supply	10 530	140
Industrial/Mining	468	4 650
Total	120 012	33 099

2.4 Flinders and Gilbert Agricultural Resource Assessment

On 6 February 2014, the Office of Northern Australia released the Flinders and Gilbert Agricultural Resource Assessment (FGARA) under the North Queensland Irrigated Agriculture Strategy. The \$6.8 million two year assessment was led by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and provides an evaluation of the feasibility, economic viability and sustainability of water resource development for the Flinders and Gilbert river catchments.

The CSIRO assessment concludes that there is potential to support irrigated agricultural development in both catchments for a range of crops between 10 000 ha and 20 000 ha in the Flinders River catchment and between 20 000 ha and 30 000 ha in the Gilbert River catchment. The most viable water development options to take advantage of this potential for agricultural development recommended by FGARA were:

- For the Flinders River catchment, unallocated water associated with water harvesting into on-farm storages.
- For the Gilbert River catchment, unallocated water associated with two large instream storages.

CSIRO's FGARA reports can be accessed online at: www.csiro.au

3. Development of the draft amended plans

The development of the draft amended plans was undertaken in accordance with the requirements of the Act and began with collecting the best available information, data assessment and preliminary consultation. This section summaries the process and its outcomes.

3.1 Statement of proposals

In response to the findings of CSIRO's FGARA report, on 13 March 2014 the Minister for Natural Resources and Mines released a Statement of Proposals to formally commence a review of the Gulf WRP to support additional water resource development in the Flinders and Gilbert river catchments.

The statement of proposals provided a high level overview of the likely scope of the amendments, what the key considerations would be, as well as providing for public submissions on the proposals that would be considered in the development of the draft amended plans. When the submission period closed on 2 May 2014, 12 properly made submissions had been received by the department.


The key issues raised in submissions and a response to the issues are summarised below:

- Concerns that the review was progressing too quickly and requests for a minimum 60 business day submission period on the amended draft plans—a 30 business day submission period has been adopted for receipt of submissions on the draft amended plans. The timeframe is considered appropriate given the targeted focus of the amendment and that the amendment builds on the various planning and technical assessment processes undertaken in the Gulf over the last decade that have provided significant opportunity for community input.
- Concerns that the additional technical assessments are limited in scope and qualitative in nature—the technical assessments have been targeted to address the scope of the draft amended plans and to complement the depth of technical work delivered by CSIRO through the FGARA project.
- Requests that CSIRO's median annual flow data be used for hydrological assessments—a range of flow data has been used in guiding the draft amended plans' proposals, including median annual flow data.
- Concerns that there is limited information available on current or historical water quality of the Gilbert River, its associated estuaries and coastal areas—water quality is predominantly an issue outside the scope of the water planning process. A range of strategies are proposed in the draft amended plans to support important ecological processes and values in the Flinders and Gilbert rivers including estuarine and marine environments.
- Concerns about the potential impacts of the Etheridge Integrated Agriculture Project in the Gilbert River Catchment—the potential impacts of the project are currently the subject of a separate environmental impact assessment process and not part of this Gulf amended plans process.
- Two requests for unallocated water on the Gilbert River and two requests for unallocated water on the Staaten River—there will be opportunity for the emerging demands of new projects to be considered in setting priority areas for future releases of unallocated water in the Gulf.

3.2 Technical assessments

CSIRO's FGARA report highlighted potential risks associated with large scale irrigated agricultural development including:

- Reduction in river connectivity and flushing flows supporting waterhole ecology
- Reduced frequency of coastal floodplain inundation
- Fisheries production in the Gulf of Carpentaria
- Species distribution and lifecycle requirements including migration.



CSIRO's FGARA studies did not address these risks or potential impacts of development on existing water entitlements. CSIRO stressed that it is critical for water resource planning to establish rules on what constitutes the first flush flows of a flood event in renewing the aquatic ecology of the system.

The Department of Science, Information Technology, Innovation and the Arts (DSITIA) undertook an environmental assessment of the Flinders and Gilbert river catchments while CSIRO undertook a targeted fisheries assessment for the Gulf of Carpentaria.

Technical assessments were based on various water development scenarios and were informed, in part, by hydrological modelling of those scenarios. The CSIRO development scenarios underpinning the FGARA report were used as well as modified versions of those scenarios. All hydrological modelling was undertaken using the hydrologic models developed by CSIRO for the FGARA project.

CSIRO's FGARA reports can be accessed online at: www.csiro.au

The development of the draft amended plans has been well informed and guided by the findings of the technical assessments.

3.2.1 Fisheries considerations

CSIRO undertook an assessment of the implications of possible future water resource development on the productivity of commercial fisheries, non-commercial fisheries and aquatic plants, animals and ecosystems of high ecological value in the Flinders and Gilbert river catchments and the Gulf of Carpentaria.


The report prepared by CSIRO, 'Assessing the water needs of fisheries and ecological values in the Gulf of Carpentaria' provided an analysis of possible impacts to fisheries and ecological values in the Gulf of Carpentaria from key development scenarios in the Flinders and Gilbert rivers specified in the FGARA.

The findings of CSIRO's fisheries assessment report include:

- A qualitative risk assessment completed for 47 fisheries species identified 15 species potentially at high risk and 8 species at medium risk from reduced flows in the Flinders and Gilbert Rivers.
- A quantitative risk assessment completed for White Banana Prawns and Barramundi showed a potential 3-13per cent reduction in Banana Prawn catch in adjoining fishing zones under the FGARA scenarios and a potential reduction in Barramundi catch of 3-12per cent for the Gilbert River and 2-4per cent for the Flinders River.
- Analysis of risk to the Barramundi population based on assessment of year class strength showed that there were no high risk years under predevelopment or current water use scenarios. However under the FGARA scenario the number of years in the high risk category increased to 12per cent in the Gilbert River and 3per cent in the Flinders River.

CSIRO's fisheries assessment report also outlined the importance of key fisheries species and their link through life history phases to specific freshwater flow classes. For example:

- The life cycle of White Banana Prawns is strongly related to flow. High flows between January and March trigger migration of adult prawns to offshore habitat to spawn. Large flood flows also transfer tonnes of nutrients to the nearshore flood plume zone, important for enriching the food web that supports a range of fisheries species,



including prawns. Banana prawn larvae make their way back up to the estuary between August and October, and juveniles grow in the estuary from October to December. In the lead up to the wet season, the first rainfall events and flows in the system help to reduce the salinity in the estuary to brackish levels, which is important for the growth of banana prawns, which may be inhibited if conditions are too saline.

- Similarly, the life cycle of Barramundi is closely linked to flow. First wet season flows and rising water temperatures trigger downstream movement of barramundi to the estuary and inshore marine environments to spawn between September and February. Connectivity to the floodplain created by large flow events is important for juvenile development and growth, as Barramundi thrive in wetlands, tidal creeks and freshwater habitats. Juveniles and adolescents may remain in ephemeral freshwater habitats for months or years before a high flow reconnects these habitats to the main channel.

CSIRO also provided recommendations in their fisheries assessment report on potential mitigation strategies that could be considered to reduce the identified impacts. CSIRO's fisheries assessment report including their recommendations can be accessed online at the department's website: www.dnrm.qld.gov.au

3.2.2 Environmental assessment

DSITIA investigated and identified ecological assets and processes with critical links to flow. Risks to these assets were then analysed based on future water development scenarios for both the Flinders and Gilbert river catchments.

DSITIA initially focused on identifying the risks associated with the largest water development options identified through CSIRO's FGARA project (560 GL of additional development in the Flinders and 670 GL of additional development in the Gilbert). DSITIA also tested the effectiveness of applying mitigation strategies to minimise the impact of development (see 3.3. below for details of mitigation strategies).

The assessment identified 15 ecological assets across the Flinders and Gilbert river catchments as potentially sensitive to changes in flow. Overall the assessment identified risks to a number of these assets under both the large water development options, including with mitigation strategies.

Due to the significant risks identified by DSITIA and CSIRO (see 3.2.2 below for more information about fisheries risks), a supplementary environmental assessment was undertaken for three further water resource development scenarios:

- A reduced volume of 266 GL of new water harvesting in the Flinders River catchment with mitigation strategies.
- Two instream storages (Green Hills and Dagworth dams) with a reduced total volume of 489 GL in the Gilbert River catchment with mitigation strategies.
- A reduced volume of 489 GL of new water harvesting in the Gilbert River catchment with mitigation strategies.

Under this supplementary assessment, six key assets were chosen as indicators for representing the risk of the new water resource development scenarios to the environment. The assets were also selected as being reflective of processes critical to fisheries:

- Migratory fish guild
- Freshwater turtles
- Floodplain vegetation

- Wetlands
- Fluvial geomorphology and river forming processes
- Floodplain energy subsidy.

For both catchments, significant improvements can be seen in ecological risks under reduced volume scenarios (i.e. 266 GL in the Flinders and 489 GL in the Gilbert) and further improvements are made in the Gilbert River catchment by switching from instream developments to water harvesting developments that minimise the impact on instream flows while maintaining large-scale agricultural development opportunities.

DSITIA's reports can be accessed online at the department's website: www.dnrm.qld.gov.au

3.2.3 Surface water hydrology

The Queensland Hydrology unit of DSITIA has also supported the preparation of the draft amended plans through testing the new surface water proposals using the hydrologic models developed by CSIRO under the FGARA project. This includes using hydrological modelling to inform the environmental and fisheries assessments and assessing the potential impacts of development scenarios on existing water users including town water supplies.

3.3 Development and assessment of mitigation strategies

It is clear from the outcomes of the technical assessments that in making unallocated water volumes available in the Flinders and Gilbert river catchments, mitigation strategies need to be adopted to minimise the risks to Gulf of Carpentaria fisheries, environmental assets and ecological processes and existing water users. The mitigation strategies proposed by the department in consultation with DSITIA and DAFF seek to ensure that the key flows which mitigate these risks are protected.

When investigating alternative options two imperatives guided the determination of new unallocated water volumes and associated mitigation strategies:

1. To identify unallocated water volumes of sufficient quantity and reliability to enable the significant expansion of irrigated agriculture in the Flinders and Gilbert river catchments.
2. To avoid significant impacts to existing water entitlement holders, the riverine environment and to the Gulf's commercial fisheries sector.

The mitigation strategies have been applied to hydrologic modelling scenarios which have guided the development of the draft plan and are reflected in the outcomes and the environmental flow objectives for the Flinders and Gilbert river catchments. Though these mitigation strategies do not appear in the draft WRP amendment document as a specific rule, section 39A requires that all new entitlements have a pass flow condition to ensure the environmental flow objectives are achieved.

Wet season flow

The protection of a wet seasonal flow is a mitigation strategy that was recommended in CSIRO's and DSITIA's technical assessments, and has been adopted in the Draft WRP scenario. CSIRO found that a wet season flow from January to March each year was required to support Gulf of Carpentaria fisheries, specifically the emigration of Banana prawns to offshore habitat and survival and growth of juvenile Barramundi in both the Flinders and Gilbert river catchments. Similarly, DSITIA recommended that options for supporting seasonal inundation of floodplains should be explored.

It is proposed that any new entitlements granted from the general unallocated water reserve will not be able to access water from 1 January each year until a specific volume of water (140 000ML in the Gilbert River Catchment and 152 480ML in the Flinders River Catchment) has reached an end of system location (Miranda Downs gauge station and Walkers Bend gauge station respectively). New entitlement holders can resume accessing water once the cumulative volume is reached (37 days on average) or in the event that the cumulative volume is not reached in low flow years over the whole wet season (11per cent of years in the simulation period), new entitlement holders can resume taking water at the beginning of April.

The volume of water for the wet season flow has been based on the 1 year average recurrence interval (ARI) daily flow (the size flow which is predicted to occur, on average, once a year) as it represents a good balance between event size and frequency. The actual gauged flows through the 1970's and 80's also indicate that flows of this size occurred frequently during the wet seasons of the 70's which were good years for the catch of Barramundi and Banana Prawns and were notably absent in flows through many years of the 80's when the catch of Barramundi and Prawns was poor. The 1 year ARI flow was then multiplied by 8, guided by research into the migratory requirements of fish species in parts of Queensland which indicates that 8 days of flow was required for successful fish migration and CSIRO recommendations for mitigating floodplain impacts.

Examination of flows throughout the model simulation period (122 years) indicates that a wet season flow of this volume provides most benefits in years which have median or below flows for the months January, February and March (combined). In these years the wet season flow strategy improves the end-of system flows in the Flinders by up to 19per cent.

The mitigation strategy was not designed to change the overall volume of unallocated water available but ensures that flood flows from January – March reach the estuary.

Reduced volumes

This further mitigation strategy is to reduce the total volumes of unallocated water proposed under CSIRO's FGARA largest water development scenario where 670GL of available water was identified in the Gilbert River catchment and 560GL in the Flinders River catchment. A primary objective of reducing the total volumes of unallocated water, particularly in the Flinders catchment, was to improve the productive reliability associated with the new unallocated water volumes. In the Flinders River catchment the total volume of general unallocated water was reduced to 266 GL which provides new entitlements with a reliability comparable to those water licences granted from the 2012–3 unallocated water release process.

In the Gilbert River catchment the total volume of general unallocated water was reduced to 489 GL to minimise impacts on Gulf of Carpentaria fisheries and ecological assets and processes.

The CSIRO fisheries report indicates that when both catchments are considered, these smaller volumes change the predicted reductions to Banana Prawn catch in the south eastern Gulf of Carpentaria from a possible 16per cent reduction to a 10per cent reduction. Impacts to the commercial catch of Barramundi are predicted to change from 3per cent to 1-2per cent in the Flinders and 6per cent to 4-5per cent in the Gilbert.

It is important to note that even with the reduction in volume, significant residual risks remained in the Gilbert river catchment, primarily related to the continued impacts of the instream dams. A range of scenarios were therefore investigated by the department where each dam in the Gilbert catchment was replaced with an equivalent volume of water harvesting developments (pumping of water into an off-stream storage).

Increased flow thresholds for new water harvesting developments: Flinders River catchment

Hydrologic assessments of CSIRO's FGARA water harvesting scenario in the Flinders River catchment identified risks to the performance of existing water users. This was primarily attributed to the flow thresholds (the river flow level at which new entitlements can begin pumping water into off-stream storages) applied to new water harvesting developments in the Flinders River catchment.

A mitigation strategy to raise the water harvesting flow thresholds for new water harvesting developments was applied to protect the performance and minimise impacts on existing water users in the Flinders River catchment.

Inflow–outflow rule: Gilbert River catchment

The inflow-outflow rules are another mitigation strategy that was investigated and adopted for scenarios investigating the two instream dams in the Gilbert River catchment. Technical assessments identified that low flows in the Gilbert River catchment required protection. It is these low flows which contribute to waterhole persistence and river connectivity. An inflow-outflow rule works by ensuring that low flows entering the dam must also be allowed to pass downstream of the dam.

Summary of mitigation strategies

Table 3 presents a summary of the mitigation strategies investigated by the department and their link to ecological values and flow classes.

Table 3: Mitigation strategies, ecological values and flow classes

Flow class	Threats from water resource development	Related ecosystem components	Mitigation strategies proposed - Flinders	Mitigation strategies proposed - Gilbert
No flow/low flow	Capture of low flows by storages and increase in the duration and number of no flow spells Pumping of waterholes and bedsands during spells without flow	Waterholes as refugia Stable flow spawning fish (Eastern rainbowfish) Gilbert River bed sand aquifer	No specific mitigation proposed as water harvesting development option proposed by CSIRO does not target low flows	Inflow-outflow rules proposed for both Dagworth and Green Hills Dams. For the water harvesting development scenario, mitigation is not required.
Low/medium flow	Capture of low and medium flows by storages Loss of seasonal migratory opportunities and cues Loss of ephemeral nature of system	Migratory fish (Hyrtl's tandan, Narrow-fronted catfish, Spangled perch and Largetooth sawfish)	Raised water harvesting thresholds for new users to protect low-medium flows and existing water users	As above
High flow (1 in 2 year flow events)	Capture of high flows by instream storages and water harvesting Loss of seasonal migratory opportunities and	Freshwater turtles (Northern snake-necked turtle, Cann's long-necked turtle), Fluvial geomorphology	Jan – Mar first wet season flow (provide for fisheries migration)	Jan – Mar first wet season flow (provide for fisheries migration) Adopted a new plan outcome 'maintenance of flows to provide

	cues Reduced connectivity of system	and river forming processes (including sediment load and nutrient export) Barramundi and Banana prawns		brackish estuarine habitat suitable for juvenile banana prawn development' Water harvesting developments without instream storages have been recommended
Overbank flow (1 in 10 year flow events)	Capture of overbank flows by instream storages and water harvesting Loss of connectivity to floodplain	Floodplain energy subsidy to riverine food webs, Floodplain wetlands, Floodplain vegetation	Smaller water harvesting volumes adopted (266 GL)	The impacts to overbank flows were not able to be mitigated under the Greenhills and Dagworth Dam scenario, but are able to be mitigated under water harvesting development scenarios

3.4 What this means for instream infrastructure

The proposed draft WRP amendment does not prevent the future development of instream storages. Any proposed developments will have to ensure that resulting impacts on downstream flow outcomes are no greater than those associated with a 489 GL water harvesting scenario, as proposed under the amended draft plans.

The Etheridge Integrated Agriculture Project is listed as a coordinated project with the Department of State Development, Infrastructure and Planning (DSDIP). The project is still subject to an environmental impact statement (EIS) that must run its course independently of the draft amended plans. The EIS will comprehensively deal with water related impacts of the proposed development and canvass the views of relevant stakeholders.


More information about the Etheridge Integrated Agriculture Project can be found on the DSDIP website at: www.dsdip.qld.gov.au

3.5 Additional water to drive economic development

Opportunities for largescale development of irrigated agriculture have long been sought in the Flinders and Gilbert river catchments. Most recently, the Commonwealth Government released the Agricultural Competitiveness Green Paper¹ in October 2014 that identified water infrastructure projects of interest to the Commonwealth in promoting agricultural development, including development in the Flinders and Gilbert river catchments.

The FGARA report prepared by CSIRO provides a strong case for the establishment of a long-term viable irrigated agricultural industry in both the Flinders and Gilbert river catchments (section 2.4). The reliability of access to water is critical to the longevity of an industry, particularly to provide the private sector with confidence to invest in water infrastructure and supporting infrastructure such as a cotton gin, sugar mill, abattoir, bioprocessing plant.

¹ Information and documents about the Agricultural Competitiveness Green Paper is available at: www.agriculturalcompetitiveness.dpmc.gov.au



In 2013, six water licences were granted from the general reserves of the Flinders and Gilbert river catchments following the completion of an unallocated water release process. In the Flinders River catchment 80 000ML of new water entitlements were granted and in the Gilbert River catchment 14 220ML were granted. In both catchments the total volume tendered for was significantly greater than the volumes available to be granted.

This was followed by a register of interest process that was undertaken by the department in 2014 to identify the level of demand for unallocated water in catchments where general reserves were available. At the time of this process general unallocated water was available in the Gilbert River catchment and there was demonstrated demand for unallocated water in this catchment.

The department was made aware of further demand for unallocated water through submissions received on the Statement of Proposals. Two requests were made for unallocated water in the Gilbert River catchment.

The unallocated water volumes of 266 GL in the Flinders river catchment and 489 GL in the Gilbert river catchment which are identified for future development through these draft amended plans could support the creation of up to 60 000 ha of additional irrigation across the two catchments. This scale of development would create significant employment opportunities and economic growth for the region.

Through the choice of appropriate unallocated water volumes and the use of mitigation strategies the draft amended plans seeks to provide for significant agricultural expansion tailored to the demands presented while limiting the impacts to existing important industries such as fisheries and tourism, and environmental values.

CSIRO identified that Northern Prawn Fishery landings were worth an estimated \$97.1M in 2011 and \$64.7M in 2012. Environmental assets draw tourists to the area, including for recreational fishing. The regional tourism profile shows domestic overnight visitors spend an average of \$37M per year². Minimising the impact on the flows important to barramundi and banana prawns will ensure the longterm viability of both the commercial fishing industry and regional tourism.


3.6 Consultation

Consultation on the development of the amended draft plans occurred through the Local Water Consultation Group. This group was established by the Minister and includes representatives from local councils, agricultural sector, resources industry, fisheries industry, NRM groups and Indigenous groups. The group first met on 22 May 2014 to discuss a range of issues relevant to the WRP amendment including the key issues raised in submissions.

The Local Water Consultation Group met with departmental officers again on 28 August 2014 to discuss key findings of the technical assessments, unallocated water reserve scenarios and mitigation strategies.

Stakeholders will have further opportunity to comment on the proposed amendments to the Gulf WRP and Gulf ROP by making a submission using the submission form included in this document.

² Source: Flinders Richmond McKinnlay Tourism Profile, December 2009 to December 2012, Tourism and Events Queensland. Available at www.teq.queensland.com



Public information sessions will also be held within the plan area to explain the proposed amendments and assist with the preparation of submissions.

4. Matters the Minister and Chief Executive must consider when preparing a water resource plan and resource operations plan.

In accordance with section 47 of the Act, the Minister for Natural Resources and Mines has considered the following when preparing this draft WRP amendment:

- the State's water right and the volume and quality of water
- the duration, frequency, size and timing of water flows necessary to support natural ecosystems as assessed using the best scientific information available
- technical assessments
- existing water entitlements
- the state's future water requirements, including cultural, economic, environmental and social requirements and values
- all properly made submissions about the proposed draft WRP
- the public interest—the views and objectives of relevant stakeholders have been sought and considered in preparing the draft WRP amendment.

In accordance with section 99 of the Act, the chief executive of the department has considered the following when preparing the draft ROP amendment:

- the Statement of Proposals for the draft WRP amendment
- the draft WRP amendment
- all properly made submissions about the proposed draft ROP
- the public interest—the views and objectives of relevant stakeholders have been sought and considered in preparing the draft ROP amendment.

5. Scope of the draft amended plans

5.1 Proposed unallocated water reserves

5.1.1 Background

There is a demonstrated demand for additional water resources in the Flinders and Gilbert river catchments through the interest shown in the 2013 unallocated water process. Demands for larger scale development in the Flinders and Gilbert river catchments have also been identified including a major development proposal in the Gilbert River catchment which is lodged with the Coordinator-General.

The amendments have focused on identifying additional volumes of unallocated water for the Flinders and Gilbert river catchments to support agricultural development, including projects that support the social and economic aspirations of indigenous people in these catchments.

5.1.2 What is proposed in the draft amendments to the water resource plan

Based on CSIRO's FGARA reports, community and peak body consultation, hydrological scenario modelling and the technical assessments discussed in section 3.2, the draft WRP

amendment proposes to increase the current unallocated water reserves in the Flinders and Gilbert rivers catchments as detailed in table 4.

The proposed volumes were determined in consideration of and seeking a balance between the following:

- Water with an associated reliability that meets agricultural development needs
- Minimising impacts of future water entitlements on existing water users
- Minimising impacts on commercial fisheries in the Gulf of Carpentaria
- Minimising impacts on key ecological processes and environmental assets

Table 4: Proposed unallocated water reserve volumes

Reserve	Flinders (ML)	Gilbert (ML)
General reserve	239 650	467 000
Indigenous reserve	8 500	17 000
Strategic reserve	17 850	5 000
Total	266 000	489 000

It should be noted that the proposed volumes of unallocated water relate to the annual volumetric limit of future water entitlements. The volume of water able to be extracted under a future water entitlement in any given year will be subject to water availability, entitlement conditions and infrastructure.

The identification of volumes of water for the indigenous reserve followed the same methodology that has been utilised for the identification of water in the Wet Tropics Water Resource Plan. Land tenure owned by indigenous interests was identified within the Flinders River and Gilbert River catchment. Known proposals for further developments of industry and agricultural pursuits were also considered, in addition to the Regional Indigenous Land Strategy report³ (ILC 2013). The potential irrigable land areas within the identified land parcels were determined by examination of satellite imagery, soil suitability and with reference to detailed reports produced on the catchments by the CSIRO for the FGARA project. Land suitable for improved pasture, vegetable crops or broadacre cropping was multiplied by the appropriate conversion factor and totalled for the individual catchments.

The strategic reserves for the Flinders River catchment, Nicholson River subcatchment area and Norman River catchment area have been updated (reduced) to reflect the volume of the licences recently granted to Flinders Shire Council, Cloncurry Shire Council, Burke Shire Council and Carpentaria Shire Council from the strategic reserve expression of interest process. Table 5 shows the updated volumes for these reserves.

Table 5: Proposed updated strategic (State purpose) unallocated water reserves

Catchment	Strategic Unallocated Water Reserve (ML)
Flinders River catchment	17 850
Nicholson River subcatchment	4 284
Norman River catchment	1 000

³ Indigenous Land Corporation 2013 Regional Indigenous Land Strategy: Queensland 2013-2017. Australian Government

5.2 Performance indicators and objectives

5.2.1 Background

Chapter 4 of the draft WRP amendment describes the objectives for water allocation security and environmental flows. This amendment has included performance indicators and environmental flow objectives for the Flinders and Gilbert river catchments. The specification of performance indicators and environmental flow objectives is a key strategy ensuring that the future release and management of unallocated water aligns with the ecological and environmental outcomes of the water resource plan.

The environmental flow objectives are derived from the 122 year hydrological simulation period. Future resource management decisions, for example, unallocated water releases, water trades or strategies implemented in the resource operations plan—must comply with the objectives proposed in Chapter 4 of the draft WRP amendment. This is separate from any other approvals that may be required—for example, approvals for works under the *Sustainable Planning Act 2009*.

5.2.2 What is proposed in the draft amendments to the water resource plan

The Gulf WRP provided for environmental flow objectives only in the Upper Leichhardt River subcatchment area. Chapter 4 has been amended to include a new node to represent an end of system location in each of the Flinders and Gilbert River catchments (i.e. Flinders River at Walkers Bend and Gilbert River at Miranda Downs). A new low flow performance indicator and wet season flow performance indicator have also been proposed for these two catchments.

The new low flow performance indicator proposed for the Flinders and Gilbert river catchments has been developed to maintain longitudinal connectivity opportunities for migratory fish, and protect the persistence of refugial waterholes. For the end-of-system nodes on the Flinders and Gilbert an alternative performance indicator for no-flow periods is proposed. For assessment purposes in the Flinders and Gilbert any days on which the model predicts the flow to be below 5 ML/day are considered 'no-flow days' as there is a high likelihood that flows of this size would be subsurface (moving through the sands and gravels of the riverbed). The performance indicator in the draft plan is the percentage of days in the model simulation period which are considered 'no-flow' days. There are large periods of time when the Flinders River is naturally dry, while the Gilbert River is more consistently flowing. The proposed objectives for the two rivers reflect their different hydrologic characteristics.

The new wet season flow performance indicator proposed for the Flinders and Gilbert river catchments has been developed to ensure that a large wet season flow from January to March each year is maintained. This was required to support the Gulf of Carpentaria fisheries and key environmental assets reliant on large flushing flows (Section 3.3).

Schedule 5 has been amended to include the proposed environmental flow objectives for the Flinders and Gilbert river catchments for the new performance indicators as well as for the medium to high flow indicators (i.e. mean annual flow, median annual flow and the 1.5, 5 and 20 year daily flow volumes).

The map in schedule 1 of the draft WRP amendment has been amended to show the position of the two new nodes in the Flinders and Gilbert River catchments. The table below shows the anticipated change in mean and median annual flow under the draft amended plans scenario as a percentage of the pre-development flow at the end of system node.

Table 6: Freshwater discharges from the Flinders and Gilbert to the Gulf of Carpentaria

Flinders River at Walkers Bend	Mean annual flow (ML)	Median annual flow (ML)
Pre-development flows	2 693 527	1 409 247
Flows under draft WRP amendment scenario (266 GL water harvesting)	2 461 698	1 121 905
Residual flows under draft WRP scenario as a percentage of pre-development flow	91.4% (Environmental flow objective = 90%)	79.6% (Environmental flow objective = 78%)
Gilbert River at Miranda Downs	Mean annual flow (ML)	Median annual flow (ML)
Pre-development	3 776 819	2 648 586
Flows under draft WRP amendment scenario (489 GL water harvesting)	3 541 952	2 389 247
Residual flows under draft WRP scenario as a percentage of pre-development flow	93.8% (Environmental flow objective = 93%)	90.2% (Environmental flow objective = 89.5%)

5.3 Conditions for general unallocated water in the Flinders and Gilbert River catchments

5.3.1 Background

Hydrologic assessments of CSIRO's FGARA water harvesting scenario identified risks to the performance of existing water users. This was primarily attributed to the low flow thresholds which had been applied to new water harvesting developments.

A mitigation strategy to increase the water harvesting flow thresholds for new water harvesting developments was applied to minimise impacts on existing water users. The inclusion of this water harvesting threshold has also been demonstrated to help with the protection of low flow ecological assets.

Water entitlements granted from the general reserve in the Flinders and Gilbert river catchments will be tradable entitlements. It is proposed that these entitlements will be subject to different trading rules than current entitlements in the Flinders and Gilbert river catchments to ensure the trading of these entitlements does not impact on existing water users.

5.3.2 What is proposed in the draft amendments to the water resource plan

The proposed new section 39A of the Gulf WRP provides for the inclusion of a pass flow condition to be stated on water entitlements granted from the general reserve in the Flinders and Gilbert river catchments. This pass flow condition will need to provide for flows consistent with the environmental flow objectives at the end of system nodes in the Flinders and Gilbert river catchments.

To identify the water entitlements granted from the general reserve in the Flinders and Gilbert river catchments it is proposed that a condition will be applied to these entitlements stating that the transfer of water under the entitlement must be done in accordance with the group B water trading rules. These water trading rules will be contained in the Gulf Resource Operations Plan amendment.

5.3.3 What is proposed in the draft amendment to the resource operations plan

Water licence transfer (trading) rules have been proposed in the draft ROP amendment for water entitlements that state water trading group B. It is proposed that these entitlements will be able to be permanently and seasonally traded by assessment under criteria stated in section 115E and 115J of the draft ROP amendment by the chief executive.

5.4 Plan outcomes

5.4.1 Background

Water Resource Plan outcomes are key provisions that the strategies and management rules in both the WRP and ROP are designed to support and align with.

5.4.2 What is proposed in the draft amendments to the water resource plan

A new ecological outcome has been proposed in the draft WRP amendment to maintain flows in the Gilbert River to provide brackish estuarine habitat suitable for juvenile banana prawn development (see Section 3.2.2).

A new structure has also been applied to the plan outcomes which categorises them as social, economic and ecological outcomes which allows for a more systemic approach to the evaluation of the performance of planning instruments against plan outcomes.

5.5 Authorising the taking of water without an entitlement

5.5.1 Background

Changes to section 20A of the Act mean that throughout Queensland, water can now be taken without an entitlement for non-riparian stock and domestic water use, subject to any limitation included in a water resource plan.

5.5.2 What is proposed in the draft amendments to the water resource plan

The proposed new section 56 of the draft WRP amendment provides for the taking of surface water for stock or domestic purposes anywhere within the plan area, except for within a part of a watercourse used for the distribution of water by scheme licence holders.

It is expected that allowance for such take without entitlement will significantly reduce the regulatory burden associated with this low-risk (low-volume) water activity.

5.6 Other changes

Other minor amendments to the draft amended plans are proposed including the following;

- Proposed new provision to allow owners of land within 1km of a prescribed watercourse to take the groundwater for stock or domestic purposes.
- Transferring the provisions in the Gulf ROP that allowed for the granting of licences to interfere with the flow of water in relation to unallocated water and town water supplies into section 43 of the draft WRP amendment with other similar provisions for interference.
- Removal of unallocated water reserves for Lake Corella as this water was granted to the Department of Energy and Water Supply through the Gulf ROP amendment of July 2014.

- Updated terminology in line with other contemporary water resource plans, for example, a coordinated project instead of a project of state significance.
- Changes to reflect the August 2014 repeal of the *Wild Rivers Act 2005*.

6. Further information

If you would like further information about the draft amended plans please phone the department's Mareeba office on 1800 697 805. Alternatively, email WRPGulf@dnrm.qld.gov.au.

7. Consultation and submission process

Individuals, groups and other interested persons are invited to make a submission on the amended draft plans. The submission form can be used by the public to make a submission on the amended draft plans. Submissions should be made:

- using the appropriate form (see appendix A of this report or on the department's website), or
- online, using the government's Get Involved website www.getinvolved.qld.gov.au.

Submissions must be received by 5pm, 10 February 2015.

In finalising the plans all properly made submissions and information provided in properly made submissions will be reviewed and considered.

8. Approval of the final plans

After any necessary changes are made, the plans will be finalised and submitted to the Governor-in-Council for approval. The approval of the plans will be published in the Queensland Government Gazette.

A consultation report which summarises the issues raised during the submission process and how they were addressed will be released to the public following finalisation of the plans.

9. How to make a submission

Anyone can make a submission on the draft amended plans. Submissions may be made in writing and posted or faxed to the department, or made online by **5pm 10 February 2015**.

To make a written submission, please use the submission form included in this document and complete the checklist on the form to ensure the submission is properly made. Only properly made submissions must be considered in finalising the plans.

Post, fax or email this form and any attachments to:

Postal address

Chief Executive
Attention: Water Planning Project Officer
Department of Natural Resources and Mines
PO Box 156
Mareeba QLD 4880


Facsimile

(07) 4092 2366

Email

WRPGulf@dnrm.qld.gov.au

Online

Get Involved at www.getinvolved.qld.gov.au.

Enquiries

Phone the Department of Natural Resource and Mines on 1800 697 805.

Note: All submissions will be treated with sensitivity and wherever possible in confidence. However, submissions may be viewed by other parties under the provisions of the *Right to Information Act 2009* and the *Information Privacy Act 2009*.

Appendix A: Submission form

(Please use a ballpoint pen to complete this submission).

Office Use Only

Submission No:.....

Date Received:.....

Title and surname

First name(s)

Address

Postal address (if different)

Organisation

Position

Telephone

Mobile

Facsimile

Email

Signature(s)

Date

Which interest group(s) do you primarily represent?

.....
.....
.....

In which part of the plan area are you located (you may tick more than one box)

- Flinders River catchment Gilbert River catchment Other (please specify)

.....

What features of the draft amended plans do you think are worthwhile? What issues concern you? How do you think the draft amended plans can be improved to address these issues?

(Please indicate the plan, chapter, part or clause number to which your submission refers, if applicable).

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Please tick this box and attach a detailed submission if more space is required.

Checklist

Please follow these five steps to ensure the submission is completed correctly:

- Details of each person making the submission have been specified.
- Each person or authorised representative making the submission has signed the submission form.
- The grounds for making the submission, and the facts and circumstances relied on in support of the submission have been stated.
- If additional space is required, the box at the end of the submission form has been ticked and the detailed submission is attached.
- Submission made and sent by the closing date 5pm 10 February 2015.