

# **Surface Water Network Review**

## **Final Report**

**16 July 2018**

This publication has been compiled by Operations Support - Water, Department of Natural Resources, Mines and Energy.

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# Table of contents

<b>Executive Summary .....</b>	<b>4</b>
<b>1. Context .....</b>	<b>5</b>
1.1 Uses of Streamflow Data.....	5
1.2 Network history .....	8
<b>2. Objective and scope .....</b>	<b>9</b>
2.1 In scope .....	10
2.2 Out of scope .....	10
<b>3. Methodology .....</b>	<b>10</b>
<b>4. Results.....</b>	<b>11</b>
4.1 Proposed monitoring sites.....	12
4.2 Sites to reopen or relocate .....	13
4.3 Sites proposed for closure.....	15
4.4 Sites operated by other agencies .....	16
4.5 Sites proposed for alternative technology .....	18
<b>5. Conclusion .....</b>	<b>20</b>
<b>6. Further information .....</b>	<b>21</b>
<b>Appendix 1 – Catchment areas based on AWRC recommendations .....</b>	<b>22</b>
<b>Appendix 2 – Sites scored against criteria.....</b>	<b>23</b>
<b>Appendix 3 - Maps showing potential sites to reopen or establish, possible closures and suggested relocations; overlaid with plan areas.....</b>	<b>43</b>

## Executive Summary

A review of the surface water gauging station (GS) network in Queensland has been completed to assist the Department of Natural Resources, Mines and Energy (DNRME) in designing a network accredited under ISO 9001:2015, that is capable of effectively assessing and managing the surface water resource. Recommendations have not been constrained by budget, staff resources or other operational needs.

The review comprises two parts:

- **Part A:** Review of the existing GS network; and
- **Part B:** A determination of the ideal network in terms of GS density and geographical locations to assess the water resources of Queensland.

Currently there are 403 GS in operation.

Under Part A guidelines, the recommended network would:

- Retain 368 GS in their current location;
- Relocate 9 GS to more suitable sites; and
- Close 26 GS.

This would result in a total of 377 GS. Consultation with identified stakeholders recommends the establishment or reopening of 60 GS (16 with high priority) which would stabilise the network at 437.

For Part B, an evaluation was carried out on each of the 76 drainage basins and is reported across the 24 current and draft water plan areas covering these catchments. The minimum number of GS required to assess and manage the State resource, generated by Part B, is 588 although many of these are considered low priority or unsuitable for accurate data collection. After consideration with existing sites this number was further reduced to 437.

The review has classified 20 sites operated by other agencies where it is advantageous and in some cases necessary to seek an improved data standard and/or level of operational involvement.

A further 20 sites that would be suitable for temporary or alternative technology are also identified.

# 1. Context

In Queensland, the collection of water quality (WQ) and quantity data is administered under a Quality Management System (QMS) certified to ISO 9001:2015 standards. The QMS requires that a review of the network be completed every five years. Additionally the Queensland Government is responding to the Murray-Darling Basin (MDB) Water Compliance Review released in November 2017 which recommended each state conduct a hydrometric network review by 30 June 2019. Compliance, the density of monitoring sites, data quality assurance and maintenance regimes for GS networks are important in the context of the MDB Review and as such have been captured in this review. This review will further consider MDBA guidelines for hydrometric networks including an analysis of needs and the adequacy of data collection processes.

The Queensland Government's Independent Audit of Queensland Non-urban Water Measurement and Compliance also made recommendations relating to GS owned by DNRME and Resource Operations Licence (ROL) holders. Although sites owned or operated by other authorities were considered in this review, a full assessment of their linkages will be the focus of a further body of work by the department.

Most basin catchments are included in water plans which are developed under the *Water Act 2000* to sustainably manage and allocate water resources in Queensland. There are currently 23 approved and one draft plan (Cape York) covering the state. Basins 117 (Black River), 118 (Ross River), 121 (Don River), 127 (Styx River), 128 (Shoalwater) and 129 (Waterpark Creek) are not included in water plans while 122 (Proserpine River) 124 (O'Connell River) and 126 (Plane Creek) are only partially covered. The offshore islands including the major ones are not covered by water plans, however ground and surface water monitoring is undertaken on Stradbroke and Moreton Islands.

## 1.1 Uses of Streamflow Data

A sample of the users and applications of collected data can be found in **Table 1** and the range of analyses in **Table 2**. During the consultation process it was demonstrated that the users of the data are many and applications varied and vast. Consequently a large number of people were involved in compiling this review, including internal DNRME staff, water service providers, the Bureau of Meteorology (BoM), Border Rivers Commission (BRC), Department of Environment and Science (DES) and WaterNSW staff involved in monitoring the MDB and other intersecting streams.

**Table 1: Data uses and users**

Use	User	Data description and application
Water Resource Assessment	DNRME/DES	River basin runoff.
Riparian and in-stream	DNRME (Management and Use; M&U)	Runoff characteristics for M&U (e.g. riparian water demands, recreation), compliance and reporting, licensing decisions.
Catchment yields	DNRME/DES	Runoff statistics covering catchment sizes, characteristics, climate/catchment types; estimate yields for ungauged catchments.
Flood warning/estimation	DNRME/DES/BoM	Height and flow for flood warning and estimation of design floods.
Water Resource Development	DNRME/DES	Catchment yields and flood flows for storage and infrastructure development.
Storage operations	DNRME/ROL holders	Height and flow for operation and management of storages including flood inflows for dam surveillance
Specific Purposes	QLD Government	Height and flow for design of infrastructure (e.g. developments, bridges, roads, crossings, flood mitigation schemes.

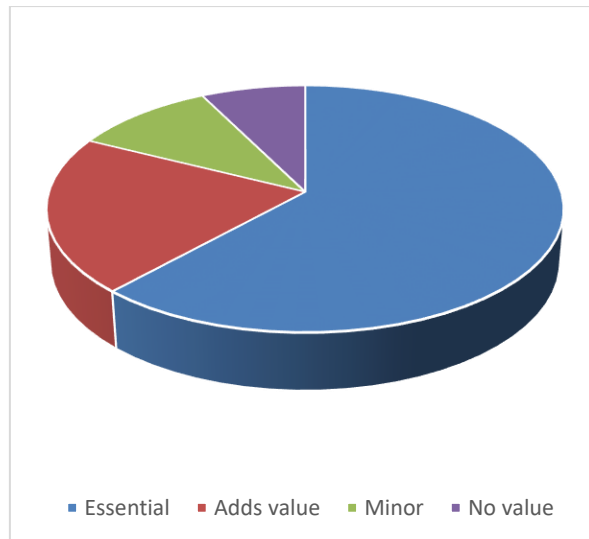
Benchmarking	QLD Government	Height, flow and hydraulics from undisturbed catchments for assessment of climate change.
WQ	DNRME/DES/Industry	Discharge, WQ and sediment transport data for planning and compliance (e.g. mining, industrial, agriculture, environment).

**Table 2: Data analyses**

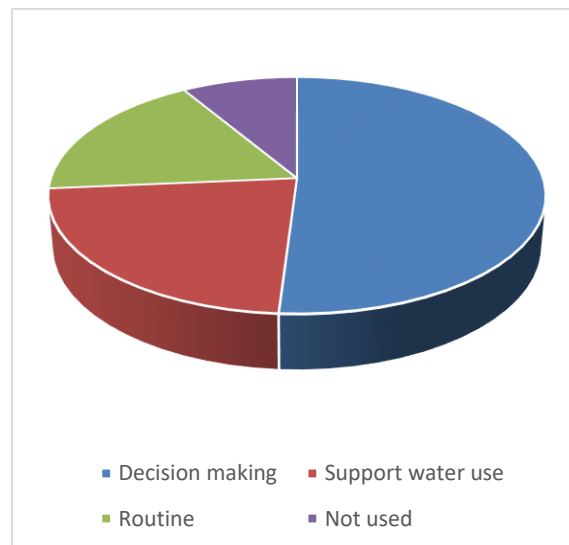
<b>Analysis</b>	<b>Purpose</b>	<b>Application</b>
Rainfall-Runoff Modelling	Extending/Simulating flow record	Resource M&U. Water use planning. Flood mitigation projects.
Minimum flow analysis	Prediction of probability of low flow duration	Resource M&U. Environmental management/ recreation.
Storage analysis	Determining dam and weir capacities	Storage planning/ water supply. Flood mitigation/ operational procedures.
Stochastic record generation	Determining flow sequences using statistical methods	Storage planning/ water supply.
Flow duration studies	Estimating % of time flows are exceeded	Resource M&U. Environmental management/ recreation.
Flood estimation	Predicting probability of flood discharges	Infrastructure/ urban/ spillway planning. Flood mitigation.
Flood hydrograph synthesis	Flood hydrograph derivation for probability of exceedance	Flood mitigation/ forecasting. WQ modelling.
Water level profiles/flood routing	Estimating channel water level profiles and backwater analysis	Flood mitigation/drainage/ protection.
Sediment Transport	Fluvial transport rates/storage sediment accumulation	Environmental studies /erosion control/ land resource management/ life of storage.
WQ modelling	Stream pollutant dispersal/chemical concentrations	Environmental, land resource, ecological management and protection. Pollution control/ waste disposal/ recreation.
Storage WQ	Eutrophication/salinity mass balance studies	Environmental, land resource, ecological management and protection. Pollution control/ waste disposal/ recreation.
Evaporation studies	Rates of storage evaporation/evapotranspiration from vegetation	Irrigation/ agriculture-forestry development/resource management.

Charts 1-4 indicate the functional usage of the current network as captured in the consultation process. They identify the primary purpose of each site in respect to resource assessment, water planning support, stream management and reporting/compliance, based on the methodology scoring matrix and definitions (**Appendix 1**) and completed in association with regional input.

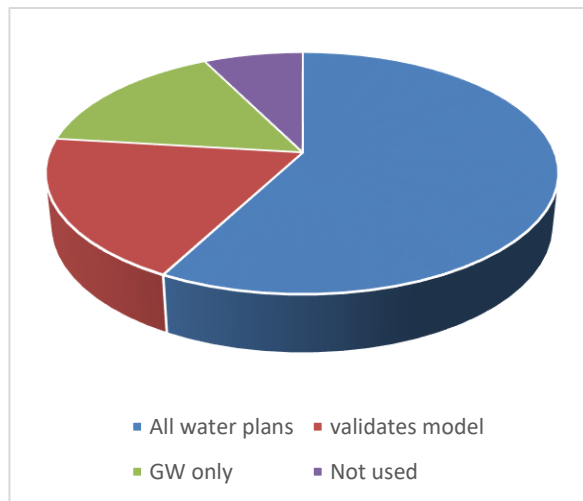
*Chart 1: Value of sites for resource assessment purposes*



*Chart 2: Purposes of sites for water management and use*

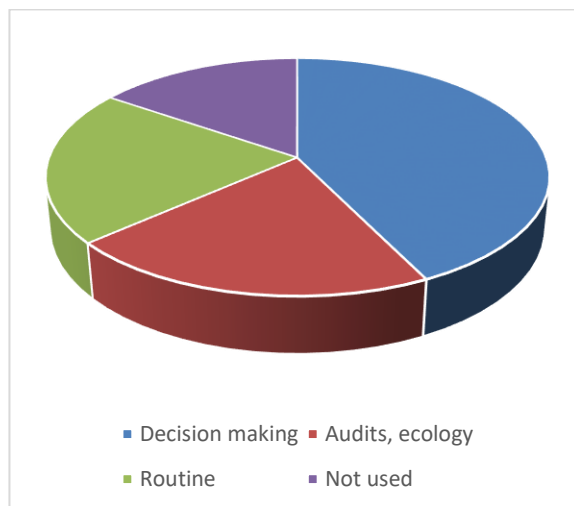


*Chart 3: Importance of sites for planning support purposes*



(GW = groundwater)

*Chart 4: Purposes of sites for reporting and compliance*



## 1.2 Network history

The first stations were installed in 1909; they consisted of manually read staff gauges and were primarily located for convenience of access to gauge readers. The growth of the network was slow and interrupted by two world wars but expanded to 230 by 1964.

Following the formation of the Australian Water Resources Council (AWRC) in 1962 the Commonwealth government agreed to provide funds to the state government over a ten year period from 1964-1974 for expansion of the network, primarily for assessment of the water resources on a national basis. This resulted in a logically designed network that peaked at 613 sites in 1980 before undergoing the first minor review in 1983; this evaluation looked at both the adequacy of the assessment stations and a rationalisation of the existing sites on “fit for purpose” principles.

Strategic network design was not formulated for Queensland prior to the establishment of the AWRC. The first iteration consisted of a basic network of 650 stations supplemented by 150 “special study”

and management sites to provide an overall collective of 800 GS to be built by 1979. This was not achieved due to curtailment in funding of the original programme; despite a request from QWRC for further support in 1981, this was never reinstated and a review based on budget was requested.

GS were classified into three groups - Assessment, Management and Special Studies and BRC, and were defined as follows:

- The Assessment Stations Network consists of primary and secondary GS to monitor spatial and temporal variations in runoff
- Management and Special studies sites were operated on behalf of inter - departmental branches or outside organisations for a set annual charge
- BRC sites were operated by the department to monitor flows along streams flowing from Queensland into NSW, with the cost reimbursed by the BRC.

The review resulted in the gradual closure of 49 sites and the total stabilized at 564 in 1984; this grew back to 579 by 1988 mainly due to the need for more rigorous management of the water resource which in many areas was starting to show stress.

In 1987 due mainly to budget and resourcing pressures another review was undertaken with a “view to determining a network of GS that will effectively meet the surface water data needs of Queensland”. Recommendations made for the network were based on determining the “minimum number of GS to effectively meet the present and future needs of Queensland.”

A network of 678 stations was recommended, well above the existing 579; a mixture of retaining current sites, relocation, closures and establishment of new stations was endorsed. The proposal to close sites was the only one adopted and 172 were shut down in 1988/89, leaving a network of 407; the other three options and a plan to install 146 pluviographs was abandoned. Most of the closures occurred in remote areas and across catchments that were deemed to have little or no development prospects; the far north and western areas of Queensland were targeted on these principles.

Due to flood warning and stream management needs, sites were installed or reopened and the network grew again to 493 by 1999. Another resourcing cut and formation of a separate water provider (SunWater) in 2000 saw another 120 sites closed or ownership transferred, leaving a minimalist collection of 373 by 2000. This has been balanced somewhat by reviews based on requirements in 2007, 2009 and 2012 which has resulted in 403 currently operating gauging stations.

A comprehensive analysis of assessment needs based on AWRC guidelines was completed in 2009 and this advocated the need for 179 extra sites. The methodology (Part B) was revisited and ratified in this review and advises the need for 60 new sites based on and moderated by priority, site suitability and compromise using current locations. The review of 2012 targeted only existing sites (Part A of this review) and the closure or relocation of 67 sites was proposed; the recommendations from both exercises were not generally implemented.

## **2. Objective and scope**

It is intended that this review be used to maintain and strengthen the State’s GS network, operating under ISO 9001:2015 standards, by adding, closing and relocating GS, to build a network that is fit for purpose and able to meet the information demands of a large client base with many data analysis requirements.

Consideration has to be given to the capacity of the current GS network to assess, manage and protect the state’s water resources; this review has been completed to rationalise these needs. The sites are reported over 76 drainage basins with boundaries and names defined by the Australian Water Resources Management Committee and is current as at 12 February 2018.

## 2.1 In scope

All DNRME owned surface water monitoring sites in the Stream GS Network, extracted from the corporate Hydstra database, are included in the review. New sites and those targeted for reopening, which are identified under the methodology criteria and AWRC guidelines for ideal network design, will form the basis of final recommendations.

Stations that are considered ineffective and have the potential for relocation and those operated by other agencies which publish data of interest to DNRME are also covered. Emerging management and legislative commitments and the potential use of new or enhanced technology are included in the review.

## 2.2 Out of scope

This review covers the Surface Water GS Network only; it does not include the Pluviometer and Ground Water Quantity/Quality networks or the Surface Water Ambient Network (SWAN) which was established to monitor and sample WQ at dedicated sites. The SWAN is referred to throughout this report, as 232 of the 403 GS are included as WQ monitoring locations.

Both the MDB Review and Queensland Government's Independent Audit targeted metering and compliance of water take as issues of concern for the Queensland Government. Both of these matters are being addressed through separate projects currently funded by DNRME and are not considered in the recommendations of this report.

## 3. Methodology

A methodology, provided at [Appendix 1](#) was developed to address two elements:

- **Part A:** Review of the existing group of GS; and
- **Part B:** A design protocol to determine the ideal density and geographical locations of monitoring sites to assess the water resources of Queensland.

Part B assumes an undeveloped and unpopulated scenario and is based on spatial coverage to assemble an optimum network utilizing the principles of basin size and geography, tributary catchment areas, rainfall patterns, aggregated basin behaviour, moderation of cumulative volumes and climatic zones, which are all elements of, and further explained in the methodology.

In 2009, maps displaying catchment areas of streams and tributaries across the 76 state basins, overlaid by rainfall isohyets were prepared and examined by regional and OS Water staff. The process was ratified by the project team as part of this exercise and few changes were identified; this was expected as the methodology assumes an undeveloped landscape and assesses on physical attributes only.

This exercise acknowledged the need for an extra 185 sites across the state but this was then moderated to 60 after analysis which examined practicality, access, data value, suitability and the opportunity for substitution by an existing GS. This report lists only those sites that were deemed required and practical; it does not detail all locations evaluated through the methodology.

Part A comprised the evaluation of all existing GS against six criteria:

1. Resource assessment
2. Water planning support
3. Water management functions
4. Reporting and compliance
5. Uses by other agencies
6. Current role in respect to the collection of WQ data.

Each station was individually scored by the project team and local staff drawn from the three functional groups - management and use, water planning and monitoring - and the total benchmarked

against a scoring matrix for low-high value. All sites with scores and ratings are included as **Appendix 2**.

Two hundred and thirty two (or 60 %) of the 403 GS are equipped with WQ instrumentation and comprise the SWAN as a standalone network. While it is not the intent to operate a GS solely for WQ purposes, the significant proportion of sites fulfilling this role requires that WQ be included in the appraisal.

Further moderation determined whether potential sites identified in Part B could be substituted by existing GS. The scope was deliberately broad and liberal to allow existing sites with long and accurate records to remain in lieu of building new sites that may add only minimal value to the existing data set.

Although it is not within the scope of this review, the methodology described in **Appendix 1** includes guidance on the ideal number of visits required to return optimal data quality from each GS. It contrasts the individual GS data quality (taken from the scoring matrix) against the quality of the individual waterhole control to determine the number of visits per year required at each site.

Actual visitation schedules will be determined by regional offices dependant on staff numbers and distances travelled. The issue of data quality - particularly in respect to low flow - was raised many times during consultation; it was suggested that this could be addressed on an individual station basis. Work practices covering gauging station maintenance schedules should be referenced in making these decisions.

## 4. Results

Data have been collected and analysed following the process detailed above. Results include:

- Five tables of recommendations:
  - **Table 3:** Proposed additional monitoring sites
  - **Table 4:** Sites to reopen or relocate
  - **Table 5:** Sites proposed for closure
  - **Table 6:** Sites operated by other agencies
  - **Table 7:** Sites which may be suitable for alternative technology.
- **Appendix 2:** A list of current GS scored against the following criteria and with supporting commentary:
  - Resource assessment
  - Water planning support
  - Water management functions
  - Reporting and compliance
  - Uses by other agencies
  - Current role in respect to the collection of water quality (WQ) data.
- **Appendix 3:** Maps showing potential sites to reopen or establish, possible closures and suggested relocations locations; overlaid with plan areas. A general Queensland overview and three magnified areas are included.
- *Charts 1 – 4* indicate functional usage of the current network, highlighting resource assessment, water planning support, stream management and reporting/compliance.
- *Chart 5* illustrates the primary purpose of total proposed changes by functional usage, derived through consultation.
- Data files created through the 2009, 2012 and the 2018 reviews including reference maps, raw data and scanned historic hard copy information has been provided to Operations Support (Water) and will be stored for future reference.

## 4.1 Proposed monitoring sites

The current GS list ([Appendix 2](#)) is considered to be generally fit for purpose, however some recommendations regarding expansion, relocation, closure and data quality have been made. It is proposed that the following locations be equipped with instrumentation and monitored; 10 are considered high priority (“H”). Reasons and significance have been nominated through regional consultation and are provided for each site.

**Table 3: Proposed additional monitoring sites**

Basin	Stream	Requirements	Priority
001	Eyre Creek	A new site at the end of system but consider reopening GS 001101A Eyre Creek at Glengyle. Aquatic ecology (AE) and resource assessment requirement	Medium (M)
001	Georgina River	New site at top of catchment to capture mines’ runoff from Buckley River tributary (downstream Camooweal). AE requirement	Low (L)
003	Wilson River	Proposed new site at Noccundra for AE requirements; this would return preferable data to the current diver logger	L
003	Kyabra Creek	Proposed new site for AE requirements; this would return preferable data to the current diver logger	L
003	Barcoo River	There is a contained section 30 km downstream Isisford which is identified for resource assessment. Priority BoM site	M
003	Landsborough Creek or Towerhill Creek	Required for resource assessment in upland desert reaches of the Thomson River (upstream Muttaborra). Choose the best location for access and operational suitability	M
105	Ninda Creek	Near Laura River Junction; required for management and licensing functions	L
107	Endeavour River	Below Cameron Creek confluence; north branch needs a new site - suited to horizontal Doppler	M
112	North Beatrice Creek	At North Johnstone junction. Assessment and management of licences in heavily committed stream	M
112	Malanda Creek	Upstream confluence with Johnstone River. Stream is heavily committed; requires water sharing rules under water plan	M
112	North Johnstone River	Upstream Malanda Falls. Stream is heavily committed (upper Johnstone and Malanda TWS); requires water sharing rules under water plan	M
116	Herbert River	Near confluence with Blunder Creek (downstream of Mandalee Crossing). Heavily committed area will require water sharing rules under water plan; no other gauge suitable for implementation of these rules	H
120	Rosella Creek	Near Bowen River Junction; AE requirement for GBR monitoring	M
120	Broken River	Stream at Mt Sugarloaf carries 50 % of Bowen River water and requires site for resource assessment and planning use	H
120	Suttor River	Site required between St Anne’s and Dam H/W (Scartwater) for management and licensing	H
120	Campaspe River	Near Boomerang Creek; this is a new trading zone for the water plan. GS 120307A Cape River at Pentland monitors a small catchment area and lacks a high flow measurement section; would be beneficial to close it in lieu of this location	H
120	Fletcher Creek	Lolworth Creek Junction. Required for management and licensing; resource assessment also required	L
122	Myrtle Creek	Shute Harbour Road; specific to modelling and AE requirements	L
122	Thomson River	Main road bridge. Only a small catchment but is 10000 ML over allocated and requires future management	L

124	Reliance Creek	MacKay/ Habana road. Area has WQ problems. Required for licensing and management decisions	L
130	Theresa Creek	AMTD 15.3 km. Required for AE monitoring	M
130	Van Dyke Creek	Requirement for management of licences	M
130	Hutton Creek	Increasing gas activity and calls for better management of resource. See comment in <b>Table 4</b> .	L
143	Lockyer Creek	Downstream of Glenore Grove but upstream of Brightview Weir; ideal location would be around Lockrose. GS 143210B Lockyer Creek at Rifle Range Road (downstream of Brightview weir) misses high flows. Needed for stream management and modelling	H
145	Albert River	Luscombe Weir or downstream of GS 145102B Albert River at Bromfleet which is unsuitable due to poor control and access. Required for end of system flows	M
416	Weir River	Surrey Bridge. Required for stream management and to aid in licensing decisions	L
416	Yarrill Creek	Medpark. Aid in licensing and allocation decisions	L
416	Weir River	Gooray Road. Important new site in highly committed and contentious management area	H
422	Cogoon River	Upstream of Surat. Management requirements but difficult to find a suitable site	L
422	Culgoa River	Cubbie Offtake; mid-way between Whyenbah and Woolerbilla. Needed to assist with water losses and take for stream management and compliance	M
422	Condamine River	Macalister (downstream Jimbour Creek junction). Needed to monitor flows for management and licensing decisions; significant gap in Condamine River system	H
422	Rosenthal Creek	Near Warwick; required for management and licensing decisions	L
423	Cuttaburra Channel	Downstream of Cunnamulla. Would aid resource assessment and modelling functions; difficult to find suitable site	L
919	Lynd River	Bottom of the Lynd to capture total of Tate/Lynd flows. There are a lot of assumptions in the model; this site required to improve calibration. If not reopen 919002A and 919006A (both on the Lynd River) and 919004A and 919008A (both on the Tate River)	H
921	Holroyd River	Downstream of Goanna Creek. Required as there are 69000 ML of unallocated water to manage in the future. Consideration could be given to reopening 921002A at Strathgordon which is further downstream and has rating problems	H
921	Kendall River	Kendall. New water licences to be allocated	H
922	Archer River	Downstream of Coen River junction. A requirement but lack of suitable sites. Moving 922001A Telegraph Crossing downstream may be an option but keeping identified location is preferred	M

## 4.2 Sites to reopen or relocate

The sites in **Table 4** have been classified for relocation or in some cases reopening following closure after past reviews; six to reopen are considered high priority. Completing this schedule will serve to support the current network and provide better information as identified by Water Services functional groups during consultation.

**Table 4: Sites to reopen or relocate**

<b>GS No.</b>	<b>Stream</b>	<b>Location</b>	<b>Reason for relocation</b>	<b>Priority</b>
003101A	Cooper Creek	Currareva	Reopen; required for planning review and AE requirements	M
106001A	Mclvor River	Elderslie	Reopen; water trading is soon to commence and licences are tied to flow conditions at this station. If necessary could be re-established downstream at a more suitable location	M
111003C	Behana Creek	Aloomba	Reopen and maybe relocate to better site. Management and licensing requirements	M
116017A	Stone River	Running Creek	Relocate; an important station but hydrographically poor site	H
120005B	Bogie River	Strathbogie	Reopen; requirement for more data for model as it drains a significant catchment	M
120014A	Broughton River	Oak Meadows	Reopen; GW recharge/ discharge anomalies and need better assessment data	L
120101A	Burdekin River	Charters Towers	Reopen; 14.4 km from Sellheim boundary of trading zone and flow conditions in place for council on TWS	M
120111A	Burdekin River	Lucky Downs	Reopen; important trading zone in plan, required for management and dealings. Will pick up Reedybrook Ck flows and input from Basalts	H
120220A	Pelican Creek	Kerale	Reopen; requirement for more data for model as it drains a significant catchment. WQ monitoring requirement for mines discharge	M
121004A	Euri Creek	Koonandah	Relocate; no water plan yet but will be needed when one is developed	M
122012A	Lethe Brook	Hadlow Road	Reopen; management and licensing requirements	M
126002A	Plane Creek	Sarina	Reopen; required to manage licensing activity, may need to find better site than original location	L
130219A	Nogoa River	Duckponds	Relocate or upgrade; not a good monitoring site. AE requirements	M
130342A	Hutton Creek	Fairview	Reopen; lot of gas activity in the area; demands for better management of resource. Should be SWAN site	L
130411A	Bee Creek	Smith's Yard	Reopen; parallel catchment to the west of Nebo Creek, would be more representative for resource assessment as it is a larger catchment. See closure table 130407A	H
130414A	Isaac River	Goonyella	Relocate; only use is flow indicator for Mines activity – no threshold required. Move downstream but could consider closure	H
144002A	Herring Lagoon	South Station	Reopen for resource and WQ assessment, licensing conditions and AE monitoring	H
416407a	Canning Creek	Woodspring	Reopen; large ungauged catchment area, required for resource assessment	L
422205A	Balonne Minor River	Hastings	Relocate to bifurcation #2 or #3 on the Ballandool River; current data collected are redundant	H
422210A	Bungil Creek	Tabers	Relocate; high in catchment but required for resource assessment. Move downstream near Dunkeld	M
422306A	Swan Creek	Swanfels	Relocate; monitors small percentage of catchment. If not moved could consider closure	M

422313B	Emu Creek	Emuvale	Relocate; monitors small percentage of catchment. If not moved could consider closure	M
423201A	Warrego River	Charleville	Reopen; required for resource assessment and would aid with flooding (not a DNRME responsibility) as Augathella is too far upstream	L
424201A	Paroo River	Yarronvale	Reopen; required for resource assessment and stream modelling. Station is intact and could be easily re-activated	L
915014A	Stawell River	Walker's Park	Reopen; required for resource assessment and water plan modelling	M
915208A	Julia Creek	Julia Creek	Relocate; not a good site but may not be more suitable one available	L
917004A	Gilbert River	Gilberton	Reopen; water planning and compliance requirements	H
917111A	Einasleigh River	Minnie's Dip	Reopen; requirement for resource assessment and stream modelling	H
919001C	Mary River	Mary Farms	Reopen to assist with seasonal trading	M
920003A	Coleman River	Bass Yards	Reopen; management and licensing requirements	M
925002A	Wenlock River	Wenlock	Reopen; required for resource assessment, water plan modelling and compliance	M
926001A	Ducie River	Bertiehaugh	Reopen; required as down-stream water planning node	L

### 4.3 Sites proposed for closure

There are 26 GS identified for possible closure with associated resources re-directed to other locations considered to provide more valuable or relevant data. It should be acknowledged that these sites have been classified through the review methodology scoring system that distinguishes monitoring points currently returning data of limited value. Primary purpose has been provided for each site in **Table 5** but further consultation with regional staff will determine if closure, installation of alternative technology or reduced service schedules is the best option. Priorities have not been allocated for this table

**Table 5: Sites proposed for closure**

GS No.	Stream	Location	Reason for Closure
109001A	Mossman River	Mossman	Is tidally influenced and subject to vandalism but no suitable site upstream. Fitted with alternative technology.
111010B	Hills Creek	Hamilton Road Bridge	Small catchment with no identified purpose.
112005A	Taylor Creek	Warraker	Small catchment with no identified purpose.
118003A	Bohle River	Harvey Range Road	No recognized use apart from BoM and local authority activity.
120310A	Suttor River	Bowen Development Road	Built as Reef monitoring site but data collection is considered complete; still used by BoM.
130105A	Mackenzie River	Coolmaringa	To be closed after correlation with "B" location is complete.
130319A	Bell Creek	Craiglands	No identified requirements.
130334A	Sth Kariboe Creek	Pump Station	No identified requirements; catchment area 284 km <sup>2</sup> , consider with GS130336A (233 km <sup>2</sup> ) and close one or the other.

130336A	Grevillea Creek	Folding Hills	See comments above. Consider either for advanced technology and select best alternative
130348A	Prospect Creek	Red Hill	No identified requirements.
130407A	Nebo Creek	Mt. Nebo	No identified requirements. See comments regarding Bee Creek in relocation table.
130416A	Murray River	Undercliff	Established for dam investigation; dam not constructed and no future plans. Rain gauge would suffice as only consideration being it is a wet catchment.
136001B	Burnett River	Walla	No longer has assessment value and low flows are drowned out by Ned Churchward weir. GS 136007A was built as replacement and correlation is complete. New FW alert site built on other bank but BoM still interested in this location.
137001B	Elliot River	Elliot	Low assessment value as site at 137003A is 5 km downstream. Considered of high importance by BoM.
141003C	Petrie Creek	Warana Bridge	Small catchment. No recognized use; of limited interest for hydrologic modelling and to BoM and SCRC.
141008A	Eudlo Creek	Kiels Mountain	Small catchment, affected by tides. No recognized use; of limited interest for hydrologic modelling and to BoM and SCRC.
144005A	18 Mile Swamp	Horse Crossing	Originally installed as client site; no requirements for DNRME since mine closure
422205A	Balonne Minor River	Hastings	Not used as same information is reflected by GS 422204A (Whyenbah). Close or consider a move to the Cubbie bifurcation weirs. See notes in relocation table
422306A	Swan Creek	Swanfels	No recognized use but could have assessment value if relocated downstream. See relocation table
422313B	Emu Creek	Emuvale	No recognized use but could have assessment value if relocated downstream. See relocation table
422321B	Spring Creek	Killarney	No identified value; WQ data collection only
422332A	Gowrie Creek	Oakey	Redundant site on this stream; not required
422345A	Condamine River North Branch	Lone Pine	No recognized value but is used by SunWater for flow decisions
422355A	Condamine River	Talgai Weir T/W	Ineffective and poor high flow rating; could consider site on Dalrymple Creek in lieu of this to capture Condamine River inflows
913010A	Fiery Creek	16 Mile Waterhole	No identified use.
917114A	Routh Creek	Beef Road	No longer required. Some interest from Water Planning as it was used for model calibration. No other recognized use.

#### 4.4 Sites operated by other agencies

The review identified a demand for an improved data standard or operational involvement from 20 GS operated by other agencies and listed in **Table 6**.

These are sites operated by other agencies that DNRME use as operational aids (e.g. water-harvesting) or where the reported data are used for planning/modelling purposes; in many cases the information is inadequate or inaccurate.

Hydrologic modelling is contracted to Queensland Hydrology (QH) from DES who use any available streamflow information in their analyses; this often means incorporating data from water providers and other agencies including Seqwater, SunWater and the BoM. Concerns have been raised about the quality of some of these data, in particular the accuracy of specific height information and the application of stage-discharge rating curves to calculate flow for the published height readings.

There are GS managed by other agencies that are not used operationally to “run water”. It is recognized that some agencies, as ROL holders, do have reporting obligations that are satisfied by selected sites but there are others identified as having limited purpose. Sites used for dam release management generally have a low flow threshold of interest; high flows are not operationally important and consequently often ignored. This results in the published data being of limited value for hydrologic modelling.

An option would be for DNRME to acquire or resume operation of key sites in an attempt to apply consistent QMS standards to the collection, verification, analysis and publishing of the resultant streamflow figures. It would further ensure regular gaugings and a full range of ratings were completed and the published data easier to access in the required format. Preliminary discussions have been held with some agencies who are interested in this proposal.

Where this is not feasible or cost effective, it is recommended that the owners be asked to improve data quality or where it is a legislative requirement to commence compliance action against them to ensure accurate data are reported in the future. Provision of these data does not however, usually include flood measurement and the subsequent creation or maintenance of high flow ratings which are important to DNRME

In the case of the BoM a submission could be made to assume management of targeted sites with the aim of elevating their operation and maintenance to QMS standards to help in generating important information for use in water plan modelling.

Conversely there are some sites targeted for closure that could be offered to other agencies such as the BoM or relevant local authorities who may want to continue operation for flood warning or monitoring of local issues.

The sites in **Table 6** are considered key to DNRME operations and continued upgrade or validation of Integrated water Quantity and Quality simulation Models (IQQM).

**Table 6: Sites operated by other agencies**

GS No.	Stream	Location	Data Requirements
002102B	Diamantina River	Birdsville	Low priority; but old site is required for gap in modelling and resource assessment requirements. Operated by South Australia.
120008B	Burdekin River	Dalbeg	Reliance on data for high flows but poor information from SunWater as they have only low flow requirement; enforce compliance.
120215B	Broken River	Eungella T/W	Data used in modelling is unreliable and inaccurate. Enforce compliance.
130104B 130111A	Dawson River	Bedford Weir headwater (H/W) and tailwater (T/W)	Heavy reliance on this site for W/H announcements made on the T/W gauge. Data are inconsistent and unreliable. Consider operating or enforce compliance on both H/W and T/W.
130304C	Dawson River	Neville Hewitt Weir HW	Data important but unreliable; enforce compliance on SunWater to provide better data.

130350B	Dawson River	Moura Weir HW	Telemetry data often disagrees with upstream and downstream DNRME sites. Needed for W/H but conflicting data has led to disputes with clients.
130362A	Dawson River	Knebworth	Take on operations from SunWater or enforce compliance. Important W/H site but has not been working since September 2017; station not repaired in timely manner; should be done within 2 working days as per agreement.
136119A	Three Moon Creek	Monto	Need data as system soon to convert to Water Allocations. Take over operations or enforce compliance.
136206B	Barambah Creek	Stonelands	Better quality data is required than that received at present, enforce compliance
138019A	Mary River	Dagun Pocket	Returns poor data; the most contentious Seqwater site DNRME does not operate; needed for reporting/modelling. Take on operations or enforce compliance.
138020A	Mary River	Gympie	Above Moy Pocket; poor data. Enforce compliance on data supply and quality.
143116A	Warrill Creek	Toohills Crossing	High importance for water harvesting, IQQM modelling and resource assessment. Top priority to take over operations or enforce data quality compliance.
143117A	Warrill Creek	Junction Weir T/W	Data required for flow model; enforce compliance.
143118A	Warrill Creek	Junction Weir H/W	Data required for flow model; enforce compliance.
143236A	Lockyer Creek	Gatton	High priority; investigate feasibility of operating but should ensure data quality compliance. See new sites information but this GS could be used in conjunction with 143229A Laidley Creek at Warrego Highway as an alternative to new installation.
145025B	Logan River	Bromelton Weir T/W	High priority for better information from Seqwater site. Data are used for water harvesting announcements but often shown to be erroneous. Also used in model but doubts over validity of historical data. Take on operations or enforce data quality compliance.
145030B	Logan River	Cedar Grove Weir	Data required for flow model and AE project to validate Environmental Flow Objectives. Enforce compliance as data are often erroneous.
422222A	Thuraggi Channel	Buckinbah Weir	Enforce compliance on data supply and quality.
422353A	Condamine River	Yarramalong	Enforce compliance as reported data quality is erratic. Modelling requirement.
422395A	Sandy Creek	Leslie Dam T/W	Take over operations or enforce data quality compliance. High priority as erroneous data, due to incorrect height information and poor rating curve application, has been reported over the last three years. Modelling requirement.

## 4.5 Sites proposed for alternative technology

The GS network has become a useful tool for water management, use and licensing purposes as flows are used to announce water harvesting opportunities, pumping forecasts and general resource availability. Often, however only indications of a particular flow regime are required and this alleviates the need for a complete, fully rated GS. A temporary gauge, camera, direct flow measurement instruments or low cost loggers may suffice in these cases.

Identifying new science or water management project sites and GS that are suitable for advanced or alternative technology is outside the scope of this report but where they fill an operational need or an existing GS is suitable for this technology, they have been identified.

**Table 7** classifies sites and basins where alternative enhancement would be suitable; it further highlights locations where advanced, enhanced or additional monitoring may be required.

**Table 7: Sites proposed for alternative technology**

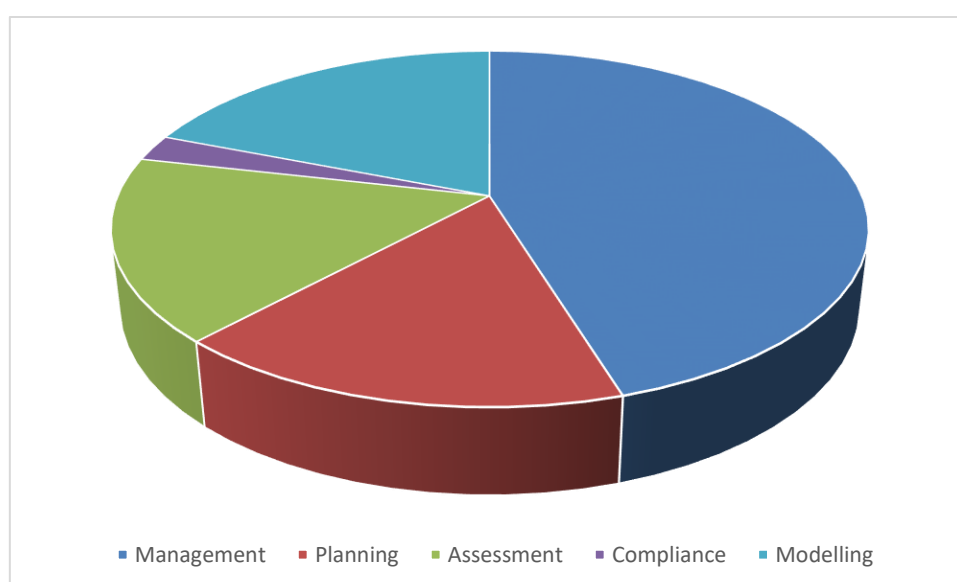
GS No	Stream	Location	Requirements
001203A	Georgina River	Roxborough Downs	Need for WQ data to be collected for AE purposes (observation only)
105102A	Laura River	Coalseam Creek	Identified as needing better stream rating (QH); may benefit from alternative technology (drone/imagery)
105 Basin	Outflow	1 Mile Dam	Pass flow indicator device only (camera)
118 Basin	Outflow	Ross River Dam	Pass flow indicator device only (camera).
120110A	Burdekin River	Mt Fullstop	Difficult to rate, horizontal Doppler and/or camera both suitable.
122004A	Gregory River	Lower Gregory	Difficult to rate, horizontal Doppler and/or camera both suitable.
130334A 130336A	South Kariboe Creek Grevillea Creek	Pump Stn Folding Hills	See notes in <b>Table 5</b> . Both suitable for horizontal Dopplers; need to decide which site is best for assessment purposes, other station to be closed.
130504B	Comet River	Comet Weir	Affected by backwater; horizontal Doppler suitable.
136108A	Monal Creek	Upper Monal	Difficult to rate, have to cross creek 4 times to get to site. Suitable for horizontal Doppler.
136111A	Splinter Creek	Dakiel	Suitable for horizontal Doppler but there is a lot of vegetation in the stream.
136112A	Burnett River	Yarrol	Suitable for horizontal Doppler to obtain full rating.
136305A	Auburn River	Dykehead	Remote site with difficult access; requires horizontal Doppler and/or camera.
136306A	Cadarga Creek	Brovinia Stn	Remote site with difficult access; requires horizontal Doppler and/or camera; comms may be a problem.
138002C	Wide Bay Creek	Brooyar	Currently equipped with horizontal Doppler but would benefit from camera.
138120A	Obi Obi Creek	Gardners Falls	Difficult to time/capture high flows; requires horizontal Doppler and/or camera; vandalism may be a problem.
416 Basin	Yambacully Creek	Goodar Road	Requirement for effective management; pass flow indicator only required. Suitable for camera, telemetered height trigger or temporary device.
416 Basin	Dingo Creek	Near Goondiwindi break-out	HP requirement for effective management; pass flow indicator only required. Suitable for camera, telemetered height trigger or temporary device.
422 Basin	Grasstree Creek	Millmerran - Leyburn Rd	Requirement for effective management; pass flow indicator only required. Suitable for camera, telemetered height trigger or temporary device.
422 Basin	Farm Creek	Between Tannymorel and Emu Creek Junc.	Required for management and licensing decisions. Preferable to install a bore logger as this would show both SW and GW dynamics.

The use of pluviographs, to aid the generation of streamflow data was not considered but this option should be investigated further for locations not suited to traditional GS installation.

The quality of discharge data at some existing sites was targeted as needing improvement. This could be addressed through the station visitation schedule where more manual stream gaugings may be obtained or through the use of new technology which allows for the direct measurement of discharge and the ability to calculate flow through remote capture and associated post-calculations.

Suggested changes to the network were collated after input from departmental functional groups and users of the data. *Chart 5* illustrates the combined results of these changes including opening, re-establishing, closing and relocating sites defined by the stakeholders in conjunction with the intended purpose of the sites and data.

*Chart 5: Proposed changes (new, re-established, relocated, closure) grouped by intended purpose of the site/data*



## 5. Conclusion

The gauging station network in Queensland is generally effective and well considered. An examination of data requirements and the network required to meet them has been completed through consultation with both internal and external specialist staff. Overall, the current listing meets the needs of DNRME but some modifications to the placement, infrastructure and its operation are recommended. This will continue to be the case as government priorities, resource demand and technological advances change and adapt.

The existing network consists of 403 stations, which is considerably less than the 588 determined from Part B of the methodology. **Tables 3, 4 and 5** include a significant number of stations to be established, relocated or closed. Recommendations for the improvement of data quality reported from sites operated by water providers and the installation of advanced technology is included as **Tables 6 and 7**. The quality of published discharge data requires improvement and a guide to operation and maintenance scheduling of gauging stations is included in the methodology to help address this.

Consultation with regional water services staff defined the monitoring needs in local catchments and helped to design a network that if implemented, will cover the assessment and management of Queensland's water resources. A range of external stakeholders and other government agencies who both use and provide data to DNRME were invited to offer input to the process.

Implementation of the recommendations will become the responsibility of the accountable parties within the department; consideration should be given to recognizing high priority proposals and those required for flow management and water plan performance. It is further recommended that the next review be completed within three years to retain continuity and build on the knowledge and outcomes from this exercise.

## 6. Further information

For more information about water monitoring in Queensland:

- Refer to the department's water management contact information online at <https://dnrme.qld.gov.au/>
- Visit the Water Monitoring Information Portal at <https://water-monitoring.information.qld.gov.au/>
- Email [water.monitoring@dnrme.qld.gov.au](mailto:water.monitoring@dnrme.qld.gov.au)
- Visit your nearest business centre (locations listed at <https://dnrme.qld.gov.au/>)

## Appendix 1 – Catchment areas based on AWRC recommendations

Zone	Gauge Density (km <sup>2</sup> /Gauge)	
	Mountains & Ranges	Flat Terrain
Mediterranean Zone (Winter rain)	300-1,000	1,000-2,500
Temperate Zone (Uniform rain)	300-1,000	1,000-2,500
Tropical Zone (Summer Rain)	300-1,000	1,000-2,500
Transitional Zone	600-2,000	2,000-5,000
Arid Zone	3,000-7,000	7,000-20,000

Note: the lower figure represents the minimum, the upper the mean. *Reference: AWRC, 1982. Surface water information network design. Report of the Working Group of the Surface Water Committee, Australian Water Resources Council, Canberra.*

## Appendix 2 – Sites scored against criteria

STATION	Site Name	Scores against purpose and use criteria						Total	Owner	Supporting comments
		1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies			
001202A	Burke River at Boulia	3	3	1	1	3	2	13	QWR	Aquatic ecology (AE)
001203A	Georgina River at Roxborough Downs	3	3	1	2	3	2	14	QWR	AE
002104A	Diamantina River at Diamantina Lakes	3	3	1	2	3	2	14	QWR	
002105A	Mills Creek at Oondooroo	3	3	1	2	0	2	11	QWR	
003103A	Cooper Creek at Nappa Merrie	3	1	1	0	3	3	11	QWR	Bureau of Meteorology (BoM) flood warning (FW)
003202A	Thomson River at Longreach	3	3	3	3	3	2	17	QWR	
003203A	Thomson River at Stonehenge	3	3	3	3	3	2	17	QWR	Cooper Water Plan
003204A	Cornish Creek at Bowen Downs	2	2	2	2	3	2	13	QWR	
003205A	Darr River at Darr	2	2	2	2	3	2	13	QWR	
003301B	Barcoo River at Retreat	3	2	2	2	3	2	14	QWR	
003302A	Alice River at Barcaldine	3	2	2	1	3	2	13	QWR	
003303A	Barcoo River at Blackall	3	2	2	1	3	2	13	QWR	
011202A	Bulloo River at Autumnvale	3	1	1	3	3	3	14	QWR	BoM FW
011203A	Bulloo River at Quilpie	3	1	1	0	0	3	8	QWR	BoM FW
102101A	Pascoe River at Fall Creek	3	3	1	1	3	2	13	QWR	Road reports
102102A	Pascoe River at Garraway Creek	3	3	1	1	0	3	11	QWR	Great Barrier Reef (GBR)
104001A	Stewart River at Telegraph Road	3	3	1	1	0	2	10	QWR	GBR
105001B	Hann River at Sandy Creek	3	3	3	3	0	2	14	QWR	GBR
105101A	Normanby River at Battle Camp	3	3	3	3	0	2	14	QWR	GBR
105102A	Laura River at Coal Seam Creek	3	3	3	3	0	2	14	QWR	GBR
105105A	East Normanby River at Mulligan Highway	2	3	3	3	3	2	16	QWR	GBR

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
105107A	Normanby River at Kalpowar Crossing	3	3	3	3	3	3	18	QWR	GBR
107001B	Endeavour River at Flaggy	3	3	3	3	0	3	15	QWR	
107003A	Annan River at Beesbike	3	3	3	3	3	3	18	QWR	Council; Transport and Main Roads (TMR)
108003A	Bloomfield River at China Camp	3	1	1	0	3	3	11	QWR	
108008A	Whyanbeel Creek at Upstream Little Falls Ck	3	1	1	0	3	2	10	QWR	Representative catchment
109001A	Mossman River at Mossman	3	3	3	3	3	3	18	QWR	GBR
110001D	Barron River at Myola	3	3	3	3	3	3	18	QWR	GBR
110002A	Barron River at Mareeba	3	3	3	3	0	3	15	QWR	
110003A	Barron River at Picnic Crossing	3	3	3	3	3	3	18	QWR	BoM
110011B	Flaggy Creek at Cattle Yards	3	3	3	3	0	3	15	QWR	BoM; Council
110017A	Kauri Creek at Main Road	1	3	3	3	3	1	14	QWR	
110018A	Mazlin Creek at Railway Bridge	1	3	3	3	0	3	13	QWR	Barron Water Plan - leave as is
110019B	Peterson Creek at Railway Bridge	1	3	3	3	0	3	13	QWR	
110020A	Barron River at Bilwon	2	3	3	3	0	2	13	QWR	Barron Water Plan - leave as is
110021A	Barron River at Goonara Creek	1	3	3	3	0	2	12	QWR	Barron Water Plan - leave as is
110022A	Leslie Creek at Barron Junction	1	3	3	3	0	2	12	QWR	
110024A	Gwynne Creek at Schoorls	1	3	3	3	0	2	12	QWR	
110025A	Rocky Creek at Channel Road	1	3	3	3	0	1	11	QWR	
110026A	Spring Creek at Channel Syphon	1	3	3	3	0	1	11	QWR	
110104A	Freshwater Creek at Redlynch Estate	2	3	3	3	3	2	16	QWR	Barron Water Plan - leave as is
111005A	Mulgrave River at The Fisheries	3	3	3	0	0	2	11	QWR	BoM FW
111007A	Mulgrave River at Peets Bridge	3	3	3	2	3	2	16	QWR	BoM. GBR

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
111010B	Hills Creek at Hamilton Road Bridge	0	0	0	0	0	1	1	QWR	BoM. Close
111101D	Russell River at Bucklands	3	3	3	2	3	3	17	QWR	BoM. GBR
111105A	Babinda Creek at The Boulders	3	3	3	3	0	3	15	QWR	Unique catchment. BoM
112002A	Fisher Creek at Nerada	3	3	3	3	3	2	17	QWR	Representative catchment. BoM
112003A	North Johnstone River at Glen Allyn	3	3	3	3	3	3	18	QWR	
112004A	North Johnstone River at Tung Oil	3	3	3	3	3	3	18	QWR	BoM. GBR
112005A	Taylor Creek at Warraker	0	0	0	0	0	1	1	QWR	BoM. Close
112006B	Rankin Creek at Ross's	2	2	3	2	0	2	11	QWR	BoM
112101B	South Johnstone River at Upstream Central Mill	3	2	2	2	0	3	12	QWR	BoM. GBR
112102A	Liverpool Creek at Upper Japoonvale	2	2	2	2	0	2	10	QWR	BoM
112103B	Liverpool Creek at Silkwood	3	3	3	2	0	2	13	QWR	BoM
113004A	Cochable Creek at Powerline	3	3	2	1	0	3	12	QWR	BoM Baseline site
113006A	Tully River at Euramo	3	3	3	3	3	3	18	QWR	BoM end-of-system (EOS); GBR
113015A	Tully River at Tully Gorge National Park	3	3	3	3	0	3	15	QWR	BoM GBR
114001A	Murray River at Upper Murray	2	3	3	2	3	2	15	QWR	BoM
114002B	Meunga Creek at Sing's	3	3	3	3	0	2	14	QWR	BoM
116001F	Herbert River at Ingham	3	3	3	3	3	3	18	QWR	GBR
116004C	Herbert River at Glen Eagle	3	3	3	3	3	3	18	QWR	
116006B	Herbert River at Abergowrie	3	3	3	3	0	2	14	QWR	BoM
116008B	Gowrie Creek at Abergowrie	3	2	3	0	0	2	10	QWR	
116010A	Blencoe Creek at Blencoe Falls	3	3	1	1	0	2	10	QWR	
116011A	Millstream at Ravenshoe	3	3	3	3	0	0	12	QWR	Keep
116012A	Cameron Creek at 8.7km	3	3	1	1	0	1	9	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
116013A	Millstream at Archer Creek	3	3	3	3	3	3	18	QWR	
116014A	Wild River at Silver Valley	3	3	3	3	3	3	18	QWR	
116015A	Blunder Creek at Wooroora	3	3	1	1	3	2	13	QWR	
116016A	Rudd Creek at Gunnawarra	3	3	3	3	0	2	14	QWR	
116017A	Stone River at Running Creek	2	3	3	3	3	2	16	QWR	BoM relocate
117002A	Black River at Bruce Highway	3	3	2	3	3	2	16	QWR	BoM
117003A	Bluewater Creek at Bluewater	2	2	0	3	3	0	10	QWR	
118003A	Bohle River at Hervey Range Road	0	0	3	0	3	0	6	QWR	
118106A	Alligator Creek at Allendale	2	3	3	2	3	3	16	QWR	
119003A	Haughton River at Powerline	3	3	3	3	3	3	18	QWR	
119005A	Haughton River at Mount Piccaninny	3	3	3	3	0	3	15	QWR	
119006A	Major Creek at Rocky Waterhole	2	3	3	3	0	3	14	QWR	
119101A	Barratta Creek at Northcote	3	3	3	3	3	3	18	QWR	
120002C	Burdekin River at Sellheim	3	3	3	3	3	3	18	QWR	Planning node
120006B	Burdekin River at Clare	3	3	3	3	3	3	18	QWR	
120015A	Burdekin River at Hydro Site	3	3	1	3	3	2	15	QWR	
120102A	Keelbottom Creek at Keelbottom	3	3	1	1	0	2	10	QWR	
120106B	Basalt River at Bluff Downs	3	3	1	1	0	1	9	QWR	
120107B	Burdekin River at Blue Range	3	3	3	1	0	2	12	QWR	
120110A	Burdekin River at Mount Fullstop	3	3	1	2	3	2	14	QWR	
120112A	Star River at Laroona	3	3	1	0	0	2	9	QWR	
120120A	Running River at Mount Bradley	3	2	3	1	0	1	10	QWR	
120122A	Burdekin River at Gainsford	3	3	3	3	3	2	17	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
120123A	Burdekin River at Valley of Lagoons	3	2	3	2	3	2	15	QWR	
120205A	Bowen River at Myuna	3	2	2	2	0	3	12	QWR	
120207A	Broken River at Urannah	3	2	2	3	0	3	13	QWR	
120209B	Bowen River at Jacks Creek	3	2	3	3	3	3	17	QWR	
120216A	Broken River at Old Racecourse	2	2	0	3	0	3	10	QWR	Inflow Eungella
120301B	Belyando River at Gregory Development Rd.	3	3	2	3	3	3	17	QWR	
120302B	Cape River at Taemas	3	3	2	3	3	3	17	QWR	
120303A	Suttor River at St Anns	3	3	3	3	3	3	18	QWR	
120304A	Suttor River at Eaglefield	2	2	2	1	0	3	10	QWR	North region model. Keep
120305A	Native Companion Creek at Violet Grove	3	0	0	1	3	1	8	QWR	
120307A	Cape River at Pentland	3	2	1	1	0	2	9	QWR	Possible relocate
120309A	Mistake Creek at Twin Hills	3	3	3	3	3	2	17	QWR	
120310A	Suttor River at Bowen Developmental Road	1	0	0	0	0	2	3	QWR	
121001A	Don River at Ida Creek	3	2	2	2	0	2	11	QWR	>60 years record
121002A	Elliot River at Guthalungra	3	2	2	1	3	1	12	QWR	
121003A	Don River at Reeves	3	2	1	2	3	3	14	QWR	
121004A	Euri Creek at Koonandah	3	2	2	2	3	2	14	QWR	
122004A	Gregory River at Lower Gregory	3	1	1	3	3	3	14	QWR	Reef; consider Alternative Technology
124001B	O'Connell River at Stafford's Crossing	3	3	3	3	3	3	18	QWR	AE interest
124002A	St.Helens Creek at Calen	3	2	3	1	3	3	15	QWR	
124003A	Andromache River at Jochheims	2	3	2	1	3	2	13	QWR	
124004A	Jolimont Creek at Mount Roy	3	1	3	1	3	3	14	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
124005A	O'Connell River at Forbes Road	0	3	3	2	0	3	11	QWR	AE interest
125002C	Pioneer River at Sarich's	3	3	3	2	0	3	14	QWR	
125004B	Cattle Creek at Gargett	2	3	3	3	3	3	17	QWR	
125005A	Blacks Creek at Whitefords	1	3	0	0	3	1	8	QWR	
125006A	Finch Hatton Creek at Gorge Road	3	2	2	0	3	3	13	QWR	Alert (AL)
125007A	Pioneer River at Mirani Weir Tailwater	1	2	1	1	0	3	8	QWR	AL
125009A	Cattle Creek at Higham's Bridge	1	3	3	2	3	3	15	QWR	Water harvesting (WH); restrictions
125013A	Pioneer River at Dumbleton Weir Headwater	0	3	2	2	3	0	10	QWR	Data used for modelling inflows
125016A	Pioneer River at Dumbleton Weir Tailwater	3	2	2	2	0	0	9	QWR	
126001A	Sandy Creek at Homebush	3	3	3	3	3	3	18	QWR	
126003A	Carmila Creek at Carmila	3	1	2	0	3	0	9	QWR	
129001A	Waterpark Creek at Byfield	3	0	3	1	3	3	13	QWR	No WP; only assessment site
130003B	Fitzroy River at Riverslea	3	3	3	3	3	3	18	QWR	
130004A	Raglan Creek at Old Station	3	2	1	0	3	0	9	QWR	Small catchment
130005A	Fitzroy River at The Gap	3	3	2	3	3	3	17	QWR	
130009A	Marlborough Creek at Slopeaway	3	1	2	2	0	1	9	QWR	
130105A	Mackenzie River at Coolmaringa	3	3	3	2	3	3	17	QWR	Close after correlation is established with B location. BoM
130105B	Mackenzie River at Coolmaringa	3	3	3	2	0	3	14	QWR	
130106A	Mackenzie River at Bingegang	3	3	3	1	0	3	13	QWR	WH. Mines

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
130113A	Mackenzie River at Rileys Crossing	3	3	3	1	3	3	16	QWR	
130206A	Theresa Creek at Gregory Highway	3	3	3	2	3	3	17	QWR	
130207A	Sandy Creek at Clermont	1	1	1	0	3	3	9	QWR	AE
130209A	Nogoa River at Craigmore	3	3	3	1	3	3	16	QWR	
130210A	Theresa Creek at Valeria	2	2	3	1	3	3	14	QWR	
130219A	Nogoa River at Duck Ponds	3	2	3	1	3	3	15	QWR	Move/fix
130302A	Dawson River at Taroom	3	3	3	1	3	2	15	QWR	
130306B	Don River at Rannes Recorder	3	3	3	2	3	3	17	QWR	
130313A	Palm Tree Creek at La Palma	3	0	0	1	0	3	7	QWR	Coal seam gas
130316A	Mimosa Creek at Redcliffe	3	1	1	0	0	0	5	QWR	
130317B	Dawson River at Woodleigh	3	3	3	1	3	3	16	QWR	WH
130319A	Bell Creek at Craiglands	3	0	0	0	3	2	8	QWR	Close
130322A	Dawson River at Beckers	3	3	3	2	3	3	17	QWR	WH
130324A	Dawson River at Utopia Downs	3	3	1	3	3	3	16	QWR	Model. Few licences
130327A	Callide Creek at Goovigen	3	2	1	2	3	3	14	QWR	BoM
130334A	South Kariboe Creek at Pump Station	3	0	0	0	3	3	9	QWR	
130335A	Dee River at Wura	2	1	3	3	3	3	15	QWR	Mines AL for pH
130336A	Grevillea Creek at Folding Hills	3	0	0	0	0	3	6	QWR	
130344A	Juandah Creek at Windamere	3	2	2	1	0	0	8	QWR	Coal seam gas
130348A	Prospect Creek at Red Hill	2	0	1	1	3	3	10	QWR	BoM
130349A	Don River at Kingsborough	3	1	2	0	0	1	7	QWR	
130363A	Roundstone Creek at Dawson Highway	2	0	0	2	0	3	7	QWR	
130374A	Dawson River at Bindaree	3	1	3	1	0	1	9	QWR	WH
130375A	Robinson Creek at Broadmere	3	1	2	2	0	1	9	QWR	Coal seam gas
130376A	Eurombah Creek at Brookfield	3	3	3	3	3	2	17	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
130401A	Isaac River at Yatton	3	3	3	2	3	3	17	QWR	BoM. AE
130403A	Connors River at Mount Bridget	3	2	3	1	3	3	15	QWR	BoM. AE
130404A	Connors River at Pink Lagoon	3	3	3	2	3	2	16	QWR	BoM. Mines. AE
130406A	Funnel Creek at Main Road	3	3	3	3	3	3	18	QWR	BoM. AE
130407A	Nebo Creek at Nebo	1	0	0	0	3	0	4	QWR	Investigate
130410A	Isaac River at Deverill	3	0	0	3	3	0	9	QWR	
130413A	Denison Creek at Braeside	2	2	0	1	3	1	9	QWR	Node
130414A	Isaac River at Goonyella	0	1	0	2	0	2	5	QWR	Mines. Close
130416A	Murray Creek at Undercliff	0	0	0	0	0	1	1	QWR	Close
130502B	Brown River at Lake Brown	3	3	3	2	3	1	15	QWR	WH. BoM
130504B	Comet River at Comet Weir	3	3	3	1	3	3	16	QWR	BoM. Benefit from HADCP
130506A	Comet River at The Lake	3	3	3	2	3	1	15	QWR	BoM
130509A	Carnarvon Creek at Rewan	3	1	1	3	3	3	14	QWR	BoM
130510A	Comet River at Springsure Creek Junction	3	1	3	0	0	3	10	QWR	WH. BoM
132001A	Calliope River at Castlehope	3	3	3	1	3	1	14	QWR	BoM. Gladstone Area Water Board
134001B	Baffle Creek at Mimdale	3	2	2	3	3	3	16	QWR	BoM FW
134002A	Oyster Creek at Rapleys	2	2	2	1	0	2	9	QWR	
135002A	Kolan River at Springfield	3	2	2	2	3	2	14	QWR	BoM GBR
135004A	Gin Gin Creek at Brushy Creek	3	2	2	2	3	3	15	QWR	BoM FW, GBR5
136001B	Burnett River at Walla	0	1	1	3	0	1	6	QWR	FW (Ned Churchward ponded area) Close
136002D	Burnett River at Mount Lawless	3	3	3	2	3	3	17	QWR	GBR5
136004A	Burnett River at Jones Weir Headwater	2	3	3	3	3	2	16	QWR	
136006A	Reid Creek at Mungy	2	1	1	1	0	1	6	QWR	BoM

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
136007A	Burnett River at Figtree Creek	3	3	2	3	3	3	17	QWR	GBR5, FW
136011A	Degilbo Creek at Coringa	3	2	2	2	0	3	12	QWR	BoM AL
136017B	Burnett River at Gayndah Flume	2	1	2	1	3	3	12	QWR	FW
136094A	Burnett River at Jones Weir Tailwater	3	3	2	2	0	3	13	QWR	
136101C	Three Moon Creek at Abercorn	2	2	2	2	3	2	13	QWR	BoM, GBR
136103B	Burnett River at Ceratodus	3	2	3	2	0	2	12	QWR	BoM FW
136106A	Burnett River at Eidsvold	2	2	1	1	3	3	12	QWR	GBR, FW, BoM; sediment transport site DEH
136108A	Monal Creek at Upper Monal	2	1	1	1	3	2	10	QWR	BoM AL
136111A	Splinter Creek at Dakiel	2	1	1	0	0	2	6	QWR	FW. High GW interest
136112A	Burnett River at Yarrol	2	1	1	1	3	2	10	QWR	BoM AL. Dam site
136118A	Eastern Creek at Lands End	2	1	1	0	0	2	6	QWR	FW. Condition & trend monitoring
136202D	Barambah Creek at Litzows	0	3	3	1	0	1	8	QWR	Nodal
136203A	Barker Creek at Brooklands	2	2	2	1	3	1	11	QWR	FW
136207A	Barambah Creek at Ban Ban	3	3	2	2	3	3	16	QWR	BoM AL
136208A	Boonara Creek at Ettiewyn	2	1	1	1	3	1	9	QWR	Locals FW
136209A	Barker Creek at Glenmore	2	3	2	3	3	1	14	QWR	In ROP rules
136213A	Barambah Creek at West Barambah	3	3	1	2	3	2	14	QWR	FW
136301B	Stuart River at Weens Bridge	3	2	2	0	3	2	12	QWR	FW; Council
136304A	Stuart River at Proston Rifle Range	2	2	2	2	0	1	9	QWR	Sunwater
136305A	Auburn River at Dykehead	3	2	2	2	3	2	14	QWR	FW
136306A	Cadarga Creek at Brovinia Station	2	1	1	1	0	2	7	QWR	
136315A	Boyne River at Carters	2	2	2	1	0	2	9	QWR	FW

Scores against purpose and use criteria										
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
136319A	Boyne River at Cooranga	3	3	3	3	3	3	18	QWR	FW. Should use this site instead of Derra for M&U
137001B	Elliott River at Elliott	1	1	1	0	0	3	6	QWR	BoM. Close. Offer to BoM?
137003A	Elliott River at Dr Mays Crossing	3	3	2	1	3	1	13	QWR	
137101A	Gregory River at Isis Highway	2	1	2	2	3	3	13	QWR	BoM
137103A	Gregory River at Leeson's	3	2	3	3	3	2	16	QWR	GBR5
137201A	Isis River at Bruce Highway	2	2	2	3	3	3	15	QWR	BoM. Small allocations; local residents.
138001A	Mary River at Miva	3	3	2	2	3	3	16	QWR	BoM
138002C	Wide Bay Creek at Brooyar	3	3	3	2	0	2	13	QWR	FW suited to HADCP
138003D	Glastonbury Creek at Glastonbury	2	1	2	1	3	1	10	QWR	
138004B	Munna Creek at Marodian	2	2	1	1	3	2	11	QWR	BoM local FW
138007A	Mary River at Fishermans Pocket	2	3	2	3	3	3	16	QWR	BoM FW; P/S DE&S
138009A	Tinana Creek at Tagigan Road	2	2	1	1	3	2	11	QWR	
138010A	Wide Bay Creek at Kilkivan	2	2	3	1	3	3	14	QWR	BoM
138014A	Mary River at Home Park	2	3	2	2	3	2	14	QWR	Bottom of system
138102C	Amamoor Creek at Zachariah	2	3	1	1	3	1	11	QWR	Local FW
138107B	Six Mile Creek at Cooran	3	3	1	2	3	2	14	QWR	BoM AL. High interest for AE
138110A	Mary River at Bellbird Creek	3	3	2	2	3	3	16	QWR	AL town council
138111A	Mary River at Moy Pocket	2	3	2	2	3	3	15	QWR	BoM AL
138113A	Kandanga Creek at Hygait	2	3	1	1	0	1	8	QWR	Local FW
138120A	Obi Obi Creek at Gardners Falls	3	2	3	3	0	3	14	QWR	SEQ P/S benefit from alternative technology; vandalism problems
138903A	Tinana Creek at Bauple East	3	3	2	1	3	2	14	QWR	BoM FW

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
140002A	Teewah Creek at Coops Corner	3	3	2	3	3	3	17	QWR	Dept. Environment & Science; town water supply
141001B	South Maroochy River at Kiamba	1	3	1	0	0	1	6	QWR	BoM AL. Vandal problems. Consider future closure.
141003C	Petrie Creek at Warana Bridge	1	1	1	0	3	3	9	QWR	BoM AL. Close
141004B	South Maroochy River at Yandina	3	1	1	2	0	3	10	QWR	BoM AL
141006A	Mooloolah River at Mooloolah	3	3	1	0	3	3	13	QWR	BoM AL
141008A	Eudlo Creek at Kiels Mountain	0	1	0	0	3	3	7	QWR	BoM AL. Tide effected. Close
141009A	North Maroochy River at Eumundi	2	1	1	0	3	3	10	QWR	BoM AL
141010A	Coochin Creek at Mawsons Road	3	0	2	1	3	3	12	QWR	GW interactions
142001A	Caboolture River at Upper Caboolture	3	3	2	1	3	3	15	QWR	
142202A	South Pine River at Drapers Crossing	3	3	0	3	3	3	15	QWR	
143001C	Brisbane River at Savages Crossing	3	3	3	3	3	3	18	QWR	Long term station. FW; EOS; dam outflows
143007A	Brisbane River at Linville	3	3	1	2	0	2	11	QWR	Dam site
143009A	Brisbane River at Gregors Creek	3	3	3	3	3	3	18	QWR	S&G extraction
143010B	Emu Creek at Boat Mountain	3	2	1	0	3	3	12	QWR	
143015B	Cooyar Creek at Taromeo Ck	3	3	0	0	3	3	12	QWR	Major Brisbane tributary
143016A	Maronghi Creek at Glendale	3	0	0	0	3	3	9	QWR	
143017A	Esk Creek at Falls Road	2	2	0	0	0	1	5	QWR	Wivenhoe inflow
143028A	Ithaca Creek at Jason Street	1	0	2	1	0	3	7	QWR	Urban catchment
143032A	Moggill Creek at Upper Brookfield	1	3	2	1	0	1	8	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
143033A	Oxley Creek at New Beith	1	3	0	0	0	3	7	QWR	
143107A	Bremer River at Walloon	3	3	2	3	3	3	17	QWR	
143108A	Warrill Creek at Amberley	3	3	3	3	3	3	18	QWR	Water supply scheme
143110A	Bremer River at Adams Bridge	2	0	3	0	3	3	11	QWR	
143113A	Purga Creek at Loamside	2	3	2	0	3	3	13	QWR	
143121A	Western Creek at Kuss Road	3	0	2	0	0	3	8	QWR	
143203C	Lockyer Creek at Helidon Number 3	3	3	3	3	3	3	18	QWR	Assessment and flooding
143207B	Lockyer Creek at Clarendon	3	3	3	3	0	1	13	QWR	
143209B	Laidley Creek at Mulgowie	2	2	3	3	0	3	13	QWR	Assessment and flooding
143210B	Lockyer Creek at Rifle Range Road	1	3	3	3	3	3	16	QWR	
143212A	Tenthill Creek at Tenthill	3	3	3	3	3	3	18	QWR	Assessment and flooding
143213C	Ma Ma Creek at Harms	3	3	3	0	0	3	12	QWR	
143219A	Murphys Creek at Spring Bluff	0	0	3	3	0	3	9	QWR	Flooding
143229A	Laidley Creek at Warrego Highway	3	3	3	3	3	3	18	QWR	Lockyer Valley yields
143233A	Flagstone Creek at Brown-Zirbels Road	1	3	3	3	0	3	13	QWR	
143303A	Stanley R at Peachester	1	3	2	2	0	3	11	QWR	
143306B	Reedy Ck at Mount Byron	3	2	0	1	0	2	8	QWR	
143312A	Kilcoy Ck at d/s Kilcoy Weir	2	2	3	3	0	3	13	QWR	
143901A	Stanley River at Woodford	3	3	3	3	3	3	18	QWR	Assessment and flooding
143921A	Cressbrook Creek at Rosentreter's Crossing	3	3	3	3	3	3	18	QWR	Stream management
144003A	Blue Lake at Outflow	3	3	3	3	3	1	16	QWR	
144005A	18 Mile Swamp at Horse Crossing	0	0	0	0	0	1	1	QWR	Close
145003B	Logan R at Forest Home	2	3	3	1	0	2	11	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
145008A	Logan River at Round Mtn	3	3	3	3	3	3	18	QWR	Assessment and flooding
145010A	Running Ck at Dieckmans Bridge	3	3	3	3	3	3	18	QWR	
145011A	Teviot Brook at Croftby	1	3	2	0	0	3	9	QWR	
145014A	Logan River at Yarrahappini	3	3	1	2	3	3	15	QWR	Sediment, AE, flooding, assessment
145018A	Burnett Ck at Upstream Maroon Dam	3	3	1	2	3	3	15	QWR	Dam inflows
145020A	Logan R at Rathdowney	2	3	3	2	0	3	13	QWR	
145026A	Christmas Creek at Tramway Lane	2	3	3	3	3	1	15	QWR	
145027A	Palen Creek at Ward Road	2	3	0	0	0	1	6	QWR	
145031A	Teviot Brook at Coulson	3	2	0	2	3	2	12	QWR	Dam inflows
145101D	Albert River at Lumeah Number 2	2	3	3	0	0	3	11	QWR	
145102B	Albert River at Bromfleet	3	3	3	3	3	3	18	QWR	Flooding and assessment
145103A	Cainbale Creek at The Gorge	1	3	0	0	0	1	5	QWR	
145107A	Canungra Creek at Main Road Bridge	3	3	3	1	0	3	13	QWR	Stream management
146002B	Nerang River at Glenhurst	3	3	3	2	3	3	17	QWR	Stream management
146010A	Coomera River at Army Camp	3	3	3	2	3	3	17	QWR	
146012A	Currumbin Creek at Nicolls Bridge	3	3	3	1	3	3	16	QWR	Assessment
146014A	Back Creek at Beechmont	2	0	2	0	0	1	5	QWR	Small catchment
146015A	Nerang River at Numinbah	3	3	3	2	0	3	14	QWR	
146020A	Mudgeeraba Creek at Springbrook Road	2	0	2	0	0	1	5	QWR	
146095A	Tallebudgera Creek at Tallebudgera Creek Road	3	3	2	1	3	3	15	QWR	

		Scores against purpose and use criteria								
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416201A	Macintyre River at Goondiwindi	3	3	3	3	0	3	15	QWR	
416201B	Macintyre River at Goondiwindi Weir	0	0	0	0	0	3	3	QWR	Consider closing, poor data
416202A	Weir River at Talwood	3	3	3	3	3	3	18	QWR	BoM FW
416203A	Callandoon Creek at Carana Weir	0	1	2	1	0	3	7	QWR	Callandoon Creek Water Board, consider closing
416204A	Weir River at Gunn Bridge	2	2	1	0	0	2	7	QWR	BoM FW
416205A	Weir River at Jericho	0	1	3	2	0	1	7	QWR	
416206A	Callandoon Creek at Oonavale	0	0	3	3	0	3	9	QWR	Callandoon Creek Water Board, consider closing
416207A	Weir River at Mascot	3	2	3	3	3	2	16	QWR	
416305B	Brush Creek at Beebo	1	0	0	0	0	1	2	QWR	Border Rivers Commission (BRC). Close. No value to operator
416309B	Pike Creek at Glenlyon Dam T/W	0	3	3	3	0	2	11	QWR	BRC
416310A	Dumaresq River at Farnbro	3	3	3	3	3	3	18	QWR	BRC
416312A	Oaky Creek at Texas	2	0	1	0	0	0	3	QWR	BRC. Used as flow regulator in plan
416315A	Pike Creek at Glenlyon Dam Headwater	0	2	1	3	0	3	9	QWR	BRC flood warning
416317A	Broadwater Creek at Barkers	0	1	2	2	3	0	8	QWR	
416318A	Severn River at Ballandean	2	2	2	2	0	0	8	QWR	
416319A	Quart Pot Creek at Stanthorpe	2	2	2	2	0	0	8	QWR	
416320A	Accommodation Creek at Wallaces Dump	2	2	2	2	0	0	8	QWR	
416402C	Macintyre Brook at Inglewood	2	1	3	2	3	3	14	QWR	BRC
416415A	Macintyre Brook at Booba Sands	3	3	2	3	3	3	17	QWR	

Scores against purpose and use criteria										
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
417201B	Moonie River at Nindigully	1	3	3	3	3	3	16	QWR	BoM FW
417204A	Moonie River at Fenton	3	2	3	3	3	3	17	QWR	BRC
417205A	Moonie river at Flinton	2	1	3	3	0	3	12	QWR	
422201F	Balonne River at St. George	2	3	3	3	3	3	17	QWR	BoM
422202B	Dogwood Creek at Gilweir	3	1	1	2	3	3	13	QWR	BoM FW
422204A	Culgoa River at Whyenbah	3	3	3	3	3	3	18	QWR	Intersecting streams
422205A	Balonne-minor River at Hastings	0	0	0	0	0	0	0	QWR	Relocate to bifurcation #2 Same stage as Whyenbah
422206A	Narran River at Dirranbandi-Hebel Road	3	3	3	3	0	3	15	QWR	Murray-Darling (MD) assessment
422207A	Ballandool River at Hebel Bollon Road	3	3	3	3	3	3	18	QWR	M-D assessment
422208B	Culgoa River at Woolerbilla Road	3	3	3	3	0	3	15	QWR	M-D assessment
422209A	Bokhara River at Hebel	3	3	3	3	3	3	18	QWR	M-D assessment
422210A	Bungil Creek at Tabers	2	0	0	0	3	3	8	QWR	
422211A	Briarie Creek at Woolerbilla-Hebel Road	3	3	3	3	3	3	18	QWR	M-D assessment
422213A	Balonne River at Weribone	3	3	3	0	3	3	15	QWR	Dam inflows
422219A	Yuleba Creek at Forestry Station	1	1	1	2	0	0	5	QWR	
422220A	Balonne River at Surat	1	1	2	1	0	3	8	QWR	flood warning?
422306A	Swan Creek at Swanfels	1	1	1	2	3	0	8	QWR	relocate/close
422308C	Condamine River at Chinchilla	2	2	3	3	3	3	16	QWR	BoM. SunWater
422310C	Condamine River at Warwick	3	2	3	1	3	3	15	QWR	BoM FW
422313B	Emu Creek at Emu Vale	1	1	1	0	3	2	8	QWR	BoM AL relocate/close
422316A	Condamine River at Cecil Weir	2	2	3	3	3	3	16	QWR	
422317C	Glengallan Creek at Rocky Ridge	2	1	2	0	0	0	5	QWR	

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
422319B	Dalrymple Creek at Allora	1	2	2	0	3	0	8	QWR	
422321B	Spring Creek at Killarney	0	0	0	0	3	0	3	QWR	Town AL
422323A	Condamine River at Tummaville	3	2	2	2	3	2	14	QWR	
422325A	Condamine River at Cotswold	3	2	2	2	3	0	12	QWR	M-D assessment
422326A	Gowrie Creek at Cranley	1	1	2	1	3	0	8	QWR	Stream management
422332B	Gowrie Creek at Oakey	1	1	2	0	3	1	8	QWR	Possible close
422333A	Condamine River at Loudouns Bridge	2	2	3	2	3	0	12	QWR	Compliance reporting
422334A	Kings Creek at Aides Bridge	2	2	2	1	3	2	12	QWR	
422336A	Condamine River at Brigalow	1	2	3	2	0	2	10	QWR	
422338A	Canal Creek at Leyburn	1	1	2	0	3	0	7	QWR	
422341A	Condamine River at Brosnans Barn	0	1	1	1	3	0	6	QWR	Top of catchment
422343A	Charleys Creek at Chinchilla	0	2	2	2	0	0	6	QWR	
422344A	Condamine River at Bedarra	0	1	3	2	0	2	8	QWR	
422345A	North Condamine River at Lone Pine	0	1	1	0	3	2	7	QWR	Possible close
422347B	North Condamine River at Pampas	0	1	1	0	0	3	5	QWR	Possible close
422350A	Oakey Creek at Fairview	3	2	3	3	3	3	17	QWR	Stream management
422352A	Hodgson Creek at Balgownie	1	1	2	1	3	0	8	QWR	Surface water-groundwater interaction
422355A	Condamine River at Talgai Tailwater	0	1	1	0	0	0	2	QWR	Close. Move to Dalrymple Creek
422360A	Oakey Creek at Dalmeny	0	2	3	3	0	0	8	QWR	
422361A	Oakey Creek at Bowenville Reserve	0	2	3	3	0	0	8	QWR	Stream management

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
422394A	Condamine River at Elbow Valley	1	1	2	3	3	3	13	QWR	FW AL
422401D	Maranoa River at Mitchell	2	3	2	3	0	3	13	QWR	FW AL
422404A	Maranoa River at Cashmere	3	3	3	3	3	3	18	QWR	Flood warning
422501A	Wallam Creek at Cardiff	3	3	1	3	0	1	11	QWR	Flood warning. M-D
422502A	Nebine Creek at Roseleigh Crossing	3	3	1	3	3	0	13	QWR	
423202C	Warrego River at Cunnamulla Weir	3	3	2	3	3	3	17	QWR	Intersecting streams
423203A	Warrego River at Wyandra	2	2	2	2	0	2	10	QWR	M-D; high sediment load
423204A	Warrego River at Augathella	1	1	1	0	0	3	6	QWR	Flood warning
423205A	Ward River at Binnowie	3	2	0	2	3	2	12	QWR	Sediment loads
423206A	Warrego River at Wallen	0	1	3	0	0	2	6	QWR	Flood warning
424201A	Paroo River at Caiwarro	3	3	0	3	3	3	15	QWR	Flood warning
912101A	Gregory River at Gregory Downs	3	3	3	3	0	3	15	QWR	BoM
912105A	Gregory River at Riversleigh No.2	3	3	3	1	3	1	14	QWR	BoM
913004A	Leichhardt River at Miranda Creek	3	3	3	1	0	2	12	QWR	BoM FW
913006A	Gunpowder Creek at Gunpowder	2	3	2	3	3	3	16	QWR	BoM; mine compliance
913007B	Leichhardt River at Floraville Homestead	3	3	3	3	3	3	18	QWR	BoM. End of catchment
913010A	Fiery Creek at 16 Mile Waterhole	1	1	0	0	0	1	3	QWR	
913014A	Leichhardt River at Doughboy Creek	3	3	3	2	0	3	14	QWR	MIM, Sun water, BoM
915003A	Flinders River at Walkers Bend	3	3	3	3	3	3	18	QWR	BoM

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
915008A	Flinders River at Richmond	3	3	3	3	3	3	18	QWR	BoM
915011A	Porcupine Creek at Mt Emu Plains	3	3	3	3	3	2	17	QWR	
915012A	Flinders River at Etta Plains	3	3	3	3	0	3	15	QWR	BoM
915015A	Flinders River at Glendower Crossing	3	3	3	2	0	2	13	QWR	
915016A	Flinders River at Punchbowl	3	3	3	3	0	2	14	QWR	Council flood warning
915017A	Saxby River at Punchbowl Road	3	3	3	3	0	2	14	QWR	
915203C	Cloncurry River at Hensley Drive	3	3	3	3	0	3	15	QWR	BoM
915206A	Dugald River at Railway Crossing	2	2	2	2	3	2	13	QWR	
915208A	Julia Creek at Julia Creek	3	3	3	3	3	3	18	QWR	BoM
915211A	Williams River at Landsborough Highway	2	1	0	1	0	2	6	QWR	
915212A	Cloncurry River at Canobie	3	3	3	3	0	3	15	QWR	BoM
915213A	Gilliat River at Wills Developmental Road	3	3	3	3	0	2	14	QWR	BoM, TMR, Council
916001B	Norman River at Glenore Weir	3	3	3	3	3	3	18	QWR	BoM
917001D	Gilbert River at Rockfields	3	3	3	3	0	3	15	QWR	BoM
917014A	Gilbert River at Burke Development Road	3	3	3	3	0	3	15	QWR	
917104A	Etheridge River at Roseglen	3	3	3	3	0	2	14	QWR	
917106A	Einasleigh River at Einasleigh	3	3	3	3	3	3	18	QWR	BoM
917107A	Elizabeth Creek at Mount Surprise	3	3	3	3	0	2	14	QWR	
917111A	Einasleigh River at Minnies Dip	2	3	3	3	0	2	13	QWR	Locals only
917114A	Routh Creek at Beef Road	1	1	1	0	0	1	4	QWR	Flood warning, rep basin

		Scores against purpose and use criteria								
STATION	Site Name	1. Resource Assessment	2. Planning Support	3. Water Management	4. Reporting & Compliance	5. Role in collection of WQ data	6. Use by other Agencies	Total	Owner	Supporting comments
917115A	Copperfield River at Spanner Waterhole	3	3	3	3	0	3	15	QWR	Inflow to storage
918003A	Staaten River at Dorunda	3	3	3	1	3	2	15	QWR	EOS
919003A	Mitchell River at O.K. Bridge	3	3	3	3	3	2	17	QWR	CSIRO
919005A	Rifle Creek at Font Hill	3	3	3	3	3	3	18	QWR	CSIRO
919009B	Mitchell River at Dunbar	3	3	3	3	3	3	18	QWR	CSIRO
919011A	Mitchell River at Gamboola	3	3	3	3	0	3	15	QWR	CSIRO
919013A	McLeod River at Mulligan Highway	3	2	1	0	0	3	9	QWR	BoM, CSIRO, TMR, wet catchment
919014A	Mitchell River at Cooktown Crossing	3	3	3	3	0	3	15	QWR	BoM, CSIRO
919201A	Palmer River at Goldfields	3	3	3	1	3	3	16	QWR	CSIRO
919204A	Palmer River at Drumduff	3	2	2	1	3	3	14	QWR	Nodal point. CSIRO
919305B	Walsh River at Nullinga	3	3	3	2	0	3	14	QWR	Relocate after study is over? Nodal point. Might be needed if dam is built. CSIRO
919309A	Walsh River at Trimble's Crossing	3	3	3	3	0	3	15	QWR	End of system. Possible future plan. CSIRO
919310A	Walsh River at Rookwood	2	2	1	1	0	3	9	QWR	CSIRO
919311A	Walsh River at Flatrock	3	3	1	3	3	3	16	QWR	End of Barron plan, EFO node. CSIRO, BoM, Sun water
922001A	Archer River at Telegraph Crossing	3	3	3	3	0	2	14	QWR	FW
922101B	Coen River at Racecourse	2	3	3	3	0	2	13	QWR	
923001A	Watson River at Jackin Creek	3	2	2	0	0	2	9	QWR	Rio Tinto
925001A	Wenlock River at Moreton	3	3	3	3	0	3	15	QWR	Nodal point. BoM
926002A	Dulhunty River at Dougs Pad	3	3	3	3	0	3	15	QWR	
927001B	Jardine River at Monument	3	2	3	1	3	3	15	QWR	

	0	0	0	0	0	0	48	score 18
3	249	226	201	163	231	212		
2	83	86	91	88		109		
1	41	60	74	81		49		
0	30	31	37	71	172	33		
total	403	403	403	403	403	403		








## Gauging Station Purpose and Use Criteria

Criteria			Score		Score		Score		Score	
Water Resource Assessment (s38 – refer Part B)	No	0	Y (minor)	1	Y(suitable, adds value)	2	Y (essential)	3		
Water Planning Support (modelling)	No	0	GW only (e.g. connectivity)	1	Adds value Validates model inputs	2	All Water Plans	3		
Water Management (licensing, water harvesting)	No	0	Routine	1	Support water use	2	Decision making Trigger Levels	3		
Reporting and Compliance (ROP, EFAP BoM, NWCF)	No	0	Routine	1	Water audits Ecology assessments	2	Decision making	3		
Other agencies requirements (DE&S, BoM)	No	0	Elementary	1	Flood info Mines regulation	2	Key site (FW) licence conditions, environmental evaluations	3		
Water Quality (SWAN)		0		0		0	Y	3		

### Appendix 3 - Maps showing potential sites to reopen or establish, possible closures and suggested relocations; overlaid with plan areas

The maps below indicate all changes that are recommended for the gauging station network.

#### Legend for Maps 1 - 3

	Cities and towns
	Water plan boundaries (except GABORA)
	Gauging stations that could be closed
	Stations that will benefit from use of new data measuring technologies
	Stations that should be re-located or re-opened
	New sites required to better measure, monitor and manage the resource
	Pass flow indicator and short term project sites required

Map 1 – North Queensland



Map 2 – Central Queensland



Map 3 – South Queensland



## Map 4 – State, all proposed changes

### Legend

	Gauging stations that could be closed		Sites that could be relocated or reopened
	Pass flow indicator and short term project sites required		New sites required to better measure, monitor and manage the resource
	Stations that will benefit from use of new data measuring technologies		

