1584835-V1

Queensland Floods Commission of Inquiry

RECEIVED
04 APR 2011
IN DRM

Submission to Queensland Floods Commission of Inquiry

Commissions of Inquiry Act 1950

Salutation	Mr
Name	Barry Dennien
Title	Chief Executive Officer
Organisation	SEQ Water Grid Manager
Address	Level 15 53 Albert Street Brisbane
State	Qld
Postcode	4000
Daytime phone	[redacted]
Mobile phone	[redacted]
Email address	[redacted]

Submissions can address any issues in the Commission of Inquiry's Terms of Reference. The full Terms of Reference, and further information on the conduct of the Inquiry, are available at www.floodcommission.qld.gov.au or by calling (07) 3405 9759.

To assist the Inquiry, please indicate the issues addressed in your submission:

- [x] preparation and planning by federal, state and local governments, emergency services and the community
- [ ] private insurers and their responsibilities
- [x] the response to the 2010/2011 flood events, particularly measures taken to inform the community and protect life, private and public property
- [ ] measures to manage the supply of essential services
- [ ] adequacy of forecasts and early warning systems
- [ ] implementation of systems operation plans for dams
- [ ] land use planning

Please indicate if particular regions are addressed in your submission, or if it refers to statewide issues.

Submissions will be published on the Inquiry website. However individuals making a submission may request all or part of their submission not be published.

11/3893

Partner Tony Cotter
Writer Suzie Emery
Direct line [redacted]
Email [redacted]
Our reference SJE:ACC:158740-00001

McCullough Robertson lawyers

15 April 2011

Ms L Moon
Queensland Floods Commission of Inquiry
Level 30
400 George Street
BRISBANE QLD 4000

Dear Ms Moon

SEQ Water Grid Manager
Submissions 4 April 2011

We refer to your telephone conversation with Suzie Emery yesterday.

As requested, **attached** is a CD containing electronic copies of the annexures to SEQ Water Grid Manager's submissions dated 4 April 2011.

If you have any questions, please contact us.

Yours faithfully

[redacted]

Tony Cotter
Partner

attachment
11630263v1

Lawyers | McCullough Robertson

Attachments to Submissions by SEQ Water Grid Manager on 4 April 2011

In the matter of the Commissions of Inquiry Act 1950, Commissions of Inquiry Order (No 1) 2011

Queensland Floods Commission of Inquiry

Volume 1 of 3

Matter barcode: 158740-00001

SEQ WATER GRID MANAGER
SEQ Water Grid Manager
Level 15
53 Albert Street
BRISBANE QLD 4000

Email: [redacted]
Ph: [redacted] Fax: [redacted]

Dated: 4 April 2011

2011 BRISBANE FLOODS

F: 0088
FD: Attachments to Submissions by SEQ Water Grid Manager on 4 April 2011 - Volume 1 of 3

Acting FE: MMC
Resp FE: MMC
Intro FE: MMC

Folder barcode: F00392198

Date Created: 27/01/2011

Level 11 Central Plaza Two 66 E
Telephone 07 3233 8888 | F

In the matter of the Commissions of Inquiry Act 1950, Commissions of Inquiry Order (No. 1) 2011
Queensland Floods Commission of Inquiry on 4 April 2011

Submissions by SEQ Water Grid Manager on 4 April 2011

1. This further submission is made by the SEQ Water Grid Manager (**Water Grid Manager**).

2. The submission is set out in the following sections:

   a. Section A – Further information as to the roles and responsibilities of the Water Grid Manager;

   b. Section B – The Water Grid Manager's involvement in the planning and preparation for the 2010 – 2011 floods; and

   c. Section C – The Water Grid Manager's involvement in the response to the 2010 – 2011 floods.

A. Further information as to the roles and responsibilities of the Water Grid Manager

3. The submission addresses aspects of specific topics raised by the Commission's terms of reference, in particular:

   a. the extent of the Water Grid Manager's role in preparation and planning by federal, State and local governments, emergency services and the community for the 2010/2011 floods in Queensland; and

   b. the extent of its role in the response to the 2010/2011 flood events.

4. The Water Grid Manager does not advance any submissions as regards the other aspects of the Commission's terms of reference at this stage. It confines itself to those matters on which it considers that it may offer substantive contribution (rather than making submissions for the sake of participation). It remains available to assist the Commission, howsoever.

5. The Water Grid Manager considers that it ought to provide further detail about its roles and responsibilities as a preface to the submissions dealing with those terms of reference if only as lending material context.

Overview of the Water Grid Manager's roles and responsibilities

6. In summary[1], the Water Grid Manager is responsible for managing the operation of the Water Grid to ensure:

   a. Water supply (including short term water security and the reliability of water supply);

   b. Water quality; and

   c. Efficient and cost–effective operation of the Water Grid.

7. The Water Grid Manager operates the Water Grid with a view to compliance with the strategy, targets, objectives and rules set for it by the Queensland Water Commission (**QWC**) in, amongst other documents, the System Operating Plan (discussed below).

8. In particular, the Water Grid Manager has several specific roles and responsibilities (which arise as part of its responsibilities to provide a secure water supply of requisite quality) which are relevant to matters of interest to the Commission under its terms of reference. Those include:

   a. The preparation of the Water Grid Emergency Management Plan;

   b. The preparation of the Water Grid Risk Management Plan; and

   c. Communications insofar as that is relevant to the Water Grid.

9. Each of these roles and responsibilities is to be viewed in light of the Water Grid Manager's overall responsibility mentioned above. The Water Grid Manager is responsible for ensuring that water of a certain quality is provided from the bulk suppliers of water, through the Water Grid, to its ultimate end users, in accordance with the strategy set by the QWC. It buys water services (storage, treatment, production of

[1] Acknowledging that summaries can be apt to mislead by obscuring the detail. The Water Grid Manager identifies the Acts and Instruments referred to below for that detail.

manufactured water and transportation) from bulk water suppliers and sells water to its customers.

10. The Water Grid Manager does not have a responsibility for disaster and emergency planning and management (as those matters are covered by the State Disaster and Emergency Management committees and other entities including local councils), land use planning (which would encompass risks to persons and property in potentially flood-affected areas), weather forecasting and other topics that will undoubtedly be of interest to the Commission. The Water Grid Manager's focus is on ensuring that water travels from bulk water suppliers to customers in a way which best utilises the region's water resources as a whole.

11. In its submission dated 11 March 2011, the Water Grid Manager outlined the relevant legislation and statutory instruments. Some elaboration, by reference to separate Acts and instruments, to explain the specific roles and responsibilities of the Water Grid Manager may be useful.

Relevant aspects of the South East Queensland Water (Restructuring) Act 2007

12. The Water Grid Manager, a statutory body, was established by section 6(1)(d) and section 10 of the *South East Queensland Water (Restructuring) Act 2007* (Qld).

13. Section 10 of that Act provides that the Water Grid Manager is to purchase water services, sell water and engage in other activities that would complement or facilitate those functions, to the extent they are consistent with its operating and strategic plans.

14. Section 45 of that Act provides that, before 31 March each year, the Water Grid Manager must prepare and submit to the responsible Ministers for their agreement a draft strategic plan and draft operational plan for the next financial year.

15. Sections 47, 48 and 49 of that Act provide that the Water Grid Manager must comply with its strategic and operational plans.

16. Section 51 of the Act provides for the requirements of the operational plan to be prepared by the Water Grid Manager.

Relevant aspects of the Water Act 2000

17. The *Water Act 2000* (Qld)[2] (**WA**) provides for the management and use of water in Queensland.

18. Chapter 2, WA deals with the '.... *sustainable management and efficient use of water and other resources by establishing a system for the planning, allocation and use of water*'[3].

19. Part 2 of Chapter 2A, WA provides for the establishment of the QWC.

20. Part 3 of Chapter 2, WA deals with water planning and the preparation of various plans in respect of water, particularly water resource plans.

21. Section 345, WA provides that the QWC's main functions are:

'(a) to do the following for the SEQ region and designated regions -

(i) advise the Minister on matters relating to water supply and demand management for water;

(ii) advise the Minister on the delivery of desired levels of service objectives for water supplied to the SEQ region and designated regions;

(iii) facilitate and implement regional water security programs;

(iv) ensure compliance with the programs and with commission water restrictions; and

(b) the functions given to the commission under chapter 3.'

---

[2] insofar as it was amended upon the enactment of the *South East Queensland Water (Restructuring) Act* 2007 (Qld).

[3] See section 10(1) of that Act.

22. Section 360 ZCL, WA provides that:

'The market is the wholesale exchange for –

(a) the supply of declared water services to the water grid manager; and

(b) the sale by the water grid manager of water supplied by the declared water services.'

23. Section 360 ZCX, WA provides that the Minister may make rules about the operation of the water market. These are known as the 'Market Rules'.

24. Section 360 ZCX(2), WA provides that the Market Rules are a statutory instrument under the *Statutory Instruments Act 1992* (Qld), but are not subordinate legislation.

Relevant aspects of the Water Supply (Safety and Reliability) Act 2008

25. The *Water Supply (Safety and Reliability) Act 2008* (Qld) provides for the establishment of the Water Supply Regulator and its purposes and relationship with various service providers that deal with water.

26. Chapter 4 of that Act deals with referable dams and flood mitigation. That Chapter provides for the establishment of flood mitigation manuals by the owners of particular dams and their approval by the Regulator.

Relevant aspects of the Market Rules

27. The Market Rules[4]:

a. set out the registered participants and registration processes insofar as Grid Participants are concerned;

b. set out the relationships in the Market;

c. deal with the operation of the Water Grid;

[4] Insofar as those are effective as of 1 July 2010.

d. specifically deal with the preparation and approval of the Water Grid Emergency Response Plan;

e. specifically deal with the Water Grid Risk Management Plan;

f. deal with water quality management; and

g. deal with other matters including asset management and pricing.

28. Under the Market Rules, the Water Grid Manager, relevantly, is responsible for the preparation of a Water Grid Emergency Response Plan[5] and Water Grid Risk Management Plan[6].

29. Market Rule 4.24 provides that:

'(a) The Water Grid Manager must prepare, implement and maintain a Water Grid Emergency Response Plan which specifies:

(i) incidents which must be reported to the Water Grid Manager;

(ii) response levels for types of incidents reported to the Water Grid Manager;

(iii) escalation and notifications paths for each response level;

(iv) reporting and monitoring requirements for each response level;

(v) responsibilities for preparing and issuing public statements (if required) for each response level;

(vi) any changes to the process for the issue of Grid Instructions following a reported incident;

(vii) the process for operation of the Water Grid following a Water Supply Emergency Declaration;

---

[5] Pursuant to Market Rule 4.24.

[6] Pursuant to Market Rule 4.34.

(viii) the process for preparing, issuing and amending Operating Instructions following a Water Supply Emergency Declaration;

(ix) arrangements (where applicable) for providing the Water Grid Manager with access to Grid Service Provider operated control rooms, real-time information, equipment and personnel following a Water Supply Emergency Declaration; and

(x) any other matter the Water Grid Manager considers appropriate.'

30. Market Rule 4.34 provides that:

'(a) The Water Grid Manager must prepare, implement and maintain a Water Grid Risk Management Plan which provides an integrated framework for identification, analysis, evaluation and management of risks related to the operation of the Water Grid and the achievement of the Market Outcomes.'

The Water Grid Manager's strategic and operational plans

31. In accordance with the requirements under the *South East Queensland Water (Restructuring) Act 2007* (Qld), the Water Grid Manager has prepared a strategic plan and an operational plan. Copies of the current versions of those documents are annexed to the hard copy of these submissions that will be provided to the Commission[7]. No change has been made to either of those documents since September 2010[8].

South East Queensland System Operating Plan and South East Queensland Water Strategy

32. In addition, the QWC has prepared a System Operating Plan for South East Queensland, the current version of which is release 3.2 dated 2 March 2011 and a South

[7] All the attachments to this submission will not be annexed to the electronic copy of the submission because of the size of those documents but rather will be provided in hard copy.

[8] Updated drafts of these plans were prepared by the Water Grid Manager and sent to the Minister at the end of March 2010. A further updated draft set of plans is in the process of being prepared as at the time these submissions are being prepared for the 2011-12 financial year.

East Queensland Water Strategy. The System Operating Plan release 3.1, dated 20 August 2010, was the current plan during the flood event in January 2011. The Water Grid Manager is required to comply with the System Operating Plan and is guided by the Strategy. Copies of those documents are annexed to these submissions.

B. The preparation and planning for the 2010 / 2011 flood events

33. The Water Grid Manager's involvement in preparation and planning for the floods was limited to the review and consideration of risks posed to the supply of water (which occurred generally, but not exclusively, prior to October 2010) and as the communications manager for the Water Grid (which, insofar as it is relevant, occurred in the period from October 2010 to January 2011).

34. It sets out below a summary of the work done to prepare for, and highlights of its involvement in the response to, the floods.

Preparation and planning prior to October 2010

35. As earlier noted, the Water Grid Manager is principally responsible for preparing two things which prepare and plan for emergency events including flood events. It does that (as it is required to do) insofar as those events may impact upon the supply of water / the operation of the Water Grid. Those documents are the:

    a. Water Grid Emergency Response Plan; and

    b. Water Grid Risk Management plan.

36. The Water Grid Emergency Response Plan was prepared by the Water Grid Manager and approved by the QWC and the then Minister for Natural Resources, Mines and Energy and Minister for Trade[9]. The version which was in force as at the time of the 2010/2011 floods was version 2.1. It was approved by the Minister in September 2010.

[9] The Honourable Stephen Robertson MP (now Minister for Energy and Water Utilities), who is referred to hereafter as 'the Minister'.

No changes have been made to this plan since the Minister's approval. That plan (**ERP**) is annexed to the hard copy of these submissions.

37. The ERP is a detailed plan in the event of an emergency which affects the supply of water in South East Queensland. It applies to all Grid Participants and, in particular, to the Water Grid Manager, the Queensland Bulk Water Supply Authority (trading as Seqwater), the Queensland Manufactured Water Authority (trading as WaterSecure), the Queensland Bulk Water Transport Authority (trading as LinkWater), distribution service providers including Queensland Urban Utilities and various others.

38. As is stated in the definition of 'Emergency' on page 10 of the ERP:

'*For the purposes of* [the] *Plan, an 'emergency' is an incident that impacts on water quality, water supply reliability and/or public reassurance, and has an overall severity rating of Level 3, 4 or 5 under the severity classification approach outlined in* [the] *Plan'.*

39. The Market Rules require the Water Grid Manager to regularly review and test the ERP. In March 2010, an exercise was conducted in which external consultants were engaged to simulate various emergencies over a two day period to test the adequacy of the ERP[10]. A detailed debriefing followed. In result, recommendations were suggested, discussed between the various agencies and all of the recommendations implemented.

40. The Water Grid Manager is also required under the Market Rules to prepare a Risk Management Plan. A copy of the current draft of that plan is annexed to these submissions and a summary of the history of that draft is set out below.

    a. In order to prepare the Plan, the Water Grid Manager sent a preliminary draft of it to Grid Participants in late 2008 and received feedback on the draft from them in November and December 2008.

[10] Following a specific request from the Minister.

b. That culminated in a presentation of the preliminary draft (with feedback from Grid Participants incorporated) to the QWC on 1 January 2009 (by email).

c. On 7 July 2009, the QWC advised the Water Grid Manager by email that the Risk Management Plan was a 'solid start' but that it required an additional chapter containing a Risk Register.

d. The Risk Register was developed in consultation with the Chief Executive Officers of the Grid Participants on 5 November 2009 (in an all day long workshop, which was preceded by briefing materials collated and prepared by the Water Grid Manager).

e. On 14 December 2009, the Water Grid Manager sent an email to the QWC advising that the CEOs of the Grid Participants had approved the Risk Register and it intended to submit the amended draft Water Grid Risk Management Plan in early 2010.

f. Further amendments were made to the Risk Register in February 2010 and a further meeting of Grid Participants on 16 February 2010 endorsed the revised version of that document (save that Seqwater separately endorsed the amended version by email on 12 March 2010).

g. The revised draft Water Grid Risk Management Plan was submitted to the QWC by email on 14 May 2010.

h. On 1 June 2010, the QWC acknowledged receipt of the draft Water Grid Risk Management Plan by email.

41. On 21 January 2011, the QWC wrote a letter to the Water Grid Manager declining the Water Grid Risk Management Plan and requesting that it be substantially amended with regard to requirements in the Market Rules. That work is ongoing.

42. In addition to the Water Grid ERP and the Water Grid Risk Management Plan, the Water Grid Manager has a communications unit responsible for communications

insofar as these are relevant to water supply and water quality around the Water Grid. This was established at the request of the Minister in a letter dated 22 April 2010. The Minister requested that communications for the Water Grid were to be delivered in an integrated model from 1 July 2010.

43. A copy of the SEQ Water Grid Coordinated Communications Implementation Plan is annexed to these submissions. That is the document which currently governs communications in relation to the Water Grid and the operations of the SEQ Water Grid Communications Unit (**Comms Plan**). As is reflected in the Comms Plan, the initial purpose of the Communications Unit was to ensure that communications with the public and the media were coordinated through one central unit in order to provide a cohesive government response to all matters connected with the supply and quality of water from the Water Grid.

44. In addition, annexed to these submissions is a copy of the current draft of the SEQ Water Grid Communication Strategy, which was last reviewed on 23 November 2010. It sets out the strategy for communications relevant to the Water Grid and how those communications will be conducted.

Events from October 2010 to January 2011 – specific planning for the 2010/2011 floods

45. The Water Grid Manager had some involvement in the events that occurred prior to and immediately following the floods in January 2011. It sets out below a summary of that involvement. It leaves to others detailed description of their respective involvement(s) in those events in order to provide a full picture to the Commission. It does not have that detail and does not wish inadvertently to err.

46. On or around 13 October 2010, significant rainfall occurred in the vicinity of the Wivenhoe and Somerset Dams catchments, leading to significant inflows of water which could flow down the Brisbane River. The Water Grid Manager was then involved in communications with the Minister's Office and the media in relation to that event, in consultation with (amongst others) the Bureau of Meteorology, Seqwater and the Brisbane City Council (**BCC**).

47. As a result of some differences between the information issued by the BCC and on behalf of the Queensland State Government, the Premier of Queensland, by letter dated 15 October 2010, then requested that the BCC work with the State Government to develop a protocol for the provision of information in such circumstances. Letters in like terms were then sent also by the Premier to various other local authorities including the Ipswich and Somerset Councils.

48. On or around 19 October 2010, the Water Grid Manager received a verbal request from the Office of the Water Supply Regulator to assist with communications as between the Minister's Office and other Government Departments and entities, including Seqwater, concerning preparation and planning for possible floods in the 2010/2011 period. In consequence, in October 2010, there were meetings and communications between (amongst others) Seqwater, Emergency Management Queensland, the Water Grid Manager and others about the protocol for communications during a flood event.

49. As a consequence of those letters from the Premier and resultant consultations between various stakeholders, a protocol for the communication of flooding information during flood water releases from Wivenhoe and Somerset dams was developed from in or around the middle of October 2010. Further, a public communications protocol for natural hazards affecting the community was also developed, under the leadership of the Department of Environment and Resource Management (**DERM**) and Emergency Management Queensland. The Water Grid Manager was invited to, and did, provide feedback on the draft protocols. Ultimately, these documents were merged; as is discussed below, one protocol was developed.

50. On 25 October 2010, the Minister wrote to the Chair of the Water Grid Manager.[11] A copy of that letter is attached to the hard copy of these submissions. The letter was drafted in consultation with the Water Grid Manager. In that letter, the Minister sought advice as to whether there was an opportunity temporarily to reduce the volume of water stored in key dams in preparation for the upcoming summer season. In doing so, the Minister noted that recent releases from Wivenhoe at that stage (October 2010) had

[11] Mr Gary Humphrys.

resulted in significant inconvenience and isolation for residents in some downstream areas. The Minister sought a response by the end of November 2010 as to the available options and likely benefits.

51. This letter was directed to the Water Grid Manager as having responsibility for the Water Grid communications[12] and insofar as that may affect the short term supply of water to South East Queensland (given that the reduction was only proposed to be on a temporary basis) and the Water Grid Manager's ability to comply with the System Operating Plan.

52. On 25 October 2010, the Water Grid Manager wrote (by email) to Seqwater advising that it understood it would receive a letter requesting advice as to available options and likely benefits of releases from dams including Wivenhoe and stating that that letter would be forwarded as soon as possible[13].

53. The Water Grid Manager also communicated the likelihood of the letter arriving from the Minister to the QWC by way of an email dated 26 October 2010 at 7:37am from Barry Dennien[14] to Ms Karen Waldman of the QWC[15]. This email was sent as a courtesy and because the Minister's request had the capacity to impact upon the overarching strategy for the management of the State's Water Resources (a matter within the Commission's remit).

54. On or about 27 October 2010, at the oral request of DERM, the Water Grid Manager's risk management team prepared and forwarded to DERM a summary of summer risks - which was a document based upon and summarising input from:

    a. Seqwater (the owner of Wivenhoe and Somerset Dams and the entity with responsibility for the management of the dams); and

---

[12] the Communications Unit, *ante*.

[13] Including by way of an email from Dan Spiller to Jim Pruss from Seqwater at 5:53pm on 25 October 2010.

[14] its CEO.

[15] its CEO.

b. other Grid Participants.

55. The Water Grid Manager prepared and collated this document because it was responsible for communications relevant to the Water Grid. It relied upon information received from others to prepare that document.

56. On 28 October 2010, Barry Dennien forwarded to Karen Waldman from the QWC a copy of the Minister's letter.

57. A meeting occurred on 28 October 2010 between the local councils to whom the Premier had written in relation to the communication protocol, the Water Grid Manager, DERM, the Office of the Water Supply Regulator and others. At that meeting a draft protocol was discussed. Following that meeting, various drafts of the protocol on the release of water from dams were circulated and comments were provided by the Water Grid Manager. Again, this was under the leadership of DERM and Emergency Management Queensland.

58. On 2 November 2010, Barry Dennien wrote to Mr Peter Borrows, the Chief Executive Officer of Seqwater, confirming that the Minister had sought urgent advice about whether the volume of water stored in dams could be reduced as a means of reducing the severity, frequency and duration of flooding in downstream areas. Mr Dennien enclosed a copy of the Minister's request. Mr Dennien sought Seqwater's advice by 19 November 2010.

59. On or around 10 November 2010, Mr Jim Pruss from Seqwater provided Dan Spiller[16] a draft advice by Seqwater's dam safety experts. That document examined a range of different scenarios for the reduction of the water level in Seqwater's gated dams to improve short term flood mitigation benefits. Amongst other things, the advice noted that, for major flood events impacting on urban areas, it was unlikely that peak water levels in Brisbane would be significantly impacted by minor reductions in the level of the Wivenhoe Dam and that reductions in dam volume in the order of at least 250,000

[16] the Operations Manager of the Water Grid Manager.

megalitres would be needed to provide any significant reduction in water level peaks experienced in urban areas. That advice also noted that such reductions would not necessarily guarantee reductions in urban flood levels because the distribution of rainfall in the Brisbane River catchment governed the extent of possible urban flooding.

60. On or about 18 November 2010, the Water Grid Manager asked Jim Pruss[17] and Rob Drury[18] to attend a meeting on 23 November 2010, at the offices of the Water Grid Manager, in order to discuss the draft advice provided by Seqwater on 10 November 2010 and the response to the Minister's letter.

61. That meeting occurred on 23 November 2010. Attendees were Barry Dennien and Dan Spiller from the Water Grid Manager and Jim Pruss and Rob Drury from Seqwater. At the meeting:

    a. Messrs Pruss and Drury summarised the views of Seqwater as to the issues raised by the Minister in his letter dated 25 October 2010;

    b. Messrs Dennien and Spiller asked a number of questions as to the content of the report and the basis of the Seqwater advice about the events involving total flows less than and greater than 3500 cubic metres per second measured at the Moggill gauge. In particular, Messrs Dennien and Spiller asked whether any modelling had been done with regards large flood events involving total flows greater than 3500 cubic metres per second measured at Moggill gauge and whether that would be of any benefit.

    c. Mr Drury advised that no modelling had been done on the higher flows and suggested that such modelling would take at least 6 months to perform.

    d. Messrs Pruss and Drury stated to the effect that Seqwater's opinion was that:

[17] The Executive General Manager, Water Delivery for Seqwater.

[18] The Dam Operations Manager for Seqwater.

i. the dam only controlled 50% of the Brisbane River catchment and therefore only had part control of flood impacts;

ii. whilst it was possible pre-emptive major releases of water from Wivenhoe Dam lowering the water level below full supply level may have some benefit for flood mitigation, Seqwater's view was that major releases of water may not be of benefit for flood mitigation because it depended on the rainfall distribution during a flood event and that would not likely have any significant impact upon the height of floods downstream in the event that there was a major rainfall event;

iii. the unpredictability of weather forecasting made it difficult to judge releases from the dam to pre-emptively lower the storage if they were to be just hours or days before or during a flood event. Even releases well before a rainfall event are difficult to manage. The releases may impact upon water supply security or damage property (such as bridges) downstream and impose a significant inconvenience and danger to residents downstream with no benefits if rain does not fall in the catchment above the dam wall; and

iv. before any major releases were done to lower the dam below full supply level, significant studies should be performed to determine whether the benefits outweigh the detriment to persons and property downstream from the dams.

62. At the conclusion of the meeting, Mr Drury agreed to provide further written information in response to the questions asked by Mr Dennien and Mr Spiller during the meeting and report back to the Water Grid Manager as soon as was possible so that advice could be provided to the Minister, as he had requested.

63. In late October / early November 2010, the BCC advised DERM that a Lord Mayor's taskforce on suburban flooding would be set up. On or about 18 November 2010, DERM advised the BCC that Mr Dennien, the CEO of the Water Grid Manager, would

participate in that. Mr Dennien subsequently attended one meeting of that taskforce on 1 December 2010, but was subsequently advised that the BCC would prefer to have a representative from the State who could discuss and advise on land use planning issues.

64. On 24 November 2010, the then current draft of the protocol for the communication of flooding information for Brisbane River Catchment – including flood water releases from Wivenhoe and Somerset Dams – was sent by the Premier to each of the Lord Mayor of Brisbane, the Mayor of Ipswich City Council and the Mayor of Somerset Regional Council. The Premier requested that the draft protocol be implemented on an interim basis to provide a communications framework pending formal finalisation of the protocol. A copy of that draft is annexed to the hard copy of these submissions.

65. That draft protocol provided that in every case of floodwater release from Wivenhoe or Somerset Dams, Seqwater was to coordinate the completion of a Technical Situation Report (**TSR**) and provide that report to the Water Grid Manager and to the relevant councils.

66. Under the draft protocol, the Water Grid Manager centrally tracks all communications to ensure those are shared insofar as flood water releases are concerned. It is responsible for liaising with Seqwater, the local councils' Media Directors and others. The Water Grid Manager is also responsible for coordinating responses to any questions relating to the release of flood water from the public or the media. As that draft protocol states, the Water Grid Manager is the State's lead communication agency in respect of flood water releases. Appendix B to the protocol provides for the specific responsibilities of the Water Grid Communication Unit - in the last bullet point of page 7.

67. On 1 December 2010, Mr Dennien emailed Messrs Jim Pruss and Rob Drury from Seqwater following up on their discussions on 23 November 2010 with regard to dam levels and flood impacts and advising that they were due to respond to the Minister by the end of November.

68. On 2 December 2010, Mr Drury sent Mr Dennien (copied to Mr Pruss and Mr Borrows) a draft report.

69. On 3 December 2010, Mr Dennien responded to Mr Drury (copied to Mr Pruss, Mr Borrows and Mr Spiller) asking several further questions about the draft report and, in particular, asking for clarification about the impacts and benefits of medium and large releases from the dams for events and about the modelling that had been done as to those issues.

70. On 8 December 2010, Mr Dennien emailed Mr Pruss and Mr Drury (copied to Mr Spiller and Mr Borrows) seeking a response to the earlier queries he had asked.

71. On 9 December 2010, Mr Drury sent an email to Mr Dennien (copied to Mr Pruss, Mr Spiller and Mr Borrows), responding to the questions that had earlier been asked.

72. In accordance with the protocol referred to above concerning releases of water from Wivenhoe Dam, the Water Grid Manager was involved in distributing TSRs and media releases in relation to releases from the Wivenhoe Dam on 12 and 17 December 2010.

73. On 13 December 2010, at the invitation of the Water Grid Manager, the Minister attended a board meeting, between 1:12pm and 1:56pm. At the board meeting:

    a. the Minister was provided with a demonstration of the OCA Incident Manager[19] and the Emergency Management Room[20];

    b. the Minister was also provided with an oral briefing as to:

        i. the optimal operation of the Water Grid;

        ii. the role of the Water Grid Manager in advising on Grid Capital Expenditure from a whole-of-grid perspective;

[19] The software that is used, in compliance with the ERP, to manage communications as between all Grid Participants insofar that relates to a water supply emergency.

[20] A specific room at the premises of the Water Grid Manager that is devoted to the management of emergencies and was, as at the time of the inspection, newly in operation.

iii. Wivenhoe Dam's operating level for flood mitigation; and

iv. the effectiveness of communications between the Water Grid and the Minister's office.

c. Mr Dennien made the majority of the oral presentation to the Minister (with some observations being made by Mr Spiller). Mr Dennien relevantly told the Minister that, insofar as the Wivenhoe Dam's operating level for flood mitigation was concerned:

i. Seqwater had advised that a major reduction in the capacity of the dam below Full Supply Level was not advisable at this stage;

ii. Seqwater had advised that a great deal of modelling should be undertaken before any change to the levels of Wivenhoe Dam was contemplated and that this modelling would take in the order of 6 months;

iii. Without modelling Seqwater advised that major reductions below Full Supply Level may be required in order to lower impacts for large floods. However estimated reductions for Wivenhoe Dam varied greatly between 250,000 megalitres (21%) to 580,000 (50%) megalitres. Seqwater also stated these benefits diminished the bigger the flood due to the ratio of water coming into the dam and the size of the flood compartment.

iv. Seqwater had advised that large releases (in terms of both volume and rate) would have significant impacts downstream, including the disruption or damage to bridges and inconvenience and danger for downstream residents. These impacts had to be balanced against the possible benefits, which Seqwater saw as limited due to the unpredictability of rainfall distribution during flood events;

v. Seqwater had advised that pre-emptive releases in the days or hours before a major rainfall event was not recommended because of the difficulty in predicting exactly how much rain would fall and where it would fall and the

impact of releases from the dam downstream in the event that there was either a high tide or significant rainfall downstream; and

vi. Seqwater indicated that a small reduction in Wivenhoe and Somerset Dams of 5% would reduce the inconvenience of bridge closures and improve access for the communities in the mid Brisbane area.

74. In the period between 13 December 2010 and 24 December 2010, the Water Grid Manager was involved in a lengthy set of email correspondence concerning the lowering of the water levels at the Hinze Dam so that work could be done on the dam walls.

75. The Water Grid Manager was also involved in the distribution, by email, of a TSR and various media releases concerning ongoing dam releases on 22 and 23 December 2010.

76. In accordance with its role under the draft protocol, the Water Grid Manager was involved in liaising, by email, with local councils, particularly the Somerset Regional Council, about the potential impact of the releases on residences in the area immediately downstream from Wivenhoe Dam in late December 2010.

77. On 24 December 2010, the Water Grid Manager wrote to the Minister, responding to his letter dated 25 October 2010 regarding the possibility of releasing from key storages in anticipation of major inflows. That advice was based upon information provided by Seqwater. The letter advised the Minister that the Water Grid Manager and the QWC had confirmed that releases of 5% of Wivenhoe and Somerset water would have negligible effects on the ability of the Water Grid Manager and the QWC to provide water security for South East Queensland. In the advice attached to the letter, the Water Grid Manager advised that Seqwater had confirmed that any impact to allow additional flood mitigation potential would require Wivenhoe Dam releases of at least 250,000 megalitres. The Minister was advised that such a release may have potential water security impacts and that a more detailed investigation was recommended, to be led by Seqwater and involving the Bureau of Meteorology, the councils and the Water Grid Manager.

78. On 24 December 2010, the Water Grid Manager also wrote to the QWC requesting its approval for a letter to go to Seqwater advising that Wivenhoe and Somerset Dams' level could be reduced to 95% of their combined full supply level for flood mitigation purposes. That approval was provided at approximately midday on 24 December 2010. Seqwater was advised of the same at approximately 2:32pm on 24 December 2010.

79. At 4:31pm, Mr Borrows from Seqwater queried whether the letter was a direction to release the water to levels below Wivenhoe, Somerset, and North Pine Dams' full supply level. At 4:53pm of 24 December 2010, Mr Dennien, by e-mail, responded to that.

80. Officers from the Water Grid Manager were in regular contact, by email, with the CEO of BCC on 24 December 2010 about the then releases from Wivenhoe Dam and the upcoming weather conditions in the holiday season.

81. On or around 29 December 2010, high levels of turbidity in the water flowing through the Mount Crosby Treatment Plant resulted in a shutdown of that plant and the activation of the desalination plant, with water supplies also being brought in from various other locations around the Water Grid in South East Queensland. The Water Grid Manager was involved in providing briefings to DERM by email as to these events.

82. Copies of the writings and associated materials referred to in paragraphs [45] to [81] (inclusively, as a chronological bundle) are attached to the hard copy of these submissions.

C. The response to the 2010/2011 flood events

83. Once it became apparent that there could be further releases from Wivenhoe Dam in January 2011, the Water Grid Manager became involved in the distribution of TSRs and other information from Seqwater under the protocol that the Premier had directed be adopted in late 2010. Highlights of the relevant communications are set out below. All of the communications which are referred to below were made by the Water Grid

Manager based on information provided by Seqwater as to the likely dam releases and the impact of developing weather conditions.

84. On 6 January 2011, the Water Grid Manager was involved in communicating by email with DERM, the Police and others about releases from Wivenhoe that were scheduled to recommence on 7 January 2011.

85. However, the releases were ultimately postponed because of heavy rainfall in the Lockyer Valley in the afternoon of 6 January 2011 and the impact of flows down the Lockyer Valley[21]. The Water Grid Manager was involved in communications by email with (variously) the offices of the Minister, DERM, the Police and others to advise that the releases would be deferred until after the flows had peaked.

86. On 7 January 2011, Seqwater advised by email that high rainfall totals were predicted and that significant volumes of inflows to the dams would be generated. At that stage, the Water Grid Manager was advised that the releases from Wivenhoe Dam were intended to be increased to approximately 1,200m3/s later in the day (7 January).

87. At approximately 8:27am, the Water Grid Manager, through Mr Spiller, distributed an updated TSR to the offices of the Minister, DERM and the Police by email.

88. The Water Grid Manager was involved in further email exchanges with DERM on Saturday, 8 January 2011 in order to provide an update of the information received from Seqwater in relation to proposed releases of water from the dam and the weather conditions as advised by the Bureau of Meteorology (on its website).

89. An updated TSR, in accordance with the protocol, was sent by email to the Minister, DERM and other public agencies on Sunday, 9 January 2011 at 8:14am.

90. On Sunday, 9 January 2011 at 8:29pm, based on advice from Mr Drury, Mr Spiller (the then acting CEO of the Water Grid Manager) advised Messrs Peter Martin and Kerry

[21] See, for example, email from the duty engineer from the Flood Operations Centre dated 6 January 2011 at 2:54pm providing a situation report.

Dunn, of the Queensland Police Service, by email that very large inflows were being experienced and releases would be increased.

91. An updated TSR from Seqwater was provided by email by the Water Grid Manager to DERM (also sent to Seqwater) at 9:27pm on Sunday 9 January 2011. A teleconference was held at approximately 9:30pm on that evening at which Seqwater provided a verbal briefing on information contained in the TSR.

92. At 11:07pm on 9 January 2011, Mr Spiller provided updated advice by email to the Minister's Office, Messrs Martin and Dunn, Seqwater and others in relation to the then unfolding events.

93. At 11:23pm on 9 January 2011, Mr Spiller provided an email update to the CEO of BCC in relation to the Wivenhoe Dam operations. This provided the information Mr Spiller had then received from Seqwater as to the dam releases.

94. On 10 January 2011 at 5:31am, Mr Spiller provided further email advice to DERM, the Minister, Mr Martin and others advising that the Mount Crosby Weir and Fernvale Bridges were inundated. Councils were advised by email of the information that had been received from Seqwater in the TSRs, particularly that dam releases had been increased and that communications and technical information was then being prepared.

95. Mr Spiller distributed a further situation report by email at 9:46am on 10 January 2011 advising of the increased rainfall flowing into the Somerset and Wivenhoe Dams and the impacts of those inflows.

96. Mr Spiller distributed another TSR from Seqwater by email at 1:18pm on Tuesday, 11 January 2011.

97. Copies of the materials referred to in paragraphs [83] to [96] (inclusively, chronological as a bundle) are attached to the hard copy of these submissions.

98. Water Grid Manager personnel participated in numerous conferences, discussions and meetings during the week beginning 10 January 2011 in order to assist with the impacts of the flooding being experienced in Brisbane. In particular:

a. Mr Dennien attended a meeting with the Premier and staff from the Premier's office at approximately 3:00pm on Monday 10 January 2011 in order to provide the Premier with an update as to the water releases from Wivenhoe Dam and the communications being managed by the Water Grid Manager as at that stage;

b. at the request of the Premier's office, Mr Dennien attended the meetings of the Emergency Management Queensland committee at 8:00am and 5:00pm on Monday 10 January 2011, Tuesday 11 January 2011 and Wednesday 12 January 2011. Mr Dennien attended in order to provide updates as to dam releases (based on the information supplied by Seqwater in its TSRs). Mr John Bradley from DERM attended the meetings from Thursday 13 January 2011 in place of Mr Dennien;

c. at or about 3:00pm on 11 January 2011, Mr Dennien received a telephone call from Mr Peter Borrows from Seqwater. During that telephone call, Mr Borrows advised, for the first time, that releases of up to 10,000 cumecs may be possible in light of developing weather conditions. Immediately after that phone call concluded, at approximately 3:12pm, Mr Dennien telephoned the Premier's office to relay this news and, at approximately 3:24pm, Mr Dennien was placed on a telephone call to the Premier at the Disaster Management Centre at Kedron when he passed on this information;

d. staff members from the Water Grid Manager attended many meetings and participated in many discussions about the management of water supply from the Water Grid in light of the floods. The floods had significant impacts upon the water treatment plants at Mt Crosby and Helidon and a great deal of work was required to manage the impact of the floods on the ability of the Water Grid to supply quality drinking water to greater Brisbane. It took from around 10 January

2011 until around mid-March 2011 to complete this work and restore the full capacity of the Water Grid. Details of much of this work have been entered into OCA Incident Manager (**OCA**), the software that is used to record information about water supply emergencies pursuant to the Water Grid ERP. There is a very large amount of that information, not all of which was entered by or for the Water Grid Manager. If it would assist the Commission, the Water Grid Manager could provide further details of this work, although it may take some time to collate the relevant information because of its sheer volume and the number of Water Grid Manager staff members who were involved and will have recollections about the events that occurred in the aftermath of the floods.

99. The Water Grid Manager continued to receive TSRs from Seqwater as to dam releases and distributed those by email in January and February 2011.

100. The Water Grid Manager's communications unit received numerous queries from the public and the media as to the impact of the floods on the Water Grid and has responded to those queries where appropriate.

The Cooper report

101. Mr Dennien attended a meeting of the Emergency Management Group, with the Premier and various others, at or around 8:00am on 11 January 2011. After that meeting, Mr Dennien attended a meeting with the Premier and Mr Ken Smith, the then Director-General for the Department of the Premier and Cabinet. At that meeting, there was a discussion regarding the prospect of an independent review being undertaken with respect to the operation of the Wivenhoe Dam. Following that discussion, Mr Dennien agreed that he would arrange an independent review.

102. Mr Dennien subsequently made enquiries of DERM, Seqwater and others who provided several names of potential persons who could review the dam operations. The Water Grid Manager then contacted those persons by email and telephone and obtained details of their qualifications and experience.

103. In particular, the Water Grid Manager contacted Mr Brian Cooper by email and he provided his Curriculum Vitae in the morning of 11 January 2011.

104. After email consultations and discussions with Seqwater, DERM and the Office of the Water Supply Regulator, the Water Grid Manager decided that Mr Cooper was the most suitably qualified person to provide the independent review sought.

105. Mr Cooper was subsequently engaged by the Water Grid Manager to:

    a. provide a review of the operation of Wivenhoe Dam for compliance against the flood mitigation manual for the period commencing 13 December 2010 to 11 January 2011; and

    b. advise on whether the decisions and actions taken during the flood event regarding the operation of Wivenhoe Dam were prudent and appropriate.

106. Mr Cooper was engaged by email in the late afternoon on 11 January 2011. Mr Cooper was asked to provide a written preliminary advice by 9am on 12 January 2011 and a formal written report by 4pm on the same day.

107. Mr Cooper provided his initial report to Mr Dennien by email at 9:12am on Wednesday, 12 January 2011.

108. Mr Cooper provided his final report later in the day on 12 January 2011 as requested.

109. Mr Cooper's conclusions were that (in summary):

    a. the TSRs complied with the requirements of the new communication protocol introduced in late 2010, but that some more consistency in the information presented could be achieved;

    b. the strategies as set out in the flood mitigation manual had been followed, allowing for the discretion given to making variations in order to maximise flood mitigation effects; and

c. the actions taken and decisions made during the flood event appear to have been prudent and appropriate in the context of the knowledge available to those responsible for flood operations and the way events unfolded.

110. Mr Cooper's final report was provided on 13 January 2011 to the Minister, copied to the Department of Premier and Cabinet, DERM and the Minister's Office.

The response to the floods – February releases

111. Turning to the responses after the week of 10 January 2011 (those events are best described by others), the Water Grid Manager personnel assisted Seqwater in the preparation of an initial report for the Minister immediately after the flood event in or about the week commencing Sunday 16 January 2011. That Ministerial briefing was marked 'Cabinet-in-confidence'.

112. On 20 January 2011, the Minister wrote to the Chair of the Water Grid Manager enclosing a copy of a letter to Mr Phil Hennessey, the Chair of Seqwater. The Minister asked the Water Grid Manager to assist to ensure that the requests in the correspondence to Seqwater were dealt with as a matter of priority.

113. The Minister's letter to Seqwater asked it to attend to a number of tasks, including a review of the Full Supply Levels (FSL) of the Wivenhoe and Somerset Dams.

114. To try to assist, the Water Grid Manager decided to ask for information as to the likely impact on water security from its consultant hydrologists in order to be in a position to advise Seqwater whether any proposed releases would impact upon the ability of the Water Grid Manager to comply with its service levels as specified in the System Operating Plan. Those hydrologists were asked to use the hydrology model that is provided under licence to the Water Grid Manager by the QWC to determine whether a temporary reduction in storage[22] would impact on the ability of the Water Grid Manager to comply with the objectives and rules contained in the System Operating

[22] It is important to note that these models do not deal with the likely impacts of flood waters or the impacts of the releases from the Dams, only the ability to supply water to SEQ from the Water Grid.

Plan and its ability to manage the operation of the Water Grid so as to ensure that there was adequate water supply.

115. The modelling of a temporary reduction of the water stored in Wivenhoe Dam until the end of the current wet season showed negligible impact in the probability of triggering a re-introduction of water restrictions over either a five or ten year timeframe (known as Medium Level ''restrictions). That modelling showed that the probability of regional storages falling to 40% of combined capacity within five years would increase by less than 0.5%, if Wivenhoe Dam's water level was reduced to 75% of the volume of water which would be in the dam at FSL until the end of June 2011.

116. A meeting was held on 4 February 2011 which was attended by the Minister, representatives from Seqwater and Mr Dennien. At that meeting, Seqwater tabled a letter dated 4 February 2011 and spoke to the contents of that letter.

117. The Water Grid Manager subsequently wrote to Seqwater on 9 February 2011 formally confirming and advising that if a permanent reduction in the FSL of Wivenhoe Dam was being considered, that may have an impact upon the System Operating Plan's desired levels of service and that should be raised with the QWC directly.

118. Once the decision was made to release further water from Wivenhoe Dam in February 2011 (which the Water Grid Manager understands was made by the Minister), the Water Grid Manager's communications unit was involved in advising the public and the media of the proposed releases.

Tab 1

Strategic Plan

2011–15

Secure and efficient water through partnership and innovation

Contents

About this Strategic Plan

This Strategic Plan outlines the strategies the SEQ Water Grid Manager (Water Grid Manager) will implement over the next five years to achieve its business objectives. This Plan focuses on our role in embedding an industry best practice supply chain approach to the delivery of water services to South East Queensland residents and businesses. Our planned approach will ensure we discharge our statutory obligations by providing value-added services to our customers and stakeholders.

About us

The Water Grid Manager is a Government-owned statutory body responsible for managing the SEQ Water Grid (Water Grid). We maintain regional water security by directing water to where it is needed most, and ensure sufficient high quality water supplies are provided throughout the South East Queensland region in a cost-effective manner.

In 2008, South East Queensland's water supply network was reformed from 22 different government organisations with overlapping infrastructure management interests and geographic areas of influence to an integrated regionally-focused system of seven organisations each with a specific focus. This new system is based on a coordinated supply chain management approach, connecting the region's water supplies, catchments and storages. It replaces the past practice of individual entities within the same region operating in isolation of each other, and now provides holistic management of the supply.

We were established to provide specialist strategic independent advice and direction on the best way to operate the Water Grid. As we do not own infrastructure assets but hold the water entitlements for South East Queensland, we are able to make strategic decisions based on coordinating the production and transportation of water to where it is needed most and at the lowest possible cost; rather than based on an ownership interest in infrastructure assets.

The use of an overarching manager, in this case us, removes any vested interest in terms of ownership of assets or linkages to specific geographic locations.

The table below lists our primary roles, responsibilities and the legislative and policy basis for our work.

Legislative context			
Water Act 2000 *South East Queensland Water (Restructuring) Act 2007* *Financial Accountability Act 2009 (Qld)* *Statutory Bodies Financial Arrangements Act 1982 (Qld).*			
• Enact the *South East Queensland System Operating Plan* (System Operating Plan). • Input into drought response plans.	• Purchase services. • Sell water.	• Comply with *The Market Rules SEQ Water Market* (Market Rules).	• Act commercially. • Not profit seeking.

Roles and responsibilities summary				
Strategic operation To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations.	**Customer service** To provide a service that meets our customers' expectations.	**Risk management** To manage risks effectively through planning, development and implementation of practical tools and business processes.	**Financial management** To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, the Water Grid Manager's balance sheet.	**Whole-of-Grid facilitation** To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision.

Our vision, mission and values

Our vision and mission statements articulate our roles and responsibilities in being a valued service provider to the Water Grid.

We strive to deliver products and services that exceed the expectations of our customers and stakeholders. We envisage, and aim to deliver, an integrated supply chain for the water products used by the community. To do this, we partner with our Grid Service Providers and Grid Customers to deliver high specification water to where it is needed, when it is needed.

Vision

To deliver world class water security and value to our customers.

Mission

Safe, secure and efficient bulk water services for South East Queensland through partnership and innovation.

Values

Our values reflect those attitudes and behaviours that are important to us in delivering our roles and responsibilities. By identifying and describing these behaviours, we will build a culture that will enable us to be a successful organisation and a great place to work.

Our organisational values are:

- innovative
- deliver value
- motivated
- adaptable
- professional.

The behavioural statements below describe how we will demonstrate our organisational values in our day-to-day interactions with each other, our stakeholders and our customers.

Value	Behavioural statement
Innovative	• We inquire, listen and challenge so that we are fully informed to make wise and effective decisions. • We consider innovative processes and solutions taking place in other industries, and identify opportunities to adapt these to our operations.
Deliver value	• We strive to add value from a whole-of Grid perspective by collaborating with our service providers, customers and stakeholders, and by facilitating information sharing and communication. • We encourage continuous learning and skilling so that we are able to deliver services above and beyond our customers' expectations.

Value	Behavioural statement
Motivated	• We demonstrate leadership and take pride in delivering on our commitments as we are keen to make a difference.
Adaptable	• We aim to be open minded and flexible so that we can respond to our customers' needs in a dynamic water market.
Professional	• We do what we say in a timely manner because we have a plan and have confidence and trust in who will be accountable to deliver it. • We seek to define and achieve best practice in all aspects of our work by adopting a straight-talking approach, being open and honest, and showing respect for the expertise of others.

Our customers

We sell raw water, treated bulk water and purified recycled water. From 1 July 2010, we will supply three council-owned distribution/retail entities; Allconnex Water, Queensland Urban Utilities and Unitywater; as well as three power stations and other rural and industrial customers. We have commercial contracts in place with our customers for the financial and service delivery specifications relevant to the provision of our services. In the future, other wholesale customers, both inside and outside of South East Queensland, may also become Grid Customers.

A key milestone for the Water Grid will be the consolidation of the 10 council water businesses into, the above mentioned, three distribution/retail entities from 1 July 2010. This event will occur against a background of renegotiated Grid Contracts.

Accordingly, our customer focused approach targeting this stakeholder group will:

- build their awareness and understanding of the Water Grid, how it operates, the role of our organisation and the value-adding services we can provide
- foster their involvement and collaboration in existing and future whole-of-Grid projects
- better align their key operational, financial and emergency processes with those of the Water Grid, where appropriate.

Our service providers

In order to deliver our services to our customers, we purchase water services from three State-owned bulk water entities; Seqwater, WaterSecure and Linkwater. We partner with these service providers to provide an end-to-end supply chain to deliver water to our retail customers.

While our relationship with the Grid Service Providers is at a more mature stage of development than with our Grid Customers, the need to better align current and emerging operating processes means we also need to engage proactively with this stakeholder group. We will focus on integrating the operations of the Water Grid as well as ensuring processes

and specifications are in place so we can deliver water security, water quality and cost efficiency outcomes from a whole-of-Grid perspective.

Our stakeholders

We have a number of stakeholders who we regularly engage and work with to deliver our business priorities and capabilities:

- our responsible Ministers
- the Department of Environment and Resource Management
- the Queensland Water Commission
- Queensland Treasury
- the Queensland Treasury Corporation
- the regulators.

We need to continue to engage with key individuals within these stakeholder organisations to generate greater understanding of the value-adding services we provide to the Water Grid, our customers and our service providers. In particular, our approach will deliver initiatives, which foster confidence among our primary government stakeholders in our emergency management function and capabilities.

Future directions for our business

The Water Grid Manager is responsible for managing the Water Grid to ensure the South East Queensland community has a secure, sustainable, reliable and high quality water supply at an economically responsible price to help maintain our economic prosperity and lifestyle.

We have analysed a number of environmental factors that will influence the strategic direction for our business over the next five years.

- Climate variability – Australia experiences significant climate variability. In South East Queensland, drought, floods, bushfires, severe storms and other events can significantly affect our water security. The challenge for us is to understand the variability and changes in our raw water sources, and balance the use of climate resilient water to provide a security guarantee to our customers and the community.
- Global economic position – the global financial crisis experienced in 2008 and 2009 resulted in ongoing caution regarding the national economic position. Our role is to ensure the Water Grid operates as efficiently as possible; ensuring we deliver cost-effective products to our customers to reduce any impact on the economic position of our State.
- National water initiative – the national water initiative has impacts on water service providers throughout Australia through the development of water policy and initiatives,

particularly in encouraging information transparency and innovative ways to ensure sustainable urban water supplies. Our role is to help facilitate the implementation of national initiatives across the Water Grid.

- Technology – advancements in technology are unparalleled. The Water Grid can embrace technology to assist in delivering an end-to-end supply chain for water products. It is our role to facilitate the adoption of new information, communication and technology and ensure we create effective and optimal operations across the Water Grid.
- Customer service expectation – quality customer service is an expectation of everyone regardless of the service being received. A customer-centric approach to our business is key to us becoming a trusted business partner with our customers. To do this, we need to understand their needs and communicate the value of our services to assist them in the delivery of their outcomes.
- Transparency – the public is seeking increased transparency regarding the services delivered by both the public and private sectors. We have an opportunity to be the trusted source of information on the Water Grid for South East Queensland. To achieve this role, we need to gain the trust of our government stakeholders through a 'no surprises' approach to managing our business and the Water Grid.
- Regional growth – to support the growth of regional areas in South East Queensland, the Government has implemented a policy to decentralise some operations from Brisbane's central business district. The water authorities have been identified as a sector that will move from the central business district to Ipswich.

  This provides the water authorities with an opportunity to consider their operations and centralise where practicable and beneficial. As discussions on the move to Ipswich are in the preliminary stages, with timing yet to be finalised, we have not provided a budget for this relocation at this stage.
- Aging workforce – Within the South East Queensland water industry, the current average age of workers is 57 years. Our challenge is to automate menial or manual jobs to cater for a reduced workforce. In addition, we need innovative training and recruitment strategies to encourage current and potential employees to choose a career in the Water Grid.
- Growing population – it is estimated that the population of South East Queensland will increase to 4.4 million by 2031. This places a huge demand on our water resources. We need to provide professional advice to the Queensland Water Commission regarding when new sources of supply may be needed, and manage the Water Grid to ensure this enlarged population has access to the water it needs.

Operating the Water Grid post-drought

This strategic planning period provides new challenges for the operation of the Water Grid. Over the last two years, our combined dam levels have increased from 16.7 per cent (lowest point August 2007), to 97.6 per cent in March 2010.

With our dams full and our climate-resilient water sources providing water to the Water Grid this brings a number of new challenges.

With permanent water conservation measures now in place, we are required to operate the Water Grid under the efficiency and cost effectiveness rule. To do this, we will need to balance cost effectiveness while maintaining the operational capacity of strategic Water Grid assets such as the regional interconnecting bulk water mains and our climate-resilient water sources.

Strategic intent

Taking into account these environmental factors, our strategic intent over the next five years is:

- We will maintain water security, sustainability, reliability and quality in South East Queensland through managing the Water Grid to maintain a safe, reliable and affordable water supply to mitigate the risks of climate impacts.
- We will manage our budget optimally in order to put downward pressure on the costs of the Water Grid.
- We will engage with national water initiatives and facilitate information and compliance reporting programs.

- We will develop best practice technological solutions to support the efficient and effective management of the Water Grid.
- We will maintain a customer service focus within our business providing services that add value to our customers' operations.
- We will deliver on our statutory obligations, on time, every time, and provide reliable and timely information to our stakeholders, customers and the public.
- We will implement strategies to ensure a strong and capable workforce into the future.

Our corporate strategy

The Water Grid Manager's roles and responsibilities provide the framework for it to deliver on its statements of strategic intent and form the focus of its corporate strategy for 2011–15. Our roles and responsibilities encompass 'what we do' in delivering on our legislative and operational requirements. This is achieved through our capability areas ('how we do it') of people and learning, governance and compliance and whole-of-Grid facilitation.

As we do not own infrastructure assets but hold the water entitlements for South East Queensland, we are able to make strategic decisions based on coordinating the production and transportation of water to where it is needed most and at the lowest possible cost; rather than based on an ownership interest in infrastructure assets.

To achieve this oversight role in managing the Water Grid our business delivers specialised services. These specialist roles are outlined in the diagram below.

Roles and responsibilities	**Strategic operation** To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations. This includes: • water security • whole-of-Grid cost efficiency.	**Customer service** To provide a service that meets our customers' expectations. This includes: • customer management • services cost compliance • product specification and compliance • service specification and compliance • water quality management integration.	**Risk management** To manage risks effectively through planning, development and implementation of practical tools and business processes. This includes: • emergency management and coordination of level 3, 4 or 5 incidents • facilitate whole-of-Grid risk management.	**Financial management** To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, the Water Grid Manager's balance sheet. This includes: • borrowing program requirements • debt management strategy • managing cash flows • financial transaction compliance • whole-of-Grid cost optimisation.	**Whole-of-Grid facilitation** To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision. This includes: • SEQ Water Grid Technology Strategy • training and skills development on initiatives with whole-of-Grid mutual benefit • coordinating responses to strategic issues.
Capability areas	**People and learning** To attract, manage and retain the staff we need to successfully deliver our business objectives.				
	Governance and compliance To deliver on our statutory obligations, to a high standard using best practice governance processes.				

The following pages outline our role, five-year objective and strategies over the period of this Strategic Plan.

Our strategy – delivering on our roles and responsibilities

Strategic operation	Customer service	Risk management	Financial management	Whole-of-Grid facilitation
Role				
To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queensland through directing Water Grid operations.	To provide a service that meets our customers' expectations.	To manage Water Grid emergencies and whole-of-Grid risks effectively through planning, development and implementation of practical tools and business processes.	To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, the Water Grid Manager's balance sheet.	To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision.
Objectives				
To accurately prepare short- and medium-term service specifications and publish Grid Instructions to our Grid Service Providers to ensure 100% compliance to the System Operating Plan.	Clearly specify and deliver services our customers want and have them regard us as business partners and as providers of a value-adding service.	Be highly regarded as risk management and emergency response managers and have Water Grid risks managed to a level agreed by all Grid Participants.	To accurately forecast the financial position of the Water Grid and ensure an optimised cost of funds. To have the Water Grid Manager independently assessed as an efficient business.	Deliver, in partnership, a technology vision and workforce plan that will enable a highly regarded supply chain.
Strategy				
Strategy 1 Develop and implement, in consultation with Grid Participants, a set of whole-of-Grid optimised plans that clearly articulate the specifications and standards for Water Grid compliance.	Strategy 1 Increase our customers' knowledge and understanding of the Water Grid Manager.	Strategy 1 Ensure the Water Grid can effectively respond to emergencies by: • building a state-of-the-art communications hub to facilitate a 'centre of truth'	Strategy 1 Partner with Queensland Treasury and the Queensland Treasury Corporation to establish and implement effective strategies to manage our interest rate risk.	Strategy 1 Develop and implement technology architecture to support the provision of a whole-of-Grid supply chain.

Strategic operation	Customer service	Risk management	Financial management	Whole-of-Grid facilitation
		Strategy 1 continued • use scenario planning to identify and prepare contingency plans and materials for high risk impacts • act as educators of the SEQ Water Grid Emergency Response Plan • facilitate testing and validation of our emergency response procedures.		
Strategy 2 Ensure the Water Grid specifications and standards are encompassed and managed in the Grid Contracts and ensure these can be measured objectively and accurately.	Strategy 2 Assess, negotiate, deliver and monitor quality services that our new customers (the three new retail/distribution entities) require from us.	Strategy 2 Implement guidelines and processes that ensure the Water Grid's critical infrastructure is protected in line with national security standards.	Strategy 2 In conjunction with the Queensland Water Commission enhance our ability to determine accurate medium-term operational forecasts through: • facilitating the receipt of the accurate forecasting of water demand • facilitate the receipt of Grid Service Providers cost information and forecasts.	Strategy 2 Develop and implement standardised competencies, processes and protocols to support workforce and human resource planning.
Strategy 3 Prepare a Water Grid operating strategy by using best practice modelling tools and methodology to ensure Grid Instructions comply with the System Operating Plan.	Strategy 3 Implement proactive communications with our government stakeholders by providing advice on the optimal operations and benefits of the Water Grid.	Strategy 3 Implement and make transparent the SEQ Water Grid Risk Management Plan and associated guidelines.	Strategy 3 Instruct the Water Grid to enable it to operate at optimum cost.	Strategy 3 Promote the benefits of the Water Grid to government, business, and industry.

Strategic operation	Customer service	Risk management	Financial management	Whole-of-Grid facilitation
Strategy 4 Prepare a five-year Statement of Capability Assessment to identify and plan asset performance requirements and, capacity and capability gaps against projected wholesale customer needs.			Strategy 4 Investigate future revenue sources via new wholesale customers.	Strategy 4 Implement a sustainability policy to manage the Water Grid's effect on our environment.

Capability areas – building our capability

People and learning	Governance and compliance
Role	
To attract, manage and retain the staff we need to successfully deliver our business objectives.	To deliver on our statutory obligations to a high standard using best practice governance processes.
Objective	
To provide an attractive work environment for current and future staff, providing professional challenges and an enjoyable team culture.	To meet our statutory obligations on time, every time.
Strategy	
Improve our team effectiveness through well-documented and automated business processes that assist staff to undertake their duties.	Ensure our statutory obligations are identified, documented and managed in accordance with the relevant legislation.
Develop innovative career paths across the Water Grid for our staff.	Implement and maintain policies and processes to improve governance standards.
Develop our team culture in line with the values and behaviours important to the staff.	Improve our project and program management capability to deliver outcomes on time, on budget and to the agreed quality standard.
Support the government's regional growth program by providing options and advice regarding the collaborative benefits of our moving to Ipswich.	

Our financial outcomes

The following tables outline our projected five year financial performance. This financial performance has been based on the following:

- the bulk water price path announced by the Government in 2008
- projected bulk water services costs as outlined in our contractual relationships with our Grid Service Providers
- the continued financial backing of the State Government in supporting us to access funding through the Queensland Treasury Corporation to fund the differential between the bulk water price path and the full cost of operating the Water Grid.

Income statement

	2009–10 Forecast actual '000	2010–11 Budget '000	2011–12 Forecast '000	2012–13 Forecast '000	2013–14 Forecast '000	2014–15 Forecast '000
Operating revenue						
Sales revenue	354,365	510,580	615,758	731,332	851,165	1,009,353
Other	52,864	25,564	25,210	25,210	25,210	25,210
TOTAL OPERATING REVENUE	**407,229**	**536,144**	**640,968**	**756,542**	**876,375**	**1,034,563**
Operating costs						
Bulk water purchases	690,363	878,984	924,183	979,910	1,013,014	1,031,614
Employee expenses	2,180	5,050	5,252	5,462	5,680	5,907
Supplies and services	4,440	5,669	6,179	6,426	6,683	6,950
Depreciation and amortisation	93	100	135	260	350	450
TOTAL OPERATING COSTS	**697,076**	**889,803**	**935,749**	**992,058**	**1,025,727**	**1,044,921**
EARNINGS BEFORE INTEREST AND TAX (EBIT)	(289,847)	(353,659)	(294,781)	(235,516)	(149,352)	(10,358)
Finance costs	24,761	53,760	81,586	107,918	131,181	148,482
PROFIT (LOSS) BEFORE TAX	(314,608)	(407,419)	(376,367)	(343,434)	(280,533)	(158,840)
Income tax expense	0	0	0	0	0	0
PROFIT(LOSS) AFTER TAX	**(314,608)**	**(407,419)**	**(376,367)**	**(343,434)**	**(280,533)**	**(158,840)**

Balance sheet

	2009–10 Forecast actual '000	2010–11 Budget '000	2011–12 Forecast '000	2012–13 Forecast '000	2013–14 Forecast '000	2014–15 Forecast '000
Current assets						
Cash	121	121	121	121	121	121
Receivables	69,346	93,730	111,603	131,225	151,570	178,323
Other	20	20	20	20	20	20
TOTAL CURRENT ASSETS	69,487	93,871	111,744	131,366	151,711	178,464
Non-current assets						
Property, plant and equipment	399	989	1,264	1,464	1,824	2,174
TOTAL NON-CURRENT ASSETS	399	989	1,246	1,464	1,824	2,174
TOTAL ASSETS	**69,886**	**94,860**	**113,008**	**132,830**	**153,535**	**180,638**
Current liabilities						
Accrued employee benefits	345	472	647	887	1,215	1,665
Payables	99,785	121,212	125,789	133,805	138,798	139,948
TOTAL CURRENT LIABILITIES	100,130	121,684	126,436	134,692	140,013	141,613
Non-current liabilities						
Other financial liabilities	639,862	1,050,701	1,440,464	1,795,464	2,091,381	2,275,724
TOTAL NON-CURRENT LIABILITIES	639,862	1,050,701	1,440,464	1,795,464	2,091,381	2,275,724
TOTAL LIABILITIES	**739,992**	**1,172,385**	**1,566,900**	**1,930,156**	**2,231,394**	**2,417,337**
NET ASSETS	(670,106)	(1,077,525)	(1,453,892)	(1,797,326)	(2,077,859)	(2,236,699)
Retained earnings	(670,106)	(1,077,525)	(1,453,892)	(1,797,326)	(2,077,859)	(2,236,699)
TOTAL EQUITY	**(670,106)**	**(1,077,525)**	**(1,453,892)**	**(1,797,326)**	**(2,077,859)**	**(2,236,699)**

Cash flow statement

	2009–10 Forecast actual '000	2010–11 Budget '000	2011–12 Forecast '000	2012–13 Forecast '000	2013–14 Forecast '000	2014–15 Forecast '000
Cash flows from operating activities						
Receipts from customers	333,937	486,196	597,885	711,710	830,820	982,600
Grants and other contributions	46,200	25,200	25,200	25,200	25,200	25,200
Payments for supplies and services	(705,154)	(863,226)	(925,785)	(978,320)	(1,014,704)	(1,037,414)
Employee expenses	(2,180)	(5,050)	(5,252)	(5,462)	(5,680)	(5,907)
Interest received	364	364	10	10	10	10
Other	0	0	0	0	0	0
NET CASH PROVIDED BY OPERATING ACTIVITIES	**(326,833)**	**(356,516)**	**(307,942)**	**(246,862)**	**(164,354)**	**(35,511)**
Cash flows from investing activities						
Payments for property, plant and equipment	(30)	(690)	(410)	(460)	(710)	(800)
NET CASH PROVIDED BY/USED IN INVESTING ACTIVITIES	**(30)**	**(690)**	**(410)**	**(460)**	**(710)**	**(800)**
Cash flows from financing activities						
Proceeds from borrowings	325,265	357,206	308,352	247,322	165,064	36,311
NET CASH PROVIDED BY/USED IN FINANCING ACTIVITIES	**325,265**	**357,206**	**308,352**	**247,322**	**165,064**	**36,311**
Net increase/decrease in cash held	(1,598)	0	0	0	0	0
Cash at the beginning of the financial year/quarter	1,719	121	121	121	121	121
CASH AT THE END OF THE FINANCIAL YEAR	**121**	**121**	**121**	**121**	**121**	**121**

Tab 2

SEQ Water Grid manager

Operational Plan

2011

Secure and efficient water through partnership and innovation

Contents

About this document

The Operational Plan 2011 is divided into four parts:

- Part one provides the SEQ Water Grid Manager's Board of Directors' (the Board) sign-off on the operational performance of the SEQ Water Grid Manager (Water Grid Manager).
- Part two provides information on our corporate objectives and strategies.
- Part three incorporates those matters that the *South East Queensland Water (Restructuring) Act 2007* mandates should be included in the Operational Plan and additional matters that the responsible Ministers require to be included.
- Part four includes attachments which provide additional information and form part of the Operational Plan.

Part one – performance

This is the Board's statement and agreement of performance with the responsible Ministers.

This Operational Plan, for the financial year 2010–11, is presented in accordance with Part 4 of the *South East Queensland Water (Restructuring) Act 2007.*

It represents a formal performance agreement between the Board and the responsible Ministers, the Treasurer and Minister for Employment and Economic Development; and the Minister for Natural Resources, Mines and Energy and Minister for Trade, with respect to the financial and non-financial performance targets specified for the financial year. This Operational Plan also represents an acknowledgment of the major roles and responsibilities; activities and financial arrangements of the organisation for 2010–11.

This Operational Plan is consistent with the SEQ Water Grid Manager's Strategic Plan 2011–15 submitted to, and agreed by, the responsible Ministers in accordance with Part 4 of the *South East Queensland Water (Restructuring) Act 2007.*

Major changes to key assumptions and outcomes detailed in this Operational Plan, and any that come to our attention during the year, will be brought to the attention of the responsible Ministers, though the submission of the quarterly reports.

This Operational Plan is signed by the Chair on behalf of all the Directors in accordance with a unanimous decision of the Board.

.....
Gary Humphrys
Chair
SEQ Water Grid Manager Board
Date: 17.06.2010

.....
The Honourable Stephen Robertson MP
Minister for Natural Resources, Mines and Energy and Minister for Trade
Date:

.....
The Honourable Andrew Fraser MP
Treasurer and Minister for Employment and Economic Development
Date:

Part two – corporate objectives and strategies

Core business

The Water Grid Manager is a Government-owned statutory body responsible for managing the SEQ Water Grid (Water Grid). We maintain regional water security by directing water to where it is needed most, and ensure sufficient high quality water supplies are provided throughout the South East Queensland region in a cost effective manner.

In 2008, South East Queensland's water supply network was reformed from 22 different government organisations with overlapping infrastructure management interests and geographic areas of influence to an integrated regionally-focused system of seven organisations each with a specific focus. This new system is based on a coordinated supply chain management approach, connecting the region's water supplies, catchments and storages. It replaces the past practice of individual entities within the same region operating in isolation of each other, and now provides holistic management of the supply.

We were established to provide specialist strategic independent advice and direction on the best way to operate the Water Grid. As we do not own infrastructure assets but hold the water entitlements for South East Queensland, we are able to make strategic decisions based on coordinating the production and transportation of water to where it is needed most and at the lowest possible cost; rather than based on an ownership interest in infrastructure assets.

The use of an overarching manager, in this case us, removes any vested interest in terms of ownership of assets or linkages to specific geographic locations.

The table below lists our primary roles, responsibilities and the legislative and policy basis for our work.

Legislative context			
Water Act 2000 *South East Queensland Water (Restructuring) Act 2007* *Financial Accountability Act 2009 (Qld)* *Statutory Bodies Financial Arrangements Act 1982 (Qld).*			
• Enact the *South East Queensland System Operating Plan* (System Operating Plan). • Input into drought response plans.	• Purchase services. • Sell water.	• Comply with *The Market Rules SEQ Water Market* (Market Rules).	• Act commercially. • Not profit seeking.

Roles and responsibilities summary				
Strategic operation To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations.	**Customer service** To provide a service that meets our customers' expectations.	**Risk management** To manage risks effectively through planning, development and implementation of practical tools and business processes.	**Financial management** To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, our organisation's balance sheet.	**Whole-of-Grid facilitation** To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision.

Strategic operation

Our key responsibility is to manage the operation of the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders. We do this by directing the Water Grid's operations through:

- issuing Grid Instructions
- delivering service contract specifications
- preparing whole-of-Grid plans.

This ensures an integrated service delivery across a supply chain.

Customer/contract management

We have a number of customers and stakeholders who we regularly engage and work with to deliver our business objectives. We are a contracting organisation and we ensure that contractual services are delivered under the contracts. Further, we aim to provide a service that exceeds our customers' expectations.

Risk management

To ensure an appropriate risk profile is maintained for the Water Grid we facilitate a whole-of-Grid risk management approach. We do this through planning, development and implementation of practical tools and business processes. We also undertake the lead role for any Water Grid emergencies by managing the Water Grid's emergency response under the protocols outlined in the SEQ Water Grid Emergency Response Plan.

Financial management

A key function of our operations is to buy water services and sell wholesale water products in South East Queensland to optimise, where possible, our organisation's balance sheet. We manage the financial transactions, balance sheet risk and debt profile for the Water Grid.

Whole-of-Grid facilitation

To realise the benefits of an integrated Water Grid management model, we promote a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision. Initiatives across the Water Grid will focus on building integrated operations of the Water Grid through ensuring processes and specifications are in place so that we can deliver water security, water quality and cost efficiency outcomes across the Water Grid.

People and learning

People and learning form a foundational capability for our business. To deliver our operational functions we need to attract, manage and retain the staff we need to successfully deliver our business objectives.

Governance and compliance

As a Government-owned statutory body, we must ensure that we have high governance standards and maintain our compliance with the regulatory instruments that control the Water Grid. We do this through delivering on our statutory obligations, to a high standard, using best practice governance processes.

Future directions for our business

Our strategic and operational direction for 2011–15 is shaped by a number of environmental factors and our management solutions for these issues. We recognise that the following factors influence our business:

- climate variability
- global economic position
- national water initiative
- technology
- customer service expectation
- transparency
- an aging workforce
- a growing population
- Regional growth
- a new operating strategy.

Climate variability

Australia experiences significant climate variability. In South East Queensland, drought, floods, bushfires, severe storms and other events can significantly affect our water security.

In operating the Water Grid we must understand the variability and changes in our climate-dependant raw water sources, and balance the use of climate-resilient water sources (desalinated and purified recycled water).

To help manage our climate variability, for this operating period, we will prepare a one-year and a five-year operating strategy for the Water Grid that will outline the various ways we will operate the Water Grid network. This will be done in partnership with our bulk water suppliers and will be based on robust hydrological modelling.

Global economic position

The global financial crisis experienced in 2008 and 2009 resulted in ongoing caution regarding the national economic position. Our role is to ensure that the Water Grid operates as efficiently as possible; ensuring we deliver cost effective products to our customers to reduce any impact on the economic position of our State.

To operate the Water Grid as efficiently as possible, during 2010–11 we will continue to lead the following whole-of-Grid efficiency projects:

- energy
- laboratory capacity
- cost optimisation.

Collectively, these projects will help deliver tangible operational efficiencies and reduce operating costs through:

- delivering whole-of-Grid efficient operations for electricity use
- improving operational efficiency and removing duplication across the Water Grid in water quality testing and maintenance
- delivering cost efficient operations of the Water Grid.

National water initiative

The national water initiative has impacts on water service providers throughout Australia through the development of water policy and initiatives, particularly in encouraging information transparency and innovative ways to ensure sustainable urban water supplies. We will continue to play a lead role in facilitating the implementation of the national water initiatives across the Water Grid.

Technology

Using technology effectively is essential for the Water Grid to deliver a modern integrated system that meets the needs of our customers and the community. The Water Grid needs to adapt many of its manual processes and legacy systems into smart technological solutions to deliver the value that integration brings. Our role is to facilitate a whole-of-Grid approach to delivering information, communication and technology, through the Water Grid Information and Communication Technology Strategy, and ensure we create effective and optimal operations across the Water Grid.

In 2010–11 we will start to pilot some whole-of-Grid information and communication technology initiatives to automate and improve processes for:

- delivery of Grid Instructions
- management of water quality
- management of risk, incidents and emergency response
- whole-of-Grid enterprise architecture as a base for future developments.

In addition, we will be developing a strong information and communication technology foundation in our business through the roll-out of new managed desktop/network services.

Customer service expectation

Quality customer service is an expectation of all of our customers. A customer centric approach to our business is essential to us becoming a trusted business partner with our customers. To do this, we need to understand our customers' needs and communicate the value of our services to assist them in delivery of their outcomes.

This year we will focus on increasing our customers' and stakeholders' knowledge and understanding of our organisation and gaining their trust in our ability to operate the Water Grid. Key activities will include the implementation of our Communications and Stakeholder Relations Plan, delivery of Water Grid education and training sessions to our customers and stakeholders and the development of proactive emergency response communications tools.

Transparency

The public are seeking increased transparency regarding the services delivered by the public and private sectors. We have an opportunity to be the trusted source of information on the Water Grid for the South East Queensland region. To achieve this, we need to gain the trust of our Government stakeholders through a 'no surprises' approach to managing our business and the Water Grid.

In 2010–11 a number of our operational strategies and activities will contribute to ensuring we are transparent in the way we do business, these include:

- continuing to improve our website to make it the 'central point of truth' for Water Grid operations
- delivering proactive, timely and accurate advice on the optimal operations and benefits of the Water Grid to our Government stakeholders to ensure a 'no surprises' approach to operations
- implementing a Communications and Stakeholder Relations Plan.

Aging workforce

Within the water industry in South East Queensland the average age of workers is 57 years. Our challenge is to automate menial or manual jobs to cater for a reduced workforce. In addition, we need innovative training and recruitment strategies to encourage current and potential employees to choose a career in the Water Grid. During this year we will deliver phase 2 of the Water Grid Skills Formation Strategy, which is designed to ensure that we have the people and skills needed to operate the Water Grid.

Growing population

The population in South East Queensland is likely to increase to 4.4 million by 2031. This places huge demand on our water resources. In 2010–11 we will continue to provide professional advice on South East Queensland's water security position to the Queensland Water Commission.

Regional growth

To support the growth of regional areas of South East Queensland, the Government has implemented a policy to decentralise some operations from Brisbane's central business district. The water authorities have been identified as a sector that will move from the central business district to Ipswich. This provides the water authorities with an opportunity to consider their operations and centralise where practicable and beneficial. As discussions on the move to Ipswich are in the preliminary stages, with timing yet to be finalised, we have not provided for a budget for this relocation at this stage.

Moving to Ipswich may lead to a potential loss of current staff and expertise. However, it may also provide the opportunity to:

- attract employees in the water industry who want to work for a 'centre of excellence'
- position our organisation as the experts in managing a water grid to the water industry and other jurisdictions.

Our role is to support the Government's policy by providing options and advice in relation to the optimal design for the water entities move to Ipswich and the collaborative benefits that could be achieved.

New operating strategy

In June 2009, our region's main dams were at a combined level of 77 per cent. As a result, we started the 2010 operating year running the Water Grid under the water security rule in the Queensland Water Commission's System Operating Plan (version 2.1). This meant our primary focus was to ensure we maintained water security for the region. On 1 December 2009, with the introduction of permanent water conservation measures, we began operating the Water Grid to a cost efficient rule.

In March 2010, the combined level of the region's major dams was at more than 95 per cent. As a result, we will continue to operate the Water Grid under the System Operating Plan's efficient and cost effective operating rule.

With permanent water conservation measures now in place, we are required to operate the Water Grid under the efficiency and cost effectiveness rule. To do this, we will need to balance cost effectiveness while maintaining the operational capacity of strategic Water Grid assets such as the regional interconnecting bulk water mains and our climate-resilient water sources.

Water Grid communications

In accordance with a letter from the Minister for Natural Resources, Mines and Energy, and Minister for Trade dated 22 April 2010, communications for the Water Grid is to be delivered in an integrated model from 1 July 2010. The new SEQ Water Grid Communications Unit is within our organisation. The implementation is to be done at nil additional cost.

The SEQ Water Grid Communications Unit will:

- be the single point of truth for messages about the Water Grid
- manage communications with the responsible Ministers.

The Chairs of the four bulk water entities, Seqwater, LinkWater, WaterSecure and the SEQ Water Grid Manager have, on 18 June 2010, provided their report on the establishment of this integrated Water Grid communications function to the Minister for Natural Resources, Mines and Energy, and Minister for Trade. This function will begin, in full, on 1 July 2010.

Customer service focus

In 2011 we will focus on further developing a customer centric business. We understand at the core of operating a successful Water Grid is supply chain management where the needs of our customers and stakeholders are at the centre of what we do. Our integrated water supply chain is only as strong as each link in the chain. The matrix below details the customer and stakeholder relationships.

Legend ✪ Stakeholder ☺ Customer ☑ Service provider

Delivers services / Receives services	Water Grid Manager	Seqwater	WaterSecure	LinkWater	Allconnex Water	Queensland Urban Utilities	Unitywater	Power stations	Other customers	QWC	DERM	Responsible Ministers
Water Grid Manager		☺	☺	☺	☑	☑	☑	☑	☑	✪	✪	✪
Seqwater	☑		✪	✪	✪	✪	✪			✪	✪	✪
WaterSecure	☑	✪		✪		✪		✪	✪	✪	✪	✪
LinkWater	☑	✪	✪		✪	✪	✪			✪	✪	✪
Allconnex Water	☺	☑		☑		✪	✪			✪	✪	
Queensland Urban Utilities	☺	☑	☑	☑	✪		✪			✪	✪	
Unitywater	☺	☑		☑	✪	✪				✪	✪	
Power stations	☺	✪	✪							✪		
Other customers	☺		✪							✪		
QWC	✪	✪	✪	✪	✪	✪	✪	✪	✪		✪	✪
DERM	✪	✪	✪	✪	✪	✪	✪			✪		✪
Responsible Ministers	✪	✪	✪	✪				✪	✪	✪	✪	

Our approach for 2010–11

Our roles and responsibilities provide a framework for us to deliver on our statements of strategic intent and form the focus of our corporate strategy for 2010–15.

Our roles and responsibilities encompass 'what we do' in delivering on our legislative and operational requirements. This is achieved through our capability areas ('how we do it') of people and learning, governance and compliance and whole-of-Grid facilitation. This is outlined in the diagram below.

Roles and responsibilities	**Strategic operation** To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations. This includes: • water security • whole-of-Grid cost efficiency.	**Customer service** To provide a service that meets our customers' expectations. This includes: • customer management • services cost compliance • product specification and compliance • service specification and compliance • water quality management integration.	**Risk management** To manage risks effectively through planning, development and implementation of practical tools and business processes. This includes: • emergency management and coordination of level 3, 4 or 5 incidents • facilitate whole-of-Grid risk management.	**Financial management** To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, our organisation's balance sheet. This includes: • borrowing program requirements • debt management strategy • managing cash flows • financial transaction compliance • whole-of-Grid cost optimisation.	**Whole-of-Grid facilitation** To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision. This includes: • SEQ Water Grid Technology Strategy • training and skills development on initiatives with whole-of-Grid mutual benefit • coordinating responses to strategic issues.
Capability areas	**People and learning** To attract, manage and retain the staff we need to successfully deliver our business objectives.				
	Governance and compliance To deliver on our statutory obligations, to a high standard using best practice governance processes.				

We action our strategic intent through the following short-term objectives:

- develop and implement standards and a best practice operating strategy to manage the Water Grid to maintain water security, sustainability, reliability and quality in South East Queensland
- implement the cost optimisation and energy projects to reduce operating cost of the Water Grid
- continue to play a lead role in facilitating the implementation of national initiatives across the Water Grid
- implement a new technology operating platform for our business and implement pilot information and communication technology programs to improve our management of the Water Grid
- implement activities to proactively communicate with customers and stakeholders to add value to their engagement with our business
- continue to deliver on our statutory obligations—on time, every time—and provide reliable and timely information to our stakeholders, customers and the public.
- consolidate processes and procedures to improve business efficiency and work practices and actively communicate and engage with staff to develop a strong culture.

By achieving these objectives, it will ensure that we are prepared for economic regulation.

Operational strategies, activities and performance outcomes

Our strategy – delivering on our roles and responsibilities

Strategic operation

To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations

Strategies	Activities	Performance measure	Target
1. Develop and implement, in consultation with Grid Participants, a set of whole-of-Grid optimised plans that clearly articulate the specifications and standards for Water Grid compliance.	• Develop the SEQ Water Grid Quality Management Plan to outline the minimum quality indicators for all water in the Water Grid, and the process to maintain consistency of quality to the customers tap.	• Water quality indicators align across all regulatory and contractual documents. • The SEQ Water Grid Quality Management Plan is approved by the Rules Administrator and endorsed by the Office of the Water Supply Regulator.	• Version two of the SEQ Water Grid Quality Management Plan published by 31 December 2010. • Receive regulatory approval for the SEQ Water Grid Quality Management Plan.
	• Develop the Water Grid Performance Standard to outline both the capacity and capability of each Water Grid asset.	• The Water Grid Performance Standard can be audited by the Queensland Competition Authority and is determined to be effective.	• Water Grid Performance Standard (phase 1) is completed and audited by 31 December 2010. • Water Grid Performance Standard (phase 2) is completed by 31 March 2011.
2. Ensure the Water Grid specifications and standards are encompassed and managed in the Grid Contracts and ensure these can be measured objectively and accurately.	• Through the Grid Contracts, ensure the specifications and standards link to the SEQ Water Grid Quality Management Plan.	• Compliance with customer water quality contract parameters.	• Alignment of the water quality specifications in the Grid Contracts, SEQ Water Grid Quality Management Plan and Grid Participants' drinking water quality management plans by 31 December 2011. • Achieve water quality contract compliance.

Strategic operation To manage the Water Grid to ensure a secure, sustainable, reliable, safe and efficient water supply to South East Queenslanders through directing Water Grid operations.			
Strategies	**Activities**	**Performance measure**	**Target**
			• Bulk water quality results are published on time.
3. Prepare a Water Grid Operating Strategy by using industry practice modelling tools and methodology to ensure all Grid Instructions comply with the System Operating Plan.	• Develop the 2010–11 Water Grid Operating Strategy that outlines our approach to implementing the System Operating Plan.	• Water Grid Operating Strategy for 2010–11 informs the operations of the bulk water Grid Participants.	• Water Grid Operating Strategy is developed by 31 December 2010.
	• Develop holistic modelling tools enabling water balance, water transfer, efficiency, reliability and supply security mapping (modelling tools project).	• Scope for the modelling tools project – modelling tools methodology and pilot model is established.	• Modelling tools project – pilot model operating by 30 June 2011.
4. Prepare a five-year Statement of Capability Assessment to identify and plan asset performance requirements and, capacity and capability gaps against projected wholesale customer needs.	• Use system planning to identify, by zone, a five year capability assessment of: – maximum volumetric capacity – water quality – system reliability – water security.	• A statement of capability is provided to the Queensland Water Commission.	• Statement completed following the release of the revised Market Rules or 30 June 2011, whichever is sooner.

Customer service To provide a service that meets our customers' expectations.			
Strategies	**Activities**	**Performance measures**	**Targets**
1. Increase our customers' and stakeholders' knowledge and understanding of our organisation.	• Develop and implement a Communications and Stakeholder Relations Plan.	• Communications and Stakeholder Relations Plan is developed.	• Board approves the Communications and Stakeholder Relations Plan by 31 July 2010.
	• Conduct educational sessions to stakeholders, customers and other interested parties regarding our operations (e.g. Water Grid 101).	• Customers and stakeholders are aware of and understand the Water Grid; how it operates and the role of our organisation.	• Survey results show: – Customers and stakeholders are aware of our organisation. – Customers and stakeholders can identify our organisation's roles and responsibilities. – Customers and stakeholders who participate in whole-of-Grid projects rate the experience as positive.
2. Assess, negotiate, deliver and monitor quality services that our new customers (the three new retail/distribution entities) require from us.	• Work with our customers to identify their service requirements and performance standards.	• Our customers' service requirements and performance standards are identified.	• Customer service requirements and performance standards are identified through customer surveys.
	• Conduct structured customer account meetings to review their service and contractual requirements and our performance.	• A survey is conducted to benchmark and monitor customers' perceptions.	• Customer account meetings occur monthly and issues raised are resolved. • Survey is conducted by 31 January 2011.
	• Develop and implement proactive operational communications tools (e.g. product quality notifications) to inform our customers about our product and services.	• Proactive communications tools are developed.	• Ongoing throughout 2010–11. Each communication tool is completed within the agreed scope and timeframe.

Customer service To provide a service that meets our customers' expectations.			
Strategies	**Activities**	**Performance measures**	**Targets**
	• Maintain and improve our website.	• Our website and extranet is up-to-date, providing customers and stakeholders with a 'central point of truth'.	• Website is reviewed and updated no less than quarterly.
	• Undertake media relations activities including: – management of reactive media enquiries – development of stories for trade and industry journals.	• Media coverage contains key messages.	• Ninety per cent of media coverage is balanced.
	• Align Grid Customer contracts with Water Grid standards.	• Grid Customer contracts are aligned with Water Grid standards.	• Grid Customer contracts align with Water Grid standards by 31 December 2010.
3. Implement proactive communications with our Government stakeholders by providing advice on the optimal operations and benefits of the Water Grid.	• Develop and implement a Communications and Stakeholder Relations Plan that includes government relations activities.	• Communications and Stakeholder Relations Plan is developed. • Alignment of key operational, financial and emergency response processes with relevant Grid Participants.	• Board approves the Communications and Stakeholder Relations Plan by 31 July 2010.
	• Provide pro-active advice and monitoring of whole-of-Grid issues to our stakeholders.	• Information and advice provided to Government stakeholders is relevant, consistent, accurate and timely.	• Survey is conducted by 31 May 2011 and shows that our information is relevant, consistent, accurate and timely.
	• Conduct structured stakeholder meetings to review their service requirements and our performance.	• Positive outcomes from stakeholder meetings.	• Stakeholder meetings occur on a monthly basis.

Risk management To manage risks effectively through planning, development and implementation of practical tools and business processes.			
Strategies	**Activities**	**Performance measures**	**Targets**
1. Ensure the Water Grid can effectively respond to emergencies.	• Continually improve the SEQ Water Grid Emergency Response Plan and associated tools, including: – Implement technological solutions to improve emergency response management across the Water Grid. – Develop scenario based crisis communications plans with pre-approved communications tools such as holding statements and, question and answers etc. to expedite responses during an emergency. – Improve the processes and procedures for the technical Emergency Coordination Team.	• Revised SEQ Water Grid Emergency Response Plan is implemented across the Water Grid. • Improvements to the SEQ Water Grid Emergency Response Plan are implemented, including: – Technological solutions to improve emergency response management implemented. – Scenario-based crisis communications plans developed and communications tools approved. – Improvement of emergency response management skills across the Water Grid is demonstrated through the outcome of the emergency response simulation.	• Improvement measures are implemented: – Technological solutions researched and developed by 31 December 2010. – Scenario-based crisis communications plans developed by 30 September 2010. – Debrief results show continuous improvement of performance against the SEQ Water Grid Emergency Response Plan.
	• Continue internal and external training programs for the SEQ Water Grid Emergency Response Plan.	• Undertake emergency response simulations. • Measure and record the satisfaction levels of participants at our training events.	• Emergency response simulations held twice every year. • Feedback from training events rates the training as useful.

Risk management To manage risks effectively through planning, development and implementation of practical tools and business processes.			
Strategies	**Activities**	**Performance measures**	**Targets**
2. Implement guidelines and processes that ensure the Water Grid's critical infrastructure is protected in line with national security standards.	• Develop a whole-of-Grid critical infrastructure security guideline. • Develop a whole-of-Grid business continuity guideline.	• Guidelines are developed and adopted across the Water Grid.	• Guidelines are developed and implemented by 30 April 2011. • Feedback received from Grid Participants indicates that the guidelines contribute to their operating practices.
3. Implement the SEQ Water Grid Risk Management Plan and associated guidelines.	• Provide relevant guidance and support to Grid Participants in implementing the SEQ Water Grid Risk Management Plan. • Grid Participant risk management plans are reviewed and are considered to be in line with the SEQ Water Grid Risk Management Plan.	• SEQ Water Grid Risk Management Plan is adopted by Grid Participants and implemented.	• SEQ Water Grid Risk Management Plan implemented by 30 September 2010. • Grid Participant risk management plans are reviewed within the Market Rules timeframes.

Financial management To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, our organisation's balance sheet.			
Strategies	**Activities**	**Performance measures**	**Targets**
1. Partner with Queensland Treasury and the Queensland Treasury Corporation to establish and implement effective strategies to manage our interest rate risk.	• Accurately forecast cash flow requirements to enable timely and accurate access to borrowings.	• Accurate forecasts are provided to the Queensland Treasury Corporation.	• Provide forecasts to the Queensland Treasury Corporation on a quarterly basis and ensure actual borrowings are within 10% of forecast.
	• Investigate borrowing options that potentially reduce the cost of debt	• Obtain a security guarantee from Queensland Treasury. • Board approval of borrowing strategy.	• Queensland Treasury provides a security guarantee. • Board approves our borrowing strategy.
2. In conjunction with the Queensland Water Commission enhance our ability to determine accurate medium-term operational forecasts through: a. facilitating the receipt of the accurate forecasting of water demand b. facilitating the receipt of Grid Service Providers cost information and forecasts.	• Prepare an Operating Strategy that outlines the proposed operations of the Water Grid and provide this to the entities to allow them to budget accordingly. (This activity is linked to 'Strategic operation, strategy 3')	• The Operating Strategy is prepared and provided to the entities prior to the preparation of their strategic and operational plans.	• By the end 31 December 2010.
	• In conjuction with the Queensland Water Commission, prepare processes that provide our customers with assistance on forecasting their demand.	• Demand forecasts are within the +/- 20% variance allowed in the Market Rules.	• All demand forecasts are within the +/- 20% variance allowed. Where this doesn't occur, we take steps to rectify future periods.
3. Instruct the Water Grid to enable it to operate at optimum cost.	• Design and develop stage 2 of the cost optimisation model, including understanding the lifecycle costs and assets within the Water Grid. (This activity is linked to 'Strategic operation, strategy 3, modelling tools project')	• Stage 2 is designed, developed and implemented.	• Stage 2 of the cost optimisation model completed by 30 June 2011.
	• Ensure our administative costs remain within budget.	• Comparison of the administrative budget verses actual costs.	• Administrative costs are within budget.

Financial management To buy water services and sell wholesale water products in South East Queensland and to optimise, where possible, our organisation's balance sheet.			
Strategies	Activities	Performance measures	Targets
	• Implement phase 2 of the energy project.	• Project milestones are met according to project plan.	• Phase 1 of the energy project completed by 30 June 2011. • Phase 2 of the energy project completed by 30 June 2010.
4. Investigate future revenue sources via new wholesale customers.	• Implement approved actions from the purified recycled water market assessment.	• Project milestones are met according to the project plan.	• Completed by 30 June 2011.

Whole-of-Grid facilitation **To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision.**			
Strategies	Activities	Performance measures	Targets
1. Lead whole-of-Grid projects to improve the operation of the Water Grid and deliver operational efficiencies.	• Deliver projects to improve the operation of the Water Grid.	• Performance outcomes are delivered by the following projects as detailed in their project plans: – SEQ Water Grid Information and Communication Technology Strategy. – Water Grid Skills Formation Strategy Phase 2.	• Projects deliver realised benefits within required project milestones, budget and timeframes, specifically: – SEQ Water Grid Information and Communication Technology Strategy and Water Grid Manager Enterprise Architecture completed by 30 September 2010. – Water Grid Skills Formation Strategy Phase 2 achieves the following targets: » Water Grid capability framework and career pathways by July 2010 » Training delivery framework for whole-of-Grid training programs by September 2010 » marketing and attraction campaign for Water Grid careers by October 2010 » structured whole-of-Grid graduate development program by February 2011 » evaluation of phase 2 outcomes by June 2011.

Whole-of-Grid facilitation **To facilitate a shared vision of an industry best practice water supply chain and assist partners in identifying and implementing initiatives that will achieve this vision.**			
Strategies	Activities	Performance measures	Targets
	• Pilot whole-of-Grid information and communication technology initiatives to automate and improve processes for: – delivery of Grid Instructions – management of water quality – emergency response.	• Information and communication technology pilot projects are completed and improvements are implemented into the final product.	• Pilot collaboration platform (phase 1) completed by 31 March 2011.
	• Facilitate the reporting requirements under the national water initiative (such as the pilot national water account) across the Water Grid.	• Reporting requirements under the national water initiative are met within the required timeframes.	• Reporting requirements achieved within the required timeframes.
	• Identify and undertake conference and speaking engagements presented to us by industry associations, media outlets and other organisations.	• Conference and speaking opportunities register is created.	• Undertake four conference and speaking opportunities a year.
2. Promote the benefits of the Water Grid to government, business, and industry.	• Deliver on-going training and education about the Water Grid to customers and stakeholders.	• Customers and stakeholders are aware of and understand the Water Grid; how it operates and the role of our organisation.	• Training and/or education sessions held in response to customer and/or stakeholder needs.
	• Coordinate the update and distribution of Water Grid key messages so our staff can talk confidently about the Water Grid.	• Internal communication plan to communicate the key messages to staff is developed.	• Staff survey shows that staff are aware of and can talk confidently about the Water Grid.

Capability areas – building our capability

People and learning To attract, manage and retain the staff we need to successfully deliver our business objectives.			
Strategies	**Activities**	**Performance measures**	**Targets**
1. Improve our team effectiveness through well documented and automated business processes that assist staff to undertake their duties.	• Develop a capability framework that, for each role, outlines the core skills necessary for the role.	• The capability framework is developed and core skills clearly outlined.	• Development of capability framework completed by 31 December 2010.
	• Standardise our job descriptions and link these to the capability framework.	• Job descriptions are reviewed and linked to the capability framework.	• Review of job descriptions linked to capability framework completed by 30 June 2011.
	• Investigate IT solutions that will automate repetitive activities.	• IT solutions are investigated and implemented where beneficial to staff productivity.	• Ongoing throughout 2010–11.
2. Develop innovative career paths across the Water Grid for our staff.	• Identify opportunities for staff to rotate/second to other Water Grid entities. • Develop a structured development program for our graduates.	• Staff are able to take short-term opportunities in the other water entities. • A development program is designed for graduates.	• Two staff are provided with a short-term opportunity in another water entity. • Development of a program for the 2011 intake of graduates.
3. Develop our team culture in line with the values and behaviours important to the staff.	• Collaboratively revise our organisational values. • Implement the behaviours detailed in the values through a cultural development program.	• Staff and management demonstrate the behaviours that underpin our values.	• Staff satisfaction increases from the 2009 benchmark cultural survey.
4. Support the Government's regional growth program by providing options and advice regarding the collaborative benefits of our moving to Ipswich.	• Investigate options for the collaborative provision of bulk water supply services from the common location. • Provide support and information to the project team as requested.	• Design options are prepared. • Provide information as requested. • Information is communicated to staff as necessary.	• By July 2010. • Information is provided in a timely manner. • Communication is provided in a timely manner.

Governance and compliance To deliver on our statutory obligations to a high standard using best practice governance processes.			
Strategies	**Activities**	**Performance measures**	**Targets**
1. Ensure statutory obligations are identified, documented and managed in accordance with the relevant legislation.	• Meet required statutory obligations.	• Statutory obligations are met.	• Our organisation is 100% compliant with statutory obligations.
2. Implement and maintain policies and processes to improve governance standards.	• Migrate our operating environment for desktop/network services to a new service provider to meet our business needs.	• Migration to the new environment improves business productivity. • New technology operating environment is delivered within scope, on time and on budget.	• New technology operating environment delivered by 31 August 2010.
	• Continue to revise our policies and procedures, updating current documents and preparing new policies as needs arise.	• Policies and procedures are all current and relevant.	• Policies and procedures are current and reflect the way we want to work.
	• Standardise our work practices and standard operating procedures within our quality assurance framework.	• All work practices, policies and operating procedures are linked to our quality assurance framework.	• Completed by 31 July 2011.
3. Improve our project and program management capability to deliver outcomes on time, on budget and to the agreed quality standard.	• Implement a standardised program and project management methodology.	• Improved project outcomes.	• Standardised methodology implemented by 30 September 2010.

Part three – required matters

Targets

This section outlines the financial and non-financial targets for the Water Grid Manager for 2010–11.

Financial targets

In accordance with the medium- to long-term objectives outlined in the Strategic Plan 2011–15, we undertake to achieve the financial performance targets in 2010–11 outlined in the tables below.

Financial performance targets for 2010–11

Performance targets	2009–10 Budget $000	2009–10 Forecast actual $000	2010–11 Budget $000
Operating statement			
Operating revenue	340,553	354,365	510,580
Interest expense	35,895	24,761	53,760
Earnings before interest and tax (EBIT)	(513,930)	(289,847)	(353,659)
Net profit after tax (NPAT)	(549,825)	(314,608)	(407,419)
Balance sheet			
Total assets	59,281	69,886	94,860
Cash flow			
Net cash flow	(507,838)	(326,833)	(356,516)
Ratios			
Revenue/bulk water expenses	42%	51.33%	58.09%
Increased debt/revenue	1.60	1.12	0.9
Total debt/revenue	2.47	1.92	2.10

Based on the achievement of the financial performance targets, we plan to achieve the financial indicators, detailed in the table below during 2010–11.

Financial performance indicators for 2010–11

Performance indicators	2009–10 Budget	2009–10 Forecast actual	2010–11 Budget
Water Grid Manager budget	Compliance	Compliance	Compliance
State borrowing program	Compliance	Compliance	Compliance
Debtor days	<28	28 days	<28 days
Increased debt/revenue	<1.8	1.12	<1.0
Total debt/revenue	<1.8	1.92	<2.5
Revenue as a percentage of bulk expenses	<42%	51.33%	<58.09%

Non-financial performance targets

The non-financial performance targets for our organisation are detailed in the section: Operational objectives, activities and performance outcomes.

Assumptions

Our organisation is undertaking to achieve our financial performance outcomes, which are detailed in the following economic and financial assumptions detailed in the table below.

Economic and financial assumptions

Assumptions	2009–10 Budget	2009–10 Forecast actual	2010–11 Budget
Economic indices			
CPI	2.5%	2.5%	2.5%
Wages growth	4%	4%	4%
Interest rate – working capital	3.05%	3.80%	4.15%
Interest rate – client specific pool	5.85%	5.93%	6.36%

Community service obligations

No community service obligations have been identified for our organisation for 2010–11.

Financials

These financial forecasts and targets reflect the price path for bulk water as introduced by the Queensland Government and the contracted costs to produce, treat and deliver water.

Through the 10 year price path, the price of water has been set at a lower rate than the full cost of producing and delivering this water. Until the optimal water price is reached, our organisation will have a negative net cash flow. Once the optimal water price is reached, we will begin to produce positive cash flows and will begin to pay back the debt provided by the Queensland Treasury Corporation to support our business activities.

Income statement

	2009–10 Budget $000	2009–10 Forecast actual $000	2010–11 Budget $000
Operating revenue			
Sales revenue	341,353	354,365	510,580
Other	200	52,864	25,564
Total operating revenue	**341,553**	**407,229**	**536,144**
Operating costs			
Bulk water purchases	848,166	690,363	878,984
Employee expenses	3,273	2,180	5,050
Supplies and services	3,794	4,440	5,669
Depreciation and amortisation	250	93	100
Total operating costs	**855,483**	**697,076**	**889,803**
Earnings before interest and tax (EBIT)	**(513,930)**	**(289,847)**	**(353,659)**
Finance costs	35,895	24,761	53,760
Operating profit(loss)	**(549,825)**	**(314,608)**	**(407,419)**
Profit(loss) after tax	**(549,825)**	**(314,608)**	**(407,419)**

It should be noted that budget adjustments for the SEQ Water Grid Communications Unit have not yet been undertaken by Seqwater. This adjustment ($290,000) will be made at the end of the first quarter 2010-11.

Balance sheet

	2009–10 Budget $000	2009–10 Forecast actual $000	2010–11 Budget $000
Current assets			
Cash	121	121	121
Receivables	56,892	69,346	93,730
Other	20	20	20
Total current assets	57,033	69,487	93,871
Non-current assets			
Property, plant and equipment	2,248	399	989
Total non-current assets	2,248	399	989
Total assets	**59,281**	**69,886**	**94,860**
Current liabilities			
Accrued employee benefits	225	345	472
Payables	70,680	99,785	121,212
Total current liabilities	70,905	100,130	121,684
Non-current liabilities			
Other financial liabilities	842,034	639,862	1,050,701
Total non-current liabilities	842,034	639,862	1,050,701
Total liabilities	**912,939**	**739,992**	**1,172,385**
Net assets	**(853,658)**	**(670,106)**	**(1,077,525)**
Retained earnings	(853,658)	(670,106)	(1,077,525)
Total equity	**(853,658)**	**(670,106)**	**(1,077,525)**

Cash flow statement

	2009–10 Budget $000	2009–10 Forecast actual $000	2010–11 Budget $000
Cash flows from operating activities			
Receipts from customers	326,234	333,937	486,196
Grants and other contributions	0	46,200	25,200
Payments for supplies and services	(831,005)	(705,154)	(863,226)
Employee expenses	(3,273)	(2,180)	(5,050)
Interest received	206	364	364
Other	0	0	0
Net cash provided by operating activities	(507,838)	(326,833)	(356,516)
Cash flows from investing activities			
Payments for property, plant and equipment	(2,130)	(30)	(690)
Net cash provided by/(used in) investing activities	(2,130)	(30)	(690)
Cash flows from financing activities			
Proceeds from borrowings	509,968	325,265	357,206
Repayment of borrowings	0	0	0
Net cash provided by/(used in) financing activities	509,968	325,265	357,206
Net increase/(decrease) in cash held	0	(1,598)	0
Cash at the beginning of the financial year	121	1,719	121
Cash at the end of the financial year	**121**	**121**	**121**

Assets

Our organisation does not own infrastructure assets; however, we own urban water entitlements. These water entitlements are for water drawn from watercourses, and in some cases from groundwater.

We do not have any subsidiary entities.

Capital expenditure program

Included in our budget is an information and communication technology capital budget of $690,000 to enable us to maintain up-to-date information and communication technology to support our day-to-day operations.

Proposed capital expenditure (projects expected to be approved during 2010–11)

Asset	Project status	Budgeted total cost	Total estimated expenditure to 30 June 2011	Budget 2010–11	Expected date of completion
Software	Fusion – data warehouse	$125,000	$125,000	$125,000	30.06.2011
Software	Grid Collaboration Platform	$150,000	$150,000	$150,000	30.06.2011
Software	Emergency Mgt ICT Capability	$100,000	$100,000	$100,000	30.06.2011
Software	Water Grid Modelling and Cost Optimisation	$225,000	$225,000	$225,000	30.06.2011
Software	Implementation Matrix recommendations	$44,000	$44,000	$44,000	30.06.2011
Hardware	Hardware replacement program – servers (four years)	$46,000	$46,000	$46,000	30.06.2011

Other undertakings

As part of our performance agreement with the responsible Ministers, our organisation provides the following additional undertakings. The other undertakings our organisation will commit to are listed in this section.

Prudent financial management

Our Board and Chief Executive Officer are responsible for ensuring that prudent financial practices are applied within our organisation. The Director, Finance and Corporate Services is responsible for the establishment of, and continuing effectiveness, of the organisation's internal control structure.

Capital structure

We prudently operate within the capital structure parameters (including debt capital) approved by the Government. In particular, we will ensure we manage our activities, within the State Borrowing Program approvals, for our working capital and client-specific pool facilities.

Weighted average cost of capital

The parameters adopted in the regulatory price determination for payment by us to the bulk water authorities include a return on the drought response assets. This reflects the cost of funds and a return on all other assets that reflects a commercial rate of return consistent with the level of risk involved.

For the purposes of our financial modelling, the weighted average cost of capital used is equivalent to the cost of debt provided by the Queensland Treasury Corporation. From 1 July 2009, this was 5.19 per cent (pre-tax nominal).

Annual return policy

We are a non profit seeking entity. Under section 52 of the *South East Queensland Water (Restructuring) Act 2007*, we are not required to provide an annual return to Government. We must, however, act in a commercial manner and implement responsible financial management practices to ensure risks are managed and water services are delivered efficiently.

Corporate governance

We will continually monitor and review our corporate governance arrangements to reflect good practice, having regard to the State Water Authorities Corporate Governance Principles. We have adopted these principles as part of our corporate governance framework.

Risk management

The Board has ultimate responsibility for the management of all potential internal and external risks for our organisation. The Board's subcommittee, the Audit and Risk Management Committee, reports to the Board on a regular basis and monitors our risk identification and management process.

Our risk management framework is designed to ensure that all potential financial, operational and other risks are regularly identified, assessed, monitored and reported to the Audit and Risk Management Committee and the Board, along with appropriate risk mitigation and management plans.

A risk management approach has been incorporated into our budgetary and strategic planning process.

The Market Rules require our organisation to prepare a SEQ Water Grid Risk Management Plan, which provides an integrated framework for identification, analysis, evaluation and management of risks related to the operation of the Water Grid and the achievement of the market outcomes.

The SEQ Water Grid Risk Management Plan provides a framework to:

- integrate strategic and operational risk controls across the Water Grid
- assess and report risk
- attribute risk to the appropriate Grid Participants within the Water Grid
- deliver business continuity planning outcomes, which are consistent with a whole-of-Government approach to managing emergency response.

Employment and industrial relations

Our approach to managing employment and industrial relations is detailed in Attachment 1.

Compliance with Government policies

Our organisation will comply with all relevant Government policies and guidelines as set out in Attachment 2. In particular, we will comply with the approval, notification, reporting and other requirements of those policies and guidelines.

Sponsorship, advertising, corporate entertainment, donations and other arrangements

Attachment 3 sets out the:

- budget and forecasted actuals for 2009-10, for sponsorship, advertising, and other related activities
- 2010–11 budget for communications, sponsorship and other related activities.

Part four – attachments

This section contains the following attachments that form part of this Operational Plan:

1. Employment and Industrial Relations Plan
2. Government guidelines and policies
3. Communications and other related activities.

Attachment 1 – Employment and Industrial Relations Plan

Employment and industrial relations philosophy and direction

The Water Grid Manager has structured its business around a small team of specialists focused on delivering our roles and responsibilities outlined in our Strategic Plan 2011–15. Activities that support our business, but are not regarded as core, have been outsourced through partnering agreements with a number of different organisations. This approach means that we can remain small in number and maintain our focus on achieving our objectives. Underpinned by automated and well-documented processes, we will be effective in our leadership and facilitation of the Water Grid.

We strive to have an open, consultative approach with our staff. We do this through regular meetings to discuss and implement change and to discuss and resolve issues collectively, where appropriate.

Directors and Senior Executive remuneration arrangements

Our Board has five members who are appointed under the *South East Queensland Water (Restructuring) Act 2007* for a three year term.

The directors of our Board and their appointment dates are listed below.

Board member	Position	Appointment date
Gary Humphrys	Chair	Appointed as Deputy Chair on 01.07.2008 Appointed as Chair on 01.07.2009 for the remainder of the three year term.
Gordon Jardine	Deputy Chair	01.07.2009
Dr David Cunliffe	Director	01.07.2009
Teresa Dyson	Director	01.07.2009
Jamie Quinn	Director	01.07.2009

The Board's composition and remuneration is outlined in the following table.

Non-executive Directors	Directors' fees	Committee fees	Superannuation	Other	Total
Gary Humphrys	$70,000	NIL	$6,300	NIL	$76,300
Gordon Jardine – paid to Powerlink	$40,000	NIL	NIL	NIL	$40,000
Dr David Cunliffe	$40,000	NIL	$3,600	NIL	$43,600
Teresa Dyson – paid to Blake Dawson	$40,000	NIL	NIL	NIL	$40,000
Jamie Quinn	$40,000	NIL	$3,600	NIL	$43,600

Chief Executive Officer and Senior Executives

Our executive team is made up of the Chief Executive Officer and two Directors. Their remuneration arrangements are detailed in the table below:

CEO/ Senior Executives	Total fixed remuneration[1]	Motor vehicle[2]	Superannuation[3]	Other benefits[4]	Total remuneration	Performance payment made[5]
CEO	$293,658	$26,000	$37,442	$3,940	$361,040	NIL
Director, Finance and Corporate Services	$175,197	$26,000	$22,338	$2,350	$225,885	NIL
Director, Operations	$175,197	$26,000	$22,338	$2,350	$225,885	NIL

Employment conditions

Reflecting the size of the organisation, during 2009–10 we decided to become a signatory to the State Government Department's Certified Agreement 2010. Our Chief Executive Officer has now signed the agreement on behalf of our staff. However, in becoming a signatory to this agreement, it signals our intention to apply the employment conditions and benefits provided for in the agreement.

Salary and leave provisions are outlined in the State Government Department's Certified Agreement 2010 (except for senior executives whose salary and leave provisions are

---

[1] Any salary sacrifice items plus cash salary.

[2] Any pay component value for provision of a 'company' vehicle or car allowance for business usage of a private vehicle (other than by salary sacrifice).

[3] Employer contributions to superannuation (other than by salary sacrifice).

[4] Includes, but is not limited to, general/expense allowances, car parking, subscriptions, home telephone/communication expenses, FBT not elsewhere included, etc. (other than by salary sacrifice).

[5] This is the actual payment made in the year immediately preceding the plan year relating to performance in the financial year two years prior to the plan period.

outlined in their employment contract). Regardless of the fact that this agreement is yet to be finalised, we are currently applying these provisions. Our staff all contribute to QSuper, and have access to the services provided by QSuper.

Supporting this, we have established our own human resource policies and procedures that provide clarity of the employment conditions applicable to our staff.

Through 2010–11, we will have 27 full-time permanent staff members. These will be supplemented by contractors or consultants for specialist, short-term assignments. We employ graduates to supplement our professional staff, but do not employ apprentices or trainees.

Employee flexibility

We provide our staff with a range of flexible working arrangements. A brief description of these arrangements is listed in the table below.

Employee flexibility arrangements	Description of key provisions
Part-time arrangements	Staff are entitled to work part-time.
Flexible work hours	Staff can work flexible work hours.
Paid maternity/paternity/adoption leave	Staff are able to access the statutory requirements of paid maternity/paternity/adoption leave as detailed in the State Government Department's Certified Agreement 2010.
Telecommuting (work from home)	We provide staff with the tools to telecommute and work from home.

Workplace health and safety

We endorse and support the provisions and requirements of the *Workplace Health and Safety Act 1995* and the *Workers' Compensation and Rehabilitation Act 2003*. Ensuring the prevention of injuries and illness in our workplace is an important priority. To do this, we are committed to creating a safe and healthy working environment for staff members, customers, contractors, volunteers and visitors. We have implemented policies that reflect the importance we place on workplace health and safety.

Should accidents occur, we are committed to reporting all accidents at the earliest instance and to investigate and take steps to control and prevent reoccurrences. In addition, if an injury occurs, we are committed to the rehabilitation and early return to work of injured/ill staff members.

Equal employment opportunity and anti-discrimination

We are committed to the principles of equal employment opportunity and have high expectations in relation to maintaining a harassment free workplace. With our staff, we have developed a code of conduct and values that outlines expected workplace behaviour.

Job security and redundancy provisions

We are committed to maintaining all reasonable expectations of employment security and stability. Organisational changes that may significantly impact the working arrangements of our staff will be discussed with affected staff members and their industrial representatives. As a Queensland Government statutory body, we will apply the minimum standards applicable in the event of any redundancies that may become apparent.

Contracting out

Our organisation will use contracting out, where appropriate, as a means of meeting our operational requirements.

Attachment 2 – Government policies and guidelines

- Corporate Governance Guidelines for State Water Authorities (2009)
- State Water Authorities Investment Guidelines (2009)
- State Water Authorities Air Travel Policy (2009)
- Audit and Reporting Guidelines for State Water Authorities' Controlled Entities and Investments (2009)
- Guidelines for the Development of Operational and Strategic Plans (2008)
- State Water Authorities Employment and Industrial Relations Policy (2009)
- State Water Authorities Key Responsible Ministers' Requirements for Subsidiary Constitutions (2008)
- State Water Authorities Corporate Entertainment and Hospitality Guidelines (2008)
- State Water Authorities Governance Arrangements for Chief and Senior Executives (2009)
- State Water Authorities Guidelines for the Development of Operational and Strategic Plans (2009)
- Air Travel Policy
- Air Travel Indemnity Policy
- Employment Security Policy
- Use of Government owned motor vehicles and parking of private vehicles on official premises
- Queensland Government Smoking Policy
- Contracting out of Government services
- Workplace fundraising by charities
- State Procurement Policy
- Queensland Government Language Services Policy
- Aboriginal and Torres Strait Islander Protocol – Acknowledgement of Traditional Owners
- Purchasing Carbon Offsets for Queensland Government Air Travel
- QFleet ClimateSmart Action Plan 2007-2010
- Local Industry Policy
- Indigenous Employment Policy
- 10% Training Policy
- Derivatives Transactions Policy Guidelines
- Asset Management Framework
- Leasing in Queensland Public Sector Policy Guidelines
- National Competition Policy
- Overdraft Facilities: Operational Guidelines for the Public Sector
- any other Government policies applicable to the water authorities as advised by Queensland Treasury.

Attachment 3– Sponsorship, advertising, corporate entertainment, donations and other arrangements

Activity	Budgeted 2009–10	2009–10 Actual
Communication		
Water taste change notifications	$150,000	Nil
Emergency response incident notifications	$100,000	Nil
Sponsorship	$95,000	$13,750 [1]
Corporate entertainment	$5,000	$1,364 [2]
Other related activities		
Corporate consultancies and costs to support communications strategy	$50,000	$33,561
Total all activities	**$400,000**	**$48,675**

1. Sponsorship of $13,750 includes Australian Water Association annual water awards $1,250; joint sponsorship of $12,250 (between the Queensland Government and the State-owned water entities) of the Australian Water Association's OzWater '10 Conference.
2. Table at the Australian Water Association Queensland Chapter's inaugural awards night.

The 2010-11 Marketing activity budget includes the budgeted activities for the new SEQ Water Grid Communications Unit.

Marketing activity	Budget 2010–11
Sponsorship	
Australian Water Association events	$100,000
Total sponsorship expenditure	**$100,000**
Advertising	
Emergency response incident notifications	$100,000
Total advertising expenditure	**$100,000**
Other related activities	
SEQ Water Grid call centre	$60,000
Proactive communications activities	$140,000
Total other related activities expenditure	**$200,000**
Total all activities	**$400,000**

Tab 3

South East Queensland
SYSTEM OPERATING PLAN

Release 3.1

Release Date 20 August 2010

#29414

Queensland water Commission

Securing our water, together.

TABLE OF CONTENTS

South East Queensland System Operating Plan

1. Authority to make the South East Queensland System Operating Plan

This South East Queensland System Operating Plan (Plan) is made under the *Water Act 2000, Chapter 2A, Part 5, Division 2* to facilitate the achievement of the desired levels of service objectives for the South East Queensland region (SEQ region). This Plan is an amendment to the South East Queensland System Operating Plan Release 3 (March 2010).

This Plan commences on 20 August 2010 and will continue in force until such time as it is amended.

2. Plan area

The Plan area is shown in Schedule 1. The Plan area encompasses the local government areas of Brisbane, Gold Coast, Ipswich, Lockyer Valley, Logan, Moreton Bay, Redland, Scenic Rim, Somerset and Sunshine Coast.

3. Definitions

Schedule 4 defines particular words used in this Plan.

4. Application of the Plan

4.1 Entities to which plan applies

For this Plan other than Sections 8.7, 8.8, 8.9, Schedule 2, Section 9 and 10 the entity to which the Plan applies is the SEQ Water Grid Manager (SEQWGM). In accordance with the market rules, the SEQWGM will issue grid instructions consistent with the Plan.

For Sections 8.7, 8.8, and 10 of the Plan, the entities to which the Plan applies are the SEQWGM and the Queensland Water Commission (QWC).

For Section 8.9 of the Plan, the entities to which the Plan applies are the manufactured water entity, the distributor-retailer entity and the QWC.

For Section 9 of the Plan, the entities to which the Plan applies are the manufactured water entity, the bulk water supply entity, the bulk water transport entity, the SEQWGM and the QWC.

For Schedule 2 of the Plan, the entities to which the Plan applies are the manufactured water entity, the distributor-retailer entity and the SEQWGM.

4.2 Water supply works and sewerage for the Plan

The water supply works for the Plan area are those water supply works which supply a declared water service for the SEQ region, as declared under the *Water Act 2000*, regardless of whether or not those works are in the Plan area.

The sewerage to which the Plan applies is the sewerage associated with western corridor recycled water scheme feedwater.

5. Maximum volume of water to be managed

5.1 Maximum volume

The maximum volume of water the SEQWGM may enter into contracts to sell is 450,000 ML/a, which is the total volume that can be supplied by water supply works for the Plan, calculated using the SEQ regional water balance model.

A schematic of the SEQ network, derived from the SEQ regional water balance model, is shown in Schedule 3.

5.2 Relationship to commission water restrictions

Notwithstanding the maximum volume of water, the QWC may impose a commission water restriction on water users in accordance with the *Water Act 2000*.

Commission water restrictions do not alter the maximum volume of water. However, by directly impacting on end-user demand they are likely to indirectly impact on the monthly volume of water which grid customers order from the SEQWGM to fulfil their demands.

5.3 Access to water supplies

The actual volume of water that the SEQWGM can access at any point in time may be affected by a number of factors including, but not limited to:

- any conditions specified on water entitlements held by the SEQWGM;
- requirements of any applicable Resource Operations Plan or Interim Resource Operations Licence; or
- any conditions associated with a contract between the SEQWGM and the manufactured water entity for supply of manufactured water.

6. Desired levels of service (LOS) objectives

The SEQWGM should manage the water supplied from water supply works for the Plan area to support the achievement of the following desired LOS objectives:

- During normal operations sufficient water will be available to meet an average total urban demand of 375 litres per person per day (including residential, non-residential and system losses), of which 230 litres per person per day is attributed to residential demand;
- Medium level restrictions will not occur more than once every 25 years, on average;
- Medium level restrictions need only achieve a targeted reduction in consumption of 15% below the total consumption volume in normal operations;
- The frequency of triggering drought response infrastructure will be not more than once every 100 years, on average;
- The frequency that the total volume of water stored by all key water grid storages declines to 10% of their combined water storage capacity will be not more than once every 1000 years, on average;
- The total volume of water stored by all key water grid storages must not be permitted to reach 5% of the combined total water storage capacity of these storages;
- Wivenhoe, Hinze and Baroon Pocket Dams must not be permitted to reach minimum operating levels; and
- It is expected that medium level restrictions will last longer than six months, no more than once every 50 years, on average.

7. Risk criteria

The table below details the risk criteria, which indicate the probability of reaching specified storage volumes over a five year period of SEQ regional water balance model simulation, where specified storage volumes pertain to the total volume of water stored by all key water grid storages.

Volume of water stored by all key water grid storages	Probability of reaching volume of water stored		
	within 1 year	within 3 years	within 5 years
40%	less than 0.2%	Not Specified	less than 5%
30%	Not Specified	less than 0.5%	less than 1%

8. Operating rules

8.1 Efficient and cost-effective operation rule

Subject to other rules in Section 8 of this Plan, the SEQWGM, in determining the sources of supply to meet demands, shall seek to optimise the efficient and cost-effective operation of water supply works to deliver the required volumes of water.

8.2 Water security rule

When the total volume of water stored by key water grid storages falls below 40% of the total water storage capacity of these storages:

- The supply of manufactured water from the South East Queensland (Gold Coast) Desalination Plant shall be maximised;
- The supply of manufactured water to Wivenhoe Dam from the Western Corridor Recycled Water Scheme shall be maximised, subject to appropriate approvals from the Office of the Water Supply Regulator.

8.3 Rule for the supply of water to power stations

Subject to operational constraints:

(1) CS Energy Limited shall be supplied with water sourced in accordance with the following priorities:

- Water is to be supplied from the Western Corridor Recycled Water Scheme, before
- Water is to be supplied from the Warrill Valley Water Supply Scheme, in accordance with section 8.7 of this Plan, before
- Water is to be supplied from Wivenhoe Dam.

(2) Tarong Energy Corporation Limited shall be supplied with water sourced in accordance with the following priorities:

- Water is to be supplied from the Western Corridor Recycled Water Scheme, before
- Water is to be supplied from Wivenhoe Dam.

8.4 Rule for the supply of manufactured water from the South East Queensland (Gold Coast) Desalination Plant

Manufactured water shall be supplied from the South East Queensland (Gold Coast) Desalination Plant at a rate of at least one-third of the production capacity of the plant, subject to operational constraints.

8.5 Rule for the supply of water via the Northern Pipeline Interconnector Stage 1

Subject to operational constraints, the supply of water via the Northern Pipeline Interconnector Stage 1 from water supply works within the local government area of the Sunshine Coast Regional Council to other areas within the Plan area shall be:

- zero when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam as a proportion of the total water storage capacity of these dams is less than or equal to the total volume of water stored by Wivenhoe Dam, Somerset Dam and North Pine Dam as a proportion of the total water storage capacity of Wivenhoe Dam, Somerset Dam and North Pine Dam.
- zero when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam is less than 70% of the total water storage capacity of these dams.
- up to 65 megalitres per day when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam is between 70% and 100% of the total water storage capacity of these dams.

The monthly grid instruction provided by the SEQWGM in respect to the supply of water via the Northern Pipeline Interconnector Stage 1 shall nominate a volume in megalitres no greater than the number of days in the month multiplied by 65.

8.6 Rule for the supply of water from Lake Macdonald and the Upper Mary Water Supply Scheme

The supply of water from Lake Macdonald and the Upper Mary Water Supply Scheme shall, subject to operational constraints, be in accordance with the following priorities:

- water is to be supplied from Lake Macdonald while the dam is overflowing and may continue to be supplied until the total volume of water stored by Lake Macdonald falls below 95% of capacity after an overflowing event, before
- water is to be supplied from the Upper Mary Water Supply Scheme, before
- water is to be supplied from Lake Macdonald.

8.7 Rule for supply of water within the Warrill Valley Water Supply Scheme

The supply of water under water entitlement numbers 103187, 103184 and 103203 shall be in accordance with the following conditions or any varied conditions approved by the QWC, from time to time, in accordance with this Section 8.7:

(a) water take is sourced from run of river flow; and

(b) Berry's Lagoon weir is overflowing.

At least 30 business days prior to the commencement of a water year for the Warrill Valley Water Supply Scheme, the SEQWGM may seek the approval of the QWC to vary these conditions. If the QWC approves the variation, the conditions as varied and approved by the QWC will take effect from the commencement of that water year.

The SEQWGM must notify the bulk water supply entity in writing of any QWC approval to vary these conditions prior to the commencement of that water year.

8.8 Rule for supply of water within the Logan River Water Supply Scheme

Water shall not be supplied under water entitlements held by the SEQWGM, located within the Logan River Water Supply Scheme, to meet demands other than those of the towns of Beaudesert, Kooralbyn, Rathdowney, South Maclean and Jimboomba, when Maroon Dam is at or below elevation 193.23 meters Australian Height Datum (equivalent to 10,000 megalitres of water storage in Maroon Dam), subject to operational constraints or without approval of the QWC being given to the SEQWGM.

8.9 Western corridor recycled water scheme feedwater rule

The purpose of this Section 8.9 is to provide a process for securing the availability of western corridor recycled water scheme feedwater to ensure the ongoing operation of the Western Corridor Recycled Water Scheme which is integral to achieving water supply security for the SEQ region.

(1) In relation to the use and/or supply of western corridor recycled water scheme feedwater, the distributor-retailer entity must make available western corridor recycled water scheme feedwater (treated) to the manufactured water entity in accordance with any feedwater notification issued by the manufactured water entity. The process for issuing and complying with a feedwater notification is set out in Schedule 2.

(2) The distributor-retailer entity must report the following information quarterly to the QWC, within 20 business days from the end of a quarter:

(a) daily volume of western corridor recycled water scheme feedwater (untreated) received at each of the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol; and

(b) daily volume of western corridor recycled water scheme feedwater (treated) made available to each of the following advanced water treatment plants– Bundamba, Gibson Island, and Luggage Point; and

(c) for each of the wastewater treatment plants at Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol, the quality of the western corridor recycled water scheme feedwater (treated), as measured by the distributor-retailer entity (in accordance with the distributor-retailer entity's applicable development permit for the environmentally relevant activity and any approved recycled water management plan together with copies of any such conditions and any such plan, to the extent it has not been previously provided).

(3) Subject to Sections 8.9(4), the distributor-retailer entity must not enter into, change, extend, renew, assign, novate or otherwise deal with any agreement with a third party in relation to the use and/or supply of western corridor recycled water scheme feedwater unless the terms of the agreement, change, extension, renewal, assignment, novation or other dealing have been approved by the QWC, or otherwise comply with any standing approval issued by the QWC to the former relevant Council after 1 July 2008. The QWC may from time to time publish a procedure for the distributor-retailer entity to apply to the QWC for an approval or a standing approval under this section.

(4) Nothing in this Section 8.9 affects:

- a contract between a former relevant Council and a third party, in force at 30 June 2008, for use and or supply of western corridor recycled water scheme feedwater (existing contract), provided the volume or duration of the contract is not altered;
- the ability of a party to an existing contract to assign or novate the contract to another party during the term of the existing contract; or
- the ability of the distributor-retailer entity to undertake maintenance works on the sewerage for the western corridor recycled water scheme feedwater.

For the purpose of this Section 8.9, 'third party' does not include the manufactured water entity.

9. Operating Strategy

By 31 October and 30 April each year, the SEQWGM must submit to the QWC for approval, a proposed operating strategy for the next 12 month period.

The proposed operating strategy must include:

- Details of how the SEQWGM intends to supply water to meet the forecast demands of each of its customers, including intended sources of supply, bulk water transfer arrangements and efficient and cost-effective operation proposal;
- Details of assumptions adopted to support the proposed operating strategy; and
- Any additional information supporting the proposed operating strategy.

In preparing a proposed operating strategy, the SEQWGM must make reasonable endeavours to consult each entity to which the proposed operating strategy will apply.

The SEQWGM must demonstrate that all reasonable actions have been integrated into the proposed operating strategy to achieve the:

- Desired LOS objectives; and
- Risk criteria.

The principal tool for demonstrating compliance with the desired LOS objectives and risk criteria is the SEQ regional water balance model.

The QWC, in considering a submitted operating strategy, must:

- Request further information if required;
- Approve the operating strategy with or without conditions;
- Amend and approve the operating strategy; or
- Require the SEQWGM to submit a proposal for a revised operating strategy.

The QWC may amend an approved operating strategy, or require the SEQWGM to submit a proposal for a revised operating strategy, at any time.

The SEQWGM may submit a proposal for a revised operating strategy at any time.

The SEQWGM must submit information in accordance with Section 9 in the format specified by the QWC.

Within five business days of making a decision under this section, the QWC must notify the SEQWGM of the decision.

The SEQWGM must only issue grid instructions based on the approved operating strategy, unless otherwise directed, in writing, by the QWC.

The manufactured water entity, the bulk water supply entity and the bulk water transport entity must comply with any reasonable written request from the SEQWGM to supply information which may assist the SEQWGM to fulfil its obligations under this section 9.

10. Monitoring, reporting and review of the Plan

10.1 Monitoring

(1) The SEQWGM must record the details for the grid instructions each month including:

(a) monthly customer demand forecast notices;

(b) monthly grid service provider forecast notices;

(c) monthly distribution service provider forecast notices;

(d) the grid instructions;

(e) the basis and methodologies for calculating the grid instructions;

(f) the details of operational constraints as exercised for any applicable rule in Section 8; and

(g) any amendments and relevant correspondence to the above.

(2) The SEQWGM must monitor and record the following information each month:

(a) the volume of surface water and ground water taken from each location and available to be taken;

(b) the volume of water supplied to each customer;

(c) the volume of water supplied from each water treatment plant;

(d) the volume of water transported by the bulk water transport entity;

(e) the volume of water stored in surface water storages; and

(f) an assessment of the outcomes of the grid instructions.

Details of the accuracy of the data, and if applicable, the way in which the data was estimated must also be recorded.

10.2 Monthly data provision

At the time of issue or amendment by the SEQWGM, the SEQWGM must provide a copy of the grid instructions under Section 10.1(1)(d), including details under Section 10(1)(e) and (f), to the QWC.

10.3 Reporting

The SEQWGM must provide the following reports to the QWC:

- quarterly report;
- annual report; and
- non-compliance report.

This section does not limit any other reporting requirements that must be undertaken in accordance with the market rules.

(1) Quarterly report

The SEQWGM must submit to the QWC within 20 business days from the end of each quarter a report on compliance against the Plan including, but not limited to, the following matters:

(a) the desired LOS objectives and risk criteria;

(b) the supply of water under contractual arrangements and the maximum volume of water that may be supplied;

(c) infrastructure changes, commissioning and capacity constraints;

(d) the grid instructions;

(e) an overview of the basis for grid instructions and compliance of the grid instructions and outcomes with the Plan;

(f) any circumstances where the Plan was not complied with;

(g) monitoring and reporting;

(h) any non-compliance reports; and

(i) a discussion of any matters that may warrant review of the Plan.

The SEQWGM must also report on the estimated time to supply depletion for the following rural towns and villages that have reticulated supply based on a single supply source: Aratula, Boonah, Kalbar, Mount Alford, Beaudesert, Kooralbyn, Rathdowney, Canungra, Amity Point, Dunwich, Point Lookout, Dayboro, Jimna, Kenilworth, Kilcoy, Linville, and Maleny. Details of the basis of estimations must also be provided.

The SEQWGM must include information in accordance with Section 10.1, for the quarter, in the format specified by the QWC.

The SEQWGM may include information for the quarterly report, for the quarter ending 30 June, as part of the annual report submitted in accordance with Section 10.3(2). The SEQWGM must advise the QWC, in writing, of its intent to follow this process within 20 business days from the end of the financial year.

(2) Annual report

The SEQWGM must submit to the QWC within 60 business days after the end of the financial year a report on compliance against the Plan including, but not limited to:

(a) the desired LOS objectives and risk criteria;

(b) the supply of water under contractual arrangements and the maximum volume of water that may be supplied;

(c) circumstances where the Plan was not complied with; and

(d) a discussion of any matters that may warrant review of the Plan.

The SEQWGM must include information in accordance with Section 10.1, for the financial year, in the format specified by the QWC.

(3) Non-compliance report

The SEQWGM must:

(a) notify the QWC within two business days of becoming aware of a non-compliance by the SEQWGM against the Plan; and

(b) provide to the QWC within five business days of becoming aware of a non-compliance by the SEQWGM a report on the matter including any actions taken by the SEQWGM and recommendations on the matter.

(4) Additional information

The SEQWGM must also provide to the QWC such additional information requested by the QWC from time to time as necessary in order for the QWC to:

- check whether the Plan remains appropriate for conditions in the SEQ region;
- undertake ongoing review of the regional water balance for the SEQ region; and
- monitor compliance with the Plan.

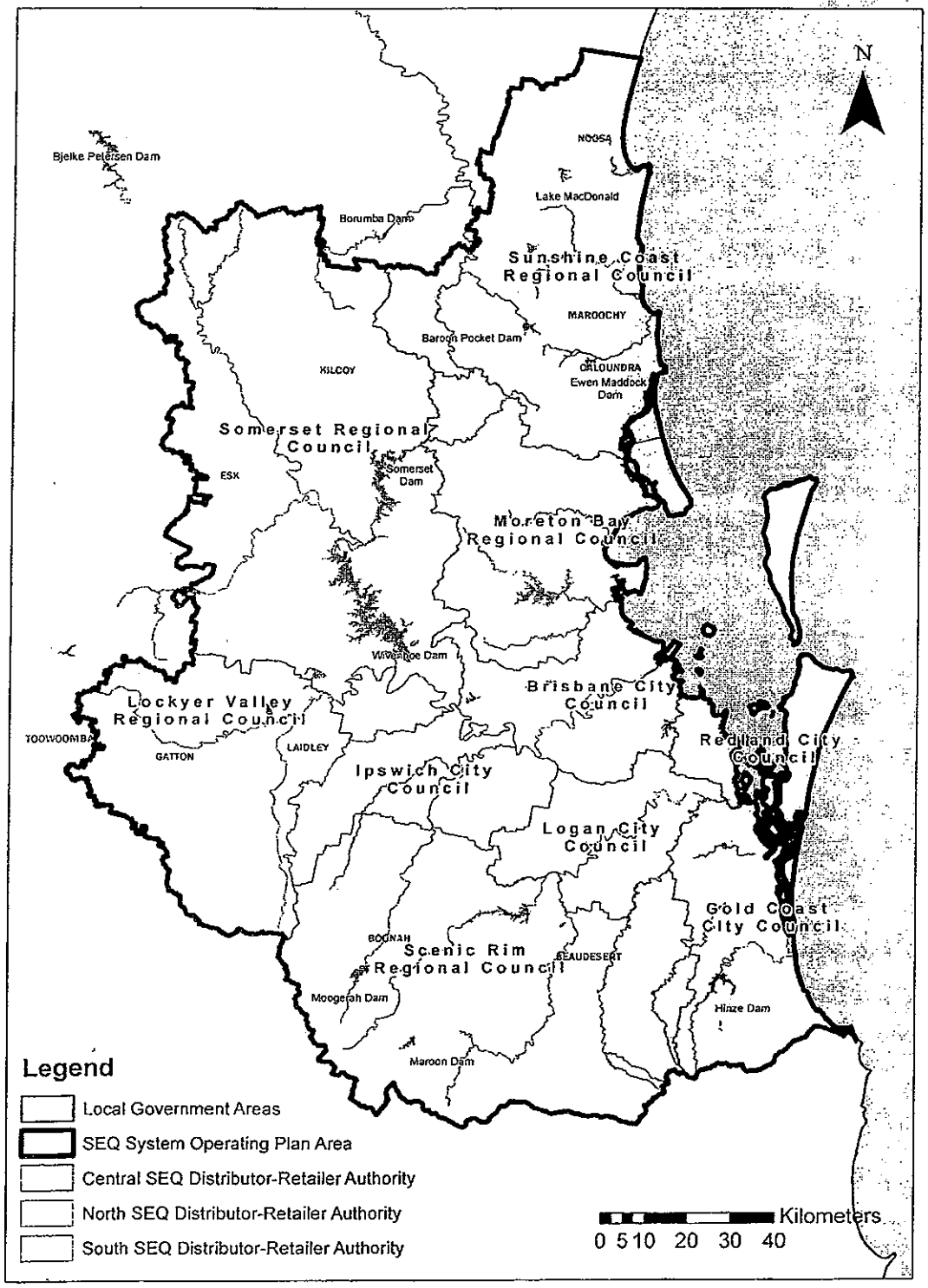
This section does not limit any other reporting requirements that must be undertaken in accordance with the market rules.

10.4 Review of the Plan

Without limiting circumstances in which the Plan may be amended, it is expected that the Plan will be reviewed regularly and if deemed necessary, amended by the QWC.

The Plan review process will inform the five yearly review of the Regional Water Security Program for the SEQ region.

Schedule 1: Plan Area



Schedule 2: Feedwater notification

1. Requirements for a feedwater notification

A feedwater notification issued by the manufactured water entity must be consistent with:

- grid instructions issued by the SEQWGM; and
- any agreement between the manufactured water entity and the distributor-retailer entity in relation to the use and/or supply of western corridor recycled water scheme feedwater that is approved or deemed to be approved by the SEQWGM in accordance with Section 7 of this Schedule.

A feedwater notification that is inconsistent with either of the above is invalid to the extent of the inconsistency.

2. Preparing and issuing feedwater notification

Draft feedwater notifications

If the SEQWGM issues the manufactured water entity with a draft grid instruction, requesting the manufactured water entity to supply water to the SEQWGM, the manufactured water entity must, within one business day of receipt of the draft grid instruction, issue a draft feedwater notification to the distributor-retailer entity.

The distributor-retailer entity may submit written comments to the Manufactured Water Entity on the draft feedwater notification within three business days of receipt of the draft feedwater notification.

Feedwater notifications

If the SEQWGM issues the manufactured water entity with a grid instruction, requesting the manufactured water entity to supply water to the SEQWGM, the manufactured water entity must, within one business day of receipt of the grid instruction, issue a feedwater notification to the distributor-retailer entity.

If the SEQWGM amends a grid instruction issued to the manufactured water entity and the relevant feedwater notification is inconsistent with the amended grid instruction, the manufactured water entity must, within one business day of receipt of the amended grid instruction, issue a revised feedwater notification to the distributor-retailer entity.

3. Contents of feedwater notification

The feedwater notification issued by the manufactured water entity must be in writing and specify:

- the relevant grid instruction to which it relates;
- the time at which it was issued;
- for Bundamba, Gibson Island and Luggage Point advanced water treatment plants:
- the volume, flow rate and quality of western corridor recycled water scheme feedwater to be made available to each plant; and
- if applicable, the time at which the western corridor recycled water scheme feedwater is to be made available to each of the plants.

4. Quality of western corridor recycled water scheme feedwater

For each of the wastewater treatment plants at Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol, the distributor-retailer entity must:

(1) make the western corridor recycled water scheme feedwater available in accordance with any approved recycled water management plan applicable to the wastewater treatment plant;

(2) to the extent no such approved recycled water management plan is in place, make the western corridor recycled

water scheme feedwater available in accordance with the conditions of the applicable development permit for the environmentally relevant activity;

(3) without limiting 4(1) and 4(2) above, use its best endeavours to make the western corridor recycled water scheme feedwater available in accordance with the quality specifications of the feedwater notification and consistent with the historical performance of the plant over the past three years; and

(4) without limiting 4(1), 4(2) and 4(3) above, use its best endeavours to make the western corridor recycled water scheme feedwater available at a quality that is consistent with the quality of the western corridor recycled water scheme feedwater produced by formerly produced by the relevant Council from the relevant wastewater treatment plant over the three year period ending on 30 June 2008.

5. Inability to make available western corridor recycled water scheme feedwater in accordance with feedwater notification

Where the distributor-retailer entity is unable to make available western corridor recycled water scheme feedwater in accordance with a feedwater notification (including as revised), the distributor-retailer entity must notify the SEQWGM and the manufactured water entity in writing as soon as possible. The notice must:

- identify the relevant feedwater notification;
- identify the extent to which the feedwater notification cannot be complied with;
- identify the length of time the distributor-retailer entity expects to be unable to comply with the feedwater notification;
- set out the reasons for the distributor-retailer entity's inability to comply, including relevant facts and supporting material; and
- On receipt of a notice under this Section 5 of Schedule 2, the SEQWGM must, no later than two business days after the receipt of the notice, notify the QWC of the non-compliance with the feedwater notification.

6. Amending feedwater notification

The manufactured water entity may amend a feedwater notification at any time, subject to Section 1 of this Schedule, including where:

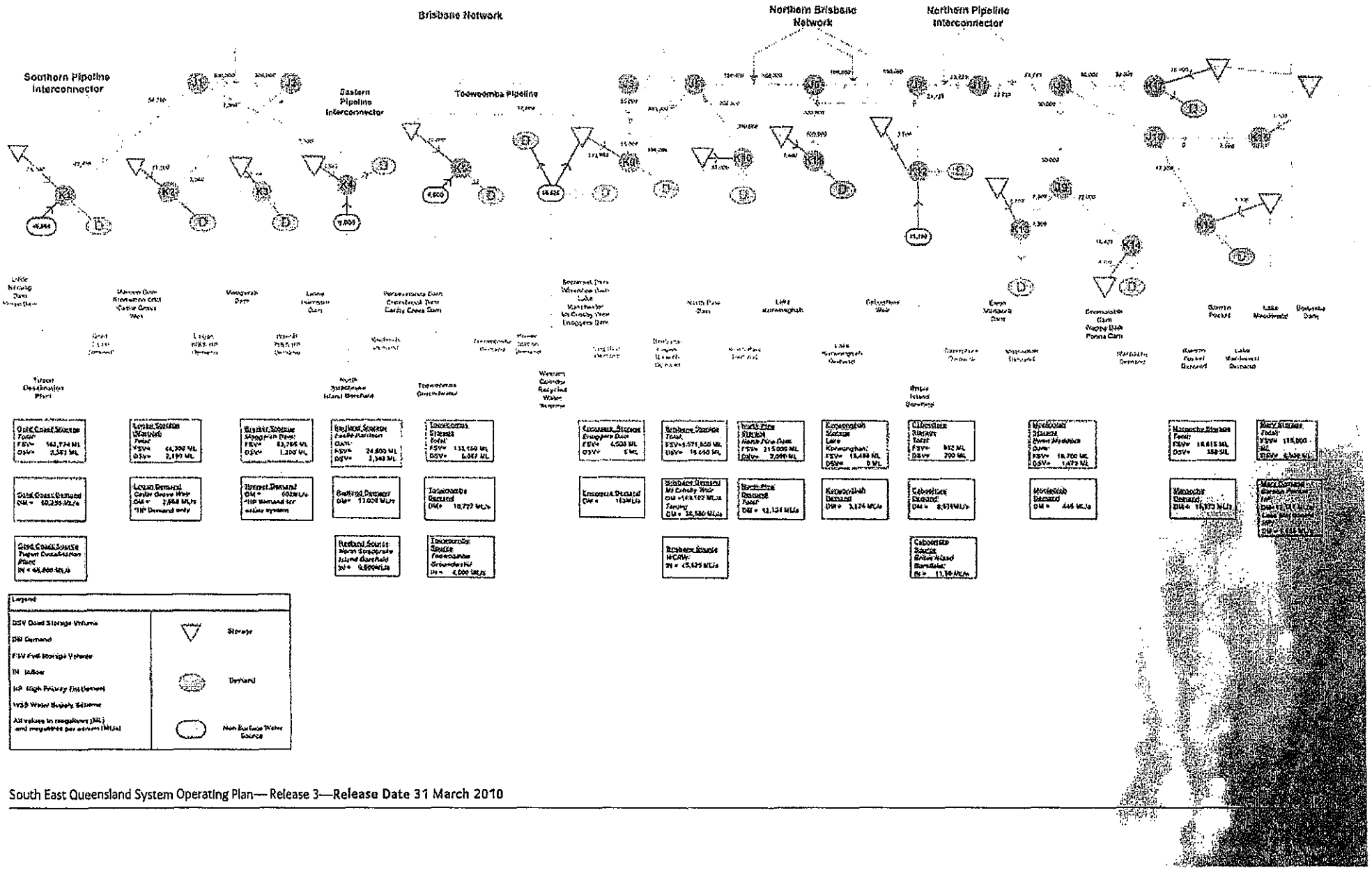
- a feedwater notification is inconsistent with the relevant grid instruction; or
- there is an error in the feedwater notification.

7. Approval of agreements relating to western corridor recycled water scheme feedwater

The distributor-retailer entity and the manufactured water entity must not enter into, change, extend, renew or otherwise deal with (including, without limitation, assign or novate) any agreement in relation to the use and/or supply of western corridor recycled water scheme feedwater unless the terms of the agreement, change, extension, renewal or other dealing have been approved by the SEQWGM.

An agreement between a former relevant Council, and the manufactured water entity in relation to the use and/or supply of western corridor recycled water scheme feedwater that is in force at 30 June 2008, excluding any change, extension, renewal or other dealing in relation to that agreement, is deemed to be approved by the SEQWGM.

Schedule 3: SEQ Network Schematic



Schedule 4: Definitions

approved recycled water management plan has the meaning give in the *Water Supply (Safety and Reliability) Act 2008*.

business day means a day that is not a Saturday, Sunday, public holiday or bank holiday in Brisbane, Australia.

bulk water supply entity means the Queensland Bulk Water Supply Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

bulk water transport entity means the Queensland Bulk Water Transport Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

commission water restrictions has the meaning given in section 360ZD of the *Water Act 2000*

customer demand forecast notice has meaning given in the market rules.

desired LOS objectives has the meaning given in Section 6 of the Plan. The principal tool for demonstrating compliance with the desired LOS objectives is the SEQ regional water balance model.

distributor-retailer entity has the meaning given in the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*, and, in the Plan, refers to the Central SEQ Distributor-Retailer Authority, which has a geographic area covering the local government areas of Brisbane City Council, Ipswich City Council, Scenic Rim Regional Council, Lockyer Valley Regional Council and Somerset Regional Council, as shown in Schedule 1.

distribution service provider forecast notice has meaning given in the market rules.

drought response infrastructure means planned infrastructure to respond to a severe drought, triggered when all key water grid storages reach 30% of the combined total water storage capacity of these storages.

feedwater notification is a notification about western corridor recycled water scheme feedwater issued under Section 8.10 by the manufactured water entity to the distributor-retailer entity.

grid customer has the meaning given in the *Water Act 2000*.

grid instruction is an instruction issued by the SEQWGM to a grid participant in accordance with the market rules.

grid service provider forecast notice has meaning given in the market rules.

interim resource operations licence means a licence that was granted under section 175 of the *Water Act 2000*.

key water grid storages are all of Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Wappa Dam, Lake Macdonald, Somerset Dam, Wivenhoe Dam, North Pine Dam, Lake Kurwongbah, Leslie Harrison Dam, Hinze Dam and Little Nerang Dam.

manufactured water is water produced by the Western Corridor Recycled Water Scheme or the South East Queensland (Gold Coast) Desalination Plant.

manufactured water entity means the Queensland Manufactured Water Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

maximum volume of water has the meaning given in Section 5.1 of the Plan.

market rules are the rules about the operation of the market that may be made by the Minister pursuant to section 360ZCX of the *Water Act 2000*, known as the Market Rules SEQ Water Market.

medium level restrictions means commission water restrictions that achieve a targeted reduction in consumption of 15% below the total consumption volume in normal operations, triggered when all key water grid storages reach 40% of the combined total water storage capacity of these storages.

minimum operating levels means the storage levels for:

- Wivenhoe Dam when the volume of stored water in Wivenhoe Dam is 11,600 ML;
- Hinze Dam when the volume of stored water in Hinze Dam is 2,180 ML; and
- Baroon Pocket Dam when the volume of stored water in Baroon Pocket Dam is 4,500 ML;

ML/a is megalitres per annum.

normal operations means the mode of SEQ Water Grid operation when the total volume of water stored by all key water grid storages is greater than 40% of the combined total capacity of these storages.

quarter means each three month period ending on 31 March, 30 June, 30 September and 31 December.

resource operations plan means a plan approved under section 103(5) of the *Water Act 2000*.

risk criteria has the meaning given in Section 6 of the Plan. The principal tool for demonstrating compliance with the risk criteria is the SEQ regional water balance model.

run of river flow means water in a watercourse, not supplemented by storage releases.

SEQ region has the meaning given in the *Water Act 2000*.

SEQ regional water balance model is the Queensland Water Commission's model developed using the Water Headworks Network (WATHNET) computer program, used to determine the system yield based on existing infrastructure being operated in a specified arrangement. The model is based on stochastically generated inflow sequences derived from historical data. The relevant model version will be provided to the SEQ Water Grid Manager, or other entities, by the Queensland Water Commission as appropriate.

sewerage has the meaning given in the *Water Act 2000*.

water supply works has the meaning given in the *Water Act 2000*.

western corridor recycled water scheme feedwater means:

- sewage entering a sewerage network that provides source water for the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley, Wacol (western corridor recycled water scheme feedwater (untreated)); and
- treated wastewater exiting the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol (western corridor recycled water scheme feedwater (treated)).

Tab3A

South East Queensland
SYSTEM OPERATING PLAN

Release 3.2

Release Date 2 March 2011

#29414

Queensland water Commission

Securing our water, together.

South East Queensland System Operating Plan

1. Authority to make the South East Queensland System Operating Plan

This South East Queensland System Operating Plan (Plan) is made under the *Water Act 2000, Chapter 2A, Part 5, Division 2* to facilitate the achievement of the desired levels of service objectives for the South East Queensland region (SEQ region). This Plan is an amendment to the South East Queensland System Operating Plan Release 3.1 (August 2010).

This Plan commences on 2 March 2011 and will continue in force until such time as it is amended.

2. Plan area

The Plan area is shown in Schedule 1. The Plan area encompasses the local government areas of Brisbane, Gold Coast, Ipswich, Lockyer Valley, Logan, Moreton Bay, Redland, Scenic Rim, Somerset and Sunshine Coast.

3. Definitions

Schedule 4 defines particular words used in this Plan.

4. Application of the Plan

4.1 Entities to which plan applies

For this Plan other than Sections 8.6, 8.7, 8.8, Schedule 2, Section 9 and 10 the entity to which the Plan applies is the SEQ Water Grid Manager (SEQWGM). In accordance with the market rules, the SEQWGM will issue grid instructions consistent with the Plan.

For Sections 8.6, 8.7, and 10 of the Plan, the entities to which the Plan applies are the SEQWGM and the Queensland Water Commission (QWC).

For Section 8.8 of the Plan, the entities to which the Plan applies are the manufactured water entity, the distributor-retailer entity and the QWC.

For Section 9 of the Plan, the entities to which the Plan applies are the manufactured water entity, the bulk water supply entity, the bulk water transport entity, the SEQWGM and the QWC.

For Schedule 2 of the Plan, the entities to which the Plan applies are the manufactured water entity, the distributor-retailer entity and the SEQWGM.

4.2 Water supply works and sewerage for the Plan

The water supply works for the Plan area are those water supply works which supply a declared water service for the SEQ region, as declared under the *Water Act 2000*, regardless of whether or not those works are in the Plan area.

The sewerage to which the Plan applies is the sewerage associated with western corridor recycled water scheme feedwater.

5. Maximum volume of water to be managed

5.1 Maximum volume

The maximum volume of water the SEQWGM may enter into contracts to sell is 450,000 ML/a, which is the total volume that can be supplied by water supply works for the Plan, calculated using the SEQ regional water balance model.

A schematic of the SEQ regional water balance model, representing the SEQ network is shown in Schedule 3.

5.2 Relationship to commission water restrictions

Notwithstanding the maximum volume of water, the QWC may impose a commission water restriction on water users in accordance with the *Water Act 2000*.

Commission water restrictions do not alter the maximum volume of water. However, by directly impacting on end-user demand they are likely to indirectly impact on the monthly volume of water which grid customers order from the SEQWGM to fulfil their demands.

5.3 Access to water supplies

The actual volume of water that the SEQWGM can access at any point in time may be affected by a number of factors including, but not limited to:

- any conditions specified on water entitlements held by the SEQWGM;
- requirements of any applicable Resource Operations Plan or Interim Resource Operations Licence; or
- any conditions associated with a contract between the SEQWGM and the manufactured water entity for supply of manufactured water.

6. Desired levels of service (LOS) objectives

The SEQWGM should manage the water supplied from water supply works for the Plan area to support the achievement of the following desired LOS objectives:

- During normal operations sufficient water will be available to meet an average total urban demand of 375 litres per person per day (including residential, non-residential and system losses), of which 230 litres per person per day is attributed to residential demand;
- Medium level restrictions will not occur more than once every 25 years, on average;
- Medium level restrictions need only achieve a targeted reduction in consumption of 15% below the total consumption volume in normal operations;
- The frequency of triggering drought response infrastructure will be not more than once every 100 years, on average;
- The frequency that the total volume of water stored by all key water grid storages declines to 10% of their combined water storage capacity will be not more than once every 1000 years, on average;
- The total volume of water stored by all key water grid storages must not be permitted to reach 5% of the combined total water storage capacity of these storages;
- Wivenhoe, Hinze and Baroon Pocket Dams must not be permitted to reach minimum operating levels; and
- It is expected that medium level restrictions will last longer than six months, no more than once every 50 years, on average.

7. Risk criteria

The table below details the risk criteria, which indicate the probability of reaching specified storage volumes over a five year period of SEQ regional water balance model simulation, where specified storage volumes pertain to the total volume of water stored by all key water grid storages.

Volume of water stored by all key water grid storages	Probability of reaching volume of water stored		
	within 1 year	within 3 years	within 5 years
40%	less than 0.2%	Not Specified	less than 5%
30%	Not Specified	less than 0.5%	less than 1%

8. Operating rules

8.1 Efficient and cost-effective operation rule

Subject to other rules in Section 8 of this Plan, the SEQWGM, in determining the sources of supply to meet demands, shall seek to optimise the efficient and cost-effective operation of water supply works to deliver the required volumes of water.

8.2 Water security rule

When the total volume of water stored by key water grid storages falls below 40% of the total water storage capacity of these storages:

- The supply of manufactured water from the South East Queensland (Gold Coast) Desalination Plant shall be maximised, subject to operational constraints;
- The supply of manufactured water to Wivenhoe Dam from the Western Corridor Recycled Water Scheme shall be maximised, subject to appropriate approvals from the Office of the Water Supply Regulator and operational constraints.

8.3 Rule for the supply of water to power stations

Subject to operational constraints:

(1) CS Energy Limited shall be supplied with water sourced in accordance with the following priorities:

- Water is to be supplied from the Western Corridor Recycled Water Scheme, before
- Water is to be supplied from the Warrill Valley Water Supply Scheme, in accordance with section 8.6 of this Plan, before
- Water is to be supplied from Wivenhoe Dam.

(2) Tarong Energy Corporation Limited shall be supplied with water sourced in accordance with the following priorities:

- Water is to be supplied from the Western Corridor Recycled Water Scheme, before
- Water is to be supplied from Wivenhoe Dam.

8.4 Rule for the supply of water via the Northern Pipeline Interconnector Stage 1

Subject to operational constraints, the supply of water via the Northern Pipeline Interconnector Stage 1 from water supply works within the local government area of the Sunshine Coast Regional Council to other areas within the Plan area shall be:

- zero when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam as a proportion of the total water storage capacity of these dams is less than or equal to the total volume of water stored by Wivenhoe Dam, Somerset Dam and North Pine Dam as a proportion of the total water storage capacity of Wivenhoe Dam, Somerset Dam and North Pine Dam.
- zero when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam is less than 70% of the total water storage capacity of these dams.
- up to 65 megalitres per day when the total volume of water stored by Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Poona Dam and Wappa Dam is between 70% and 100% of the total water storage capacity of these dams.

The monthly grid instruction provided by the SEQWGM in respect to the supply of water via the Northern Pipeline Interconnector Stage 1 shall nominate a volume in megalitres no greater than the number of days in the month multiplied by 65.

8.5 Rule for the supply of water from Lake Macdonald and the Upper Mary Water Supply Scheme

The supply of water from Lake Macdonald and the Upper Mary Water Supply Scheme shall, subject to operational constraints, be in accordance with the following priorities:

- water is to be supplied from Lake Macdonald while the dam is overflowing and may continue to be supplied until the total volume of water stored by Lake Macdonald falls below 95% of capacity after an overflowing event, before
- water is to be supplied from the Upper Mary Water Supply Scheme, before
- water is to be supplied from Lake Macdonald.

8.6 Rule for supply of water within the Warrill Valley Water Supply Scheme

The supply of water under water entitlement numbers 103187, 103184 and 103203 shall be in accordance with the following conditions or any varied conditions approved by the QWC, from time to time, in accordance with this Section 8.6:

(a) water take is sourced from run of river flow; and

(b) Berry's Lagoon weir is overflowing.

At least 30 business days prior to the commencement of a water year for the Warrill Valley Water Supply Scheme, the SEQWGM may seek the approval of the QWC to vary these conditions. If the QWC approves the variation, the conditions as varied and approved by the QWC will take effect from the commencement of that water year.

The SEQWGM must notify the bulk water supply entity in writing of any QWC approval to vary these conditions prior to the commencement of that water year.

8.7 Rule for supply of water within the Logan River Water Supply Scheme

Water shall not be supplied under water entitlements held by the SEQWGM, located within the Logan River Water Supply Scheme, to meet demands other than those of the towns of Beaudesert, Kooralbyn, Rathdowney, South Maclean and Jimboomba, when Maroon Dam is at or below elevation 193.23 meters Australian Height Datum (equivalent to 10,000 megalitres of water storage in Maroon Dam), subject to operational constraints or without approval of the QWC being given to the SEQWGM.

8.8 Western corridor recycled water scheme feedwater rule

The purpose of this Section 8.8 is to provide a process for securing the availability of western corridor recycled water scheme feedwater to ensure the ongoing operation of the Western Corridor Recycled Water Scheme which is integral to achieving water supply security for the SEQ region.

(1) In relation to the use and/or supply of western corridor recycled water scheme feedwater, the distributor-retailer entity must make available western corridor recycled water scheme feedwater (treated) to the manufactured water entity in accordance with any feedwater notification issued by the manufactured water entity. The process for issuing and complying with a feedwater notification is set out in Schedule 2.

(2) The distributor-retailer entity must report the following information quarterly to the QWC, within 20 business days from the end of a quarter:

(a) daily volume of western corridor recycled water scheme feedwater (untreated) received at each of the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol; and

(b) daily volume of western corridor recycled water scheme feedwater (treated) made available to each of the following advanced water treatment plants– Bundamba, Gibson Island, and Luggage Point; and

(c) for each of the wastewater treatment plants at Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol, the quality of the western corridor recycled water scheme feedwater (treated), as measured by the distributor-retailer entity (in accordance with the distributor-retailer entity's applicable development permit for the environmentally relevant activity and any approved recycled water management plan together with copies of any such conditions and any such plan, to the extent it has not been previously provided).

(3) Subject to Sections 8.8(4), the distributor-retailer entity must not enter into, change, extend, renew, assign, novate or otherwise deal with any agreement with a third party in relation to the use and/or supply of western corridor recycled water scheme feedwater unless the terms of the agreement, change, extension, renewal, assignment, novation or other dealing have been approved by the QWC, or otherwise comply with any standing approval issued by the QWC to the former relevant Council after 1 July 2008. The QWC may from time to time publish a procedure for the distributor-retailer entity to apply to the QWC for an approval or a standing approval under this section.

(4) Nothing in this Section 8.8 affects:

- a contract between a former relevant Council and a third party, in force at 30 June 2008, for use and or supply of western corridor recycled water scheme feedwater (existing contract), provided the volume or duration of the contract is not altered;
- the ability of a party to an existing contract to assign or novate the contract to another party during the term of the existing contract; or
- the ability of the distributor-retailer entity to undertake maintenance works on the sewerage for the western corridor recycled water scheme feedwater.

For the purpose of this Section 8.8, 'third party' does not include the manufactured water entity.

9. Operating Strategy

By 30 November and 31 May each year, the SEQWGM must submit to the QWC for approval, a proposed operating strategy for the next 12 month period.

The proposed operating strategy must include:

- Details of how the SEQWGM intends to supply water to meet the forecast demands of each of its customers, including intended sources of supply, bulk water transfer arrangements and efficient and cost-effective operation proposal;
- Details of assumptions adopted to support the proposed operating strategy; and
- Any additional information supporting the proposed operating strategy.

In preparing a proposed operating strategy, the SEQWGM must make reasonable endeavours to consult each entity to which the proposed operating strategy will apply.

The SEQWGM must demonstrate that all reasonable actions have been integrated into the proposed operating strategy to achieve the:

- Desired LOS objectives; and
- Risk criteria.

The principal tool for demonstrating compliance with the desired LOS objectives and risk criteria is the SEQ regional water balance model.

The QWC, in considering a submitted operating strategy, must:

- Request further information if required;
- Approve the operating strategy with or without conditions;
- Amend and approve the operating strategy; or
- Require the SEQWGM to submit a proposal for a revised operating strategy.

The QWC may amend an approved operating strategy, or require the SEQWGM to submit a proposal for a revised operating strategy, at any time.

The SEQWGM may submit a proposal for a revised operating strategy at any time.

The SEQWGM must submit information in accordance with Section 9 in the format specified by the QWC.

Within five business days of making a decision under this section, the QWC must notify the SEQWGM of the decision.

The SEQWGM must only issue grid instructions based on the approved operating strategy, unless otherwise directed, in writing, by the QWC.

The manufactured water entity, the bulk water supply entity and the bulk water transport entity must comply with any reasonable written request from the SEQWGM to supply information which may assist the SEQWGM to fulfil its obligations under this section 9.

10. Monitoring, reporting and review of the Plan

10.1 Monitoring

(1) The SEQWGM must record the details for the grid instructions each month including:
   (a) monthly customer demand forecast notices;
   (b) monthly grid service provider forecast notices;
   (c) the grid instructions;
   (d) the basis and methodologies for calculating the grid instructions;
   (e) the details of operational constraints as exercised for any applicable rule in Section 8; and
   (f) any amendments and relevant correspondence to the above.

(2) The SEQWGM must monitor and record the following information each month:
   (a) the volume of surface water and ground water taken from each location and available to be taken;
   (b) the volume of water supplied to each customer;
   (c) the volume of water supplied from each water treatment plant;
   (d) the volume of water transported by the bulk water transport entity;
   (e) the volume of water stored in surface water storages; and
   (f) an assessment of the outcomes of the grid instructions.

Details of the accuracy of the data, and if applicable, the way in which the data was estimated must also be recorded.

10.2 Monthly data provision

At the time of issue or amendment by the SEQWGM, the SEQWGM must provide a copy of the grid instructions under Section 10.1(1)(c), including details under Section 10(1)(d) and (e), to the QWC.

10.3 Reporting

The SEQWGM must provide the following reports to the QWC:

- quarterly report;
- annual report; and
- non-compliance report.

This section does not limit any other reporting requirements that must be undertaken in accordance with the market rules.

(1) Quarterly report

The SEQWGM must submit to the QWC within 20 business days from the end of each quarter a report on compliance against the Plan including, but not limited to, the following matters:

(a) the desired LOS objectives and risk criteria;

(b) the supply of water under contractual arrangements and the maximum volume of water that may be supplied;

(c) infrastructure changes, commissioning and capacity constraints;

(d) the grid instructions;

(e) an overview of the basis for grid instructions and compliance of the grid instructions and outcomes with the Plan;

(f) any circumstances where the Plan was not complied with;

(g) monitoring and reporting;

(h) any non-compliance reports; and

(i) a discussion of any matters that may warrant review of the Plan.

The SEQWGM must also report on the estimated time to supply depletion for the following rural towns and villages that have reticulated supply based on a single supply source: Aratula, Boonah, Kalbar, Mount Alford, Beaudesert, Kooralbyn, Rathdowney, Canungra, Amity Point, Dunwich, Point Lookout, Dayboro, Jimna, Kenilworth, Kilcoy and Linville. Details of the basis of estimations must also be provided.

The SEQWGM must include information in accordance with Section 10.1, for the quarter, in the format specified by the QWC.

The SEQWGM may include information for the quarterly report, for the quarter ending 30 June, as part of the annual report submitted in accordance with Section 10.3(2). The SEQWGM must advise the QWC, in writing, of its intent to follow this process within 20 business days from the end of the financial year.

(2) Annual report

The SEQWGM must submit to the QWC within 60 business days after the end of the financial year a report on compliance against the Plan including, but not limited to:

(a) the desired LOS objectives and risk criteria;

(b) the supply of water under contractual arrangements and the maximum volume of water that may be supplied;

(c) circumstances where the Plan was not complied with; and

(d) a discussion of any matters that may warrant review of the Plan.

The SEQWGM must include information in accordance with Section 10.1, for the financial year, in the format specified by the QWC.

(3) Non-compliance report

The SEQWGM must:

(a) notify the QWC within two business days of becoming aware of a non-compliance by the SEQWGM against the Plan; and

(b) provide to the QWC within five business days of becoming aware of a non-compliance by the SEQWGM a report on the matter including any actions taken by the SEQWGM and recommendations on the matter.

(4) Additional information

The SEQWGM must also provide to the QWC such additional information requested by the QWC from time to time as necessary in order for the QWC to:

- check whether the Plan remains appropriate for conditions in the SEQ region;
- undertake ongoing review of the regional water balance for the SEQ region; and
- monitor compliance with the Plan.

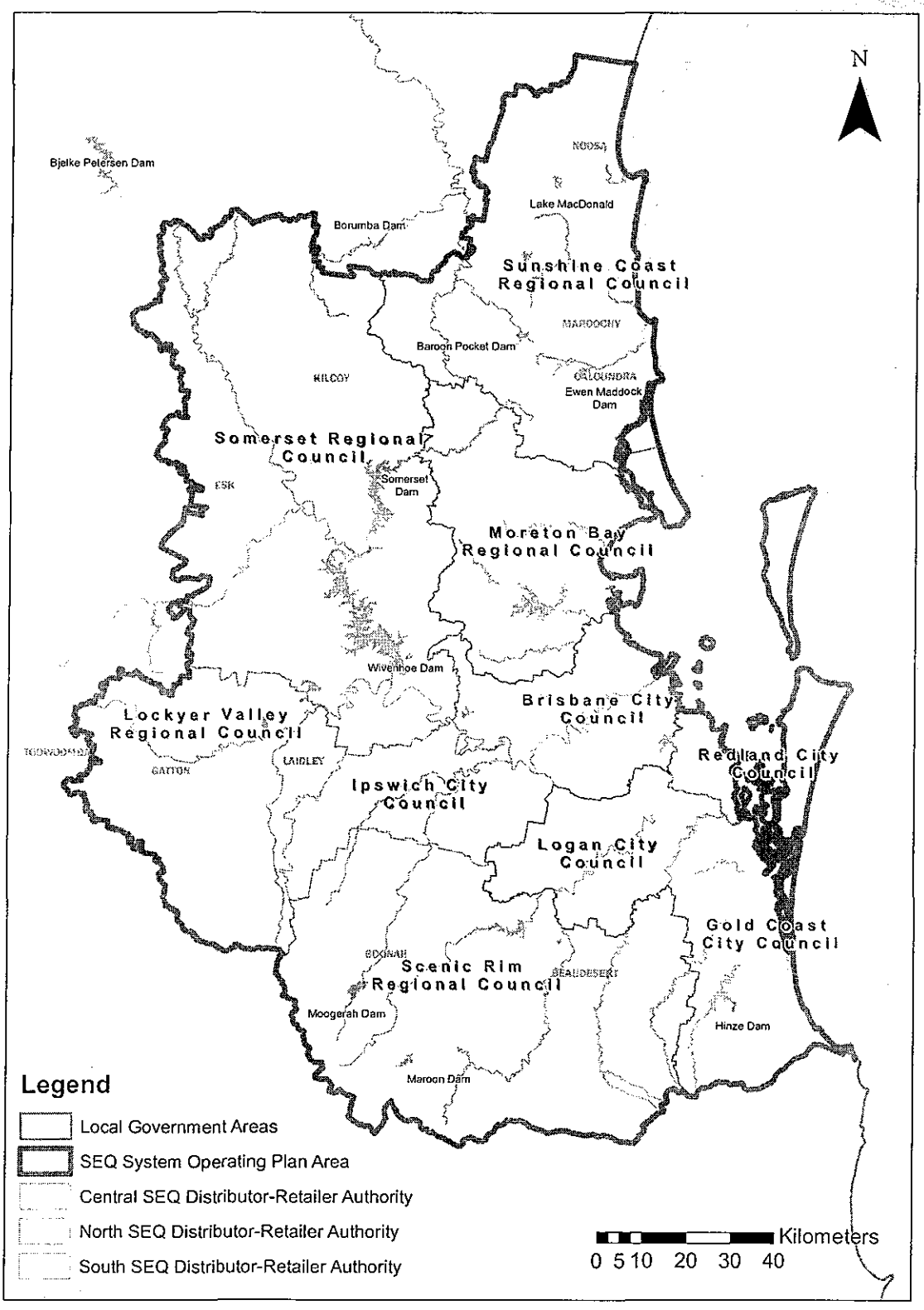
This section does not limit any other reporting requirements that must be undertaken in accordance with the market rules.

10.4 Review of the Plan

Without limiting circumstances in which the Plan may be amended, it is expected that the Plan will be reviewed regularly and if deemed necessary, amended by the QWC.

The Plan review process will inform the five yearly review of the Regional Water Security Program for the SEQ region.

Schedule 1: Plan Area



Schedule 2: Feedwater notification

1. Requirements for a feedwater notification

A feedwater notification issued by the manufactured water entity must be consistent with:

- grid instructions issued by the SEQWGM; and
- any agreement between the manufactured water entity and the distributor-retailer entity in relation to the use and/or supply of western corridor recycled water scheme feedwater that is approved or deemed to be approved by the SEQWGM in accordance with Section 7 of this Schedule.

A feedwater notification that is inconsistent with either of the above is invalid to the extent of the inconsistency.

2. Preparing and issuing feedwater notification

Draft feedwater notifications

If the SEQWGM issues the manufactured water entity with a draft grid instruction, requesting the manufactured water entity to supply water to the SEQWGM, the manufactured water entity must, within one business day of receipt of the draft grid instruction, issue a draft feedwater notification to the distributor-retailer entity.

The distributor-retailer entity may submit written comments to the Manufactured Water Entity on the draft feedwater notification within three business days of receipt of the draft feedwater notification.

Feedwater notifications

If the SEQWGM issues the manufactured water entity with a grid instruction, requesting the manufactured water entity to supply water to the SEQWGM, the manufactured water entity must, within one business day of receipt of the grid instruction, issue a feedwater notification to the distributor-retailer entity.

If the SEQWGM amends a grid instruction issued to the manufactured water entity and the relevant feedwater notification is inconsistent with the amended grid instruction, the manufactured water entity must, within one business day of receipt of the amended grid instruction, issue a revised feedwater notification to the distributor-retailer entity.

3. Contents of feedwater notification

The feedwater notification issued by the manufactured water entity must be in writing and specify:

- the relevant grid instruction to which it relates;
- the time at which it was issued;
- for Bundamba, Gibson Island and Luggage Point advanced water treatment plants:
- the volume, flow rate and quality of western corridor recycled water scheme feedwater to be made available to each plant; and
- if applicable, the time at which the western corridor recycled water scheme feedwater is to be made available to each of the plants.

4. Quality of western corridor recycled water scheme feedwater

For each of the wastewater treatment plants at Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol, the distributor-retailer entity must:

(1) make the western corridor recycled water scheme feedwater available in accordance with any approved recycled water management plan applicable to the wastewater treatment plant;

(2) to the extent no such approved recycled water management plan is in place, make the western corridor recycled water scheme feedwater available in accordance with the conditions of the applicable development permit for the environmentally relevant activity;

(3) without limiting 4(1) and 4(2) above, use its best endeavours to make the western corridor recycled water scheme feedwater available in accordance with the quality specifications of the feedwater notification and consistent with the historical performance of the plant over the past three years; and

(4) without limiting 4(1), 4(2) and 4(3) above, use its best endeavours to make the western corridor recycled water scheme feedwater available at a quality that is consistent with the quality of the western corridor recycled water scheme feedwater produced by formerly produced by the relevant Council from the relevant wastewater treatment plant over the three year period ending on 30 June 2008.

5. Inability to make available western corridor recycled water scheme feedwater in accordance with feedwater notification

Where the distributor-retailer entity is unable to make available western corridor recycled water scheme feedwater in accordance with a feedwater notification (including as revised), the distributor-retailer entity must notify the SEQWGM and the manufactured water entity in writing as soon as possible. The notice must:

- identify the relevant feedwater notification;
- identify the extent to which the feedwater notification cannot be complied with;
- identify the length of time the distributor-retailer entity expects to be unable to comply with the feedwater notification;
- set out the reasons for the distributor-retailer entity's inability to comply, including relevant facts and supporting material; and
- On receipt of a notice under this Section 5 of Schedule 2, the SEQWGM must, no later than two business days after the receipt of the notice, notify the QWC of the non-compliance with the feedwater notification.

6. Amending feedwater notification

The manufactured water entity may amend a feedwater notification at any time, subject to Section 1 of this Schedule, including where:

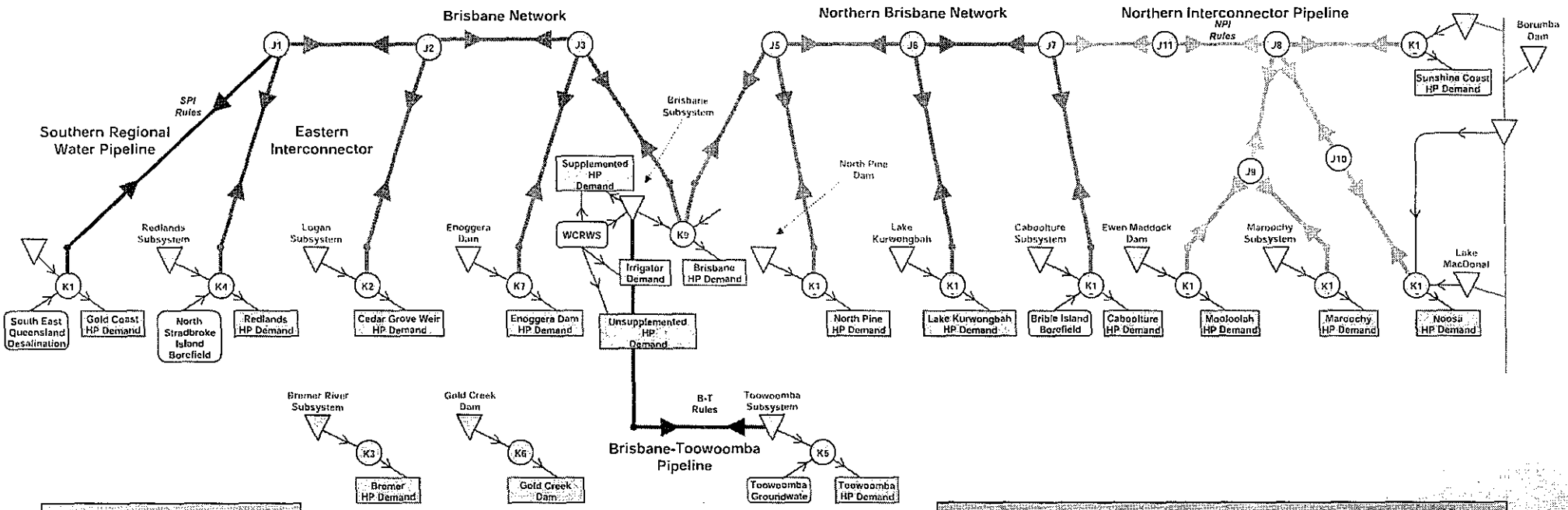
- a feedwater notification is inconsistent with the relevant grid instruction; or
- there is an error in the feedwater notification.

7. Approval of agreements relating to western corridor recycled water scheme feedwater

The distributor-retailer entity and the manufactured water entity must not enter into, change, extend, renew or otherwise deal with (including, without limitation, assign or novate) any agreement in relation to the use and/or supply of western corridor recycled water scheme feedwater unless the terms of the agreement, change, extension, renewal or other dealing have been approved by the SEQWGM.

An agreement between a former relevant Council, and the manufactured water entity in relation to the use and/or supply of western corridor recycled water scheme feedwater that is in force at 30 June 2008, excluding any change, extension, renewal or other dealing in relation to that agreement, is deemed to be approved by the SEQWGM.

Schedule 3: SEQ Network Schematic



Notes

1. Schematic does not literally represent the system interconnection, rather only what is required for modelling purposes.
2. Only demands that have direct connection to the Water Grid are shown.
3. All additional water sources shown.
4. HP means High Priority water entitlement.

Legend

- Subsystem
- Demand
- Source
- Junction
- Southern Regional Water Pipeline
- Eastern Interconnector
- Brisbane Network
- Northern Brisbane Network
- Northern Interconnector Pipeline
- Brisbane-Toowoomba Pipeline

Schedule 4: Definitions

approved recycled water management plan has the meaning give in the *Water Supply (Safety and Reliability) Act 2008*.

business day means a day that is not a Saturday, Sunday, public holiday or bank holiday in Brisbane, Australia.

bulk water supply entity means the Queensland Bulk Water Supply Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

bulk water transport entity means the Queensland Bulk Water Transport Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

commission water restrictions has the meaning given in section 360ZD of the *Water Act 2000*

customer demand forecast notice has meaning given in the market rules.

desired LOS objectives has the meaning given in Section 6 of the Plan. The principal tool for demonstrating compliance with the desired LOS objectives is the SEQ regional water balance model.

distributor-retailer entity has the meaning given in the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*, and, in the Plan, refers to the Central SEQ Distributor-Retailer Authority, which has a geographic area covering the local government areas of Brisbane City Council, Ipswich City Council, Scenic Rim Regional Council, Lockyer Valley Regional Council and Somerset Regional Council, as shown in Schedule 1.

distribution service provider forecast notice has meaning given in the market rules.

drought response infrastructure means planned infrastructure to respond to a severe drought, triggered when all key water grid storages reach 30% of the combined total water storage capacity of these storages.

feedwater notification is a notification about western corridor recycled water scheme feedwater issued under Section 8.8 by the manufactured water entity to the distributor-retailer entity.

grid customer has the meaning given in the *Water Act 2000*.

grid instruction is an instruction issued by the SEQWGM to a grid participant in accordance with the market rules.

grid service provider forecast notice has meaning given in the market rules.

interim resource operations licence means a licence that was granted under section 175 of the *Water Act 2000*.

key water grid storages are all of Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Wappa Dam, Lake Macdonald, Somerset Dam, Wivenhoe Dam, North Pine Dam, Lake Kurwongbah, Leslie Harrison Dam, Hinze Dam and Little Nerang Dam.

manufactured water is water produced by the Western Corridor Recycled Water Scheme or the South East Queensland (Gold Coast) Desalination Plant.

manufactured water entity means the Queensland Manufactured Water Authority established under the *South East Queensland Water (Restructuring) Act 2007*.

maximum volume of water has the meaning given in Section 5.1 of the Plan.

market rules are the rules about the operation of the market that may be made by the Minister pursuant to section 360ZCX of the *Water Act 2000*, known as the Market Rules SEQ Water Market.

medium level restrictions means commission water restrictions that achieve a targeted reduction in consumption of 15% below the total consumption volume in normal operations, triggered when all key water grid storages reach 40% of the combined total water storage capacity of these storages.

minimum operating levels means the storage levels for:

- Wivenhoe Dam when the volume of stored water in Wivenhoe Dam is 11,600 ML;
- Hinze Dam when the volume of stored water in Hinze Dam is 2,180 ML; and
- Baroon Pocket Dam when the volume of stored water in Baroon Pocket Dam is 4,500 ML;

ML/a is megalitres per annum.

normal operations means the mode of SEQ Water Grid operation when the total volume of water stored by all key water grid storages is greater than 40% of the combined total capacity of these storages.

quarter means each three month period ending on 31 March, 30 June, 30 September and 31 December.

resource operations plan means a plan approved under section 103(5) of the *Water Act 2000*.

risk criteria has the meaning given in Section 6 of the Plan. The principal tool for demonstrating compliance with the risk criteria is the SEQ regional water balance model.

run of river flow means water in a watercourse, not supplemented by storage releases.

SEQ region has the meaning given in the *Water Act 2000*.

SEQ regional water balance model is the Queensland Water Commission's model developed using the Water Headworks Network (WATHNET) computer program, used to determine the system yield based on existing infrastructure being operated in a specified arrangement. The model is based on stochastically generated inflow sequences derived from historical data. The relevant model version will be provided to the SEQ Water Grid Manager, or other entities, by the Queensland Water Commission as appropriate.

sewerage has the meaning given in the *Water Act 2000*.

total water storage capacity is the volume of water stored at full supply level (FSL).

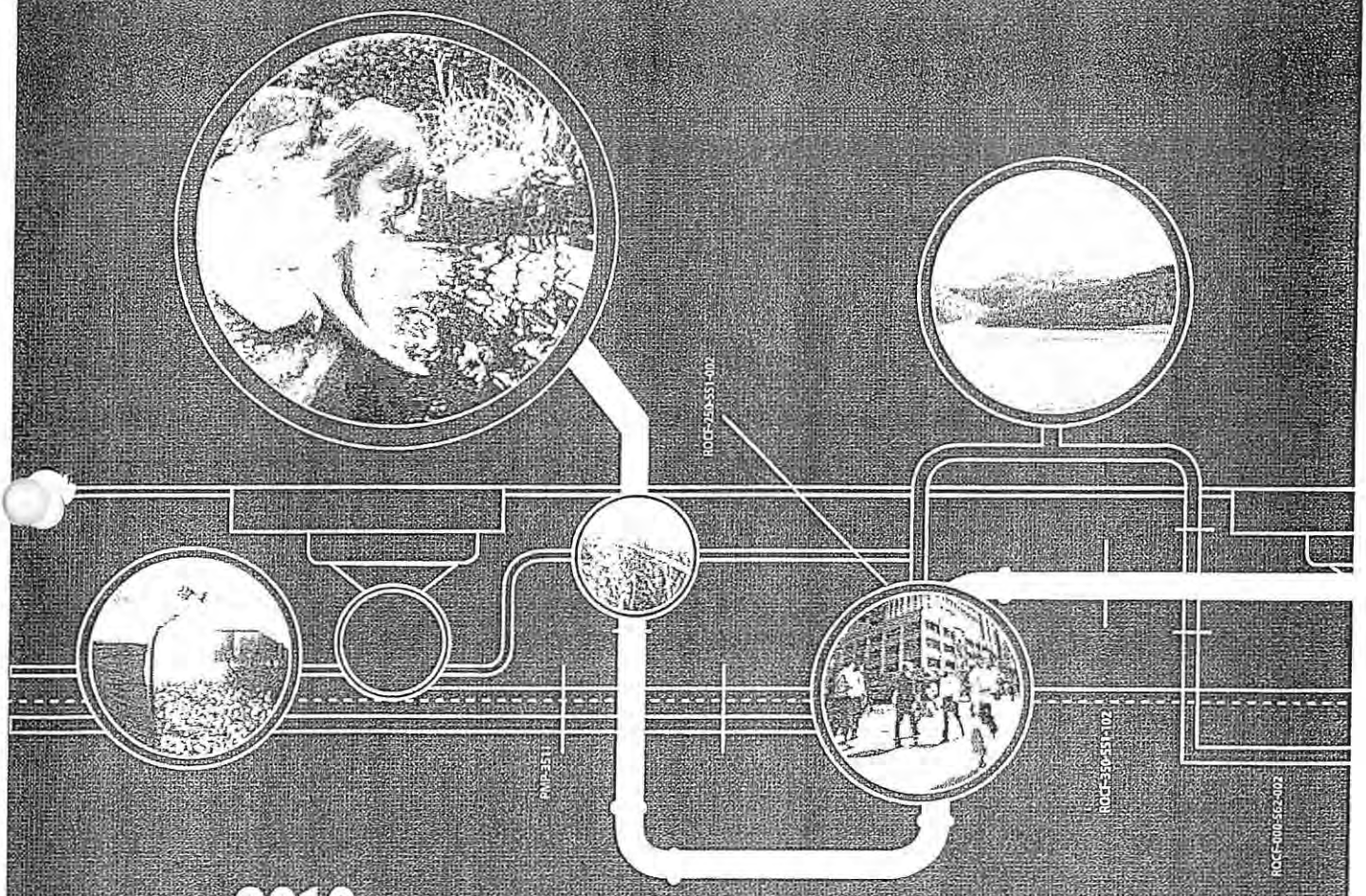
water supply works has the meaning given in the *Water Act 2000*.

western corridor recycled water scheme feedwater means:

- sewage entering a sewerage network that provides source water for the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley, Wacol (western corridor recycled water scheme feedwater (untreated)); and
- treated wastewater exiting the following wastewater treatment plants– Bundamba, Gibson Island, Goodna, Luggage Point, Oxley and Wacol (western corridor recycled water scheme feedwater (treated)).

Tab 4

South East Queensland
Water Strategy



2010

Queensland water Commission

Securing our water together

South East Queensland
Water Strategy

Queensland water Commission

Securing our water, together.

Published by:
Queensland Water Commission.
PO Box 15087
City East QLD 4002

Telephone: 1300 789 906
Email: qwcenquiries@qwc.qld.gov.au

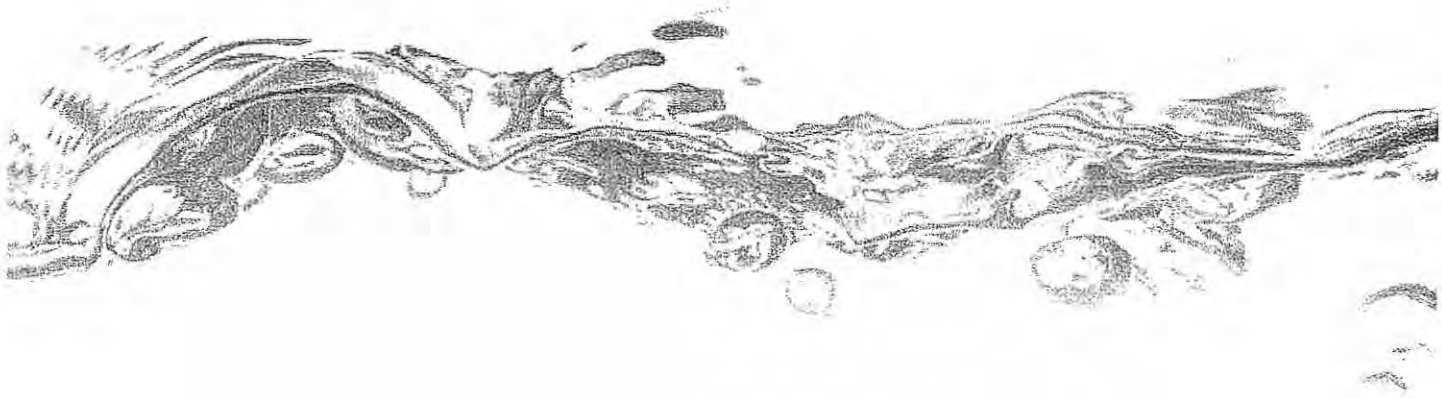
This publication can be accessed and downloaded from our website www.qwc.qld.gov.au.
Alternatively, hard copies of this publication can be obtained by emailing qwcenquiries@qwc.qld.gov.au.

Printed on recycled paper

ISSN 1836-5051

#29229

Table of Contents



Executive summary

The *South East Queensland Water Strategy* (the Strategy) is the adaptable blueprint for maintaining water security in South East Queensland (SEQ) into the future.

The Strategy enhances the transparency of planning for, and operation of, the SEQ Water Grid. It delivers a Water Supply Guarantee, which ensures sufficient water is available to support a comfortable, sustainable and prosperous lifestyle while meeting the needs of urban, industrial and rural growth and the environment.

This Guarantee will be delivered through a demand management framework, appropriate infrastructure investment and efficiencies gained through operation of the region-wide SEQ Water Grid.

Context

The Millennium Drought is now behind us. Our water supply is now secure, due to SEQ dams currently at or near full capacity and due to the range of measures that were adopted as part of the drought response. These measures include improved water use efficiency, new supplies and streamlined institutional arrangements. All of SEQ is now under the same consistent out-of-drought water management framework, with average regional residential consumption remaining consistently below 200 litres per person per day.

Now is the time to plan for the region's future needs, ensuring that security of supply is maintained in the face of population growth and climate variability and change. The opportunity now exists to use water and operate existing infrastructure more efficiently, deferring the next bulk water supply source for as long as possible. A more staged and inclusive approach to planning for these new supplies can also be adopted.

The Strategy builds on the range of institutional changes that are currently underway to ensure the efficient and effective operation of the SEQ Water Grid, and on the enhanced security provided by the diverse range of supply sources that have now been constructed.

Within this context, the key features of the Strategy are encapsulated in the general themes of:

- use less
- be supply-ready
- manage efficiently.

Use less

Efficient water use: Planning has been based on the conservative assumption that the community will reduce per-person water consumption by over 24 per cent compared to trends prior to the Millennium Drought.

Target 200: The Strategy challenges residents to do even better than planning assumptions, maintaining average consumption at or below 200 litres per person per day. If this can be achieved, the need for new supplies will be deferred.

Local water supplies: Off-Grid supplies, such as rainwater tanks, must now be installed for all new houses and most new industrial and commercial buildings. This water will be used for appropriate internal purposes, as well as for outdoor watering. The Strategy supports the adoption of stormwater harvesting and recycling where efficient and effective.

Be supply-ready

Drought planning: The Strategy plans to minimise the impact of future droughts through planned investment, prudent management and a pre-determined drought response plan. It sets an objective that the community experience water restrictions no more than once every 25 years, on average.

New water supplies: The Strategy will be reviewed before another major supply source is required. In the meantime, a range of potential supplies will be investigated in detail. Based on current information and technology, desalination facilities will underpin future water security for SEQ.

Manage efficiently

Purified recycled water: The Western Corridor Recycled Water Scheme provides security of supply as a standby facility. This means that existing sources can be more effectively utilised because in times when dam levels are low, purified recycled water will be available to supplement our dams—ensuring that security of region's water supply can be maintained.

Rural production: A range of measures to enhance the availability of water for rural production will be investigated, including making water that is not required for urban use available on an interruptible basis. Up to 32 000 megalitres per year of recycled water has been made available for supply to the Lockyer Valley and other areas, subject to commercial arrangements that are fair and do not disadvantage other SEQ water users.

Our vision

The Strategy's vision is expressed as desired Level of Service (LOS) objectives, which relate to the expected frequency, duration and severity of restrictions during future droughts. A conservative approach has been taken when determining the required LOS system yield for SEQ, which considers population growth, climate change and variability and the extent of the potential rebound in consumption demand following the drought.

The LOS objectives mean that future investments in the water supply system will be made so that sufficient water from the SEQ Water Grid will be available to meet average regional urban demand of up to 375 litres per person per day, including an allowance of up to 230 litres per person per day for residential uses. Infrastructure will be planned so that the frequency of restrictions will be no more than once every 25 years, on average. These restrictions would be much less severe than those that applied during the recent drought, which prohibited almost all outdoor water use.

Use less

The Strategy outlines measures for residents, business and industry to maintain efficient and responsible water consumption by residents, business and industry.

The Strategy challenges SEQ residents to do even better than the planning assumption of an average residential consumption of 230 litres per person per day, maintaining average residential consumption at or below 200 litres per person per day (Target 200). If this target is achieved, future water supplies can be deferred and the amount of water that is treated and distributed through the SEQ Water Grid can be reduced—saving money and electricity and reducing the carbon footprint.

The Strategy's aim is to achieve this target without significantly changing the lifestyle that SEQ residents enjoy, including the ability to sustain healthy, water-wise gardens. The challenge is maintaining, in the long term, the behavioural change brought about by the drought, as actual residential consumption will vary between households and across SEQ, and between seasons and years.

Building on Permanent Water Conservation Measures, which were introduced across SEQ on 1 December 2009, where time restrictions have generally been relaxed but efficiency measures remain in place, a range of other existing measures will continue and a number of new measures will be investigated in order to encourage efficient water use. These measures include:

- ensuring that all new buildings are water-efficient
- ensuring that existing buildings become more water-efficient, such as by requiring water-efficient showerheads to be installed as part of major renovations
- moving business and industry towards best practice water efficiency, through the preparation and implementation of water efficiency management plans
- minimising system losses
- undertaking targeted information and education programs, such as for schools and selected industries.

The QWC will review the key components of the demand management program on an ongoing basis and will seek to ensure that the program encourages water efficiency at the lowest overall economic, social and environmental cost.

Local supplies

Since 1 January 2007, all applications lodged for the construction of new homes in SEQ have had to demonstrate how they achieve the mandatory water savings targets. Detached houses must target savings of 70 000 litres per year, while terrace houses and townhouses must aim to achieve savings of 42 000 litres per year.

The water savings targets are forecast to apply to about 500 000 new houses by 2026 and about 800 000 houses by 2056, depending on population growth and household type.

These off-Grid supply sources are forecast to reduce demand on the SEQ Water Grid by about 35 000 megalitres per year in 2026 and about 60 000 megalitres per year in 2056— almost one and a half times the capacity of the existing desalination facility at Tugun. Savings from existing rainwater tanks and new tanks on commercial and industrial buildings are in addition to this.

Internally plumbed rainwater tanks are one option to achieve the water savings target. Alternatives include communal rainwater tanks, stormwater harvesting and dual-reticulation recycled water systems. Each of these options can have beneficial outcomes for other elements of the water cycle—such as capturing stormwater run-off and reducing the discharge of nutrients into waterways—but must be balanced against cost considerations.

The most appropriate solution will vary depending on local circumstances. To ensure that these decisions are well informed, a range of research is underway and some demonstration stormwater harvesting schemes are proposed.

Be supply-ready

Saving water will postpone, but not preclude, the need for additional supplies in the future, to meet growth and ensure security in times of drought.

Scenario analysis indicates that the construction of the next supply source will probably be triggered by demand growth. While this could be required in 2021, it is more likely to occur around mid-2020s (refer to Figure A). The 2021 timeframe could be delayed if there is:

- high series population growth and a regional average residential consumption of 200 litres per person per day
  or
- medium series population growth and a regional average residential consumption of 230 litres per person per day.

Residential consumption can have a major impact on the timing of the next major supply. By achieving the voluntary target of maintaining average residential consumption at or below 200 litres per person per day, additional supplies could be deferred by at least five years. For example, the earliest time at which a new supply will be required could be deferred from 2021 to around 2027.

Several scenarios have been prepared to assess the possible implications of the uncertainties of the key variables of population growth, demand and climate change. Table A illustrates possible augmentation timeframes. The Strategy has been developed to ensure that the region's water supplies will be secure in all of these scenarios.

Climate change and our dams

Climate change may have a significant impact on the supply from our dams. The majority of climate modelling done to date indicates that SEQ is likely to become hotter and drier, with reduced inflows to dams and increased demand for water.

The CSIRO is undertaking local-scale modelling for SEQ. The preliminary results indicate that, while climate change may reduce yield by about 10 per cent, the impact is likely to occur over decades, rather than immediately.

The impact of climate change is being researched through the Queensland Climate Change Centre of Excellence and the Urban Water Security Research Alliance. The Strategy will be revised as our understanding of the likely impacts of climate change on SEQ water supplies improves.

Table A Impact of reduced consumption on the timing of the next augmentation

Scenario	Regional average residential consumption	
	230 litres/person/day	200 litres/person/day
Earliest date with: • high population growth • provision for climate impact	2017	2022
Likely date with: • high population growth	2021	2027
Likely date with: • medium population growth • provision for climate impact	2020	2027
Latest date with: • medium population growth	2026	2032

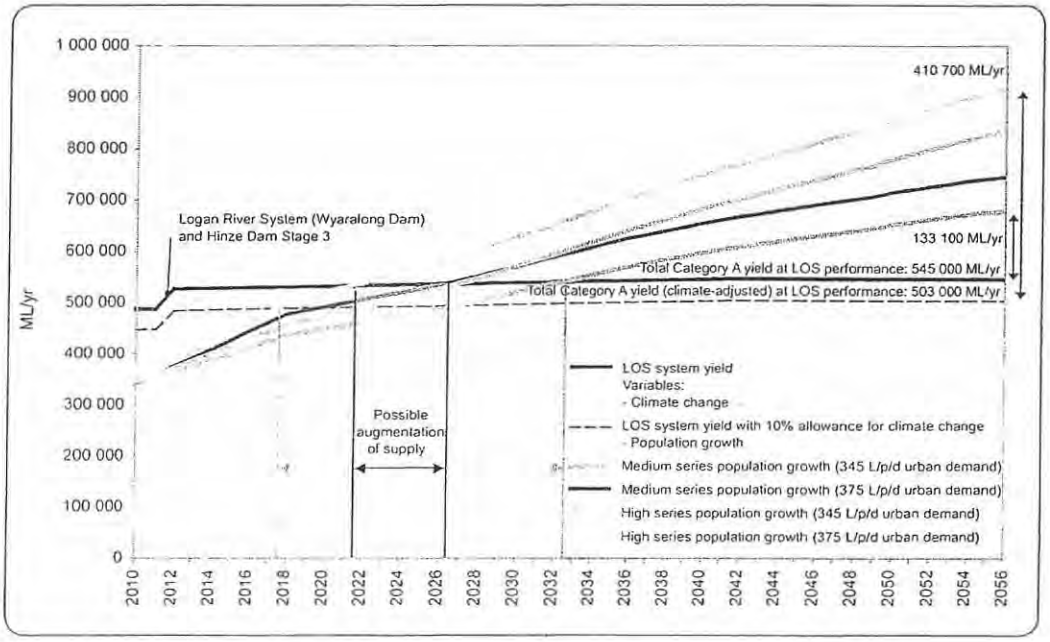


Figure A Water balance in normal operating mode

The purpose of the Strategy is to augment supplies at appropriate times to prevent a gap from developing. The QWC will update the Strategy regularly and as key assumptions change. The timing of future infrastructure will become clearer as projected population growth estimates are revised, average residential consumption patterns are confirmed and there is more certainty about the long-term impacts of climate change on water supply sources. Changes to these forecasts will have a direct impact on the planning program for potential water supplies.

The construction of major new supplies may also be triggered as part of a drought response. A drought response plan is an integral part of the Strategy as it establishes an upfront plan to ensure continuity of supply regardless of climatic conditions. The QWC will complete the drought response plan in 2011.

Our potential future sources of supply

Prudent planning for future supplies is needed, to ensure that the best options can be selected when required. With new supplies unlikely to be required until after 2021, the QWC will take advantage of that time to investigate the options thoroughly, including appropriate research and stakeholder engagement.

It is expected that desalination facilities will underpin our future water security, based on existing information and technology. The Queensland Government has announced priority and reserve desalination sites, as listed in Table B.

Table B Priority and reserve desalination sites

Category	Site	Property description	Owner
Priority	Lytton	Lot 49 SP193294	State of Queensland
	Marcoola	Lot 753 CG3375	Sunshine Coast Regional Council
Reserve	Tugun (duplication of existing facility)	Lot 30 SP197355	Gold Coast City Council/State of Queensland
	Bribie Island	Lot 67 SP214143	State of Queensland

There are also a number of small potential dams and weirs that will be investigated, as well as options to upgrade existing supplies. Options will be investigated in the Mary River catchment, including raising Borumba Dam and water harvesting. Making use of the remaining strategic reserve of unallocated water in SEQ warrants further investigation, given the limited number of alternatives.

Purified recycled water is currently available to augment Wivenhoe Dam as part of a drought response, increasing the amount that can be taken from dams and weirs in normal conditions. Over time, community confidence in purified recycled water schemes may permit the development of additional schemes and the further utilisation of the Western Corridor Recycled Water Scheme. The QWC considers it prudent to proceed with investigations of these potential schemes, with a view to preserving land for treatment facilities and pipeline corridors if viable. The QWC will continue to provide information to the community regarding purified recycled water.

The water supply options that will be investigated in detail are listed in Table C.

Table C Potential supplies to be investigated in detail

Type of source	Potential source
Desalination sites	• Marcoola (priority site) • Lytton, near the Brisbane River mouth (priority site) • Duplication of the facility at Tugun on the Gold Coast (reserve site) • Bribie Island (reserve site)
Dams and weirs	• Borumba Dam Stage 3, water harvesting from the Mary River or a combination of both • Raised operating levels in Wivenhoe Dam • Raising of the Mt Crosby Weir • Additional minor supplies in the Logan and Albert catchment, potentially including a pipeline between the Bromelton Off-stream Storage and Wyaralong Dam • Stormwater augmentation of dams
Purified recycled water schemes	• Augmentation of Hinze Dam • Augmentation of North Pine Dam

Scenario analysis indicates that if climate change impacts occur relatively soon additional water supplies might need to be available from 2017, with construction commencing by 2014. While unlikely, it is prudent to be ready to respond if necessary. The QWC will now commence detailed planning and obtain preliminary approvals to ensure that new supplies can be delivered efficiently when required. The QWC will engage with local councils and neighbouring communities in all stages of the planning process.

The detailed planning will inform a final decision regarding the next major supply when regionally significant supplies are needed. The Strategy sets out the process by which the QWC will assess alternatives and the basis for its advice to Queensland Government, including a Statement of Needs process similar to that used in the electricity sector.

Manage efficiently

Water supply for SEQ is secure for the short to medium-term, due to the construction of the SEQ Water Grid and key storages being full or near full. Given this situation, and assuming continued water efficiency, there is about 1 per cent probability of key storages falling to 40 per cent of capacity over the next 10 years, triggering the re-introduction of Medium Level Restrictions.

This Strategy seeks to ensure that the benefits of the short to medium-term security are maximised, deferring the time when major new supplies will be required. It establishes a framework for the efficient operation of the SEQ Water Grid, which complements the measures in place for efficient water use in homes and businesses.

The SEQ Water Grid allows water supplies to be managed efficiently in a way not previously possible, providing the ability to shift our water to where it is needed most.

Linking our water sources across the region has produced a 14 per cent increase in the LOS system yield of sources of supply existing in 2006. The increase is being achieved through the coordinated management of dams, and by managing risk at a regional level.

The SEQ Water Grid also benefits from the availability of the desalination facility at Tugun and the Western Corridor Recycled Water Scheme. These supplies provide a secure supply in severe drought, enabling more water to be taken from dams when levels are high. Importantly, they deliver this benefit without being operated at capacity at all times.

In the case of the Western Corridor Recycled Water Scheme, this means that the policy of using the Scheme to augment Wivenhoe Dam only when key Water Grid storage levels fall to 40 per cent of capacity reflects an optimal operating strategy at this time.

The Western Corridor Recycled Water Scheme is expected to directly supply up to about 36 000 megalitres per year for urban purposes, depending upon the level of demand from the power stations. However, its overall contribution towards the yield of the SEQ Water Grid is much greater. In conjunction with desalinated water, the Scheme increases the capacity of the Water Grid by up to 100 000 megalitres per year.

At the same time, increasing the trigger would have minimal impact on overall system yield, deferring the next source of supply by up to one and a half years,. Increasing the trigger point at which purified recycled water is added to Wivenhoe Dam—currently 40 per cent—would increase operating costs and the likelihood of the dam spilling. The costs and benefits of changing the trigger will be assessed as demand approaches supply.

Water for rural towns

About 20 000 SEQ residents live in communities that have drinking water supplies not directly connected to the SEQ Water Grid. These communities differ in terms of size and forecast population growth, and they are serviced by a diverse range of water supply sources with varying levels of security.

A number of communities are indirectly supplied from SEQ Water Grid assets and are benefiting from improved security of supply following the completion of new supplies. These communities include:

- Beaudesert, Kooralbyn and Rathdowney, which are supplied from the Logan River system
- Aratula, Boonah, Kalbar and Mount Alford, which are supplied from the Warrill Valley system.

Over time, the Strategy seeks to achieve the same LOS objectives for all communities with reticulated water supplies as for those connected to the SEQ Water Grid. Options to improve security to a number of towns are currently being investigated, with the highest priorities being Beaudesert and Canungra given the size and recent history of water supply issues in these communities.

Water for rural production

Rural producers in SEQ used about 150 000 megalitres per year of water in 2005.

The Queensland Government has announced that up to 32 000 megalitres per year of additional water supplies will be made available for rural production from the Western Corridor Recycled Water Scheme, outside times of severe drought.

The QWC will lead the investigation of a range of other options to potentially improve the availability of water for rural production. These options may increase the total amount of water available, or improve the reliability of its supply.

The SEQ Water Grid provides opportunities for aligning the management of urban and rural water supplies in some catchments. A range of options are to be investigated, including ways to provide higher levels of reliability for existing allocations and provide certainty about allocations earlier in the water year. Any such supply must occur within a transparent framework, which ensures that the costs are appropriately shared.

For example, 8250 megalitres per year of high priority water previously used by the Swanbank power station and Ipswich City Council has been reserved under the SEQ System Operating Plan to increase supply reliability for urban growth in Boonah and surrounding towns. Through this reserved water, the reliability of supply to irrigators in the Warrill Valley has also been improved.

The Strategy builds on existing Queensland Government initiatives in the Rural Futures Strategy, to ensure appropriate pricing, fair water trading and improved water use efficiency.

Energy for water

By using water more efficiently, the amount of water that is treated and distributed through the SEQ Water Grid will be reduced and region's carbon footprint lowered.. The Strategy estimates that, by maintaining average total consumption at 24 per cent below pre-drought trends, a 38 per cent saving in energy consumption can be achieved for bulk water requirements in 2048. These savings are equivalent to the total energy consumption of around 86 000 homes in 2020. Additional savings will be achieved if residents of SEQ achieve the voluntary Target 200.

Despite these savings, SEQ's water supply system will become increasingly energy-intensive over time, especially with an increased reliance on climate independent desalination. When dam levels are high, the SEQ Water Grid encourages lower energy use as it:

- allows less energy-intensive sources to be used first
- reduces water transfers.

With existing infrastructure, the energy intensity of bulk water delivered to a home in SEQ is still less than 3 per cent of typical household energy consumption.

Institutional arrangements

Reforms needed for water management in SEQ were implemented in order to fully realise the benefits of the SEQ Water Grid and ensure the efficient and effective operation of the diverse range of supply sources.

The first phase of reform implementation was completed on 1 July 2008, with the establishment of the four new entities that own and operate the SEQ Water Grid.

With the establishment of the three new distributor-retailers owned by local councils on 1 July 2010, the next stage of institutional reform was completed. These entities own and operate the water reticulation and wastewater infrastructure in the region.

Beyond the physical operation of the SEQ Water Grid, the reformed institutional arrangements also have the potential to deliver significant benefits to the community through:

- simplified business structures to deliver water services in a coordinated manner
- creation of economies of scale and scope due to the reduced number of entities
- efficiency in service provision by specialist entities, with the amalgamation of technical skill sets
- higher technical skill levels across the industry through coordinated training and education
- clarification of the respective roles of state and local governments
- improved transparency and accountability for bulk transport and distribution networks with a strong asset management regime
- enhanced economic regulation.

Implementation and review

The Strategy outlines the key elements of the first Statement of Needs, which are the projects that must proceed over the next 10 years in order to ensure that the LOS objectives can be achieved. The key elements are as follows:

- Committed projects should be completed.
- Beyond these projects, additional bulk water supplies could be required in 2021.
- Operational improvements and capital upgrades should continue, in order to comply with water quality requirements under the *Water Supply (Safety and Reliability) Act 2008*.
- A drought response plan will be prepared.

The QWC will review and update the Strategy at least every five years, aligned with the review of the *South East Queensland Regional Plan 2009-2031*, or as major developments or changes in key assumptions occur. The QWC will report annually on the implementation of the Strategy, considering the currency of key assumptions.

Chapter 1

Setting the scene

This chapter explains the purpose of the *South East Queensland Water Strategy* (the Strategy), the guiding principles and the Water Supply Guarantee, which is the Queensland Water Commission's (QWC) vision for the future and the basis for water supply planning.

Key messages

- The Strategy will deliver the Water Supply Guarantee, a vision of sufficient water to support a comfortable, sustainable and prosperous lifestyle while meeting the needs of urban, industrial and rural growth and the environment.
- This vision includes a well-informed, water-wise community that is engaged in the planning process as decisions are made. Key elements of this vision are:
  - balancing community expectations of water security, quality and cost
  - embedding water efficiency throughout the water supply and demand chain
  - managing water security through diversified and integrated water supplies, and drought preparedness
  - improving environmental outcomes, including healthier waterways, through integrated strategic planning and catchment management.
- The Strategy provides a comprehensive planning and implementation framework to secure water supplies for South East Queensland (SEQ) for the long-term.

1.1 Purpose of the Strategy

As described in the *South East Queensland Regional Plan 2009–2031* (the Regional Plan), the purpose of the Strategy is to ensure that water in SEQ is managed on a sustainable and integrated basis to provide secure and reliable supplies of acceptable quality for all uses for the long term.

For the purposes of water planning, the local government areas that make up SEQ are:

- Brisbane City Council
- Gold Coast City Council
- Ipswich City Council
- Lockyer Valley Regional Council
- Logan City Council
- Moreton Bay Regional Council
- Redland City Council
- Scenic Rim Regional Council
- Somerset Regional Council
- Sunshine Coast Regional Council

Planning for SEQ must be integrated with planning for adjoining areas. Water is already supplied to and from SEQ from adjoining areas. The Strategy takes these supplies into account. It also identifies other potential opportunities.

The largest existing supply from SEQ is to Toowoomba. Toowoomba Regional Council is responsible for water planning and management in Toowoomba. The Strategy takes into account the amount of water that might be supplied from the SEQ Water Grid through the recently completed pipeline.

Figure 1.1 shows the extent of the area covered by the Strategy.

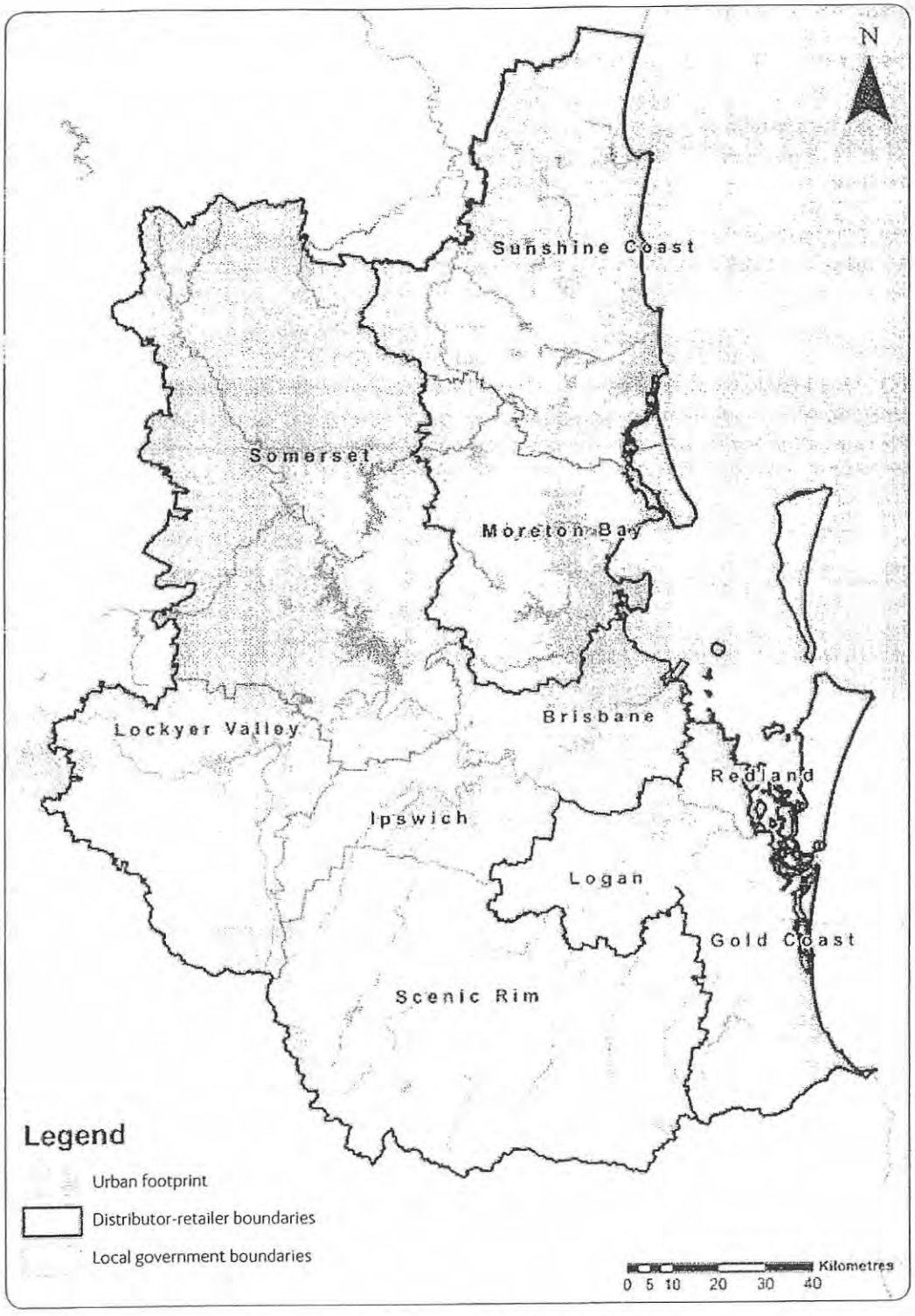


Figure 1.1 Area covered by the *South East Queensland Water Strategy*

1.2 Guiding principles

The QWC is responsible for advising the Queensland Government on achieving water security in SEQ. The *Water Act 2000* sets out the role of the QWC. The principles underpinning the Strategy derive from section 346 of the *Water Act 2000*.

Guiding principles

- Water is a scarce resource that is to be shared across the region.
- Water quality should be managed from its source to its end-users in a way that:
  - ensures the health of catchments, aquifers and their ecosystems
  - delivers water of a quality desired by the end-users at the lowest overall cost.
- Water supply arrangements should maximise efficient and cost-effective service delivery and the efficient use of water, such as appropriate connectivity between supply sources, in accordance with the Level of Service (LOS) objectives.
- The cost of water sources should be shared among users who benefit from them. Pricing should recognise Queensland Government commitments under inter-governmental agreements.
- Regional water supply assessments should consider environmental, social and economic factors, and include 'least cost planning' to ensure proper economic comparison of all supply and demand options.
- QWC water restrictions should help to achieve the region's objectives for long-term demand management for water and enable the appropriate management of any significant threat to the sustainability and security of the region's water supply.
- Flood mitigation and dam safety should be considered in assessments of regional water supply.

1.3 The Water Supply Guarantee

Economic development and a highly liveable environment have resulted in significant migration to SEQ in recent years, with the population doubling since 1981. This growth has increased demand for water.

In addition to this increased demand, SEQ recently experienced a severe drought and the worst recorded inflows to major storages in its history. In response to the drought, the community has demonstrated an outstanding commitment to reducing water consumption by embracing water restrictions and other voluntary water-saving behaviours.

The Strategy aims to reflect the community's attitude towards water through the vision of the Water Supply Guarantee for SEQ.

To deliver this regional vision, the Strategy was developed using the LOS approach to regional water planning. It includes ongoing consideration of climate change, climate variability, population growth and other regional factors affecting supply and demand.

The vision for water security in SEQ is explained in more detail below.

The Water Supply Guarantee

It is our vision that there will be sufficient water to support a comfortable, sustainable and prosperous lifestyle while meeting the needs of urban, industrial and rural growth and the environment.

Known as the Water Supply Guarantee, this water security vision will be achieved by:

- balancing community expectations of water security, quality and cost
- embedding water efficiency throughout the water supply and demand chain
- managing water security through diversified and integrated water supplies and drought preparedness
- improving environmental outcomes, including healthier waterways, through integrated strategic planning and catchment management.

1.3.1 Balancing community expectations

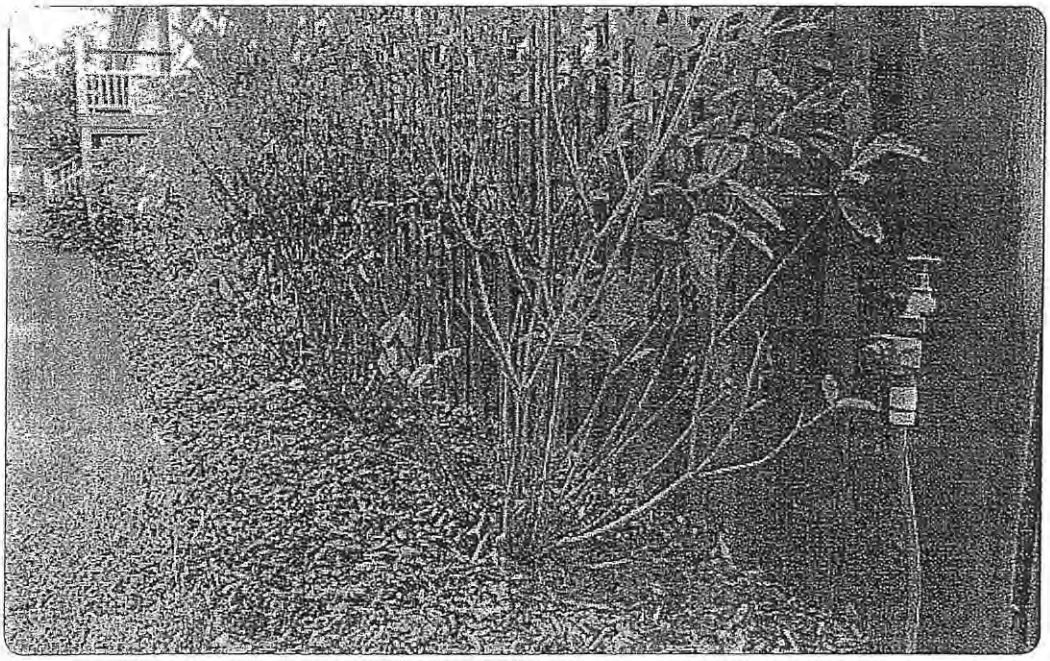
Water resources in SEQ will be managed sustainably, on a total water cycle basis.

Planning will be regularly reviewed, taking into account technological advances and changing demand patterns and attitudes.

Investments in the water supply system will be made with the objective that Medium Level Restrictions will not occur more than once every 25 years on average. The effect of these Medium Level Restrictions will be less onerous than the Extreme and High Level Restrictions applied during the recent drought.

Public health and safety will not be compromised.

These outcomes will be achieved at least cost to the community.



1.3.2 Embedding water efficiency

The Queensland Government will promote ways for residents of SEQ to value water and to use water efficiently without compromising quality of life.

There will be enough water to maintain our gardens, wash cars, top up swimming pools and fill paddle pools. As a water-wise community, we will water our gardens in the cool of the day, use efficient watering devices, such as drip irrigation, and minimise pool losses by using pool covers. Our houses will be fitted with water-efficient appliances, such as dual-flush toilets, so we can save water without thinking about it. Water conservation will be an important design aspect when building and renovating houses, and commercial and industrial buildings.

Our major commercial, industrial and government water users will have water efficiency embedded in their business. Once water efficiency is embedded, additional savings during drought will mostly come from residents reducing their outdoor use.

Our rural water users will be able to trade water and they will have efficient irrigation equipment and on-farm water use practices.

The SEQ Water Grid will be operated as efficiently as possible while achieving the LOS objectives, minimising operating costs and energy consumption.

1.3.3 Water security through diversified and integrated water supplies

SEQ will have a water supply system that is increasingly diversified and interconnected, including dams and weirs, desalination and water recycling.

This combination will allow us to make the most of the rain we receive and, in combination with a pre-determined drought response plan, meet our water needs during future periods of prolonged drought.

Local supplies, such as rainwater tanks and stormwater harvesting, will be an integral part of all new developments, reducing the demand for water from the SEQ Water Grid and contributing to improved environmental outcomes.

Corridors and potential infrastructure sites will be identified and preserved, at appropriate triggers, so we are ready to build the water supply infrastructure required in the future.

1.3.4 Improving environmental outcomes

Water supply sources will be managed in a way that enhances the health of our waterway systems. Nutrient discharges into Moreton Bay will be reduced because more of SEQ's water will be recycled. Enough water will be released into rivers and streams from our dams to maintain flora, fauna and river health.

1.4 Working in partnership

The Strategy was developed in partnership with key stakeholders, initially with the Queensland Government, the Council of Mayors (SEQ) and the bulk water authorities. Input was sought from industrial and rural water user groups, specialist working groups, the SEQ Healthy Waterways Partnership and the community.

1.5 Results of consultation

Two versions of the Strategy have been released for public consultation.

The first version was released for public consultation from 26 March 2008 to 31 July 2008.

During the consultation period, the QWC ran a campaign to raise awareness of the draft Strategy and its key content. The QWC sent a direct-mail brochure to 1.1 million SEQ households outlining the key features of the draft Strategy and information was conveyed in press advertising in a range of newspapers in SEQ. More than 2600 copies were distributed to other members of the community and almost 1500 people attended Strategy presentations. Community members were also engaged through events such as World Environment Day and the Royal Queensland Show (the 'Ekka').

The QWC received 175 responses on this version, of which 117 came from residents. Feedback was also received from 10 local government agencies, state and federal members of parliament, 20 business groups and organisations, 13 community and environmental groups and four rural water user groups.

Feedback on demand issues generally related to the proposed planning target of an average regional residential usage of 230 litres per person per day, total water cycle management, and business water efficiency measures. Feedback on water supply issues generally related to the proposed Traveston Crossing and Wyaralong dams, purified recycled water and other types of recycling, desalination and alternative additional water sources.

Feedback was also received on a range of other issues, including LOS objectives, population management, water pricing, the SEQ Water Grid, rural water and environmental issues.

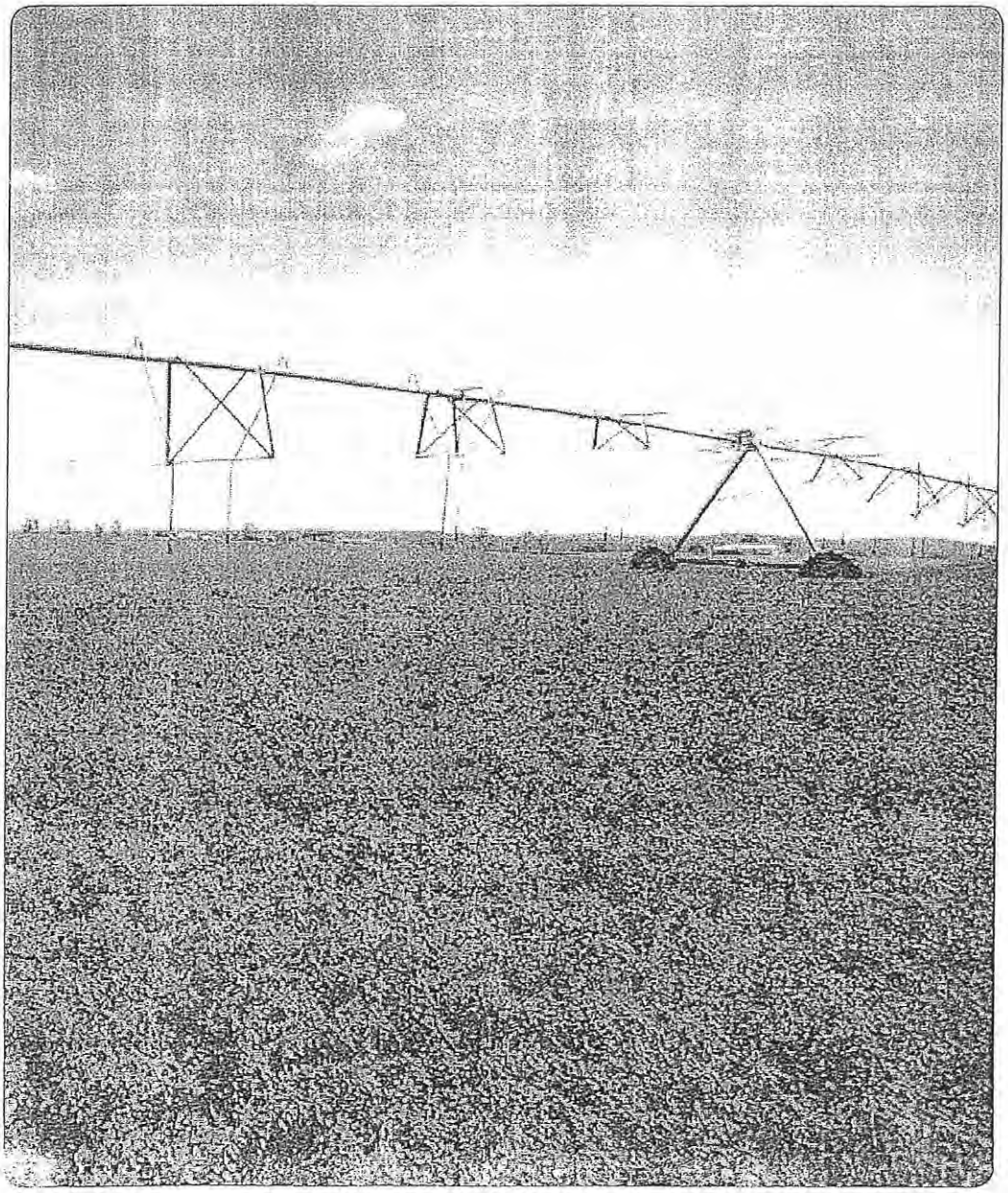
The revised draft Strategy was released for public consultation from 20 November 2009 to 12 February 2010. The revised draft Strategy incorporated feedback on the initial draft and policy decisions by the Commonwealth and state governments, notably the cancellation of Traveston Crossing Dam. In releasing the revised draft Strategy, the Minister and Commissioner specifically sought feedback on whether the regional average residential consumption target should be 200 or 230 litres per person per day.

The QWC received 3410 submissions on the revised draft Strategy, of which 3192 primarily related to identifying potential desalination sites on the Sunshine Coast.

The final Strategy responds to many of the issues raised during consultation. Key changes include:

- a voluntary regional residential consumption target of 200 litres per person per day (Target 200)
- more detail explaining the process by which the QWC will prepare advice on the next bulk water supply (Section 3.5)
- information about the framework for implementing total water cycle management in SEQ (Section 2.3)
- more detail in Section 4.6 to explain the role of local supply sources generally, and rainwater and stormwater specifically—including case studies for projects that are currently underway
- more explanation of how the LOS objectives will be achieved in communities with stand-alone water supplies (Section 6.5.1)
- more detail about the investigations into opportunities to increase the amount or reliability of water for rural production (Section 6.5)
- extensive revision of the section on the Strategy's energy implications, plus a new section on greenhouse gas impacts—including forecast greenhouse gas emissions for the operation of the SEQ Water Grid at full capacity and when supply equals demand (Section 6.8.4).

A consultation report has been released with the Strategy.



Chapter 2

Our planning context and challenges

This chapter describes the framework of plans, policies, strategies and programs that help to develop and manage growth and resources in SEQ. The chapter also describes the major challenges that affect how we plan for water for the future.

Key messages

- The Strategy will be reviewed on a five-yearly basis, aligned with the review of the Regional Plan, or in response to emerging issues that might be identified through the annual reporting process.
- The Strategy has been developed with consideration of the relevant laws, regulations, guidelines and agreements related to planning in SEQ.
- Key challenges facing SEQ include population growth and climate variability and change.
- Water supply planning must reflect a total water cycle management approach, contributing to improved outcomes for waterways and catchments.
- Water supplies for rural communities and rural irrigation should be enhanced.
- Potential sites for future water supply projects need to be identified, investigated and preserved.

2.1 Our legislative and policy frameworks

This section describes the legislative and policy framework for the Strategy.

Figure 2.1 shows some of the key state and regional plans that have influenced the development of the Strategy. Other policies and initiatives such as the National Water Initiative and the National Water Quality Management Strategy have also influenced its development.

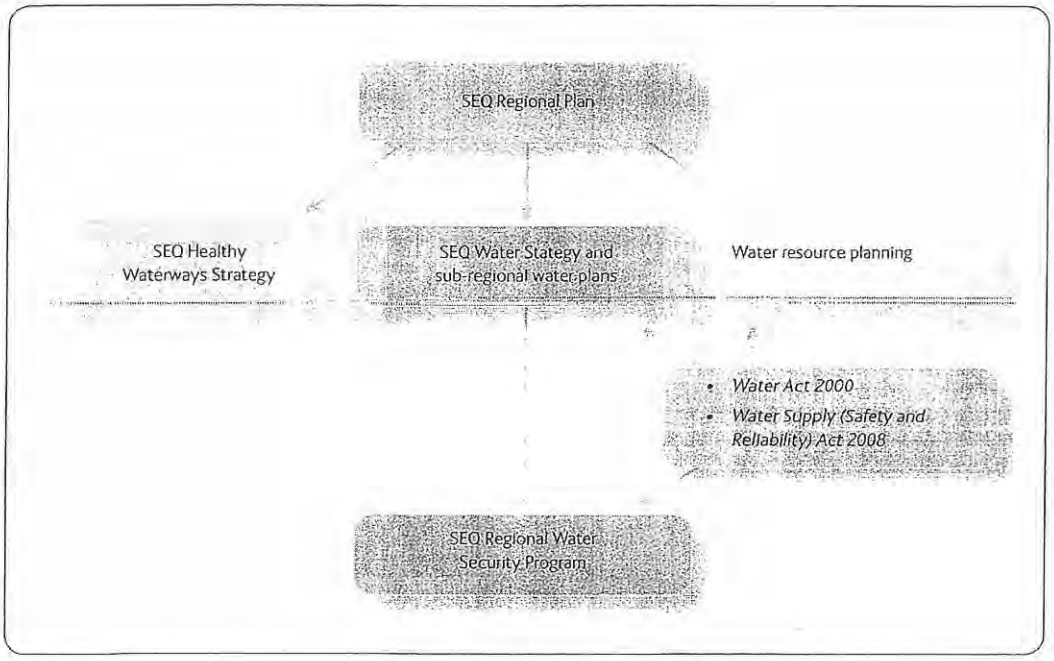


Figure 2.1 Relationship between the Strategy and other key planning processes

2.1.1 The SEQ Regional Water Security Program

The legislative and policy framework for water management in SEQ specifies a number of required (and enforceable) programs and plans. The Regional Water Security Program is one of these. The Regional Water Security Program is made by the Minister for Natural Resources, Mines and Energy and the Minister for Trade. It specifies, at a high level, how regional water security is to be achieved.

The Regional Water Security Program was adopted on 13 November 2006, providing for the construction of significant infrastructure. This program was revised on 5 March 2010 following the completion of most of these projects and the significant increase in storage levels across the SEQ region.

The Strategy and its associated analysis will provide the basis for future advice that the QWC provides to the Minister for Natural Resources, Mines and Energy and Minister for Trade on regional water security options.

2.1.2 The South East Queensland Regional Plan

The *South East Queensland Regional Plan 2009–2031* (Regional Plan) provides a framework for sustainable growth to the year 2031. It describes management strategies, regional land use patterns and policies to address growth management issues.

The Regional Plan states that water is a valuable and finite regional resource that requires management on a total water cycle basis.

The Regional Plan requires that there are secure supplies of water to meet reasonable growth and development in the region, including meeting rural water needs. This must be done while minimising overall system costs and protecting and enhancing the ecological health of our groundwater and surface water systems. It supports targeted reductions in water consumption by efficient use of water and management of consumer behaviour. Under the Regional Plan, the Strategy is to examine alternative water sources and demand management options, and develop a strategic direction for water supply in the region through to 2056.

2.1.3 Water resource planning

Water resource planning provides a framework for the sustainable allocation of water resources. Together, water resource plans and resource operations plans specify:

- the proportion of water flows that are provided for the environment
- the volumes of water that have already been allocated as entitlements which may be used for urban, industrial or rural purposes
- what water, if any, might be available for future allocation and use.

Water resource plans provide a framework for the allocation and management of water in a specified area. They do this by:

- defining the availability of water in an area
- providing a framework for sustainably managing and taking water in an area
- identifying priorities and mechanisms for dealing with future water requirements
- providing a framework for reversing, where practicable, degradation that has occurred in natural ecosystems.

Water availability is mainly reflected as entitlements, which are specified following rigorous environmental, hydrologic, social and economic assessment processes.

Resource operations plans implement water resource plans by management rules and arrangements necessary to satisfy the water resource plans' objectives and outcomes. They establish rules for monitoring, water sharing and water trading, and processes for dealing with unallocated water, within a single catchment. In addition, they establish tradeable water allocations.

In SEQ, the water resource plans for the Mary, Moreton, Logan and Gold Coast catchments have been finalised (refer to Figure 2.2). Resource operations plans for the Logan, Gold Coast and Moreton have been completed, while the resource operations plan for the Mary catchment is currently in development. Figure 2.3 illustrates the relationship between water resource plans, resource operations plans and the System Operating Plan, which is described in Chapter 3. Separate plans address other aspects of water planning, such as demand management.

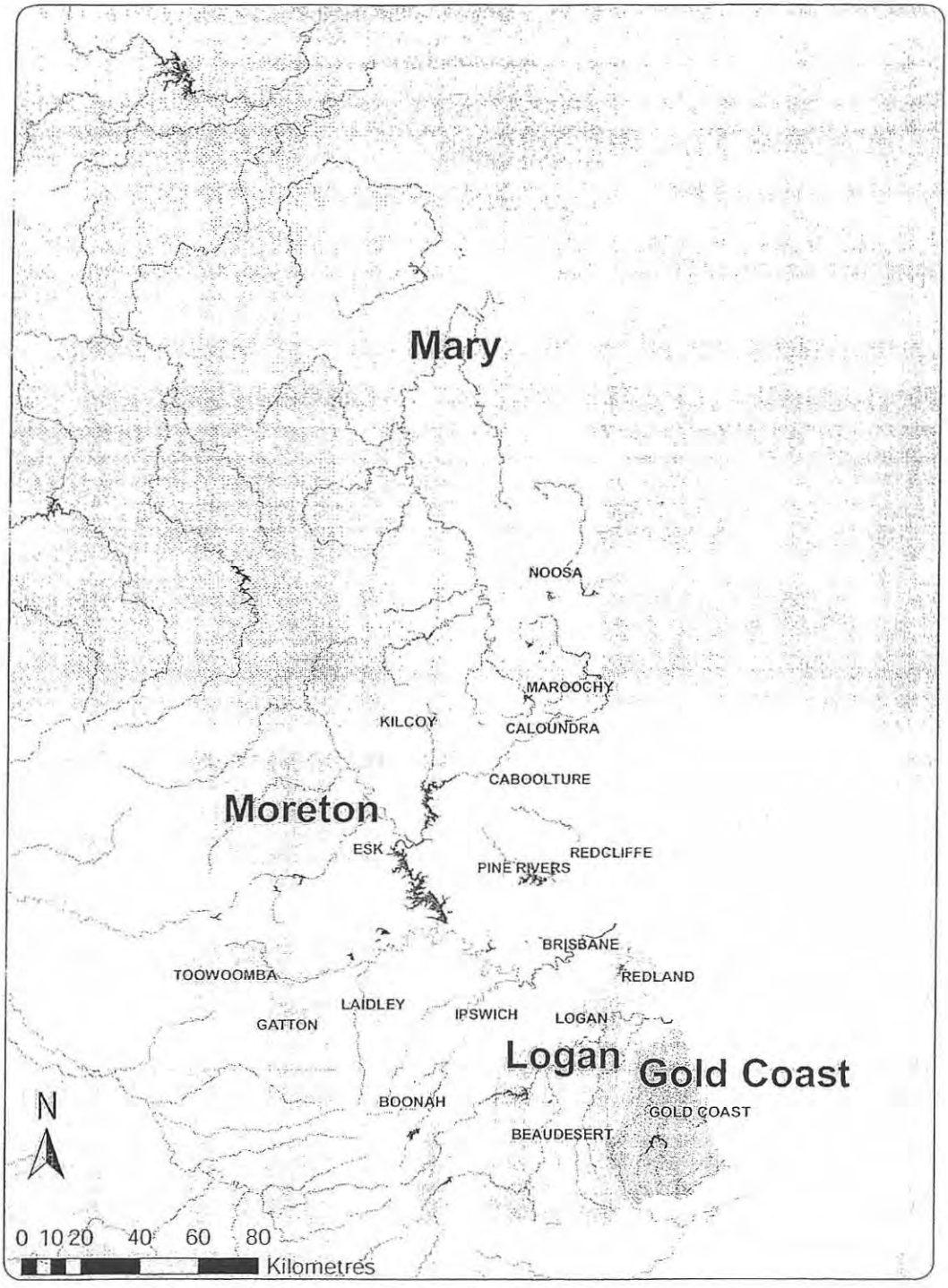


Figure 2.2 Water resource plan areas

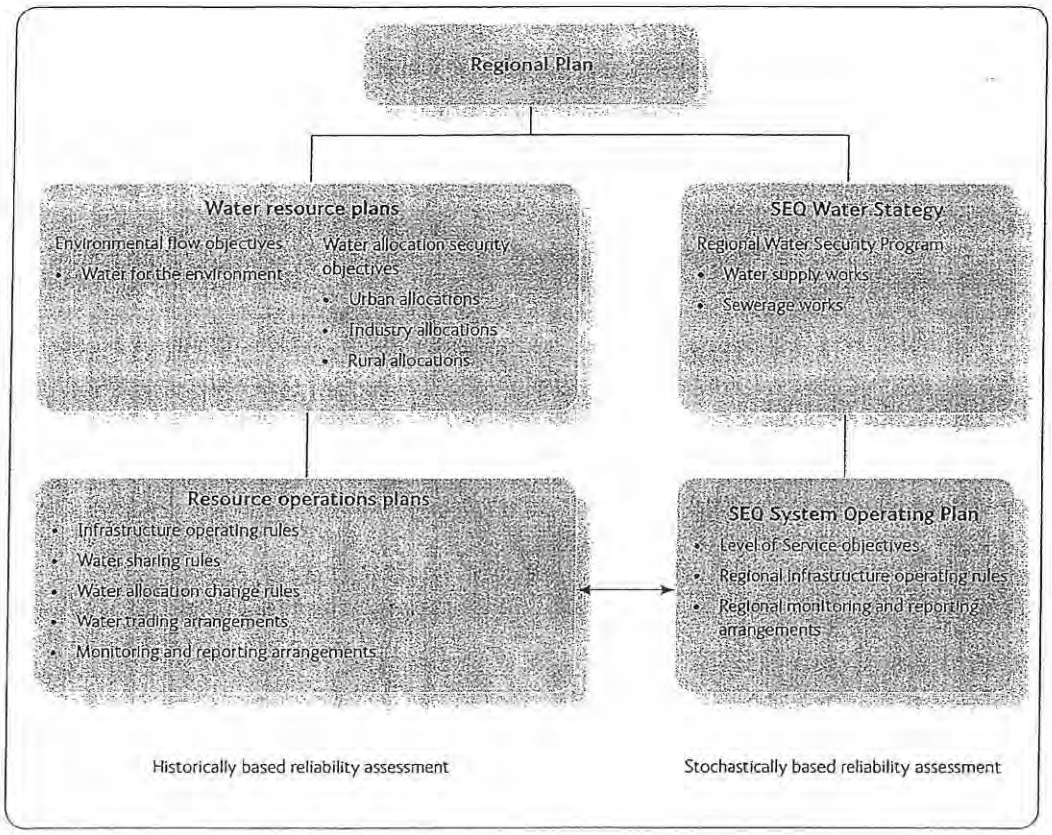


Figure 2.3 Relationship between water resource planning and the SEQ System Operating Plan

The water resource plans for the Mary Basin and Moreton are the only plans for SEQ that apply to groundwater. Declared sub-artesian areas, defined in the Water Regulation 2002, exist over Moreton Island and North Stradbroke Island.

The Strategy complies with the water resource plans. Section 3.1.3 discusses the importance of resource operations plans in achieving the desired supply reliability stated in the Strategy planning framework.

Water for the environment

Water resource plans specify a range of general and ecological outcomes. For example, some of the water resource plans for SEQ contain ecological outcomes that seek to minimise changes to the delivery of fresh water sediment, nutrients and organic matter to Moreton Bay. Monitoring and reporting programs will be established under the resource operations plans to assess whether or not water resource plans are achieving these outcomes.

In large part, the ecological outcomes are achieved by ensuring that actual flows meet or exceed specified environmental flow objectives. The environmental flow objectives are specified for high, medium and low flow regimes, and take into account seasonality. Wherever possible, environmental flow objectives attempt to mimic the natural flow regime of a catchment system.

In SEQ, environmental flows will exceed the minimum specified in water resource plans, because:

- each water resource plan identifies unallocated water that is available for urban or rural use. Until this water is fully granted, it would appear as surplus system flow (refer to Section 5.4.2)
- the SEQ Water Grid Manager will use less than the full urban water allocation to achieve the LOS objectives described in Chapter 3. This will increase the operating level of urban water supply dams, therefore increasing the potential frequency and volume of dam overflows to the environment.

The environmental flow objectives and water allocation security objectives included in the water resource plans are based on the historical record. The impacts of climate variability and change will be taken into account as part of future reviews of the plans.

Water for urban and rural use

Water resource plans also provide a level of security to water allocation holders, by establishing water allocation security objectives. These objectives define minimum performance levels that should be achieved through the implementation of operational and management rules specified in the relevant resource operations plans. The water allocation security objectives take into account any unallocated water that may be released for urban or rural use in the future.

There are a range of high priority and medium priority water entitlements from supplemented water supply schemes and some unsupplemented water entitlements. A supplemented water supply is one that is made more reliable by releases of stored water, such as from dams. Supplemented water supplies are managed by water supply scheme operators, such as Seqwater. An unsupplemented supply is one that is not sourced by releases of stored water. Unsupplemented supplies are managed by the Department of Environment and Resource Management.

In SEQ, most water resource plans specify that supply reliability[1] for high priority water allocations must be at least 95 per cent. Medium priority water allocations will generally have a lower reliability of supply. These performance levels reflect the nature of the use, with high priority allocations being suitable for urban and industrial uses and medium priority allocations being appropriate for rural uses.

For supplemented systems, announced allocation rules will generally be used to share water between allocation holders. Water trading rules will be specific to each plan and will generally apply to only supplemented water allocations in the initial resource operations plans. Water trading is intended to encourage water use efficiency and business development by enabling water allocation holders to sell, lease or seasonally assign spare water.

Groundwater

The *Water Act 2000* is the primary tool for management of groundwater extraction in Queensland.

Regulated groundwater areas have recently been identified in the water resource plans for the Mary and Moreton catchments. These mainly affect existing irrigation supplies. Bores for domestic use in SEQ are regulated on an as-needs basis.

Water bores may require a development permit under the *Sustainable Planning Act 2009* before they can be constructed. This ensures that these works are constructed properly and do not pose a risk to public safety or to the groundwater resource. Generally, the permit is required for all purposes except for stock water and domestic use.

2.1.4 Waterway health

Environmental values for water are set under the *Environmental Protection (Water) Policy 2009*. Objectives are set for key water quality parameters to protect these values, such as the percentage of sea grass coverage in parts of Moreton Bay or levels of nitrogen or phosphorus. These values provide a common set of goals to help integrate planning and management decisions.

The SEQ Healthy Waterways Partnership is a whole-of-government, whole-of-community collaboration. It focuses on leadership, commitment and voluntary cooperation to understand, plan and manage the use of SEQ's waterways and catchments. The program aims to complement other strategies and plans, including the Regional Plan, the Strategy and natural resource management plans.

The SEQ Healthy Waterways Partnership released the final version of the *SEQ Healthy Waterways Strategy 2007–2012* in 2008. The Healthy Waterways Strategy includes separate issue-based action plans regarding point source pollution, non-urban diffuse pollution, water-sensitive urban design, coastal algal blooms and protection of high conservation areas.

The Queensland Government released the draft State Planning Policy for Healthy Waterways for consultation in November 2009. The policy is intended to ensure that urban development is planned, designed and managed in ways that protect the environment.

[1] This means the percentage of months of being able to take the full water allocation over the historical simulation period. Not being able to take the full water allocation in any month does not mean that no water is available in that month, but rather that the full water allocation could not be taken for that month.

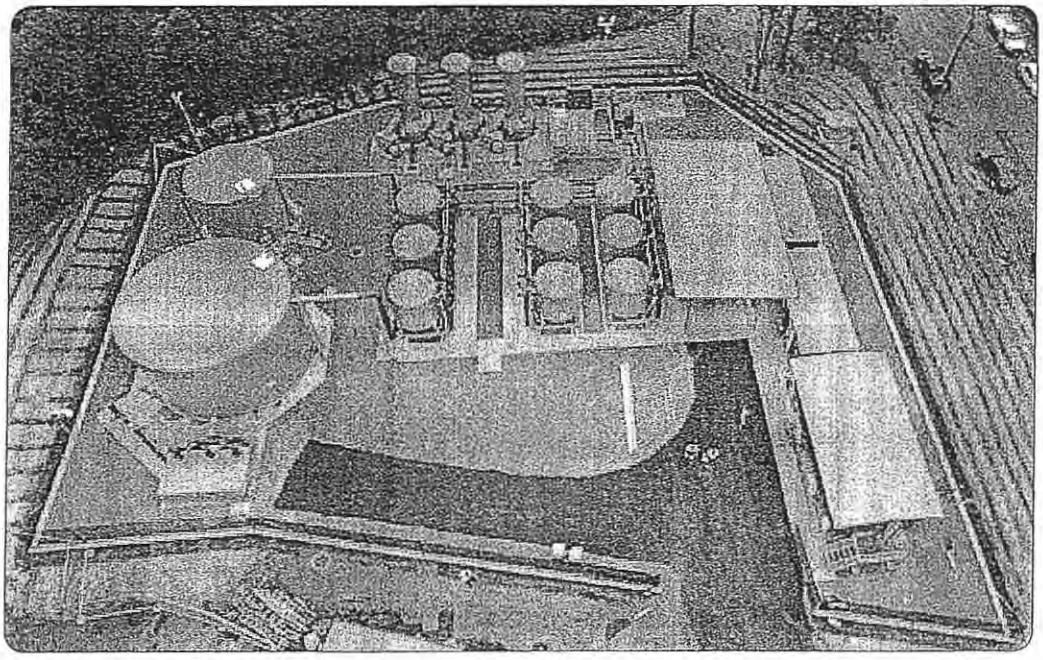
2.1.5 Drinking and recycled water quality

Drinking water quality in Queensland is regulated by the *Water Supply (Safety and Reliability) Act 2008*, the *Public Health Act 2005* and their accompanying regulations and guidelines. These Acts provide a framework for managing and ensuring the safety of drinking water supplies.

These regulations are based on the *Australian Drinking Water Guidelines*. The *Australian Drinking Water Guidelines* are designed to provide an authoritative reference on what defines safe, good quality water, how it can be achieved and how it can be assured. They address health and aesthetic issues and include guideline values for water quality parameters.

The *Water Supply (Safety and Reliability) Act 2008* and the *Public Health Act 2005* also establish a regulatory framework to ensure that recycled water schemes produce water of a quality that is suitable for its intended use. The Acts apply to all new and existing schemes across Queensland, including the Western Corridor Recycled Water Scheme.

These regulations are based on the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks.*



Brisbane Water, Runcorn Water Treatment Plant
Copyright 2007 Brisbane Caboolture Aquifuture Alliance
Photo courtesy of Brisbane City Council

2.1.6 National Water Initiative

The National Water Initiative (NWI) is an inter-governmental agreement between the Commonwealth of Australia and all states and territories. The overall objective of the NWI is to achieve a nationally compatible system of managing surface and groundwater resources for rural and urban use—a system that optimises economic, social and environmental outcomes and is based on markets, regulations and planning. In particular, the National Water Initiative seeks to:

- progressively remove barriers to water trading and to broaden and deepen the water market with the creation of an open trading market
- improve confidence for those investing in the water industry due to more secure water access entitlements; better and more compatible registry arrangements; better monitoring, reporting and accounting of water use; and improved public access to information
- return all currently over-allocated or overused systems to environmentally sustainable levels of extraction

- make water planning more sophisticated, transparent and comprehensive to deal with key issues such as the interaction between surface and groundwater systems, and the provision of water to meet specific environmental outcomes
- more efficiently manage water in urban environments—for example, through the increased use of recycled water and stormwater.

2.2 Institutional arrangements

The Queensland Government is implementing wide-ranging institutional reforms in the water industry in SEQ.

The reforms were required in order to realise the benefits of the SEQ Water Grid, ensuring the efficient and effective operation of the diverse range of supply sources. The previous arrangements were fragmented, with bulk source, transport and treatment assets being owned by 25 different entities. Customer service standards and water pricing were variable, there was no means of equitably sharing the cost of new infrastructure across the beneficiaries, and there was minimal transparency in the structure and level of water pricing.

The first phase of reform implementation was completed on 1 July 2008 with the establishment of the four new entities that own and operate the SEQ Water Grid (refer to Figure 2.4). These entities are:

- Seqwater, which owns all dams, groundwater infrastructure and water treatment plants in SEQ
- WaterSecure, which owns the desalination plant at the Gold Coast and the Western Corridor Recycled Water Scheme
- Linkwater, which owns all major pipelines in SEQ
- the SEQ Water Grid Manager.

These entities are all Queensland Government–owned statutory authorities.

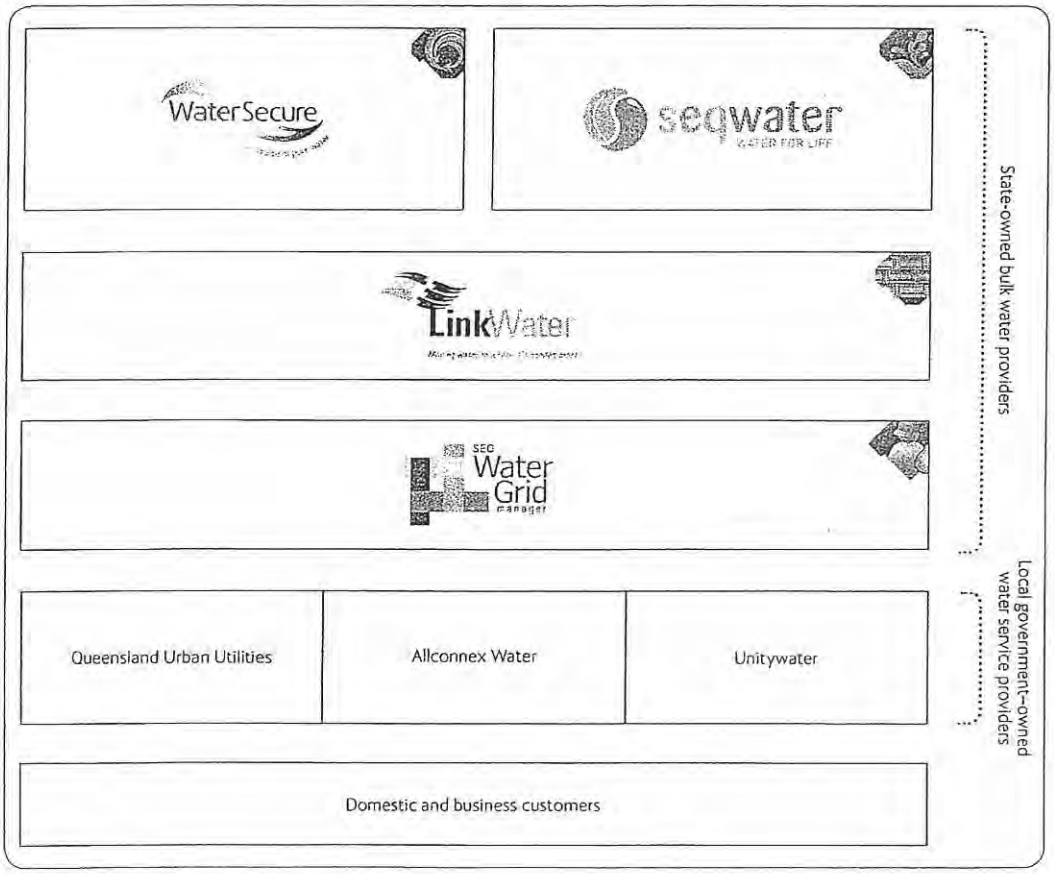


Figure 2.4 Institutional arrangements

The second stage of the reforms was completed on 1 July 2010, when three new council-owned distribution and retail entities commence operation. These entities own the water and sewerage distribution infrastructure and sell water and sewage disposal services to customers. The new entities are owned by the following councils and provide services within their areas (see Figure 2.5):

- Unitywater, servicing the Sunshine Coast and Moreton Bay areas
- Queensland Urban Utilities, servicing the Brisbane, Scenic Rim, Ipswich, Somerset and Lockyer Valley areas
- Allconnex Water, servicing the Gold Coast, Logan and Redland areas.

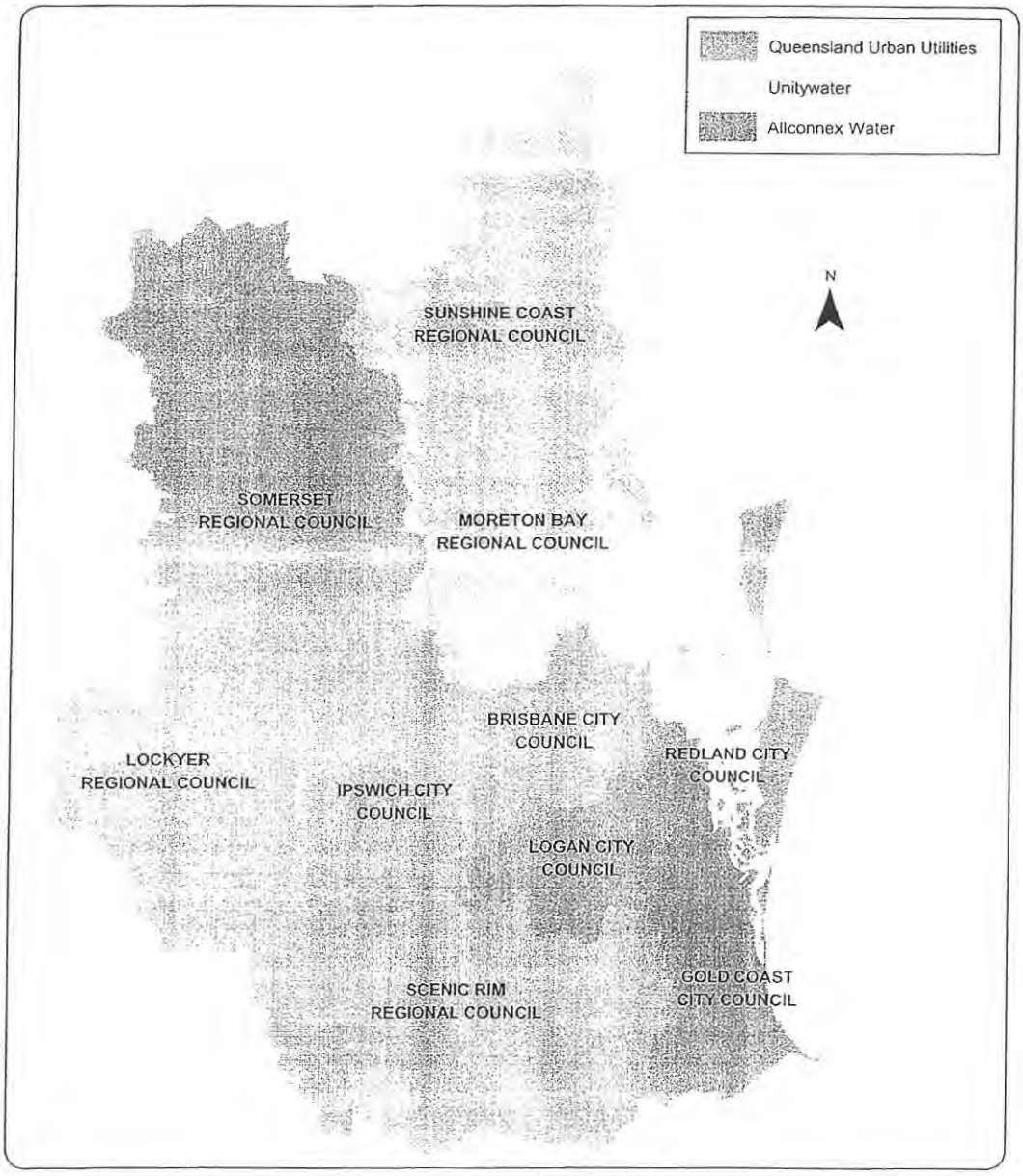


Figure 2.5 Boundaries of the three council-owned distributor-retailers

The SEQ Water Grid Manager is responsible for directing the physical operation of the SEQ Water Grid. The SEQ Water Grid Manager optimises the scheduling of supply from each source, taking into account a range of factors, including system reserves, dam inflows, operating costs, water quality and risk management.

The SEQ Water Grid Manager also provides a mechanism to share the costs of the SEQ Water Grid, by acting as the single buyer of bulk water services and the single seller of bulk water for urban purposes. It sells a wholesale 'pool' product, reflecting the portfolio cost of supplying retailers with a defined security and quality of supply at a defined bulk supply node.

Case study: Regional approach to maintaining a quality water service

On 29 December 2008, the SEQ Water Grid Manager was notified that residents in the south and west of Brisbane and some parts of Ipswich were experiencing changes to the taste, colour and odour of their tap water.

This was due to high summer temperatures, intense summer storms and seven years of extreme drought conditions. In combination, these factors increased the amount of soluble and insoluble inorganic and organic compounds flowing into water supplies at Mt Crosby. This elevated the levels of naturally occurring organic compounds, such as manganese and geosmin in the water. These organic compounds altered the colour and taste of the drinking water from the Mt Crosby Water Treatment Plant; however, the tap water continued to meet the strict health requirements of the *Australian Drinking Water Guidelines*.

The SEQ Water Grid Manager worked with four Grid participants to manage the water quality incident. Actions included:

- increasing the production of water from North Pine Water Treatment Plant
- flushing the Mt Crosby Weir with fresh water
- transferring 50 million litres of water a day from the Gold Coast to blend with Mt Crosby water
- transferring 20 million litres of water a day from the Gold Coast to Logan.

These measures resulted in reduced manganese and geosmin levels, improving the taste and odour of the tap water for Brisbane and Ipswich residents.

By 14 January 2009, test results confirmed that the concentration of organic compounds and minerals in the water at the Mt Crosby Water Treatment Plant was back to normal levels and below the *Australian Drinking Water Guidelines* aesthetic threshold.

Beyond the physical operation of the SEQ Water Grid, the reformed institutional arrangements have the potential to deliver significant benefits to the community by:

- improving and simplifying business structures to deliver water services in a coordinated manner
- creating economies of scale and scope due to the reduced number of entities
- improving service delivery by specialist entities, with the amalgamation of technical skill sets
- clarifying the respective roles of state and local governments
- improving the transparency and accountability for bulk transport and distribution networks with a strong asset management regime
- enhancing economic regulation and pricing.

The ability to introduce competition was a consideration in developing the new arrangements. Scope for practical competition will be actively assessed as part of the significant policy and regulatory reform agenda being undertaken by the QWC. While the SEQ Water Grid Manager is a monopoly service provider in the short term, some scope for the sale of bulk water directly to SEQ Water Grid customers by suppliers will be established at an early stage. This bypass mechanism is likely to see the development of new supply sources, particularly for localised solutions such as dual-reticulation recycled water schemes.

The SEQ Water Grid Manager can also enter into urban and rural water contracts. The Queensland Government has previously announced that recycled water will be made available from the Western Corridor Recycled Water Scheme to Lockyer Valley irrigators when not required to meet urban supply requirements (refer to Section 6.6.3). Additional supplies could also be made available from the SEQ Water Grid for rural production when not required to meet urban needs, such as through temporary or seasonal supply. Temporary allocations would be made available through a competitively neutral and transparent process. Any sales would be required to recover the cost of supply and not disadvantage other system users.

2.3 Total water cycle planning

The regional framework for total water cycle planning is set out in Section 11 of the Regional Plan. This section provides further detail on implementing this framework in SEQ.

The Strategy seeks to optimise total water cycle outcomes by:

- using and managing all water resources sustainably and within water resource plan limits
- introducing a demand management program to ensure that we continue to conserve our precious water resources
- considering all potential water sources, including possible future purified recycled water schemes and local recycling and stormwater schemes
- establishing new design standards for development, including for water efficiency and provisions of alternative supply sources
- recognising the importance of catchment management in protecting public and ecosystem health.

The following text box explains the framework for total water cycle management.

Framework for total water cycle management in SEQ

Total water cycle management (TWCM) involves the integration of land use and infrastructure planning across SEQ as a whole and for major development areas, local areas and specific sites. Key features of total water cycle management planning include:

- water efficiency and recycling
- integrated management of urban and rural water
- water-sensitive urban design in development
- stormwater management to improve water quality and water supply and to minimise the alteration to natural flow regimes
- a focus on catchment management to protect drinking water supplies and waterways from pollution.

Total water cycle management needs to be considered at a number of scales, with the planning process and the focus of investigations differing for each. For instance, regional planning focuses on regionally significant outcomes and infrastructure, such as the LOS objectives for water supply. At the other extreme, on-site development involves delivering built outcomes such as rainwater tanks, stormwater reuse or water-efficient devices.

Figure 2.6 illustrates the scales of planning and the key planning focus for each. At each scale, the planning requirement sets the context for planning at the scale below. At the more strategic levels, planning should not be unnecessarily prescriptive. Rather, target outcomes should be specified only where they are regionally significant.

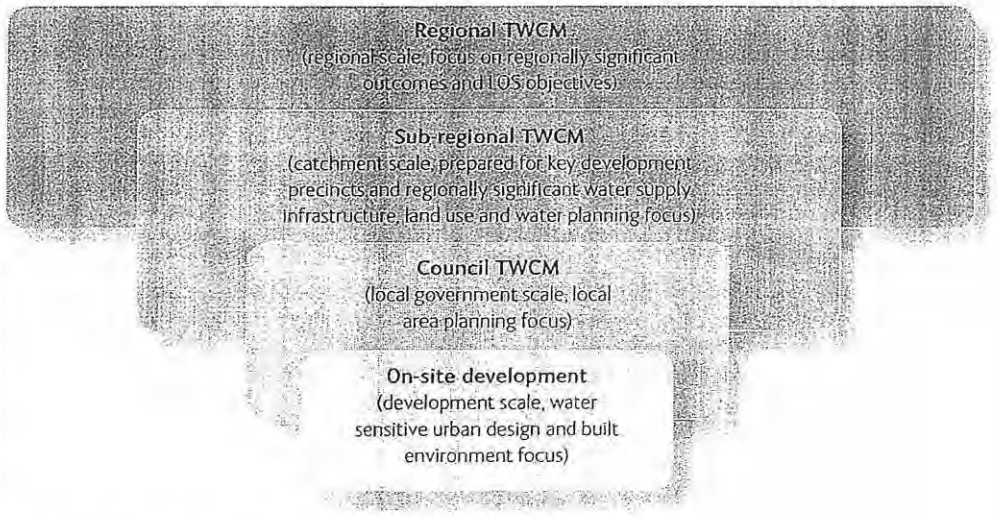


Figure 2.6 Framework for total water cycle management

Regional scale

The Queensland Government is responsible for overarching water management in SEQ. This responsibility involves a range of regional policies and initiatives, including the *South East Queensland Regional Plan*, the Strategy and the *South East Queensland Healthy Waterways Strategy 2007-2012*. These policies and initiatives are reviewed on a regular basis.

Sub-regional scale

Sub-regional total water cycle plans will be prepared for key development precincts, and where regionally significant water supply infrastructure is located. The purpose of these plans is to integrate land use planning with planning for waterway health and urban and rural supply purposes.

Sub-regional total water cycle plans will be led by the QWC, in conjunction with the local distributor-retailer entity and local governments.

The plans will build on and integrate existing processes undertaken by a range of entities. The key processes are:

- water resource planning, led by the Department of Environment and Resource Management
- specification of environmental values and water quality objectives, led by the Department of Environment and Resource Management
- water supply planning, led by the QWC
- drinking water catchment protection, led by councils and Seqwater
- recycled and wastewater infrastructure planning, led by councils and the distributor-retailers
- overland flow and flood management, led by the Department of Environment and Resource Management and local governments
- land use planning and development assessment, led by the Department of Infrastructure and Planning and local governments
- rural community planning, led by the Department of Infrastructure and Planning and the Department of Employment, Economic Development and Innovation.

The plans will include key decisions about the scope of possible future purified recycled water schemes, local recycling for non-potable uses, development controls to protect water quality, and stormwater capture and use. The plans could lead to the imposition of requirements on the way in which development is delivered and on any local supply solutions, in order to achieve optimal overall outcomes.

The outcomes from sub-regional total water cycle planning will be recommended for inclusion into the Regional Water Security Program. The Program will list key infrastructure and outcomes that should be incorporated into planning schemes and supporting documents.

Local governments will continue to have a controlling influence over local water cycle management through the preparation of planning instruments such as priority infrastructure plans.

The QWC is finalising a sub-regional water cycle plan for key development areas located within the boundaries of the Logan City Council and Scenic Rim Regional Council. This plan is being undertaken in partnership with the two councils, the SEQ Healthy Waterways Partnership and relevant Queensland Government agencies. Water-related issues affecting the area, include:

- providing water supplies for existing and new land uses, including for rural production
- managing sewage and stormwater discharges from existing and new developments
- protecting water supply catchments.

The plan will assess local supply solutions, as addressed in Section 4.6 of the Strategy. It will also consider opportunities to minimise the cost of, and energy used by, water cycle infrastructure. These issues are not council area specific and involve a number of entities. Some need to be resolved quickly to enable urban development to proceed, while others are associated with the operation and health of the Logan River system and require a long-term commitment to improving the management of resource and catchment issues within that system.

Future plans will be prepared in the short term for the key development and identified growth areas within the Moreton Bay region, Caloundra South and Palmview within the Sunshine Coast region and Ripley Valley within the Ipswich region. Other sub-regional plans will be prepared for key development and growth areas within the Regional Plan on a progressive basis.

Council scale

Under the *Environmental Protection (Water) Policy 2009*, local governments are required to develop total water cycle management plans that will guide their operating principles and decision making at the local level. Council total water cycle management plans must be developed in accordance with the guidelines being prepared by the Department of Environment and Resource Management. They will generally include provisions for integrating urban water services, including water supply, sewerage, trade waste and stormwater management. Among other things, they will address harvesting of rainwater and stormwater, wastewater recycling and water-sensitive urban design.

Council total water cycle management plans generally cover a larger spatial area than sub-regional total water cycle plans and will provide a higher level of detail to guide decision making for future planning.

On-site scale

At the on-site scale, development should comply with the planning framework outlined above and other requirements, such as the Queensland Development Code and state planning policies.

In recent years, some local governments in SEQ have incorporated water-sensitive urban design into these requirements, often in partnership with developers.

Water-sensitive urban design is a planning and design approach that integrates water cycle planning management into the built form of houses, allotments, streets, suburbs and master-planned communities. Among other things, water-sensitive urban design seeks to avoid or minimise the impacts of development by:

- protecting and enhancing the intrinsic values of the natural water cycle by minimising disturbance to natural landforms, wetlands, watercourses and riparian zones
- protecting surface and groundwater quality
- reducing downstream flooding and drainage impacts on aquatic ecosystems by managing stormwater run-off and peak flows
- promoting more efficient use of water by providing access to alternative local supplies of water, such as recycled water or stormwater
- minimising wastewater generation and ensuring treatment of wastewater to a standard suitable for wastewater reuse or release to receiving waters
- controlling soil erosion during construction and operational phases
- providing localised water supply solutions.

These initiatives complement Regional Plan requirements. The *Regional Plan Implementation Guideline Number 7* specifies design objectives for best practice urban stormwater management and describes how they should be adopted. The design objectives address three components of urban stormwater that affect water quality and waterway health:

- frequency of urban stormwater flows
- magnitude and duration of urban stormwater flows
- loads of sediment, nutrients and litter in urban stormwater.

The *Water Sensitive Urban Design Technical Design Guidelines for South East Queensland* describe appropriate methods for the detailed design of some common structural stormwater management measures.

2.4 The challenges we face

The Strategy seeks to ensure that SEQ has a safe and secure water supply. The social and economic consequences of an unreliable water supply or a failure of supply are unacceptable.

In providing this security, a balance needs to be struck between the outcomes sought by various stakeholders, which are not always well aligned. Some examples include:

- providing sufficient regional water security while minimising social, environmental and economic impacts
- providing sufficient water without over-capitalising on excess supply capacity
- improving water use efficiency while maintaining adequate supplies to support the SEQ community's lifestyle expectations

- providing improved access to water supplies for rural production while maintaining user-pays principles
- ensuring that the recommended infrastructure programs are sufficiently flexible to respond to uncertainty and, in particular, climatic risk.

Figure 2.7 illustrates the key considerations that have been taken into account in preparing the Strategy and the broad outcomes sought. The Strategy must specifically address the following key challenges.

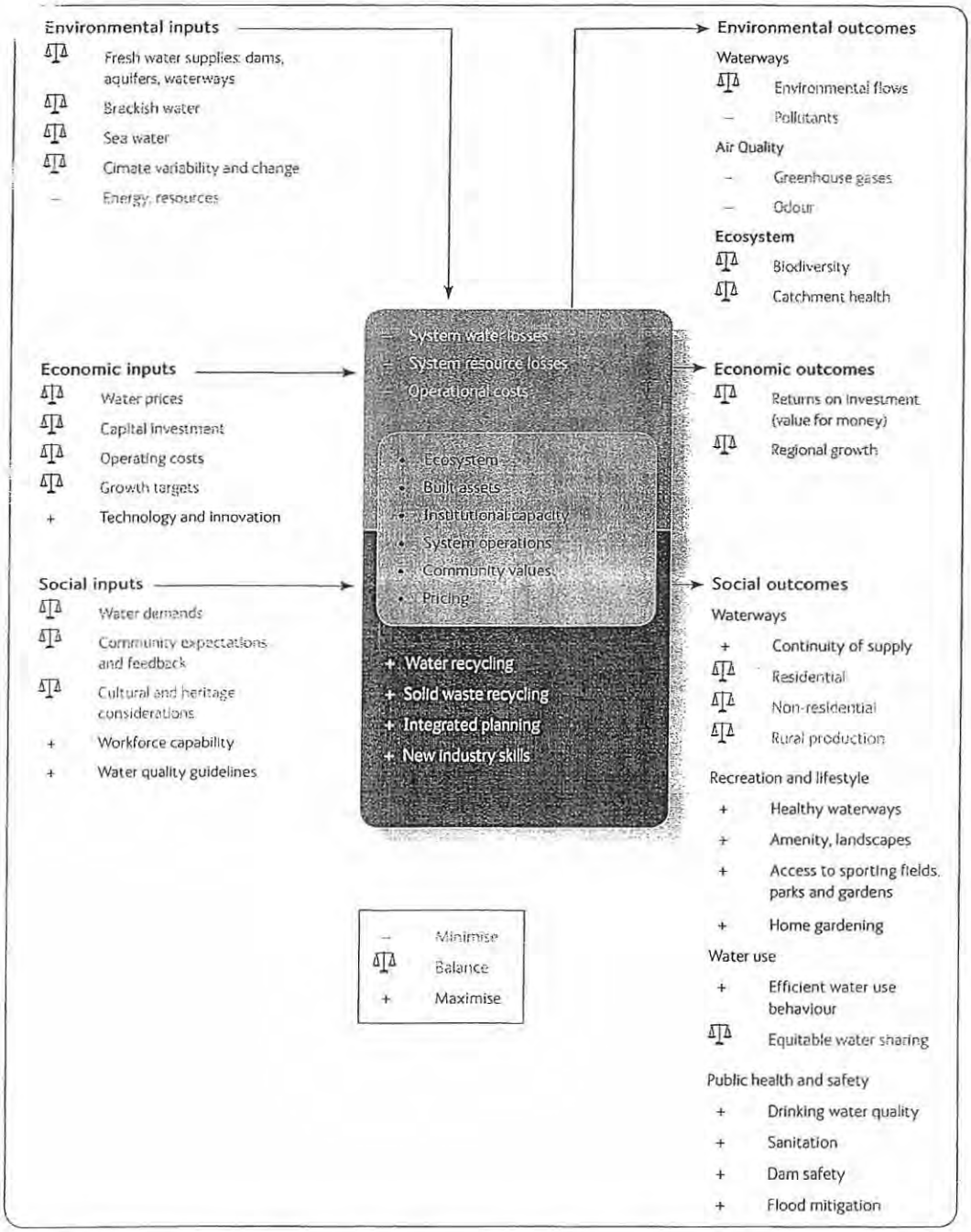


Figure 2.7 Key considerations and outcomes sought in preparing the Strategy

2.4.1 Population growth and demand trends

SEQ is forecast to continue to grow (refer to Table 2.1). Given the past trends, the Strategy has been prepared on the basis that future population growth in SEQ will trend between the medium and high series projections. Based on a high series projection, the population of SEQ could surpass six million people by 2051.

If SEQ residents were to return to pre-drought water usage of nearly 300 litres per person per day, regional water demand would double within the next 30 years, based on high series population forecasts. However, the community's response to the current drought has demonstrated that implementing simple behavioural changes, supported by basic water efficiency devices, can result in substantial water savings—reducing and deferring the need for additional infrastructure.

Table 2.1 Medium and high population projection series

Year	Population	
	Baseline	
2008[1]	3 043 100	
	Medium series	High series
2011	3 214 700	3 290 300
2016	3 567 100	3 737 200
2021	3 898 100	4 179 900
2026	4 204 700	4 609 300
2031	4 495 700	5 024 200
2051[2]	5 492 200	6 636 200
2056[3]	5 696 300	7 014 700

[1] Includes Toowoomba and Cooloola

[2] Sourced from the Planning Information and Forecasting Unit (PIFU), Department of Infrastructure and Planning. SEQ forecasts from 2006 to 2051; Queensland's future population 2008 edition (2008)

[3] SEQ forecasts 2051 to 2056: PIFU consultancy (2008) for all local governments but Toowoomba and extrapolation for Toowoomba; and Cooloola: Queensland's future population 2006 edition (2006)

2.4.2 Climate variability and change

The more we learn about the climate system, the more we are aware of its unpredictability.

Australian Bureau of Meteorology studies indicate that Queensland's climate is changing, becoming drier and hotter since 1910. Australian Bureau of Meteorology and CSIRO studies also suggest that the region is heading into a period of increased climate variability, potentially with drought occurring more often and for longer periods.

Research on the impact of climate change on inflows has been undertaken for the catchment areas in the western parts of SEQ, including Wivenhoe and Somerset dams. Case studies involving a number of global climate models and higher resolution regional climate models indicate a range of possible climate change outcomes by 2030. Mean temperatures in the western parts of SEQ could increase by between 0.8°C and 1.2°C, evaporation could increase by 2 per cent to 8 per cent, and annual rainfall could reduce by 5 per cent or increase by 20 per cent. The annual stream flow for the Brisbane River downstream of Mt Crosby Weir could be reduced by up to 28 per cent in a dry scenario or increased by up to 14 per cent in a wet scenario.

Even small changes in climate could have significant impacts for water security. Figure 2.8 shows the historical record for rainfall and combined inflows for two key storages in the SEQ region. It illustrates that, from the start of the Federation Drought through to the early 1950s, average rainfall was only slightly lower than during the second half of the century. However, inflows were, on average, substantially lower in the first half of the twentieth century than the second. This demonstrates the significant impacts of slight changes in rainfall on catchment wetting and drying and the effect of patterns of rainfall within a year, particularly the intensity of rainfall leading to run-off.

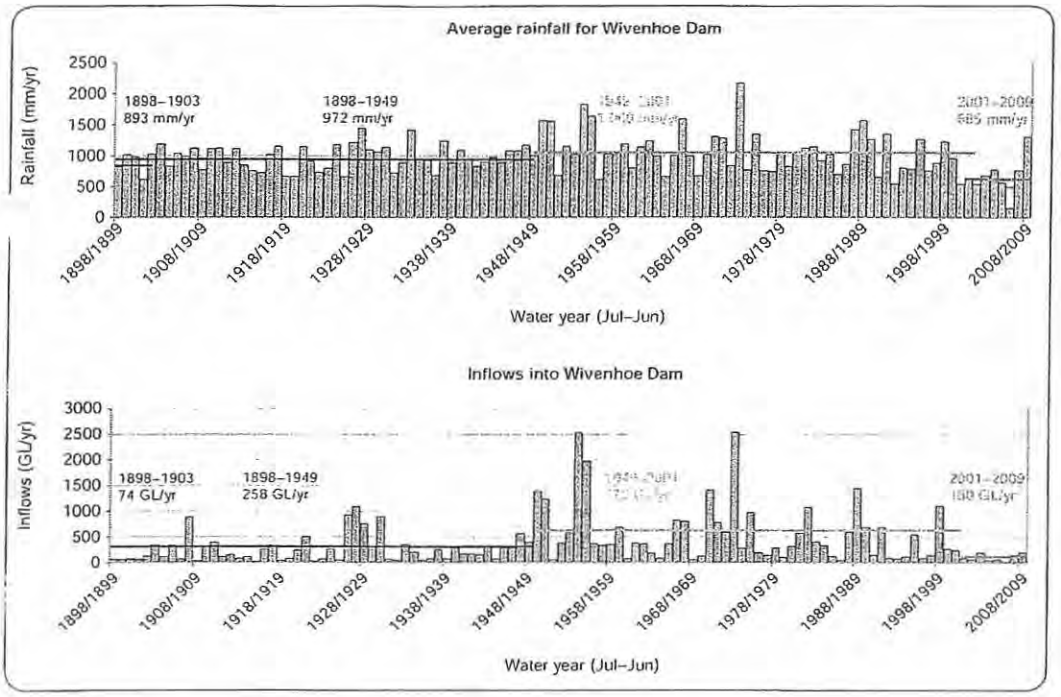


Figure 2.8 Rainfall and inflows into Wivenhoe Dam

Note: Average rainfall is the mean rainfall from the Wivenhoe and Somerset rain gauges.

Considerably more analysis is necessary to improve our understanding of climate change impacts, with the impacts expected to be highly variable across the region. Such work is being done by the Queensland Government Climate Change Centre of Excellence and the SEQ Urban Water Security Research Alliance.

The challenge is to ensure that water security planning accommodates drought impacts and maintains sufficient flexibility to adapt as climate change science improves. This is particularly important in SEQ, given our current high reliance on surface water supplies. The challenge for the SEQ community is to recognise that our regional water supply planning will continue to evolve as our understanding of climate change science improves.

The Federation and Millennium droughts

From 2001 to 2009, SEQ experienced the worst drought in the region's recorded history in terms of both length and reduced run-off: the Millennium Drought. On 20 May 2009, Wivenhoe, Somerset and North Pine Dams reached 60 per cent of their combined capacity, signalling an end to the water security crisis for SEQ.

Until the Millennium Drought, the Federation Drought was the worst drought in Australia's recorded history. Figure 2.9 illustrates the difference between the accumulated rainfall deficits across the catchment area to the west of Brisbane during the Millennium and Federation droughts. Accumulated rainfall deficit is the difference between rainfall over the drought period and average rainfall.

SEQ suffered the Federation Drought for five years from 1898 to 1903. At its worst, the accumulated rainfall deficit reached 1278 mm.

In comparison, the SEQ Millennium Drought ran for nearly eight years from 2001 to 2009. The maximum accumulated deficit during the period was 1530 mm.

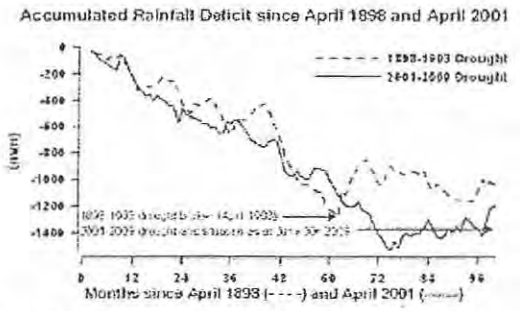


Figure 2.9 Accumulated rainfall deficit for the Federation and Millennium droughts

Source: Prepared by the Queensland Climate Change Centre for Excellence, July 2009

The El Niño-Southern Oscillation

The El Niño-Southern Oscillation (ENSO) phenomenon was a major contributor to the Millennium Drought, with El Niño events in 2002–03, 2004–05 and 2006–07.

ENSO is a global phenomenon that has a strong impact on Australian rainfall, particularly summer rainfall in Queensland. ENSO involves interplay between the ocean and atmosphere, which sets up a see-saw-like fluctuation in air pressure and sea surface temperature across the eastern and western Pacific. One extreme of this fluctuation is known as El Niño and the other extreme as La Niña. The fluctuation tends to lock into one mode (either El Niño or La Niña, or a more neutral mode) for several months—typically from spring through to the end of summer.

El Niño events tend to lead to dry summers in Queensland due to a reduced onshore flow, fewer tropical cyclones (particularly in southern Queensland) and a less active and less extensive monsoon system. Opposite conditions tend to occur during La Niña events.

ENSO has not been the only factor contributing to the dry conditions experienced in SEQ. Rainfall in SEQ is also influenced by both tropical systems from the north and fluctuations in the high-pressure ridge to the south. Interaction of these phenomena throws significant uncertainty around rainfall projections and long-term climate behaviour of the SEQ climate system. As a result, the impact of El Niño or La Niña differs somewhat from one event to the next. Another factor influencing the duration and intensity of drought, and the impact of ENSO, is variability in climate over long cycles. The SEQ Urban Water Security Research Alliance is undertaking research in this area, including a project on the Inter-decadal Pacific Oscillation.

Modified from: The South East Queensland Drought to 2007, Queensland Climate Change Centre of Excellence, 2007.

2.4.3 Efficient operation

The SEQ Water Grid provides the capacity to manage water supply on a regional basis. The challenge is to operate the SEQ Water Grid in a cost-effective and efficient manner for the SEQ community, while still achieving regional water security objectives.

Prior to the establishment of the SEQ Water Grid, the region was supplied as eight largely discrete water supply zones, with differing levels of reliability and, until recently, different owners and operators. Due to the lack of connectivity, restrictions were frequently applied in parts of the region while dams in other parts might have been full or overflowing. For instance, a severe drought was experienced on the Gold Coast in 2002, resulting in the application of severe restrictions and planning for the construction of a pipeline from Brisbane. A few years later, Brisbane was experiencing the most severe drought on record while dams on the Gold Coast were overflowing.

The SEQ Water Grid allows risk to be managed on a regional level, rather than on an individual storage or system basis. It allows optimal location of drought storage reserves and allows water to be moved from areas of surplus to areas that face a shortfall.

Conversely, when dam levels are high, the SEQ Water Grid Manager can reduce operating costs and energy consumption by:

- reducing production from expensive and energy-intensive sources, which are generally the climate resilient water sources
- 'mothballing' or reducing production from small supplies, such as aquifer projects
- altering the rate of transfer through major interconnections
- selling water to irrigators or adjoining areas on an interruptible basis.

2.4.4 Rural water supplies

The Regional Plan identifies around 80 per cent of the region as Regional Landscape and Rural Production Area. A portion of this area comprises protected national and conservation parks, water storages and state forests. However, the majority is privately owned farmland.

For the rural production sector in SEQ, access to water and the cost of that water has proven to be a major challenge. This challenge has been compounded because:

- there are thirteen sub-catchments in SEQ, which fragment potential water delivery schemes and make movement of water from one area to another difficult and expensive
- rural producers are required to provide increasing levels of certainty to major purchasers, which is difficult to provide without secure water.

These characteristics create a unique set of challenges to be overcome when developing a rural water supply strategy that aims to meet the objectives of the Regional Plan.

With SEQ now out of drought, the QWC can investigate options to increase the availability of water for rural irrigation. These investigations will be a key focus for 2010 and 2011, and are described in Section 6.6.

2.4.5 Potential water supplies

Planning for future bulk water supplies presents several challenges.

Additional bulk water supplies to meet growth might be required in 2021, and most likely not until mid-2020s. However, as the population continues to grow, competition for land is rapidly increasing. Planning for future water infrastructure requires site investigation and preservation well ahead of future need. Sufficient land must be preserved for potential future water supply options, including interconnections, with the least possible impact on adjacent communities. Pre-planning can also reduce the time required to construct any new water infrastructure.

All remaining potential bulk water supplies must be investigated in detail, including climate resilient options such as desalination and purified recycled water. There are few sound opportunities for further development of major surface water storages in the region. This is due to the shortage of suitable sites in areas identified by the water resource plans as having reliable water inflows. Groundwater is also almost fully developed, apart from smaller opportunistic extractions.

Rainwater tanks and alternative local supplies must also be investigated in detail. Some of these alternatives have the potential to exceed the minimum savings required under the Queensland Development Code, or to deliver the minimum savings more efficiently. However, they must be compared to other options on a triple bottom line basis. More research is needed to quantify the benefits and costs of these alternatives, and to ensure that they are capable of consistently supplying fit-for-purpose water quality.

Finally, there is a need for a robust and transparent process by which the QWC will prepare advice for the Queensland Government regarding the nature, location and timing of the next augmentation.

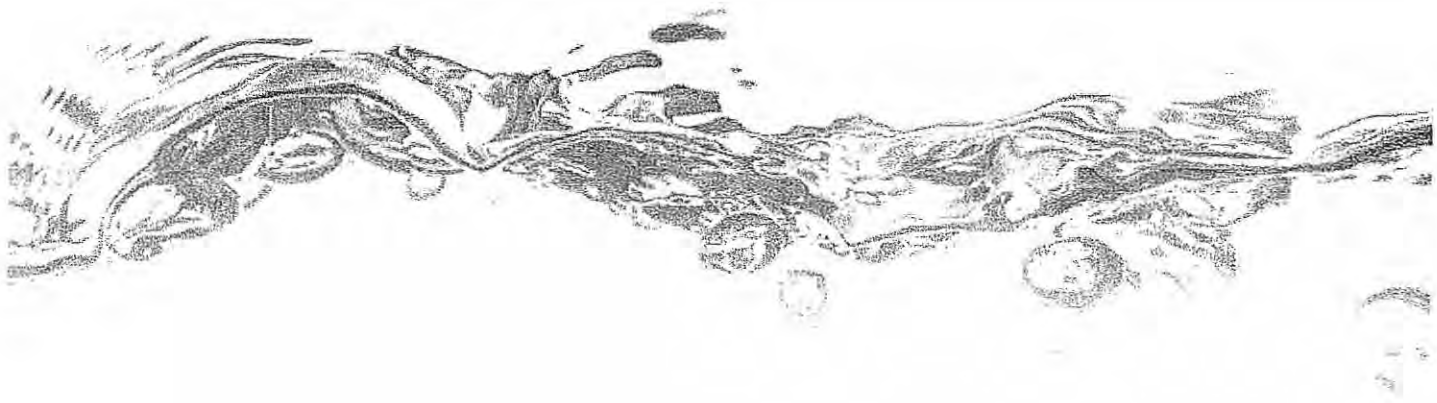
2.4.6 Our environment

SEQ contains some of the most valuable waterways and estuaries in Queensland. These waterways and estuaries are affected by a range of factors associated with human settlement, such as:

- altered environmental flows from water resource development and changes in land uses
- polluted run-off and degradation of riparian zones from urban or rural development
- point source pollution from wastewater treatment plants and industry
- in-stream sand extraction and erosion of river banks
- fishing.

The SEQ Healthy Waterways Partnership publishes an annual Report Card on waterway health. The Report Card demonstrates that these factors have caused degradation to a number of rivers and estuaries, despite some major achievements over the past decade, An increasing population, together with substantial industrial growth, will put more pressure on ecosystem health.

To restore our waterways, new development must be designed to protect water quality and flows, existing uses must be better managed, and degraded areas must be rehabilitated. These challenges highlight the importance of total water cycle management, as explained in Section 2.3. Section 4.6.3 describes some of the direct environmental benefits that can be achieved to reduce nutrients in waterways, through the use of well-planned water recycling.



Chapter 3

Striking the balance —Methodology

This chapter provides an overview of the planning framework that underpins the Strategy. It explains the approach to water security planning in SEQ, and the Level of Service (LOS) objectives that have been adopted. It also provides an explanation of how the SEQ Water Grid will be operated to achieve the LOS objectives. Finally, the chapter provides an overview of the methodology for demand forecasting and comparing alternative demand and supply options.

Key messages

- LOS objectives provide a basis for planning and managing SEQ's water resources.
- LOS objectives include the duration, severity and frequency of water restrictions.
- The Strategy aims to achieve the LOS objectives for all communities with reticulated water supplies in SEQ. See Section 3.1.1 for the full list of LOS objectives.
- The potential impact of climate change has been analysed assuming an immediate 10 per cent decrease in the yield from dams and weirs.
- A drought response plan will be developed. The plan will require the introduction of Medium Level Restrictions and the construction of new climate resilient or climate independent water supplies, such as desalination plants, as necessary.

3.1 Urban water supply planning underpinning the Strategy

The SEQ Water Grid is an interconnected system of dams and weirs, groundwater, desalination and purified recycled water. Through optimal operations, the SEQ Water Grid provides a secure water supply. While the region will continue to have a high reliance on its surface water storages, the ability to introduce climate independent water into the system and draw on a variety of sources significantly improves the security of supply.

The Strategy adopts an analytical technique based on the LOS objectives approach, originally published by the Water Services Association of Australia in June 2005. This approach is reflected in the *Water Act 2000*, which requires the QWC to provide advice based on desired LOS objectives.

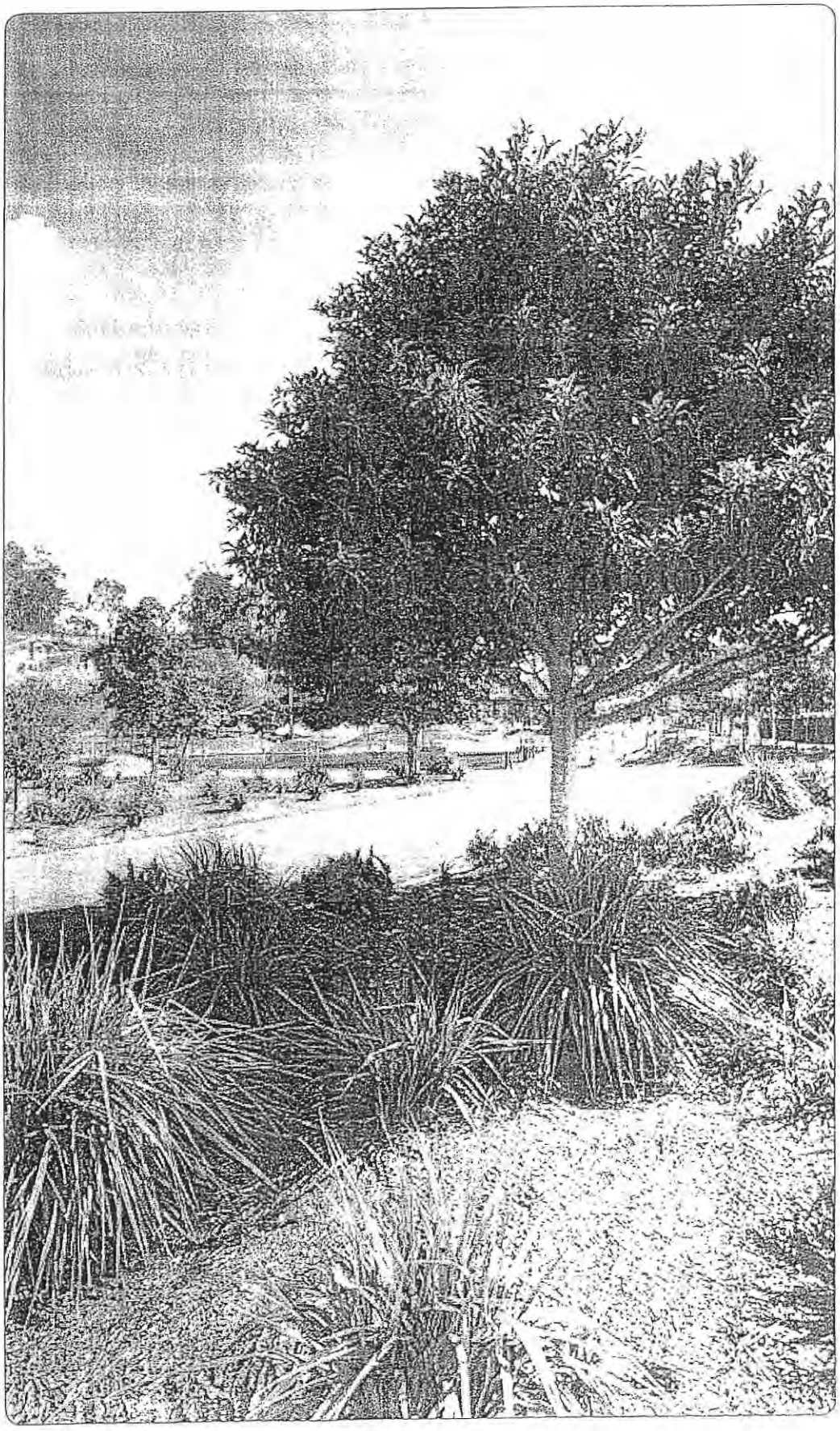
The LOS approach is intended to ensure that the community has a safe and reliable water supply, and that this is communicated to consumers. Water supply planning achieves this purpose in three ways:

1. The system has the capacity to maintain an adequate level of water supply over most periods in the long term.
2. When droughts occur, a drought response plan protects against water shortages through the planned implementation of Medium Level Restrictions and the construction of new climate resilient or climate independent supplies, such as desalination, as necessary.
3. In cases of extreme drought or critical water shortage, a contingency or emergency plan ensures that basic water needs for a community can be met for the duration of that situation.

The LOS approach involves:

- stochastically[1] generating longer time sequences of hydrologic data that have similar statistical characteristics to that of the historical record—this provides better information about climate variability and the potential for droughts worse than have occurred on record
- analysing climate models to assess potential reductions in surface water availability due to climate change
- reducing demand through cost-effective measures
- planning for future droughts as a core element of the planning process
- defining a yield for the SEQ Water Grid as a whole, such that water can be supplied at the specified LOS objectives.

[1] A stochastic model is a tool for estimating probability distributions of potential outcomes by allowing for random variation in one or more inputs over time. The random variation is usually based on fluctuations observed in historical data for a selected period using standard time-series techniques. For our model, the historical record was used to generate 1000 replicates of data with each replicate representing more than 100 years of inflow data



3.1.1 Level of Service objectives

LOS objectives provide a basis for establishing a secure water supply. The objectives define:

- the desirable maximum frequency, duration and severity of water restrictions
- the average amount of water per capita that must be supplied in normal times.

The objectives are used to determine the volume of water that can be supplied from the SEQ Water Grid, on average, every year—this is the LOS system yield. The LOS system yield is used, together with the projected demands, to ensure that supply and demand initiatives are put in place to meet future water needs.

When the LOS system yield exceeds demand, there is a lower likelihood of triggering restrictions than is specified in the LOS objectives. When demand exceeds the LOS system yield, there is a higher likelihood that restrictions will be triggered.

LOS objectives should reflect community expectations about water restrictions and the community's willingness to pay for improved security of supply. The LOS approach acknowledges that future severe droughts will occur, and that water restrictions are an effective and efficient way of managing the impact of these droughts—but restrictions can have a significant impact on the community. The LOS objectives make clear the assumptions made by water supply planners, and will inform investment decisions by the community.

The LOS objectives for SEQ have been developed on the basis that, in order to maintain a comfortable lifestyle, the community would prefer to use Permanent Water Conservation Measures coupled with Medium Level Restrictions in times of drought. In normal times, this means that water will be used wisely. In periods of drought, Medium Level Restrictions will be introduced early enough and at such a level that they avoid negative impacts on community amenity and the regional economy. For instance, in future droughts, it is expected that restrictions would not require a ban on handheld hosing and water-efficient sprinklers.

The LOS objectives are listed below. The objectives will be targeted across all SEQ communities with reticulated drinking water supplies.

Level of Service objectives

- During normal operating mode, sufficient water will be available from the SEQ Water Grid to meet an average regional urban demand of 375 litres per person per day (including residential, non-residential and system losses).
- Sufficient investment in the water supply system will occur so that:
  - Medium Level Restrictions will not occur more than once every 25 years, on average
  - Medium Level Restrictions will only reduce consumption by 15 per cent below the total consumption volume in normal operating mode
  - drought response infrastructure will be not be required to be built more than once every 100 years, on average
  - combined regional storage reserves do not decline to 10 per cent of capacity more than once every 1000 years, on average
  - regional water storages do not reach 5 per cent of combined storage capacity
  - Wivenhoe, Hinze and Baroon Pocket dams do not reach minimum operating levels.
- It is expected that Medium Level Restrictions will last longer than six months, no more than once every 50 years on average.

On the basis of the LOS objectives, the community can expect to experience water restrictions no more than once every 25 years, on average. Such restrictions would reduce regional urban demand by an average of 15 per cent, across the entire community. In setting future Medium Level Restrictions, the QWC will consider the likely impact of the measures, community preference and the existing level of efficiency for residential and non-residential customers. Once business and industry have implemented best practice water efficiency, it is likely that additional savings will be made by the residential sector curtailing outdoor use. The QWC expects that residential consumption may be curtailed to a regional average of about 185 litres per person per day.

The QWC considers that these objectives represent appropriate planning assumptions, given the current variation in consumption across SEQ and the high level of uncertainty regarding population growth, impacts of climate change and a range of other factors. In particular, the QWC recognises the risk that consumption may rebound over a relatively short period of time, compared to the time required to plan and construct new sources of supply.

The LOS objectives will be reviewed as part of future reviews of the Strategy, taking into account a range of factors including the level of residential water use and community acceptance of continued water efficiency measures. For example, the QWC would consider reducing the overall demand planning assumption if average regional urban consumption remains significantly below 375 litres per person per day and community acceptance of continued water efficiency measures remains strong. An annual performance review of the Strategy provides the opportunity to review the overall demand planning assumption.

The planning assumptions are discussed in more detail in Section 4.3.

Establishing the LOS objectives has involved trade-offs between financial costs, environmental impacts and the willingness of the community to accept restrictions on a periodic basis. Information gained from managing the Millennium Drought has been used in the formulation of the LOS objectives. The experience of managing regional water security during the Millennium Drought has provided useful evidence about practical issues and community expectations. Feedback on the draft Strategy indicated that residents of SEQ generally support ongoing water efficiency measures and planning to ensure that water supplies are secure during extreme droughts.

3.1.2 Drought response planning

A drought response plan is required to achieve the LOS objectives. The purpose of the drought response plan is to ensure continuity of supply regardless of climatic conditions or failures of the water supply system.

The drought response plan will contain the pre-determined response to droughts, including trigger levels for implementing and exiting water restrictions, water efficiency measures and construction of new climate resilient water supplies. The drought response plan will also include the introduction of purified recycled water to Wivenhoe Dam to supplement drinking water supplies. If Medium Level Restrictions and purified recycled water are introduced and the combined regional storage levels continue to decline, then the construction of projects identified in the drought response plan will be triggered. The trigger points for various aspects of the drought response plan are discussed in the following sections, together with the size and placement of the drought storage reserves.

Preparation for the construction of infrastructure in response to a drought will commence no later than when restrictions commence. However, it may be prudent to commence preparation for construction in advance of the commencement of restrictions, depending on the time of year, the rate of decline of regional storages and the level of preparedness of alternative options under the drought response plan.

The construction of drought response infrastructure is expected to occur not more than once every 100 years on average. Once constructed, this infrastructure will become part of the permanent water supply arrangements and would delay the need for future planned augmentations of the system.

While the drought response plan projects will be completed within a nominal period of 30 months, the water restrictions will only be lifted if:

- the drought conditions ease—that is, following one or more major rainfall events resulting in significant inflows,
  or
- the commencement of construction of additional pre-planned infrastructure that increases the volume of climate resilient or climate independent water supplies is brought forward.

The drought response plan will also contain contingency or emergency measures to manage extreme risk events, such as if one of the drought response projects is delayed or an extremely poor inflow sequence occurs. The measures will reflect the circumstances of the event, and may only be determined when Medium Level Restrictions have been introduced. One option is the introduction of a second tier of water restrictions—emergency restictions. Such restrictions would involve reducing average regional residential consumption to 140 litres per person per day. This is equivalent to approximately 25 per cent reduction from the planning assumption of a regional urban consumption of 375 litres per person per day under normal operating mode. For comparison, during the most critical water supply period of the Millennium Drought, residents in the restricted area of SEQ used an average of 129 litres per person per day. The likelihood that

emergency measures such as these would need to be implemented is sufficiently low that it is not considered appropriate to warrant their inclusion as an LOS objective, but rather to embed them in the drought response plan as emergency restrictions.

3.1.3 SEQ Water Grid operations

The Strategy partitions the water storage compartment in SEQ dams both individually and as a combined total SEQ system into:

- working volume
- drought storage reserve
- minimum security volume
- minimum operating volume (dead storage).

Figure 3.1 illustrates the partitioning of the water storage compartment of the region's dams. These partitions apply both to individual dams and across the SEQ Water Grid as a whole. Many individual dams are also constructed with a flood storage compartment that sits above the water storage compartment.

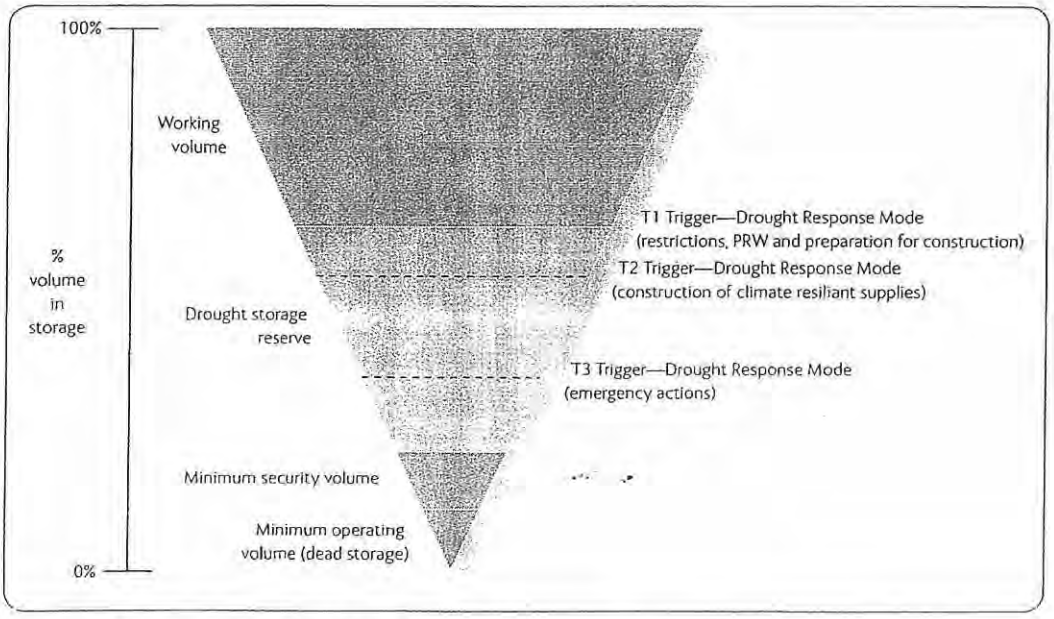


Figure 3.1 Partitioning of key SEQ Water Grid storages

The normal operating mode applies when the SEQ Water Grid is within the working volume. This mode will apply over most periods in the long term, consistent with the LOS objectives.

Below the working volume is the drought storage reserve. The combined SEQ Water Grid drought storage reserve underpins the drought response plan. The drought storage reserve is sized to provide, in conjunction with climate resilient sources, a minimum of 36 months' supply of water at a restricted demand. The actual volume of the drought storage reserve will vary over time according to the mix of supplies and the demand for water.

Calculation of the drought storage reserve requires consideration of:

- the restricted demand
- climate resilient dam inflows
- system losses, including evaporation and transport losses
- access to climate resilient and climate independent supplies, such as purified recycled water and desalination.

The drought storage reserve will only be held in the dams included in the definition of the key Water Grid storages.

Section 5 lists the region's surface water supplies. The following supplies are included in the definition of key SEQ Water Grid storages used to calculate the critical triggers—Baroon Pocket Dam, Ewen Maddock Dam, Cooloolabin Dam, Wappa Dam, Lake McDonald, Somerset Dam, Wivenhoe Dam, North Pine Dam, Lake Kurwongbah, Leslie Harrison Dam, Hinze Dam and Little Nerang Dam. This list includes all storages in SEQ owned by Seqwater, but excludes:

- weirs and off-stream storages that are too small to contain significant drought storage reserves
- storages that predominantly supply rural users, since these will not be required to be operated in accordance with the urban storage rules
- storages that supply a community that has no existing or committed SEQ Water Grid connection.

It is noted that drought storage reserves may still be specified for some of the predominately rural dams. For example, Moogerah Dam will include a volume to ensure security of supply for Boonah and connected towns. However, these reserves will be based on local considerations, rather than on the methodology outlined below.

At this time, the partitioning of individual dams defined as key Water Grid storages will be the same as the partitioning of the overall SEQ Water Grid. That is, the working volume of each dam will be between 40 per cent and 100 per cent of storage capacity. This partitioning may be reviewed over time, once the operation of the SEQ Water Grid has been refined.

The SEQ System Operating Plan describes the rules for operation of the SEQ Water Grid. These rules will influence the take from, and level of, specific dams. The rules establish acceptable levels of short to medium-term risk associated with triggering water restrictions and constructing new climate resilient water supplies. The LOS objectives also provide for the average expected performance of water supply over the long term. The rules balance short-term operational cost and efficiency benefits with maintenance of the long-term security objectives. This is achieved by understanding the real operational risks over shorter timeframes. Importantly, short-term financial gains should not be realised at the expense of long-term water security.

Within the combined SEQ Water Grid drought storage reserve there are three trigger levels:

- T1 is the trigger to enter the drought response mode (preparation phase). It applies when regional storage volumes drop down into the drought storage reserve. Pre-planned Medium Level Restrictions will be introduced and purified recycled water will be added to Wivenhoe Dam at this time. This phase provides time to prepare for construction, in the event of continued drought conditions.
- T2 is the trigger to enter the drought response mode (construction phase). It applies when construction of new climate resilient or climate independent water supplies, such as desalination plants, is required to commence to ensure that the restricted water demands for the community can be met for the duration of a long, severe drought.
- T3 is the trigger to enact emergency measures.

The trigger levels are stated in the SEQ System Operating Plan and will be reflected in the drought response plan.

For the SEQ Water Grid, the risk of drawing down to operationally significant storage levels, such as T1 or T2, will depend on the current storage volume within the system. Larger storage volumes, coupled with the increased opportunity for conjunctive system operation (transfers, desalination, or use of purified recycled water), result in a reasonably long period over which supply can be maintained with below-average inflows without drawing down to these trigger levels. However, operational decisions made when storage volumes are relatively high can still have a significant effect on regional water security (and potential infrastructure expenditure) if extended periods of low inflows are experienced.

Essentially, rules in the SEQ System Operating Plan enable timely modification of system operation to ensure that these risks are maintained within acceptable levels to the extent that is possible.

T1 has been set at 40 per cent of the combined capacity of the key Water Grid storages in SEQ. This aligns with advice to the Queensland Government from the QWC regarding the appropriate trigger to commence the introduction of purified recycled water in Wivenhoe Dam as an emergency source of supply.

T2 has been set at 30 per cent of the combined capacity of the key Water Grid storages in SEQ. This is determined by the need to allow a nominal 30 months for the construction of infrastructure in response to a drought, and by the LOS objective that the frequency of triggering drought response infrastructure will be not more than once every 100 years, on average. If the drought response plan identifies a critical project that requires more than 30 months to implement, then the time and associated trigger point for T2 will need to be reassessed. It is essential that both the T1 and T2 triggers are appropriate for the type and scale of response planned.

T3 will be set in the drought response plan. It is likely to vary depending on factors such as the period of time until drought response infrastructure is completed. It is expected to be set at 20 per cent or less of SEQ Water Grid storage capacity.

All the trigger levels may change over time, as new sources of supply are constructed and demand increases.

The minimum security volume is set at 5 per cent by the LOS objective that regional water storages must not be permitted to reach 5 per cent of combined storage capacity.

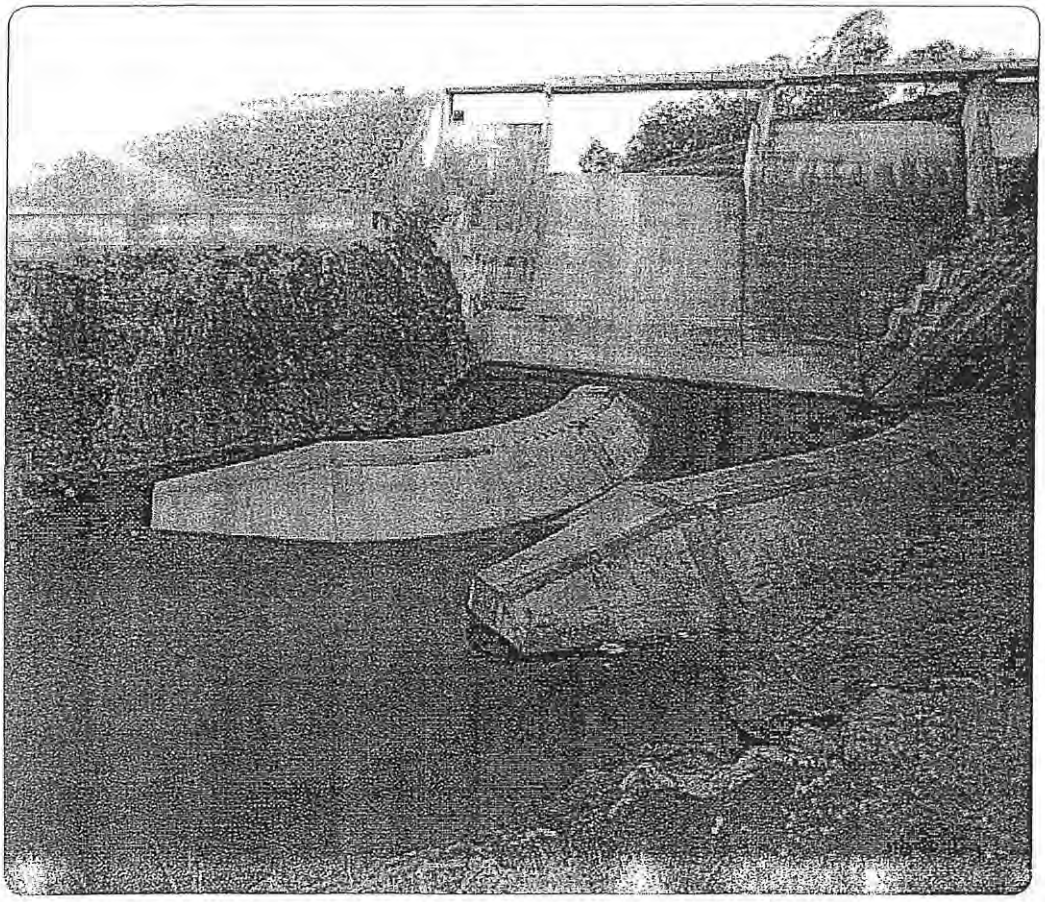
The minimum operating volume for any storage is included in the appropriate resource operations plan and may be referred to as the dead storage level. Water below the minimum operating level cannot be accessed with existing infrastructure.

3.1.4 Drought response exit

To exit the drought response mode, the combined SEQ Water Grid storage levels will need to increase beyond the T1 trigger level. The exit level will need to be set sufficiently above the drought storage reserve to minimise the risk of re-triggering water restrictions within an appropriate period. The actual exit level would be determined following consideration of:

- climate forecasts
- the existing mix of climate dependent and climate resilient supplies
- the status of any infrastructure projects in construction
- current policy on the use of purified recycled water
- short-term limitations on system capacity due to water quality
- managing the risk of use rebounding above consumption targets once the drought response mode is exited.

Ultimately, the capacity above T1 that is selected will need to strike a balance between the cost of staying in drought response mode unnecessarily, and the economic and social cost of moving out too early, and being forced to re-enter shortly after, if dam levels decline back to T1.



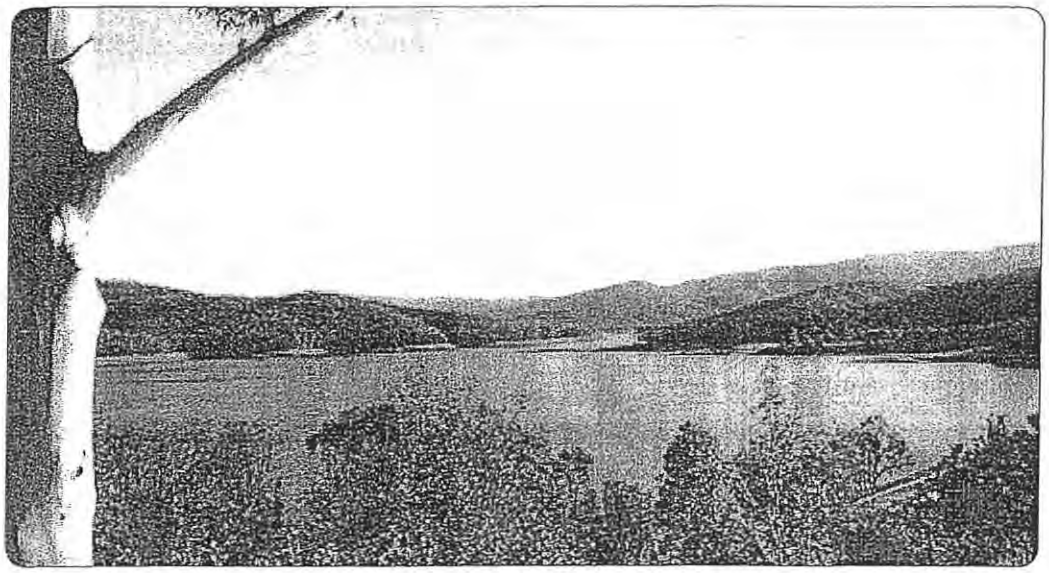
3.1.5 Determining the yield of the SEQ Water Grid

The LOS objectives are performance objectives for the delivery of bulk water supplies from the SEQ Water Grid.

The LOS system yield is the volume of water that can be supplied from the SEQ Water Grid every year and still achieve the LOS objectives. Until recently, estimating the system yield of a suite of integrated sources of supply has been based on an aggregation of yields of individual sources of supply, treated as unconnected. The modelling undertaken for this Strategy incorporates assessments of the LOS yield of specific dam systems and of the SEQ Water Grid as a whole. Future water availability has been estimated following consideration of:

- the LOS objectives
- environmental flow objectives and associated releases needed to maintain riverine, estuarine and marine ecosystem health
- water allocation security objectives
- resource operations plans
- total water storage capacity in the SEQ Water Grid
- inflows to the SEQ Water Grid storages over the period of the historical record
- estimated variability in inflows based on synthetically generated datasets that have the same statistical inflow characteristics as the historical record
- the possible impacts of climate change on inflows
- supply from climate resilient sources
- the volume of the regional drought storage reserve, and its distribution across individual dams.

Under the Strategy, less water is proposed to be used than is permitted under water resource plans and resource operations plans. This is because, in order to achieve the LOS objectives, water must be 'banked' in the wetter periods so that it is available during droughts that may be worse or more frequent than has occurred in the last 100 years. Fully using the available allocation could place the urban community at risk of supply failure during extended drought, especially from droughts worse than those that have been experienced since records were kept.



However, while the LOS system yield of the SEQ Water Grid is less than the sum of the allocations held by the SEQ Water Grid Manager for urban use, it is larger than the sum of the LOS yields of the individual systems.

Using less urban water than permitted under water allocations issued in compliance with water resource plans generally results in dam levels being higher than would otherwise be the case, because additional reserves are held in storage. In turn, this results in an increased likelihood of overflows from dams with associated environmental benefits and higher announced allocations for rural irrigation. The benefits for rural users of this arrangement are described further in Section 6.6.

For the purposes of water supply planning, modelling focused on the quantity of water. In practice, considerations such as water quality and other physical operational constraints will affect the performance of the SEQ Water Grid. However, these influences, though important in the short-term management of our water supplies, do not significantly impact on the overall LOS system yield of the SEQ Water Grid.

The regional water balance model has informed the development of broad operating rules for the SEQ Water Grid. These rules seek to balance the short-term operational costs and efficiency benefits of SEQ Water Grid operation with long-term water security objectives.

Operating rules for optimal use of the region's urban water supplies will be addressed in the SEQ System Operating Plan (refer to Chapters 5 and 7). Optimising the use of any surplus water supplies might include supplying rural production or transferring water to areas outside of the SEQ region or those areas not covered by the SEQ System Operating Plan. This could include supplying surplus water to the Tweed Shire in northern New South Wales, if appropriate.

3.1.6 Determining the climate resilient yield of the SEQ Water Grid

Some inflows will be received into the region's dams and weirs even in the most severe droughts. These inflows are referred to as climate resilient, as distinct from climate independent water supplies such as desalination. For example, during the most severe period of the Millennium Drought in 2006–2007 35 000 megalitres of inflows was recorded into the Wivenhoe–Somerset system, compared to an average of 615 000 megalitres per year in the preceding twenty years.

Assumptions about the level of climate resilient inflows influence the size of the drought storage reserve as well as the capacity of the climate resilient infrastructure that is constructed as part of the drought response plan. Assumptions must be based on a clear understanding of the risk of future drought inflow sequences occurring.

The 30-month construction period represents a critical component of the drought response plan. The trigger level for commencing construction depends on the assumed level of inflows over this 30-month period. If lower inflows occur during this period than were assumed in calculating the trigger level, then the volume of water in storage will be drawn down to critical levels before contingency infrastructure is completed. This could compromise regional water security. Planning for new infrastructure that might be required can shorten the construction time and is therefore an important part of drought response planning.

Stochastic modelling has been undertaken to determine the severity of potential droughts in SEQ. The modelling shows that SEQ should be prepared for droughts that are significantly worse than what was experienced during the Millennium Drought. However, the likelihood of these extreme events occurring is less than one in 10 000 years, on average.

The sequence used to calculate the climate resilient inflows was 30 months of inflows equivalent to a drought with a severity of between a one in 1000 and one in 10 000 year occurrence. The emergency plan provides a way of responding in the unlikely event that a drought is more severe than this.

3.1.7 Achieving the Level of Service objectives

The LOS objectives are performance objectives for the delivery of bulk water supplies from the SEQ Water Grid.

The statutory instrument for achieving the LOS objectives in SEQ is the SEQ System Operating Plan. The SEQ System Operating Plan specifies rules for how the SEQ Water Grid is operated to achieve the LOS objectives, within the bounds of the resource operations plans. The SEQ System Operating Plan directs how water can be supplied to meet the water needs of urban consumers and any other contracted customers in SEQ. This includes the supply of manufactured water sources, such as purified recycled water.

LOS objectives form part of the product definition for bulk water supplied in accordance with the SEQ System Operating Plan by the SEQ Water Grid Manager to any bulk transport node, ready for local distribution. Figure 3.2 illustrates where the LOS objectives apply under the SEQ institutional arrangements.

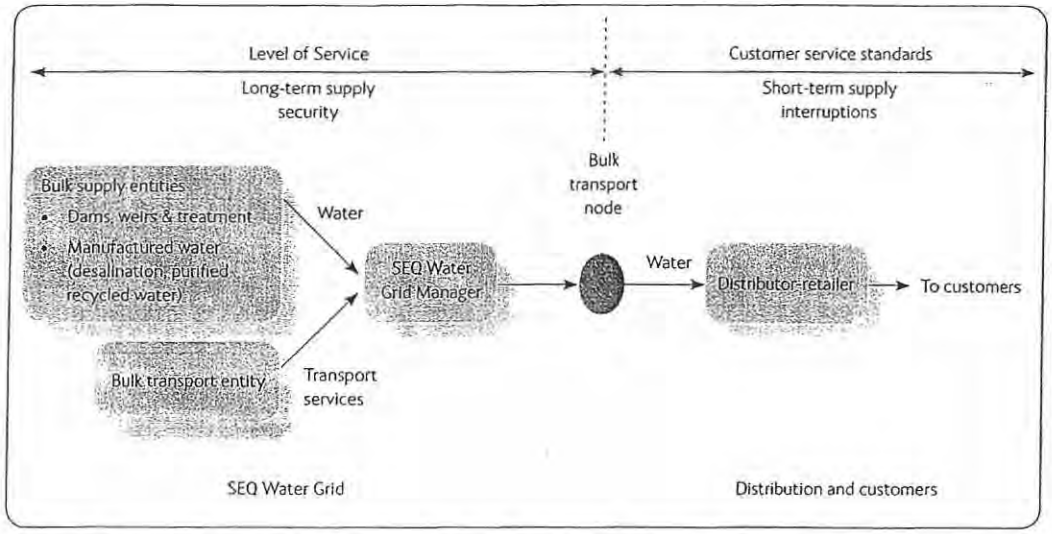


Figure 3.2 Application of LOS objectives and customer service standards

LOS objectives should not be confused with customer service standards. Customer service standards describe the level of service that a customer can reasonably expect from their distributor-retailer—for example, the response time to a breakdown or an interruption to supply. Each distributor-retailer will have the primary interface with customers, particularly through reading meters and issuing water and wastewater bills. Over the next three years, customers will move from local government area customer service standards under the *Water Supply (Safety and Reliability) Act 2008* to a Customer Water and Wastewater Code and regionally consistent service standards, and finally to guaranteed service standards. Customers will have input into the type of guaranteed service standards they want. A distributor-retailer will be required to compensate a customer if a guaranteed service standard is not met.

3.2 Planning for climate change

Climate models are used to forecast possible short- and longer-term climate change and likely impacts. They simulate oceanic and atmospheric processes and the important connections between land, oceans and the atmosphere. A factor affecting the usefulness of the climate models is the resolution, with most global climate models typically using a grid of between 150 and 300 kilometres.

There is considerable uncertainty about the accuracy of climate change projections and this uncertainty increases with the length of the projections made.

Regional climate models have been developed that increase the resolution of global climate models. This process is called 'downscaling' and requires enormous computing power. These models have reduced the uncertainty associated with the low resolution of global climate models. Work is underway to improve climate change estimates in terms of impact on stream flows. As already indicated in Section 2.4.2, case studies indicate that by 2031 the annual stream flow for the Brisbane River downstream of Mt Crosby Weir could be reduced in a dry scenario by up to 28 per cent or increased by up to 14 per cent in a wet scenario. Such impacts are expected to be highly variable across the whole of SEQ. Climate research indicates that, as a conservative estimate, a 10 per cent reduction in surface water availability is likely to occur by 2030.

The majority of climate modelling results for SEQ catchments indicate that the region is likely to become drier, with increases in average temperature and evaporation rates. This suggests that climate change may dramatically impact on regional water supplies. Consequently, less surface water is likely to be available for water catchments and dams. These changes are expected to occur over the medium to long term. This contrasts with Perth, where there is evidence that a change in inflows has already occurred.

More analysis is necessary to improve our understanding of climate change impacts. Such work is being progressed by the Queensland Government Climate Change Centre of Excellence and the CSIRO, through the SEQ Urban Water Security Research Alliance. Over time, this work will downscale the CSIRO global model simulations, and simulations from six other international modelling groups, to a 14 to 20 kilometre resolution for SEQ. It will result in a better integration between the climate change models and hydrologic modelling.

In Chapter 6, a scenario analysis has been undertaken assuming a 10 per cent reduction in the LOS yield of surface storages due to climate change. If there was an immediate climate change impact, the earliest date for supply augmentation could move forward from 2022 to 2017 (refer to Section 6.4.2). However, this impact is likely to occur over decades and the true impacts of climate change are currently difficult to quantify.

The scenarios adopted in the Strategy will be reviewed annually and revised as our understanding of the likely impacts of climate change in SEQ water supplies becomes better informed.

3.3 Planning for rural production

The Strategy includes significant initiatives to improve supply to the rural sector, as discussed in Chapter 6.

Rural water entitlements are defined through the water resource planning processes. In supplemented schemes, rural water allocations are generally specified as medium priority water, with a reliability of supply less than high priority (urban or industrial) water. This approach enables larger volumes of water to be made available during periods when dam levels are high. A significant portion of rural water entitlement exists from unsupplemented supplies—that is, water not supplemented by releases from dams or weirs.

In SEQ, water supply schemes exist in the Mary, Logan, mid-Brisbane, Lockyer and Warrill valleys. These supplemented schemes have historically operated with varying degrees of performance success and irrigators have sought ways to further enhance water security. Irrigators currently do not pay for the full cost of running these schemes. Chapter 6 discusses options to improve the reliability of supply within these schemes.

Additional water for rural use has also been made available due to the construction of the SEQ Water Grid, especially the Western Corridor Recycled Water Scheme. This additional water will be supplied to Category B (refer to Section 5.3.1) customers as an interruptible source. It will be available when the SEQ Water Grid is in normal operating mode, and is intended to cease when a drought response plan is implemented. Chapter 6 contains further information about these opportunities.

3.4 Profiling future demand

The Strategy is based on a comprehensive assessment of current and forecast water demands across SEQ. The methodologies and modelling will continue to be refined to actively monitor demand assumptions.

For this version of the Strategy, forecasting of urban water demands in SEQ has been based on:

- medium series population growth projections derived from the Queensland Government population projections—high series population forecasts have been used for sensitivity testing
- assessment of historical patterns of water use
- assessment of the historical effectiveness of existing and potential water-saving programs, including analysis of the costs and benefits of different water conservation and source substitution options at the end-user level
- aggregation of the forecast demands in each local government area to produce demand trend forecasts based on the continuation of existing policy in 2006—that is, assuming that water use continues into the future without savings from any additional demand management initiatives other than those that were already in place
- aggregation of the forecast demands in each local government area based on high, medium and low savings scenarios. The savings scenarios differ in terms of number and scope of demand management measures.

Population forecasts were revised in 2008, following the release of the first draft Strategy. The population forecasts contained in this Strategy have been adjusted based on these forecasts.

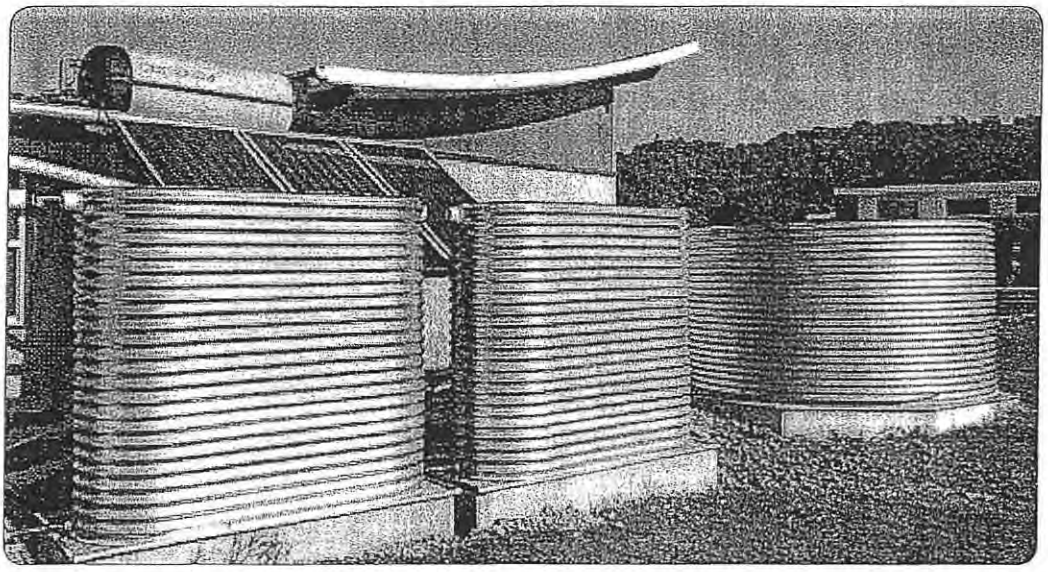
The potential reduction in demand from savings measures was estimated based on a range of complex considerations and assumptions. These included:

- structural water-saving measures implemented during the Millennium Drought
- the effectiveness of potential demand management measures, including participation rates and the number of water-efficient devices installed
- changing demographic patterns—in particular, the trend towards smaller households
- ongoing compliance with rules and regulations.

Demand forecasts are outlined in Chapter 4. Growth in demand for water for rural production is addressed in Chapter 6. To ensure that demand assumptions underpinning the Strategy remain current, ongoing demand monitoring and management will be undertaken using a water accounting framework, known as the Waterhub.

Increasing supply or reducing demand?

Some components of the supply and demand balance could be considered as either increasing supplies or reducing demand. The Strategy defines any new water source that contributes to the SEQ Water Grid as an increase in supply. For example, purified recycled water is considered to increase potable supply as it is added to the SEQ Water Grid. Water from rainwater tanks and other types of recycled water reduces demand on drinking water supplies from the SEQ Water Grid.



3.5 Process to select future supplies

The QWC proposes the use of an objective and transparent process to develop its advice to the Minister about the need for regionally significant augmentations of the SEQ Water Grid. This process is intended to:

- ensure the timely delivery of capital expenditure
- promote total water cycle planning
- provide an opportunity for parties other than the QWC to nominate innovative solutions for consideration
- ensure that options are compared on an objective, transparent and like basis, regardless of scale or type
- ensure that market participants receive information in a structured and equitable manner.

The process will consider demand and supply options, and options at a number of different scales. It will build on the detailed investigations outlined in Chapter 7, while also providing opportunities for the community and stakeholders to have input. The process may also provide opportunities for third parties to propose alternative solutions for assessment.

The key elements of the process will be:

- review of the Strategy
- a Statement of Needs
- a project selection process
- advice to the Minister on regional water security options.

The proposed process is illustrated in Figure 3.3.

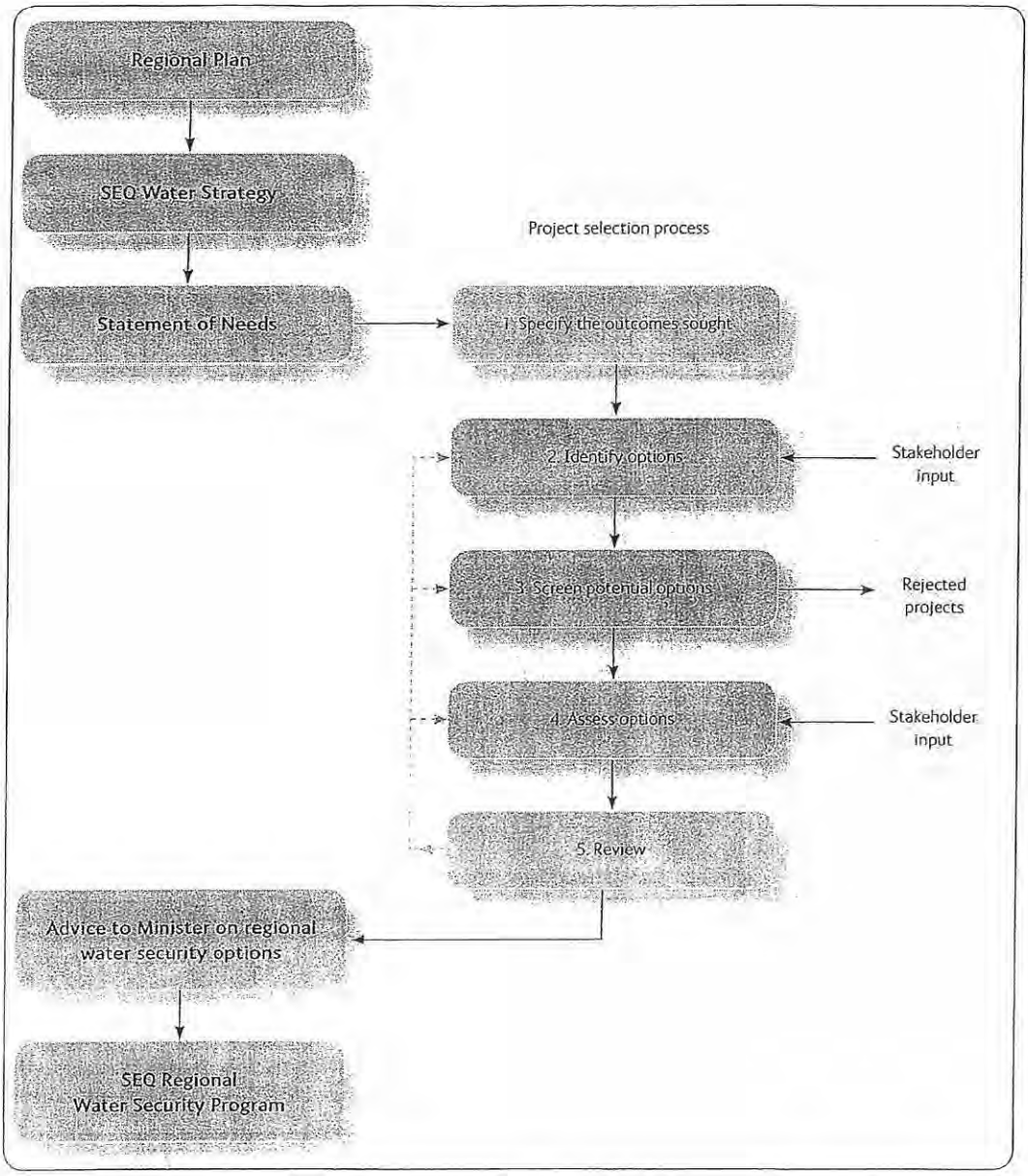


Figure 3.3 Statement of Needs and proposed project selection process

This process applies to development of new regionally significant projects only. Regionally significant projects generally involve expansion of the capability of the SEQ Water Grid to ensure that the LOS objectives can be achieved throughout the region, while operating in accordance with all relevant legislation.

Water service providers will undertake a range of other projects that are planned and regulated through separate processes. This includes projects such as renewal of existing infrastructure, the construction of new infrastructure for local needs, or improvements to the efficiency of service delivery. In some locations, planning for this infrastructure may be informed by a total water cycle plan, as explained in Section 2.3.

3.5.1 Review of the Strategy

The QWC will coordinate the review of the Strategy at appropriate times. The Strategy will be reviewed on a five-year cycle aligned with the review of the Regional Plan. Demand will be monitored as part of the assessment of the water balance, which will be reported on annually (refer to Section 7.1.2), and could result in a review of the Strategy being undertaken earlier.

3.5.2 Statement of Needs

Following the Strategy review, the QWC will prepare and publish a Statement of Needs that will clearly describe strategic requirements over the short to medium term. The Statement of Needs may identify the following types of regionally significant needs:

- an improvement to water quality within the region, such as feed water or treated water quality
- an augmentation of the water supply system, including broad identification of the scale and location of the augmentation
  or
- an improvement to system performance, such as the coverage of the SEQ Water Grid or the degree of interconnectedness.

The Statement of Needs may also include reference to institutional arrangements required to facilitate regional water security.

The Statement of Needs will be developed on the basis of the Strategy, including the water balance models that underpin it, and input from the SEQ Water Grid Manager and the water entities.

The QWC will seek endorsement of the Statement of Needs by the Queensland Government, to ensure it is aligned with current policies and strategies for SEQ.

3.5.3 Project selection process

In undertaking the project selection process (shown in Figure 3.3), the QWC will seek input to the process from professionals with appropriate expertise, as well as from a stakeholder reference group. This group will be established from key community and government stakeholders in SEQ who are likely to have an interest in the outcomes sought.

The assessment of projects will be based on the incremental benefits they could provide for the SEQ Water Grid as a whole. For example, an assessment could consider the benefits of increasing the operating level of Wivenhoe Dam in terms of the yield of the SEQ Water Grid as a whole, rather than the yield of the dam operating on a stand-alone basis.

3.5.4 Advice on regional water security options

The QWC is required to provide advice to the Minister on regional water security options. The advice must address the following issues:

- the desired LOS objectives
- demand management for the region
- water supply or sewerage works for achieving the desired Level of Service objectives
- an assessment of the likely costs and pricing implications of the works
- the preferred ways of sharing the cost of the works.

After completing the options selection process, the QWC will provide advice to the Minister on the outcomes sought, options considered and the recommended projects to be adopted in the Regional Water Security Program.

3.6 Potential portfolio

For this Strategy, a long-term water balance was constructed for the entire SEQ region and for the northern, central and southern sub-regions. This water balance was prepared on the basis of:

- projected regional demands
- the LOS objectives described earlier in Section 3.1.1
- purified recycled water being used to supplement supplies in Wivenhoe Dam when SEQ Water Grid storage levels fall to 40 per cent of capacity.

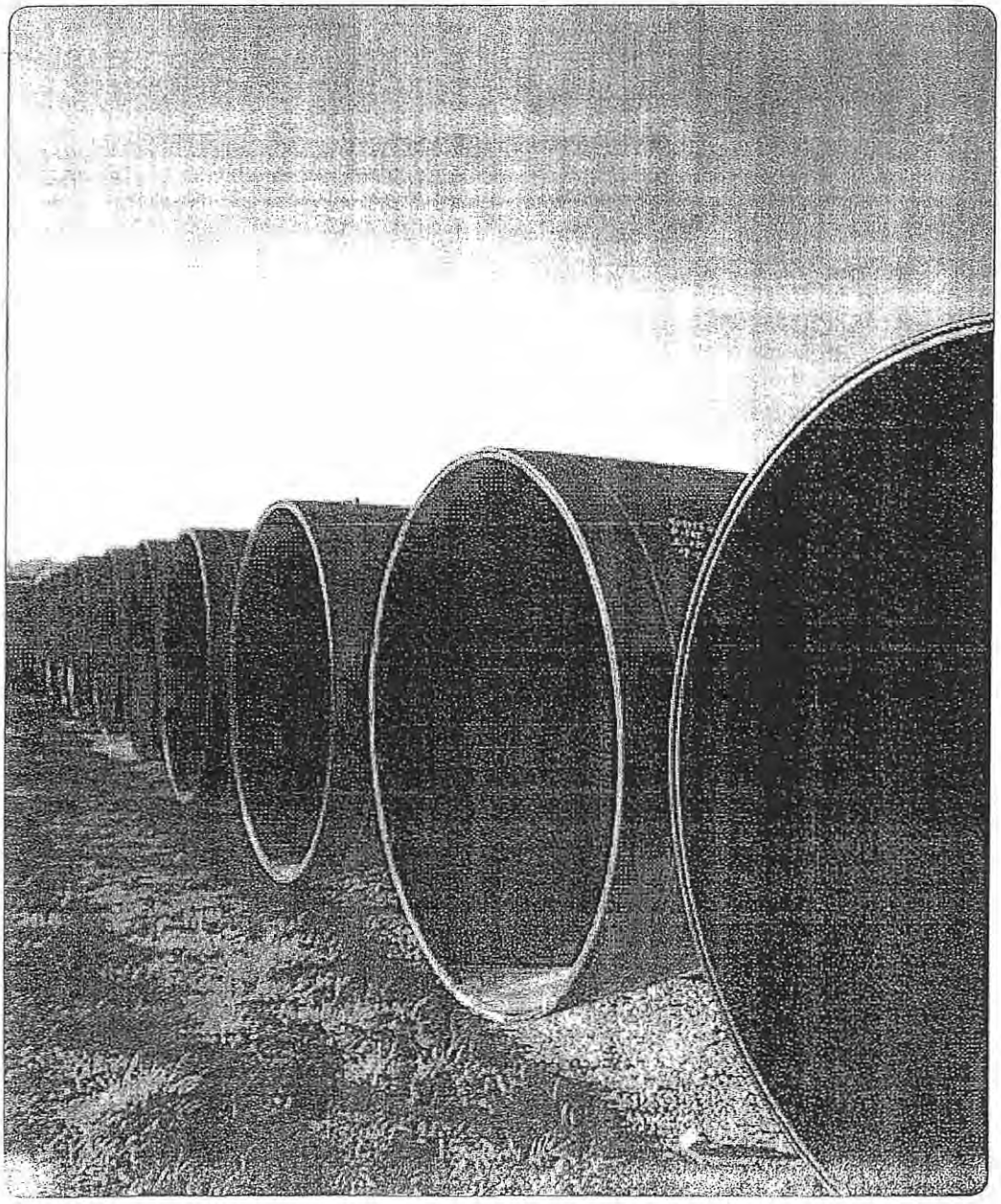
The water balance was used to identify approximately when and where supply gaps would occur in the future on a whole-of-grid basis. This preliminary assessment was conducted for the case of medium series growth, with ongoing demand management embedded. Further work will be required considering sub-regional and local needs when the Statement of Needs is produced.

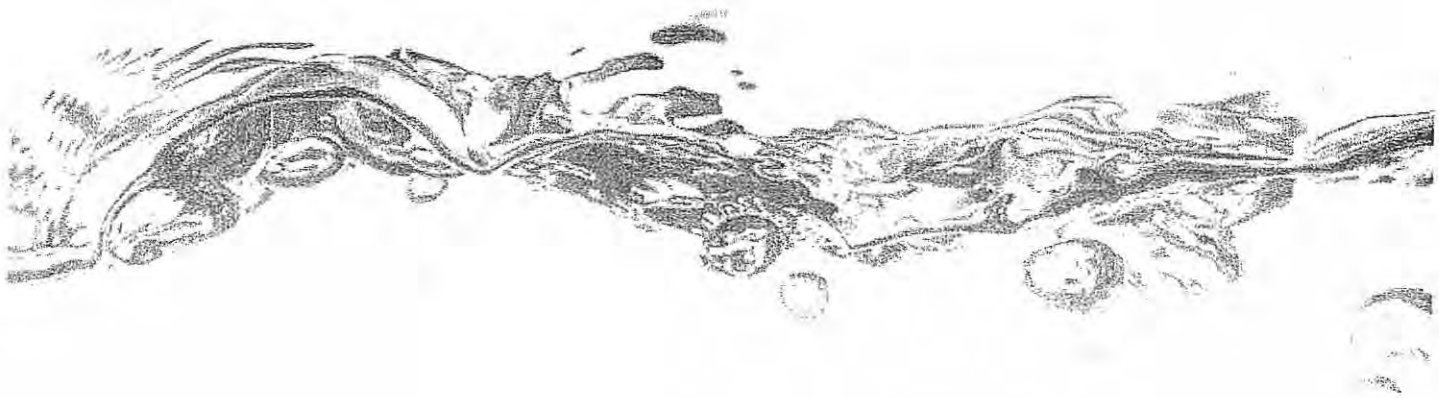
Current and potential water supply sources are described in Chapter 5. As noted above, these projects will provide the base case supply solutions against which any alternatives can be assessed following the Statement of Needs process.

Chapter 6 includes a number of potential portfolios based on these projects. These portfolios demonstrate that the potential sources are sufficient to ensure a secure water supply for SEQ to 2056 and to indicate the potential portfolio of future supplies based on currently identified sources and technologies. The portfolios do not pre-empt or pre-judge the outcomes of the selection process outlined above.

A potential base case portfolio was identified to be the medium series base case portfolio for the region. Building on this, a second portfolio was identified that could be used to fill the supply gap if high series demands emerge. A range of sensitivity analyses were conducted to understand the impact of key assumptions on the possible timing and scale of infrastructure that might constitute the future portfolio of projects.

The base case portfolio will be used to assist in the development of the region's drought response plan and as a standard for comparing future water supply options on either a bulk or local scale within the region. The base case portfolio will be reviewed and updated over time, utilising the assessment methodology as required.





Chapter 4

SEQ's future water demand

This chapter discusses water consumption trends as well as initiatives and projects being implemented to reduce water demand and increase efficiency of use. It also describes demand management strategies to support the LOS objectives for water supplies during normal times.

Key messages

- All sectors of the community should use water efficiently.
- A wide range of demand management programs have been implemented.
- The Strategy is based on maintaining demand for SEQ Water Grid water at least 24 per cent below pre-drought trends. By 2056, this will save about 241 000 megalitres per year based on medium series population growth.
- A conservative planning assumption of a maximum average regional urban consumption of 375 litres per person per day of SEQ Water Grid water underpins the Strategy. In 2004–05, average consumption was about 450 litres per person per day.
- Planning assumptions will be reviewed on a regular basis.
- Large non-residential water users, including business and industry, will be required to continue to keep moving towards best practice water efficiency.
- Businesses with reasonable access to the Western Corridor Recycled Water Scheme will be encouraged to use recycled water.
- Power stations will be required to use recycled water rather than other supplies when using water from the SEQ Water Grid.
- All building development applications lodged for the construction of new homes in SEQ must meet mandatory water savings targets. Internally plumbed rainwater tanks are one option to achieve the water savings target.
- Rainwater tanks and stormwater harvesting in new developments are forecast to reduce demand on bulk water supplies by about 7 per cent by 2056.

The demand management program that will support the achievement of the LOS objectives for water supply in normal operating mode is described in Section 6.1.

Water demand information

Water accounting data for the Strategy has been collected at a billing level from the 10 local government authorities listed in Section 1.1. Demand analyses were conducted on a local and regional basis, historically and out to 2056. Demand has been forecast for the residential, commercial and industrial sectors, and system losses. Forecasts have been prepared with and without demand initiatives and climate change impacts being applied.

4.1 Pre-drought water consumption

Prior to the Millennium Drought, there were very few drivers for urban and industrial users to reduce consumption. During periods of poor inflows, Wivenhoe Dam had previously contained sufficient storage reserves to maintain unrestricted supplies across most of the region. There have always been limitations on supply for rural water users, which have resulted in some inherent self-regulation of use.

Unrestricted consumption provides a starting point for water planning. In SEQ, the most recent unrestricted consumption occurred prior to May 2005. Table 4.1 summarises water use patterns in 2005.

Table 4.1 SEQ water consumption in 2005

Sector	Water consumption (megalitres per year)	Proportion urban demand (per cent)	Total demand (per cent)
Urban	277 459	65	
Residential	91 426	21	
Non-residential	59 808	14	
Total urban	**428 693**	**100**	**69**
Power generation	38 000[1]		6
Rural communities	5 703[1]		1
Rural production	150 000		24
Total	**622 396[2]**		**100**

[1] Historical information that includes estimated consumption for Rosalie, Jondaryan, Crow's Nest and Cooloola.

[2] Excludes recycled water supplied to industry, golf courses and parks.

About 75 per cent of water consumed in SEQ in 2005 was used for urban purposes and power generation. The remainder was used for rural purposes. This pattern differs from the overall Australian consumption pattern. In 2000, Australia used 83 per cent of its water for rural applications and only 17 per cent for urban and industrial applications.

System losses accounted for about 14 per cent of the water used for urban purposes, including fire services, metering errors, leakage and theft (refer to Section 4.3).

Average total urban consumption in SEQ varied between local government areas, from 300 to 500 litres per person per day with an average of 450 litres per person per day. On average, residents of SEQ with reticulated drinking water supplies consumed approximately 300 litres per person per day. As shown in Table 4.2, this rate of consumption was comparable with that in other capital cities in Australia.

Table 4.2 Average residential water consumption in Australian cities (2004–05 to 2008–09)

City	2004–05 (litres per person per day)	2008–09 (litres per person per day)
SEQ[1]	282[1]	143[1]
Sydney	215	202[2]
Canberra	255	195[2]
Melbourne	195	157[2]
Adelaide	265	228[2]

[1] Average residential consumption in all local government areas in SEQ.

[2] Estimates calculated from National Water Commission and Water Services of Australia (2010) *National Performance Report 2008–2009*, and Australian Bureau of Statistics information. Consumption in some cities was affected by water restrictions.

4.2 How the Millennium Drought changed our thinking

From 2005, as the extent and impacts of the Millennium Drought became evident, the Queensland Government introduced a range of demand management measures. Many of these measures have been made permanent.

Following implementation of these measures, there was a significant improvement in water efficiency coupled with a substantial reduction in demand. In the central SEQ and Gold Coast region, average urban consumption dropped from 450 litres per person per day in 2005 to approximately 230 litres per person per day from mid-2007 to mid-2009 (refer Figure 4.1). It has remained below 260 litres per person per day since mid-2009, despite the easing of restrictions.

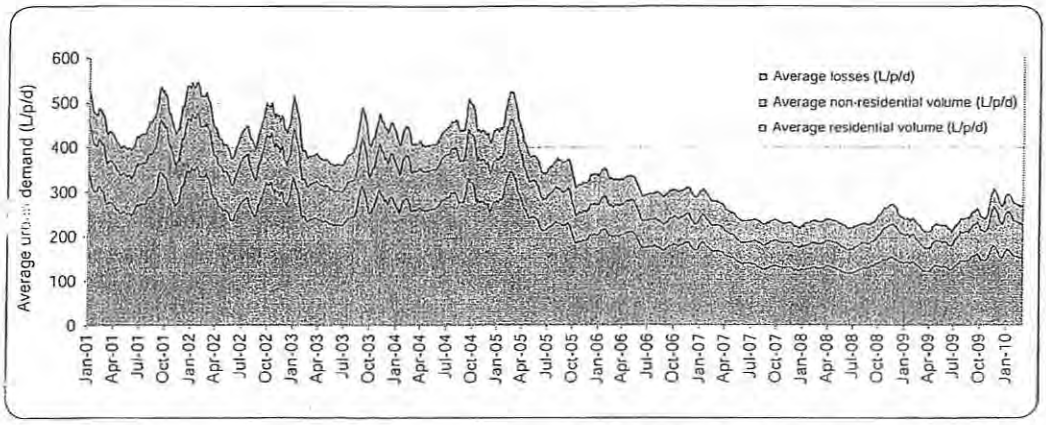


Figure 4.1 Average total per person consumption since 2001 in central SEQ and Gold Coast

Residents achieved most of the savings. Average residential use in those regions of SEQ that were under QWC restrictions was 131 litres per person per day from mid-2007 to mid-2009 (refer to Figure 4.2). In mid-2010, with Permanent Water Conservation Measures and Target 200 in place, residential consumption in the same region continues to be low, averaging around 165 litres per person per day. This indicates that the water-efficient habits developed by residents during the height of the drought are being maintained.

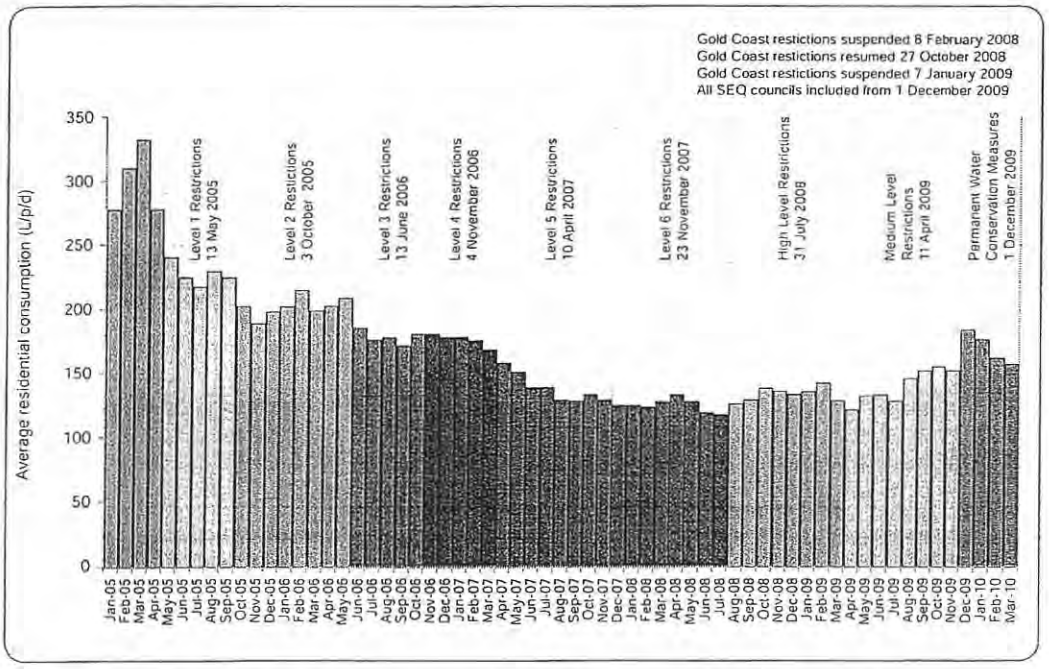


Figure 4.2 Average residential consumption for SEQ regions under QWC restrictions since 2005

Residents in other parts of SEQ have also reduced consumption, but not to the same level as central SEQ. For instance, residents on the Sunshine Coast reduced average consumption from about 317 litres per person per day in 2004–05 to about 224 litres per person per day over the six months to the end of May 2010. Gold Coast residents used an average of 206 litres per person per day over the same period. While these residents were not subject to QWC water restrictions until 1 December 2009, these areas had access to the same rebate and retrofit schemes as central SEQ.

Non-residential water use has also decreased. In 2009, 32 per cent less water was used by the non-residential sector than in 2004–05, saving 76.6 megalitres per day. These savings have been achieved despite the total number of businesses increasing by 16.9 per cent. Figure 4.3 illustrates the savings achieved by sector for moderate and major water users. Aside from irrigation, which was curtailed through temporary banning of outdoor watering, the most dramatic reductions were achieved by the public sector, followed by the commercial and other industrial sectors.

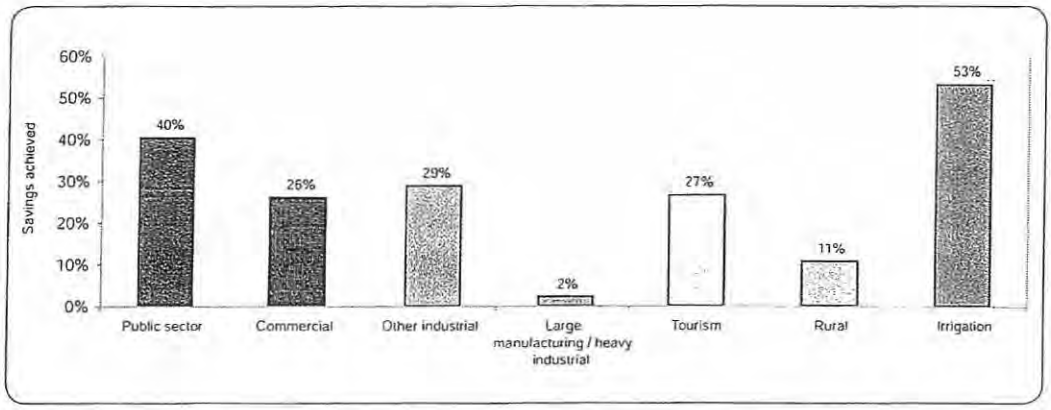


Figure 4.3 Savings achieved by non-residential sectors (2004–05 to the end of 2009)

4.3 Planning assumptions

The LOS objectives for normal operating mode include that sufficient SEQ Water Grid water be available to meet a regional average urban demand of 375 litres per person per day (including residential, non-residential and system losses).

The LOS objectives are the planning assumptions that are the basis for regional water supply planning, including detailed design of pipeline networks and water treatment plants. The assumptions are conservative, ensuring that new infrastructure can be constructed in sufficient time.

More detailed planning assumptions for residents, business and industry and system losses are specified in the remainder of this section. Chapter 6 outlines the demand management program that will contribute to the achievement of these assumptions, including the voluntary residential consumption target.

Residential planning assumption

Residential consumption is the largest sector of urban water use in SEQ (refer to Section 4.1). The community response to the Millennium Drought demonstrates the significant influence that this sector has on water security in SEQ.

The planning assumption of regional urban consumption of an average of 375 litres per person per day includes an allowance of up to 230 litres per person per day for residential use. This level of water use is considered to be comfortably sufficient to maintain the outdoor amenity and lifestyle that characterises SEQ.

This is a conservative assumption, and a prudent approach for water supply planning, taking into account the timeframes for delivering bulk water supply infrastructure and the level of uncertainty regarding:

- the extent of permanent behavioural changes by the community
- population growth
- climate variability
- the potential impacts of climate change.

However, the Strategy challenges residents to use less, voluntarily maintaining a regional average residential consumption below 200 litres per person per day. By maintaining consumption below this level, the need for new supplies could be deferred by at least five years. This challenge is described in Section 6.2.

Non-residential planning assumption

The planning assumption for non-residential water use is a regional average of 145 litres of water per person per day from the SEQ Water Grid.

Business, industry, government and other large users of water need to conserve water by being more efficient water users. The QWC has implemented Permanent Water Conservation Measures, which require these users to use water efficiently while minimising the risks to economic production and employment. The measures focus on businesses using more than 1 megalitre per year, and particularly those using more than 10 megalitres per year. The businesses in these categories comprise almost 90 per cent of existing non-residential water consumption in SEQ.

Through these permanent measures, business and industry will continue to move towards best practice water efficiency. Given this embedded best practice approach, it is expected that if there is another drought that requires the introduction of water restrictions, there will be minimal impact on water use associated with business activities.

Power generation planning assumption

Power stations are required to use recycled water when available, if accessing water from the SEQ Water Grid.

Consistent with this assumption, the SEQ System Operating Plan directs that purified recycled water from the Western Corridor Recycled Water Scheme must be the primary source of supply for any water being taken from the SEQ Water Grid to the Swanbank, Tarong and Tarong North power stations. The SEQ System Operating Plan is discussed in Section 7.2.1.

System losses planning assumption

System losses include losses from authorised uses such as fire fighting and maintenance, as well as unauthorised uses such as theft and leakage. System losses comprised 14 per cent of urban demand in 2005.

Bulk transport and network distribution system loss targets have been set at no more than 8 per cent of total urban water use. This target will be achieved through universal metering, better understanding and management of the operation of the system as a consequence of the pressure and leakage reduction project, and the design and management of new distribution infrastructure.

4.3.1 Basis for the residential planning assumption

The planning assumption of an urban consumption of a regional average of 375 litres per person per day includes a conservative allowance of 230 litres per person per day for residential consumption. The basis for this allowance is explained below. These considerations have also informed the level of the voluntary regional residential consumption target (refer to Section 6.2).

The residential planning assumption will be reviewed as part of the review of the Strategy, which will be at least every five years in line with the Regional Plan. It will also be reviewed at any point in the intervening period if it becomes clear that demand remains low, or is significantly increasing. This review of the planning assumption might be undertaken as part of preparing the annual report on the implementation of the Strategy (refer to Section 7.1.2).

Scenario assessment

The Strategy has been informed by a detailed assessment of future water demand (refer to Section 3.4). The assessment forecast the impact of individual measures upon 2004–05 trends, taking into account a range of factors including interactions between measures. For instance, shorter average shower times reduce projected savings from water-efficient showerheads.

A high savings scenario was derived, based on:

- education programs
- pricing and tariff design
- retrofit and rebate programs
- building audit programs
- irrigation management and controls
- sub-metering programs
- building code amendments
- pressure and leakage management
- dual-reticulation recycled water schemes in major new residential and industrial developments.

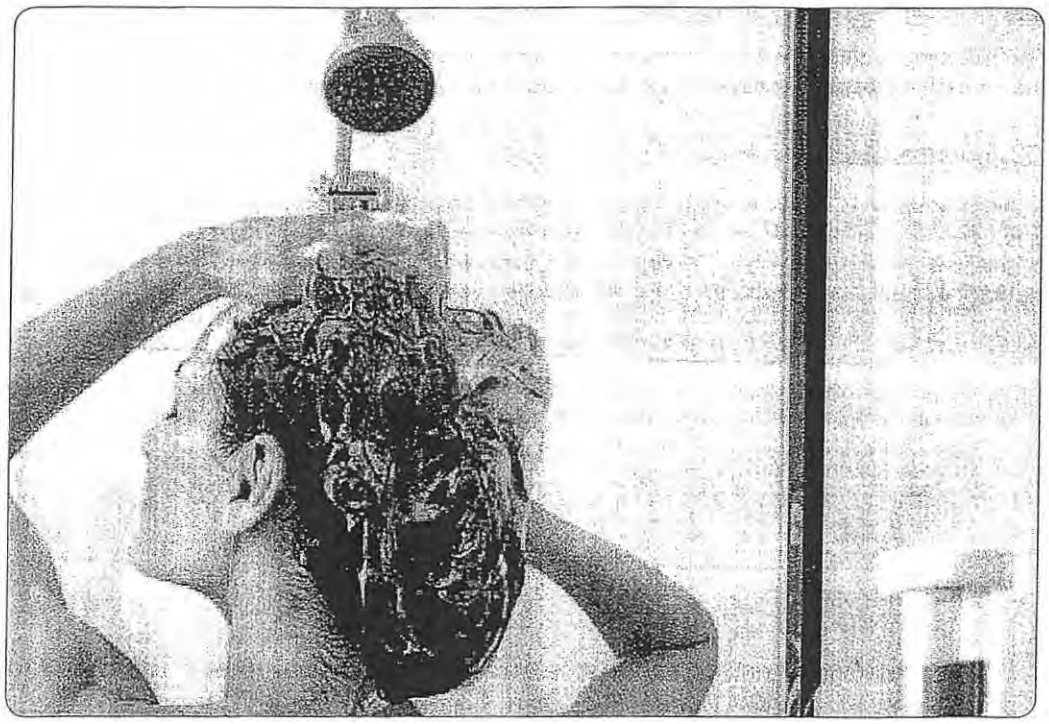
The high savings scenario forecast that average regional residential consumption would reduce by about 25 per cent, from 300 litres per person per day to slightly below 230 litres per person per day. The structural measures that have been implemented as part of the drought response were forecast to result in an immediate saving of 13 per cent, increasing to a saving of more than 20 per cent over time. The remainder of the savings was due to assumptions made about sustained behavioural changes. Greater savings may be able to be achieved with more sustained long-term behavioural changes (refer to Section 6.2).

Drought rebound assessment

There are limited precedents against which to assess how much of the behavioural changes made during the Millennium Drought will be sustained in the future. Until the late 1990s, water supply authorities in Australia did not generally seek to maintain savings that had been achieved during drought.

The information available for recent droughts in Australia and overseas indicates that the rebound back to this level of consumption can be expected to occur gradually over a minimum of two years with maximum savings of 10 to 15 per cent. The period of time over which the rebound occurs depends on a range of factors, including the amount of rainfall in following years and the extent of communications to the public to maintain water efficiency.

The extent and duration of demand reduction in SEQ exceeds that experienced in other major cities during severe drought. On this basis, the demand forecasts contained in Section 4.5 and Chapter 6 are based on consumption increasing gradually from actual levels at the end of 2009 to equal the planning assumptions by 2018.



Rebound from the Gold Coast drought

The Gold Coast experienced a severe drought during the period between June 2002 and January 2004. Water restrictions included total outdoor watering bans, with a high level of public awareness of these bans. Average regional urban consumption reduced from 440 litres per person per day to 360 litres per person per day at the height of the restrictions. In the 18 months after restrictions were lifted, regional urban demand increased to 400 litres per person per day and continued to rise. Restrictions were then imposed and demand reduced again. The effect of the 18 months of severe drought and restrictions was equivalent to an ongoing saving of less than 10 per cent.

This rebound occurred despite Gold Coast Water introducing an active demand management program that continued after restrictions were eased. Household retrofits, pressure and leakage management and volumetric pricing were all implemented after the restrictions eased.

The same drought affected northern New South Wales, where restrictions were in place in for more than 12 months and reached Level 7. During the drought, average total consumption reduced from 440 litres per person per day to as low as 300 litres per person per day. Average total demand remained at about 370 litres per person per day after the drought, a reduction of 16 per cent over the long-term average. Changes to water prices may also have contributed towards the saving.

Building block assessment

A building block approach was used to test the average lifestyle impacts of the proposed combination of measures across SEQ.

The Millennium Drought has shown that SEQ residents can reduce average residential consumption to below 140 litres per person per day compared to about 300 litres per person per day in 2005. However, for some members of the community, this may be unacceptable or unachievable over the longer term.

The allowance in the planning assumption of an average regional residential use of 230 litres per person per day represents an increase of 90 litres per person per day over the drought consumption levels. This represents around two hours of outdoor water use per household per week, if indoor use remained at approximately the same level as achieved under Target 140. In practice, some rebound in internal water use is likely to occur and some water will be used for other external uses, including topping up pools and washing cars.

By comparison, prior to the Millennium Drought, residents of SEQ used on average more than 120 litres per person per day for outdoor irrigation.

The reductions in outdoor water use are being achieved through a combination of structural and operational measures, as well as by sustained behavioural change (refer to Section 6.1).

High water users

A small proportion of households using a large volume of water have a major impact on average consumption. Since 2005, in the central SEQ and Gold Coast region, there has been a major reduction in the number of households using more than 800 litres per day and a significant increase in the number of households using between 300 and 600 litres per day. Prior to 2005, about 4.6 per cent of households in central SEQ used more than 2000 litres per day and about 36 per cent used more than 800 litres per day. In comparison, over the last three months of 2009, only 0.6 per cent of households used more than 2000 litres per day and 10.5 per cent used more than 800 litres per day (refer to Figure 4.4).

These savings have underpinned the significant reduction in average residential consumption in these areas. However, a significant rebound in the number of high water using households would have a major impact on average residential consumption across SEQ.

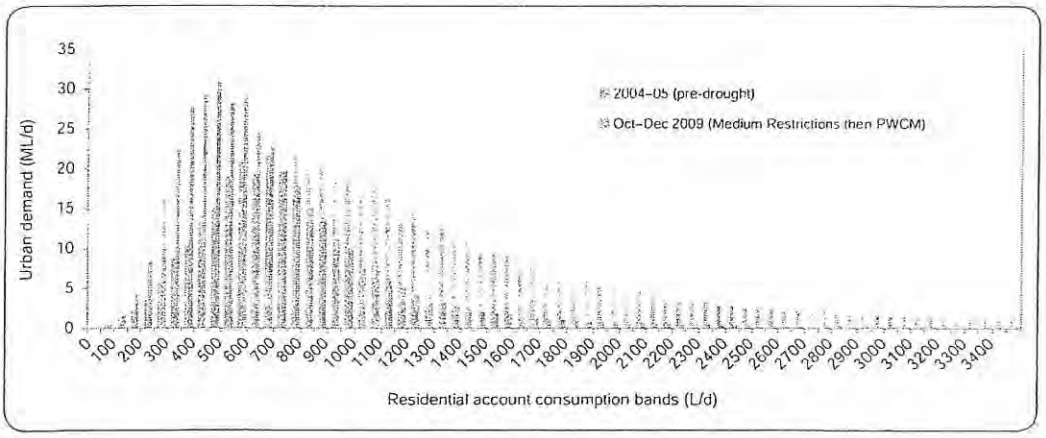


Figure 4.4 Residential consumption by consumption band for the central SEQ and Gold Coast region

Regional and household variation

The residential planning assumption and Target 200 are regional averages. Actual consumption varies considerably between households and across SEQ due to the type and age of a home, the number of occupants, the location of the home (in terms of climate and soil type conditions), and many other factors. In particular, it is forecast that:

- residents of new dwellings will use less water than residents of existing dwellings, due to water-efficient devices, rainwater tanks or other water supply alternatives. On average, residents of new dwellings are expected to use about 150 litres per person per day

- residents of units will generally use less water than residents of detached dwellings with gardens. The size and type of a garden, as well as access to tank water will influence the additional water requirements for such detached houses
- households with more people will continue to use less water per person than smaller households. For example, on average, a two-person household may use 200 litres per person per day (a total of 400 litres per day) while a six-person household may use 140 litres per person per day (a total of 840 litres per day)
- differences in rainfall will result in daily variations in external water use between locations, seasons and years, as illustrated in Figure 4.5.

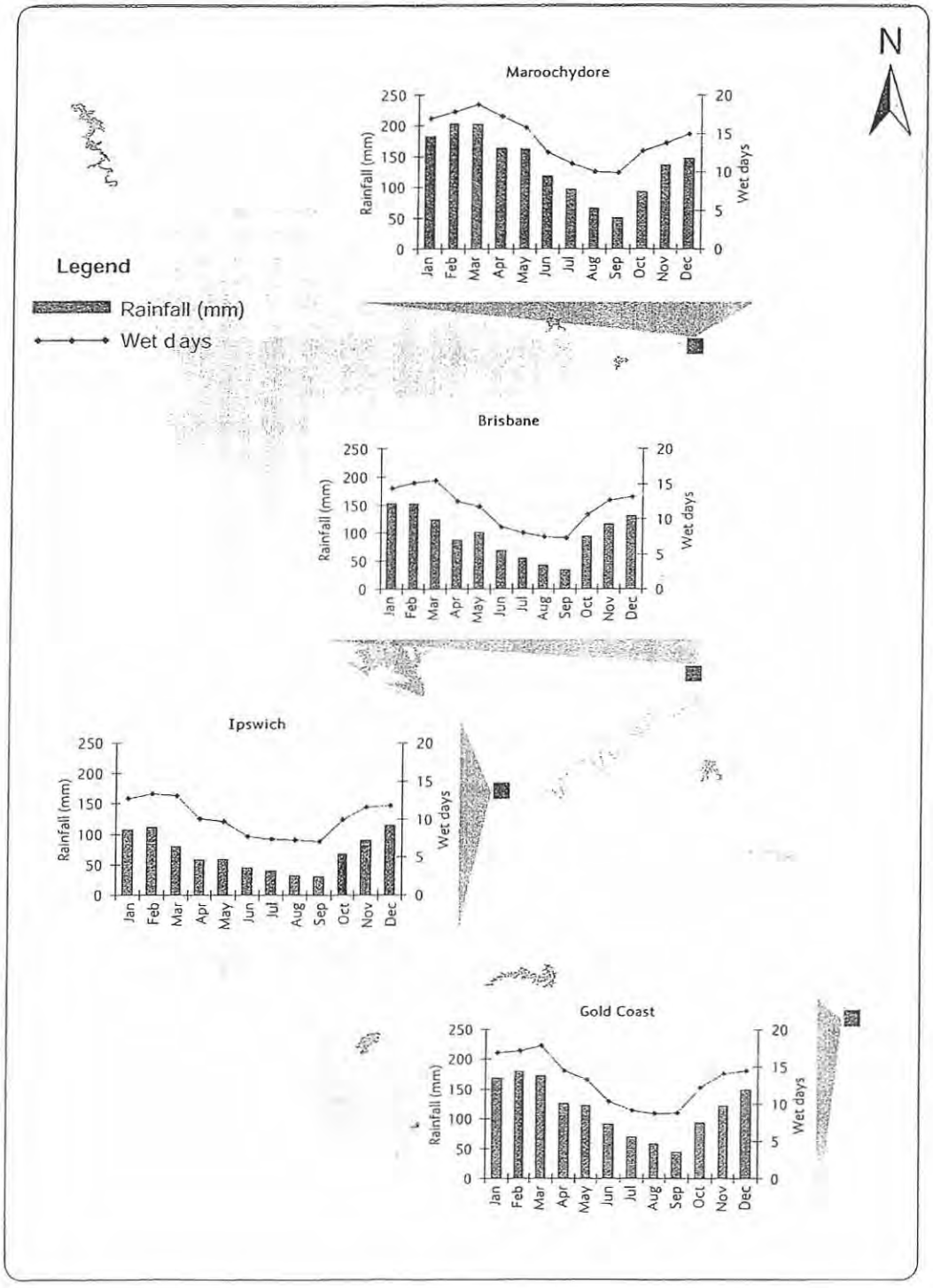


Figure 4.5 Regional variation in rainfall and rainfall days (data from 1957 to 2008)

External water use

Water is used outside the home for watering gardens, filling pools, washing cars and general cleaning activities.

Actual external water use will vary significantly depending on regional differences, such as rainfall and soil type. The greatest variation will relate to watering of gardens. Figure 4.6 shows the predicted water needed, on average, each month for a number of locations within SEQ, based on climate information, soil type and a range of other factors. Figure 4.7 predicts the number of times a garden needs to be watered for the same locations, on average. Both figures are based on an assumption that residents use efficient irrigation, watering only when necessary.

Together, these figures illustrate that:

- residents in coastal locations should use less water on their gardens, on average, than similar residents located in inland regions, due primarily to rainfall patterns
- soil conditions should significantly affect the frequency of watering, as distinct from the volume of water used.

For instance, Ipswich has generally loamy soils. In an average September, it is predicted that a gardener in this location would need to water their garden twice in a month, delivering the equivalent of 160 litres per person per day. By comparison, Maroochydore has very sandy soils and more rainfall, meaning that the same gardener would need to water their garden four times in the month but only use the equivalent of about 140 litres per person per day.

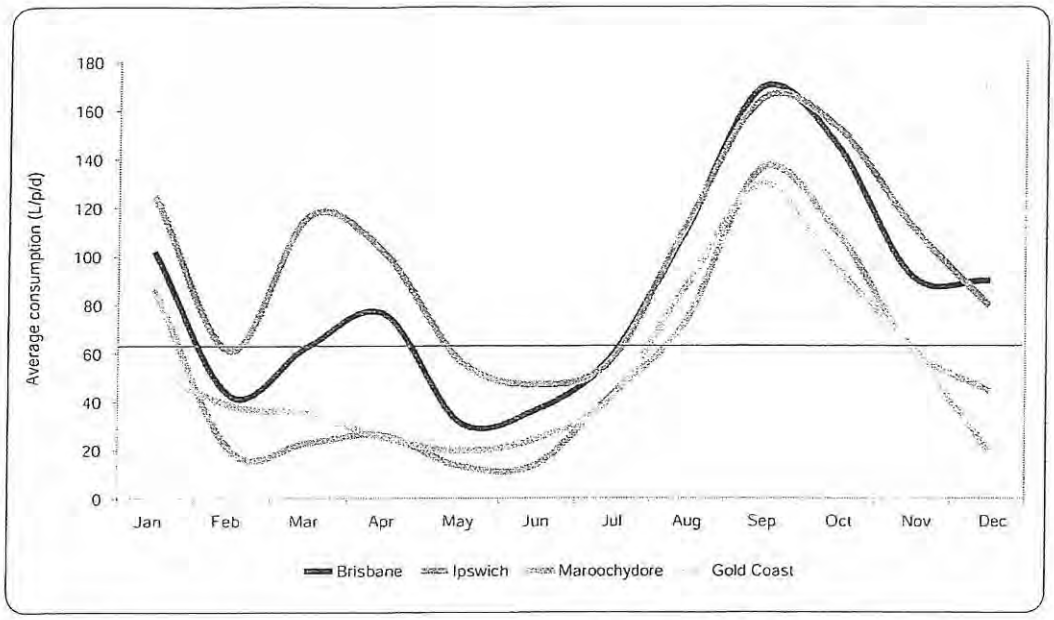


Figure 4.6 Forecast average external water use by location and month

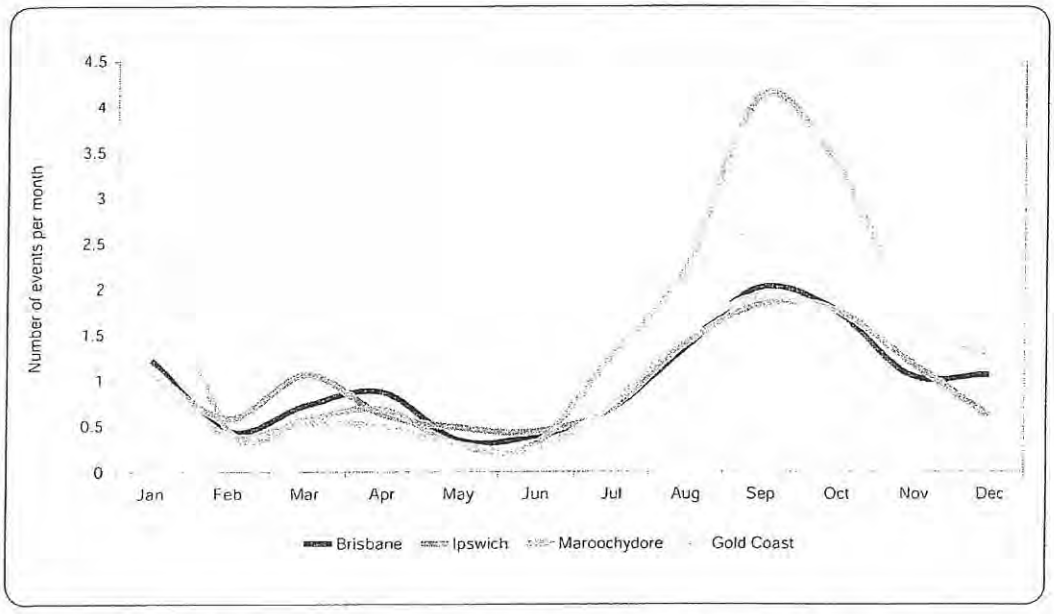


Figure 4.7 Forecast average number of watering events by location and month

4.4 Measures currently being implemented

Responses to the Millennium Drought included a number of demand management measures.

There are three categories of water efficiency measures:

- structural—making sure that our homes and businesses have water-efficient devices, appliances and equipment installed
- operational—making sure that water-efficient equipment is used correctly to achieve efficient outcomes
- behavioural—encouraging good use water behaviours and ensuring that the community understands the benefits of conserving water.

Table 4.3 gives information about the measures that have been implemented and factored into demand forecasts. These measures are long-term, as explained in Chapter 6.

Section 6.3.2 contains further demand management measures for investigation, to support achievement of the WSAA objectives. Ongoing monitoring and review of water usage will be needed to determine the effectiveness of the program, including the potential to further reduce regional water consumption without significantly affecting our lifestyle, environment, or business and industry.

Drought response measures were identified during the early phases of Strategy development. A detailed and comprehensive assessment was conducted of some 100 potential measures across all customer sectors and involved a range of implementation mechanisms. Potential demand management measures were screened based on the following criteria:

- significance of water savings from a regional perspective
- sustainability of water savings from a regional perspective
- reductions in energy use
- improved public awareness
- likely public acceptance
- equity across customer base
- regulatory obstacles
- life cycle cost to customers
- life cycle cost to water service providers.

The annualised cost of potential measures was compared to the cost of potential sources of supply. Annualised cost is the cost of the measure divided by the amount of water that it will save each year. On this assessment, the measures proposed in the Strategy were generally cost-effective relative to potential sources of supply. Figure 4.8 illustrates the annualised cost of some of the potential demand management measures, based on the initial planning assumptions. More detailed economic analysis was undertaken for significant measures, including levelised[1] cost assessments and portfolio analysis, which is explained in Section 6.3.2.

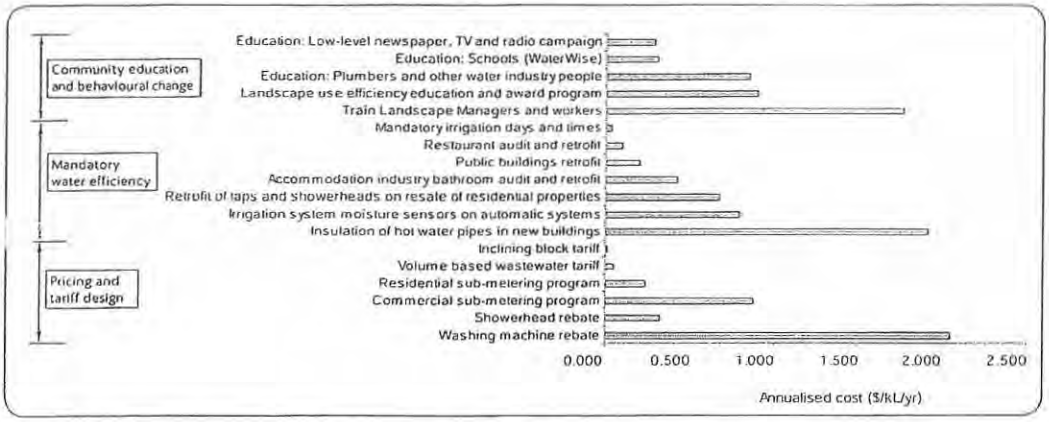


Figure 4.8 Annualised cost of potential demand management measures

[1] Levelised cost is calculated as the ratio of the present value of projected capital and operating cost of an option to the present value of the projected annual demand supplied or saved by the option.

Table 4.3 Permanent efficiency measures

Structural water efficiency measures

Water efficiency management plans

Water efficiency management plans (WEMPs) are required to be prepared for large water-using businesses and other non-residential activities. Under a WEMP, businesses must assess their current water use and identify and implement water savings. The plans demonstrate if a water user is already at best practice in water efficiency, or how a user is planning to become water-efficient in the near future. All businesses using 10 megalitres per year or more must prepare, submit and comply with a WEMP. WEMPs are also required for public swimming pools, nurseries, turf farms and market gardens, and premises with cooling towers.

WEMPs are a long-term measure. Businesses that are subject to a WEMP are required to review and update their WEMP at least every five years, with the aim of achieving business best practice water efficiency.

All businesses must ensure that their urinals and cooling towers are efficient, and businesses using 1 megalitre per year or more must ensure that all internal water fittings on the premises are water-efficient.

Queensland Development Code Part 4.1—sustainable buildings

Since 1 March 2006, new houses in Queensland are required to use water and energy more efficiently. Detached houses, terrace houses and townhouses must contain water-efficient showerheads and toilets, and water pressure limiting devices. Units must have water-efficient showerheads and toilets. Homes undergoing bathroom renovations must include water-efficient showerheads and taps.

Queensland Development Code Part 4.2—water savings targets

Since 1 January 2007, all building development applications lodged for the construction of new homes in SEQ must meet mandatory water savings targets. Detached houses must target savings of 70 000 litres per year, while terrace houses and townhouses must aim to achieve savings of 42 000 litres per year. Internally plumbed rainwater tanks are one option to achieve the water savings target. Alternative solutions to achieve the water savings target include communal rainwater tanks, stormwater harvesting, dual-reticulation recycled water schemes, and the treatment and reuse of greywater.

Queensland Development Code Part 4.3—alternative water sources, commercial buildings

From 1 January 2008, most new commercial and industrial buildings are required to have alternative water sources. Options include internally plumbed rainwater tanks and treated greywater.

Topping up swimming pools

Water from the reticulated supply system may be used for topping up swimming pools only if a rainwater tank or downpipe rainwater diverter is installed. The pool must also be an accredited ecopool or the premises must comply with three of four water efficiency measures, namely the use of:

- a swimming pool cover
- water-efficient taps and showerheads
- water-efficient toilets
- water-efficient washing machines.

Pressure and leakage reduction program

The Queensland Government has collaborated with local governments to reduce supply pressure and distribution system leakage losses by 60 megalitres per day by 2012. As at March 2010, a reduction of 52 megalitres per day had been achieved.

Expanded use of greywater

Allowable uses for greywater have been expanded where appropriate, through setting treatment standards and amending the types of buildings eligible to install greywater use facilities. Commercial and industrial building owners are allowed to reuse greywater captured within their buildings. These provisions commenced on 1 January 2008 and allow treated greywater to be used for toilet flushing, laundry use, vehicle washing, washdown of paths or walls, and spray irrigation of lawns and gardens.

Installation of water meters

Accurate water usage data is a critical factor for effective water use management. Individual water meters must be installed in all new residential and commercial multi-unit developments. In addition, businesses must install sub-meters:

- on the supply line of any process or equipment that uses a significant portion of the total water use on the site
- on the supply line of an irrigation system that irrigates an area greater than 500 square metres.

Operational water efficiency measures

Guidelines for business

Working with industry, the QWC has developed water efficiency guidelines that identify water-efficient equipment and practices to assist businesses and commercial operators. The guidelines cover a range of business and sporting operations, from fixed commercial vehicle washing to playing surface management. Generally, operators must:

- use water-efficient equipment, appliances, accessories and products that enhance water efficiency
- undertake activities in a water-efficient manner in accordance with manufacturers' instructions and equipment and training requirements
- check for leaks and, when a leak is found, undertake immediate repairs
- improve processes and upgrade to water-efficient equipment when it becomes economically feasible
- ensure that performance targets are met and equipment is maintained in good condition.

Active Playing Surfaces Guidelines

The Active Playing Surfaces Guidelines set out rules for irrigating grassed active playing surfaces to ensure that water is used efficiently while surfaces are maintained in a safe and playable condition. Over 620 registered active playing surfaces in SEQ use water in accordance with these guidelines.

Efficient Urban Irrigation Program

Irrigating outdoor areas can consume large amounts of water. The QWC has introduced the Efficient Urban Irrigation Program to improve the efficiency of outdoor water use for establishing and maintaining gardens and lawns around homes and businesses.

Irrigation systems must operate with a timer and a soil or rainwater moisture sensor. Irrigation must also be supported by efficient gardening practices. For business and commercial applications, a sub-meter must also be installed.

Residents and businesses operators are encouraged to choose landscaping elements that are appropriate to the climate and require minimal water to flourish.

The Efficient Urban Irrigation Program is based on the *Efficient Irrigation for Water Conservation Guideline*. The guideline has been granted the Smart Approved WaterMark and links to the use of efficient products which can be identified by the Smart Approved WaterMark.

Mobile commercial operator training and registration programs

Water is the primary input to the businesses of many mobile commercial operators, such as mobile car washing businesses, external cleaners and pet washers, making it important that these businesses operate in a water-efficient manner. The QWC developed Water Efficiency Guidelines to ensure operators are trained in efficient water use practices. By the end of 2009, 1130 operators were registered, trained in efficient water use, and operating according to the QWC guidelines.

Behavioural water efficiency measures

Rebate schemes

The Queensland Government and a number of local governments have provided rebates for installing rainwater tanks and water-efficient devices, including dual-flush toilets, showerheads, washing machines and swimming pool covers. In some instances, increased rebates were offered for rainwater tanks that had been plumbed to internal fixtures.

More than 580 000 rebates were paid under the Queensland Government's WaterWise Rebate Scheme, with a total estimated value of almost $330 million. Rebates were paid to retrofit rainwater tanks to 236 000 houses and to provide water-efficient showerheads and other fittings.

Water-efficient showerheads continue to be available through the Queensland Government's ClimateSmart Home Service.

ecoBiz is a Queensland Government program that provides rebates to help businesses save money through reduced energy and water consumption, and reduced waste.

Public education and communication

The QWC implemented successful public education and communication campaigns, including Target 140, Target 170 and Target 200, to encourage residents of SEQ to reduce their water use and to use water efficiently. A separate campaign, Water at Work, promoted water efficiency in the workplace. Further community and business education campaigns will be undertaken as required and to support the voluntary Target 200.

WaterWise

The WaterWise program targets particular sectors of the community and seeks to establish efficient lifetime water consumption habits. *Water: Learn it for life!* has been developed for preparatory and primary school children. The program is administered by the Department of Environment and Resource Management.

Council water savings and efficiency education programs

Many local governments provide educational information and water savings tips and toolkits for households and businesses. Some local governments also offer water efficiency rebates.

Behavioural water efficiency measures (continued)

Water use information to residential tenants

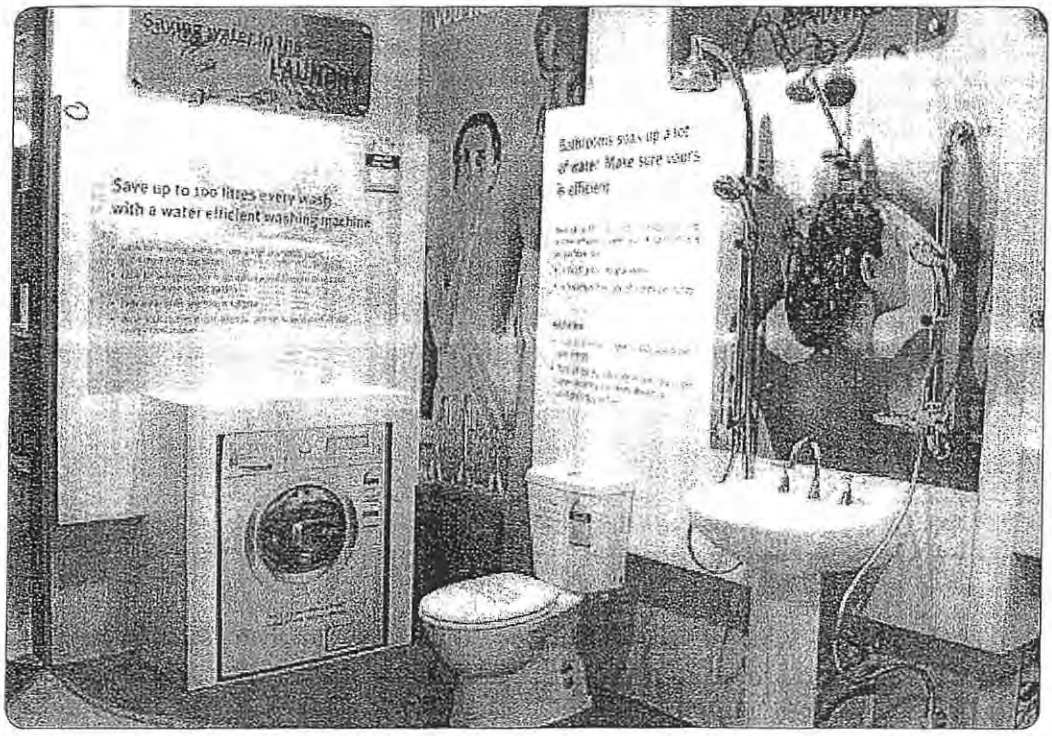
This measure requires water service providers to give water use information to occupiers of residential rental properties. The advice states the volume of water supplied to the premises during each meter-read period so residents can monitor their water use.

Water efficiency calculator

The QWC has developed a water efficiency calculator to help residents and business operators become more water-wise. The calculator determines water usage volumes in and around the household or premises, using information provided by the user. The calculator suggests water savings tips and enables residents to compare estimated water usage with metered water usage.

Water-efficient technologies display

A water-efficient technologies display has been established at the Home Ideas Centre in Brisbane. The display features a range of water-efficient devices, appliances and fixtures and promotes water-efficient technology to people building or renovating a home.



4.4.1 Role of rebate schemes

The demand management program focuses on structural measures that will continue to provide cost-effective savings well beyond the time when additional sources of supply are required. The main focus is for new houses and commercial and industrial buildings to be water-efficient—for example, by using water from rainwater tanks to flush toilets or for other purposes. Unless many of these measures are undertaken now, the opportunity could be lost and the future cost of retrofitting would be prohibitive.

With these requirements in place, substantial water savings will be achieved through natural replacement of the building stock, either when constructed or as part of renovation.

Most of the rebate schemes have now been discontinued. They were effective in bringing forward demand savings as part of a drought response. However, they are less cost-effective when LOS system yield exceeds demand, and when similar demand savings will be embedded over time through regulation and the natural replacement of fittings and fixtures.

Refer to behavioural water efficiency measures in Table 4.3 for more information on rebate schemes.

Examples of measures implemented by non-residential users

Industrial water recycling—BP and Caltex refineries

Since 2000, the BP Amoco Refinery at Bulwer Island in Brisbane has been using an average of 3650 megalitres per year of recycled water. Since May 2008, the Caltex refinery at Lytton has been receiving 1600 megalitres per year of high-quality recycled water from the nearby Wynnum Wastewater Treatment Plant. Both of these projects use the recycled water for boilers and cooling towers, and are examples of recycled water substitution that will directly reduce the demand on drinking water supplies.

Industrial water management—Dairy Farmers, Ipswich

Dairy Farmers is one of the largest dairy manufacturers in Australia. Recent improvements at the Booval Dairy Farmers plant have led to greater recovery and reuse of water, allowing the plant to reduce water consumption by 25 per cent. An additional benefit is that wastewater discharge from the plant has been reduced.

Commercial water management—Conrad Jupiters Casino

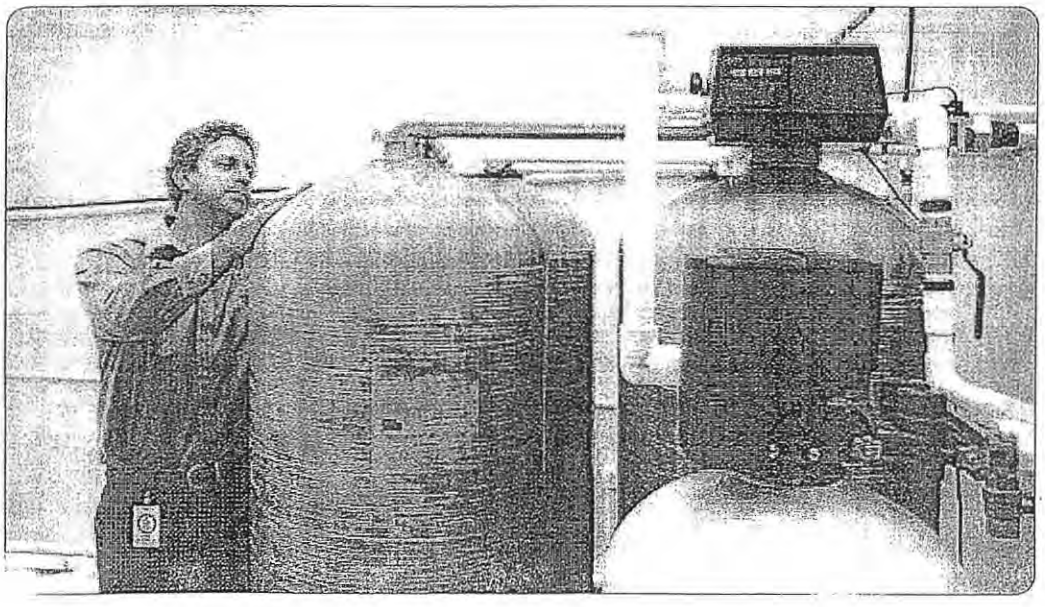
Conrad Jupiters Casino on the Gold Coast has reduced its potable water consumption by 37 per cent. Key initiatives include installing water-efficient fittings on showers, taps and urinals; a recycled water treatment facility for garden irrigation; dual-flush toilets; and rainwater tanks for topping up swimming pools.

Government buildings—Water SMART Buildings

This program reduced water consumption in Queensland Government–owned commercial buildings, facilities and parks. High water use facilities were targeted with a program of works to improve their water efficiency. Projects included replacing single-flush toilets and installing water-efficient tapware, showerheads and flow restrictors. A reduction in potable water consumption of approximately 55 per cent was achieved in 37 government buildings in SEQ when comparing 2004–05 and 2008-2009 annual water usage data.

Rural water use efficiency—SEQ Irrigation Futures

The SEQ Irrigation Futures project was established to improve the efficiency and off-farm impacts of irrigation. Participating industries include horticulture, dairy and fodder, turf, flora, and nursery and garden sectors. A key objective is to provide research and development, which has underpinned a 12 per cent improvement in water use efficiency as at the end of 2009—equivalent to an estimated 21 000 megalitres per year. Technologies and management practices for improved irrigation practice have been developed, trialled and evaluated through water balance models, spatial variability assessments, zonal irrigation management and 'tool kit' support for industry consultants.



4.5 Forecast demand

Based on 2004–05 trends, demand for water for urban uses and power generation would have increased from around 467 000 megalitres per year in 2005 to approximately 985 000 megalitres per year in 2056. With high series population growth, demand would have increased to around 1 196 000 megalitres per year.

Overall, a reduction in demand of 24 per cent compared to 2004–05 patterns is forecast by 2056. Table 4.4 contains the current demand forecasts, based on the planning assumptions outlined above. It also takes into account projects and initiatives currently being implemented and the demand management program described in Section 6.3.

Table 4.4 Forecast SEQ urban and power generation demand (excluding rural allocations)

	2005 estimated water consumption (megalitres per year)	2026 forecast demand (megalitres per year)	2056 forecast demand (megalitres per year)
Medium series population projections			
Pre-drought trends	466 693	690 000	985 000
Strategy forecast demand management program	–	533 000	744 000
Per cent saving	–	23 per cent	24 per cent
High series population projections			
Pre-drought trends	466 693	749 000	1 196 000
Strategy forecast demand management program	–	577 000	914 000
Per cent saving	–	23 per cent	24 per cent

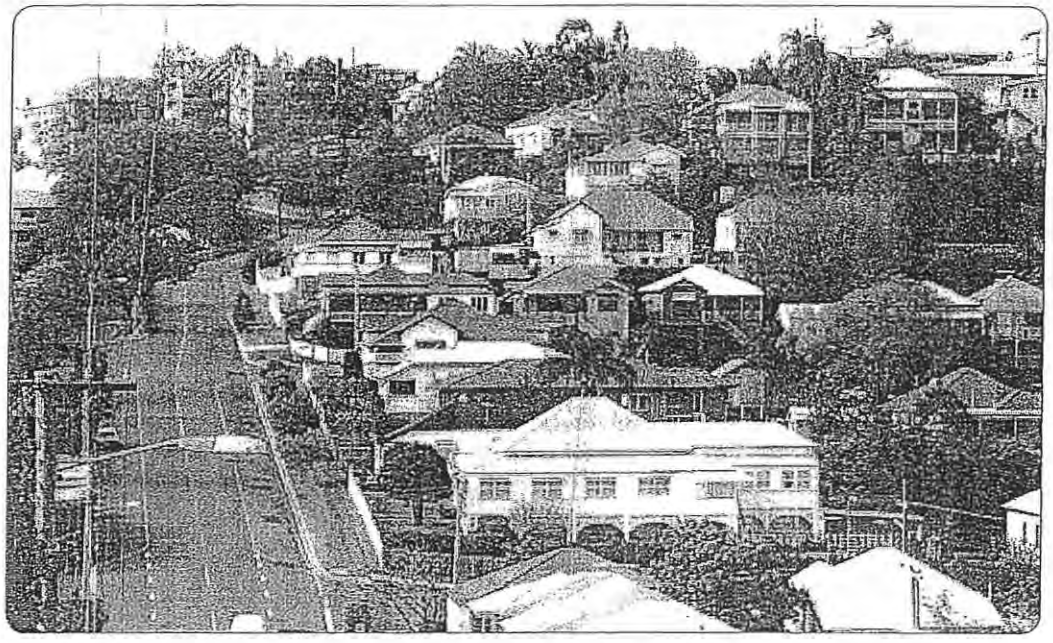


Figure 4.9 illustrates forecast demand over time, in total and for key sectors. A demand range has been prepared to ensure that the Strategy is flexible enough to respond to changes in population growth or consumption trends. Cases where water savings initiatives within the high series forecast are slower to come into effect, or do not fully materialise, are expected to be within the range.

The Toowoomba and Cooloola local government areas are not part of SEQ. However, the pipeline connecting Wivenhoe Dam to Cressbrook Creek Dam provides the capacity to supply up to 10 000 megalitres per year of untreated water to Toowoomba Regional Council. This potential supply has been included in the modelling of future demand.

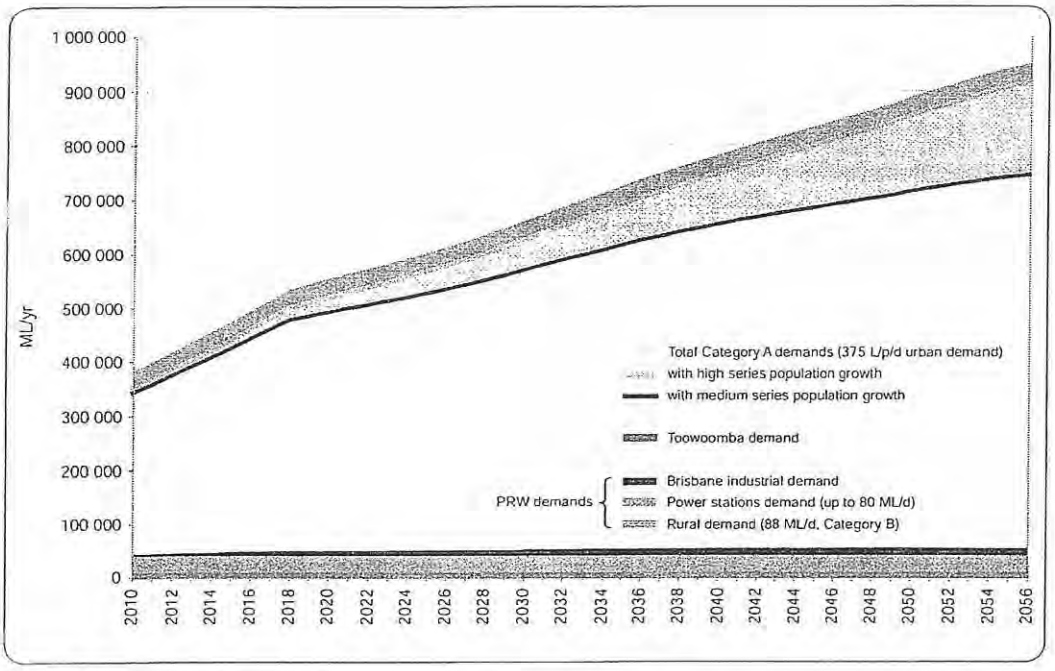


Figure 4.9 Forecast demand

4.5.1 Forecast urban demand

Before 2005, residential use accounted for around 65 per cent of urban demand. The relative proportion of residential water use is projected to decline slightly to about 58 per cent of urban water use by 2056.

Non-residential water use (excluding system losses and power generation) represented approximately 21 per cent of total urban water use in 2005. Non-residential demand is forecast to increase from about 91 000 megalitres per year in 2005 to about 117 000 megalitres per year in 2026 and about 172 000 megalitres per year in 2056, based on medium series population growth. At these rates, non-residential water use is forecast to comprise about 24 per cent of urban demand in 2056.

4.5.2 Forecast power generation demand

In 2005, about 38 000 megalitres was used for power generation in SEQ, equivalent to 6 per cent of total consumption. Most of the water was used in coal-fired power stations.

Since 2005, SEQ power stations have implemented a range of water-saving measures that have permanently reduced demand on the SEQ Water Grid. At the Swanbank B and E power stations, these measures include stormwater collection to supplement cooling water. At the Tarong and Tarong North power stations, the measures include installation of a reverse osmosis plant to recycle stormwater, boiler blowdown water and ash dam water.

Demand will also be reduced by the progressive closure of the Swanbank B power station over the period to mid-2012. Potentially offsetting this, CS Energy has long-term plans to build another gas-fired power station at the site. Power stations may also be built elsewhere in the region at some stage.

Taking these factors into account, the Strategy allows for supply to power generation of up to 29 500 megalitres per year. This is a conservative assumption, based on existing contracts. Actual consumption in any year may be lower, due to lower demand for electricity or to the Tarong power station taking water from Boondooma Dam rather than from the SEQ Water Grid.

When accessing water from the SEQ Grid Water, the Swanbank, Tarong and Tarong North power stations will use purified recycled water from the Western Corridor Recycled Water Scheme. For the Swanbank and Tarong North power stations, purified recycled water is the primary source of supply. For the Tarong power station, the primary source of supply will continue to be Boondooma Dam, with purified recycled water being used when supply is unavailable from the dam.

4.5.3 Forecast rural community demand

In the future, demand for water in rural communities with stand-alone supplies is expected to remain at approximately 1 per cent of total SEQ demand.

These demand forecasts were derived from the October 2006 population growth forecasts from the former Department of Local Government, Planning, Sport and Recreation. An assumption has been made regarding the proportion of future connected and unconnected properties in each local government area.

Section 6.5 provides more information on securing water supplies for all rural communities, both with and without reticulated supplies.

4.5.4 Forecast rural production demand

The growth in rural activities in SEQ is limited by the availability of water, with some restrictions on land use. With the current allocations of water available under the water resource plans, there are only limited opportunities for growth in the rural sector in terms of hectares under irrigation. Within this area, there may be changes to the types of crops and rural activities driven by the national water reforms and other initiatives.

Section 6.6 explains commitments made regarding additional water for rural production. If this water is not taken into account, rural water consumption is likely to remain at around 150 000 megalitres per year, which is the amount used in 2005.

4.5.5 Supply to areas outside SEQ

A pipeline between Wivenhoe Dam and Cressbrook Creek Dam was completed in early 2010. Through this pipeline, the SEQ Water Grid can initially supply up to 10 000 megalitres per year to Toowoomba Regional Council. The conditions of supply have been specified in a contract with Toowoomba Regional Council. This supply is allowed for in water balance models.

Supply to other areas outside SEQ may be considered subject to appropriate terms and conditions, including that the security of supply to SEQ is not reduced below the LOS objectives (refer to Section 6.1).

4.6 Local water supplies

Local water supplies are an integral part of the Strategy. These local supplies will complement supply from the SEQ Water Grid, helping to reduce the amount that needs to be supplied from bulk water supplies and the distance over which it is transported.

Development of local water supplies is required under the Queensland Development Code's water savings targets for new residential, commercial and industrial buildings. As noted in Table 4.3, since 1 January 2007 all building applications in SEQ for detached houses must target savings of 70 000 litres per year, while terrace houses and townhouses must aim to achieve savings of 42 000 litres per year. These local supplies must be internally plumbed to provide water for, at a minimum, toilet flushing and washing machine cold water taps, as well as for outdoor use.

The water savings target is forecast to apply to about 500 000 new houses by 2026 and about 800 000 new houses by 2056. At this rate, local supplies in new houses are forecast to reduce demand for the SEQ Water Grid water by about 35 000 megalitres per year by 2026 and 60 000 megalitres per year by 2056. The actual number of new houses depends on a range of factors including population growth and household size. The forecast takes into account variations in the yield of rainwater tanks across the region. These forecasts are based on the minimum requirements.

Internally plumbed rainwater tanks are one option to achieve the water savings target. Other options to achieve the water savings target include communal rainwater tanks, stormwater harvesting, greywater, and dual-reticulation recycled water systems. These options can benefit other elements of the water cycle, as described in Section 2.3.

The most appropriate solution to the water savings target will vary depending on local circumstances, and should be determined as part of the planning processes described in Section 2.3. In key development areas, the optimal solution may be specified as part of sub-regional total water cycle planning. In other locations, it may be considered on a site-specific basis by developers or as part of local government total water cycle planning.

In some circumstances, local water supplies may be able to deliver savings above the minimum required under the Queensland Development Code. These opportunities should be investigated and pursued when the incremental benefits are cost-effective compared to alternative sources of supply. Potential economic benefits of these options include:

- reducing and deferring the need for major supply augmentation
- reducing or avoiding the need for upgrades to the water distribution system
- reducing whole-of-system operating costs
- reducing the overall demand for water.

These opportunities should be assessed on a total water cycle basis, taking into account environmental and social considerations (refer to Section 3.5). Local water supplies can have significant benefits for the local environment. For example, local recycled water schemes can significantly reduce nutrient discharges from wastewater treatment plants, improving the health of receiving waterways and estuaries. These benefits vary between schemes, depending on a range of factors including the treatment process and the other flows in the receiving waterway. Other issues, such as energy intensity, must also be taken into account—local supplies can be more or less energy-intensive than bulk water supplies (refer to Section 6.8.3).

Demand for SEQ Water Grid water will be further reduced by existing tanks including those retrofitted to existing houses during the drought response and tanks on new industrial and commercial buildings.

With few exceptions, local supplies will be insufficient to achieve the LOS objectives described in Chapter 3. As a result, the water balance takes into account the amount of water that will be required to augment supplies from rainwater tanks during severe droughts.

4.6.1 Rainwater tanks

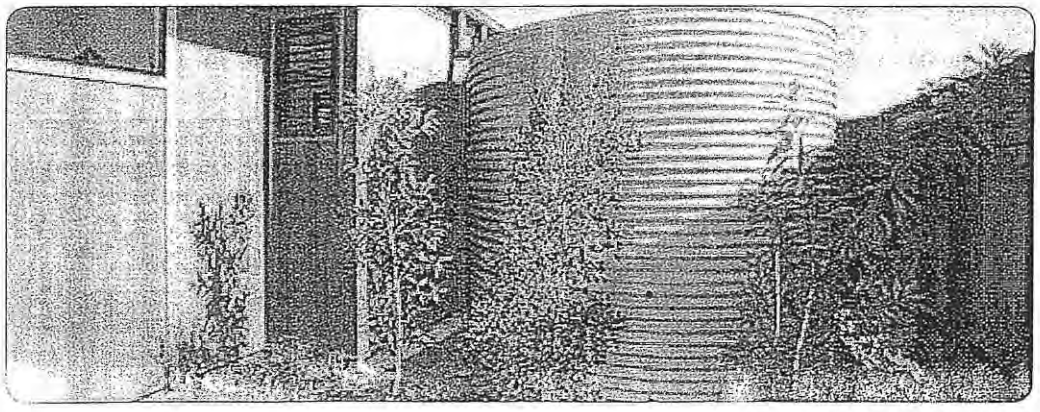
Rainwater tanks were installed in 236 000 homes in SEQ as part of the Queensland Government's WaterWise Rebate Scheme. This represents a penetration rate of almost one in four detached and semi-detached dwellings. These tanks enabled residents to reduce the impact of the drought on gardens while maintaining average consumption below 140 litres per person per day for over a year.

A large proportion of development in SEQ is located in coastal areas that receive higher rainfall than existing major dam catchments. Rainwater tanks and stormwater harvesting provide a way to capture some of this rainfall. Rainwater tanks are able to collect inflows from light rainfall, whereas dams may require 50 millimetres or more of rainfall in the catchment area before run-off commences.

The minimum requirements specified in the Queensland Development Code ensure that rainwater tanks are cost-effective compared to desalination and purified recycled water. This cost effectiveness is due to:

- cost being minimised by installing the tank and internal plumbing connections during construction
- yield being maximised by regulating the minimum size of the tank, connected roof area and plumbing into toilets and washing machines.

The savings that could be achieved for similar costs in existing homes are estimated to be considerably lower. Retrofitted rainwater tanks are generally less cost-effective due to smaller tanks, smaller connected roof area and fewer, if any, internal connections such as to toilets or washing machines. Further work is planned to improve the yield, energy efficiency and cost-effectiveness of rainwater tank systems installed in new dwellings.



4.6.2 Stormwater harvesting

Stormwater harvesting involves collecting and storing stormwater, then treating and using it at a later time. The appropriate use depends on the quality of treatment. Undertaken as part of water-sensitive urban design, stormwater harvesting has the potential to reduce the impacts from urban development on local waterways, rivers and Moreton Bay. These benefits relate to:

- reducing the quantity of pollutants entering waterways, by trapping and filtering pollutants before discharge and use
- reducing the volume, intensity and frequency of stormwater run-off and stream flow, which helps to maintain in-stream habitats and bank stabilisation.

Stormwater harvesting can vary from on-site scale, such as a shopping centre or industrial development, to regional scale. At the on-site scale, stormwater harvesting may involve capturing and reusing water for use in toilets and for outdoor irrigation. Storage could be provided in underground tanks under car parks or internal roads.

At the local scale, run-off from a new development area might be collected in a wetland for treatment and used for outdoor irrigation or through a dual-reticulation system. At the sub-regional or regional scale, stormwater harvesting might involve collecting run-off from a large catchment area that includes urban and rural areas. The water may be treated to a high standard and used to supplement drinking water supplies.

In a number of greenfield development scenarios, stormwater harvesting could deliver water supply to meet or exceed the water savings targets at a cost comparable to or lower than rainwater tanks.

It is most likely to be cost-effective in developments where:

- the density of development is high, increasing the demand for water and decreasing the unit cost
- the development is large, providing the opportunity for economies of scale
- land is available for surface water storage that does not reduce lot yield, such as low-lying land that would be drainage reserve or passive parkland
- moderate to steep catchments allow for drainage and storage to limited areas.

Similar to rainwater tanks, it is generally more cost-effective to install stormwater supply systems as part of new developments.

Stormwater harvesting could more efficiently achieve both the water savings targets and water-sensitive urban design requirements than if these requirements were addressed separately.

The QWC will also consider opportunities to use managed stormwater harvesting to augment:

- bulk water storages, such as occurs in Orange in New South Wales
- recycled water flows as part of the detailed investigations of potential purified recycled water schemes. Such schemes could have significant benefits for waterways, due to capturing the first-flush stormwater.

The Queensland Government is undertaking more detailed research to assess opportunities for stormwater harvesting in SEQ, as explained in Section 7.4. This includes investigating where large stormwater harvesting schemes could be developed. Much of the research also relates to the health risks that must be managed due to the variation in the quality of stormwater between locations and over time. At present, the cost of meeting regulatory requirements for stormwater use will be a significant factor in determining the viability of such schemes.

The Queensland Government is investigating a number of potential demonstration projects, as summarised in the following text box.

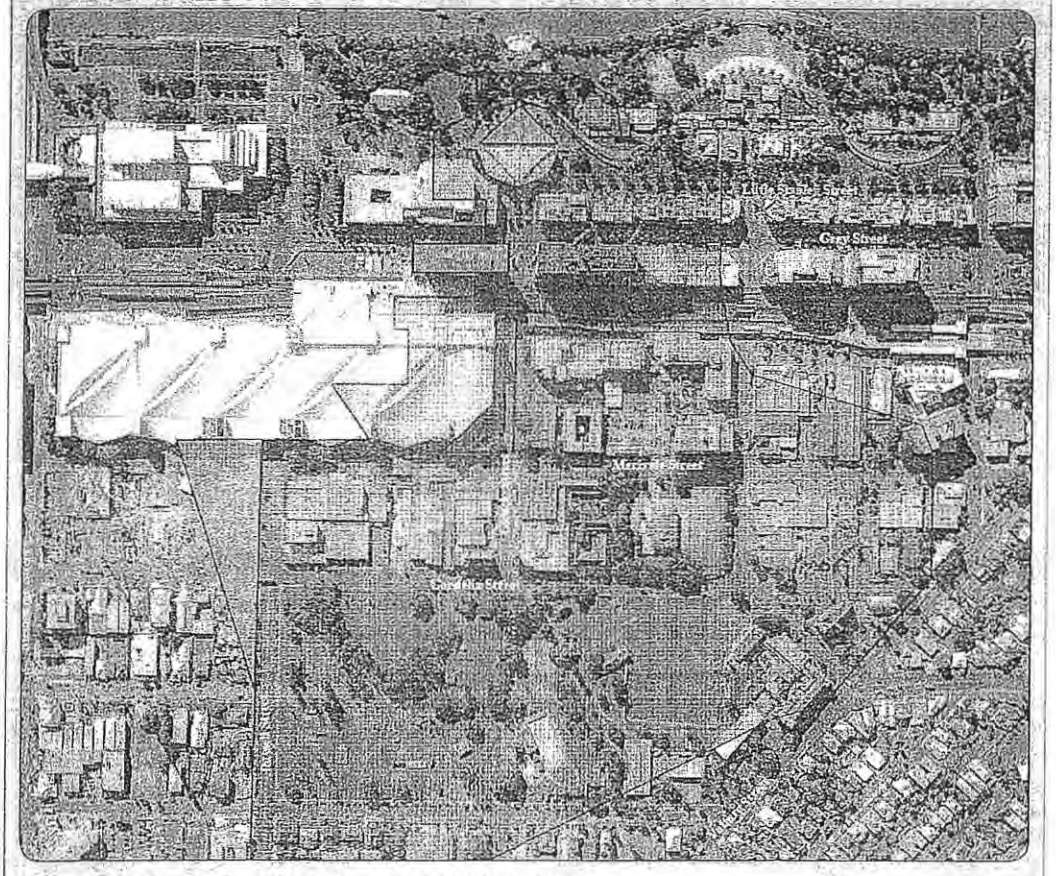
Stormwater harvesting at South Bank

The South Bank Stormwater Harvesting and Recycling Centre (SHARC) will harvest water from a highly urbanised catchment, providing a basis for research. Construction is scheduled to be completed by late 2010.

The scheme involves harvesting stormwater run-off from a 30 hectare urban catchment extending from South Bank into West End. Water will be extracted from a diversion pit in front of the Suncorp Piazza. The water will be treated before being pumped into an underground storage tank and again before distribution. The plant room will include opportunities for community viewing and education.

The SHARC project is expected to supply approximately 77 megalitres per year of treated stormwater. Initially, the water will be used for irrigation, water features and toilet flushing. Once potential water quality issues have been investigated, the water could be used to top up the South Bank pools.

The Queensland Government is contributing $3.3 million to the project. The Australian Government is contributing $4.6 million.



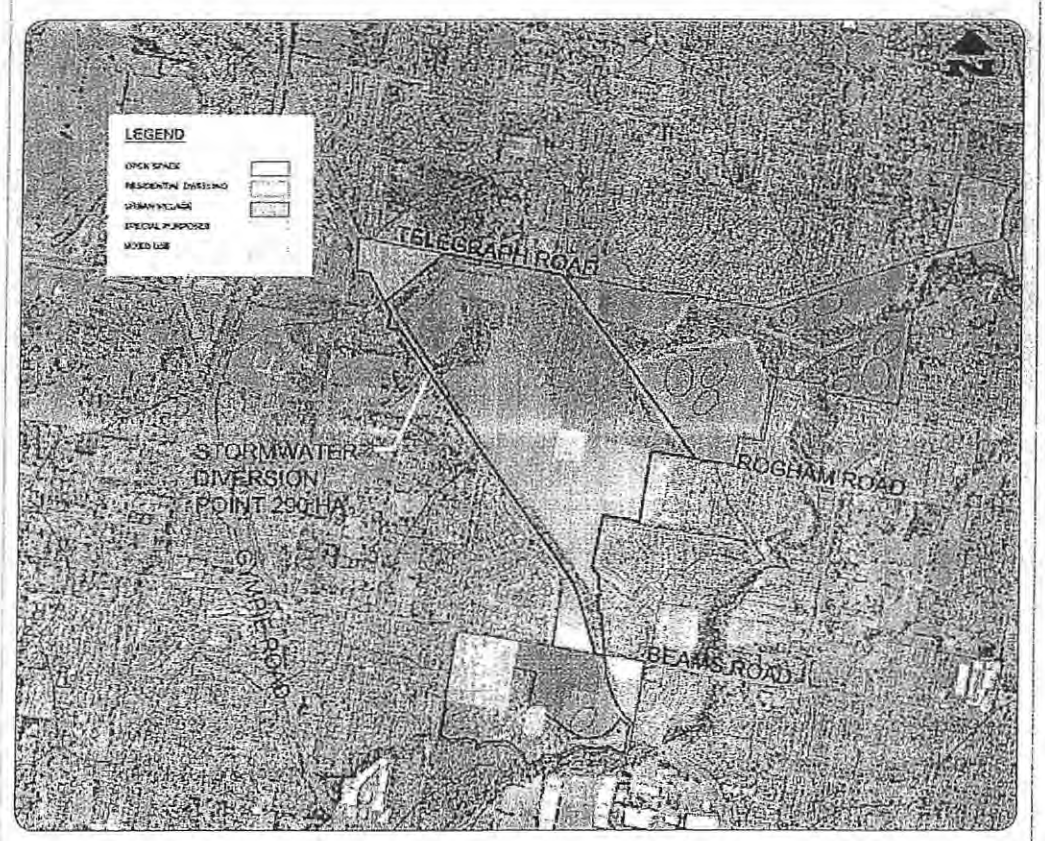
Catchment feeding the South Bank stormwater harvesting scheme

Fitzgibbon Chase

The Fitzgibbon Chase development is an innovative housing affordability initiative, combining recreational, cultural, education, business and medium-density residential development. The Urban Land Development Authority, in partnership with the QWC, is investigating whether a stormwater harvesting scheme could be constructed within the development.

The proposed Fitzgibbon Stormwater Harvesting (FiSH) scheme would divert urban stormwater run-off from an adjacent 290 hectare urban catchment, storing the water in a 5 megalitre urban lake. Stormwater would be treated and distributed to houses and units through a dual-reticulation system. Treated stormwater would be used for toilet flushing, cold laundry taps, garden irrigation and outdoor use.

The FiSH scheme would supply about 89 megalitres per year—about 84 per cent of the development's non-potable demand.



Fitzgibbon Chase stormwater harvesting catchment

4.6.3 Local recycling

Local recycling is an option to achieve the Queensland Development Code's water savings requirement for new dwellings. As with stormwater harvesting, local recycling is more appropriate for offsetting demand from larger scale greenfield industrial or residential developments rather than single properties or brownfield sites.

Apart from purified recycled water, other types of water recycling may provide additional water supplies for the region. Such recycling opportunities may involve:

- wastewater from a wastewater treatment plant that is not part of a purified recycled water scheme
- excess wastewater from a wastewater treatment plant that is surplus to the requirements for any local purified recycled water scheme
- water that is extracted from the sewerage system and treated locally
- greywater.

A feature of recycled water is that the treatment process and water quality can be tailored to suit the use, optimising the capital and operating costs. Where treated wastewater is not fully upgraded to purified recycled water, it might still be of a suitable quality to be used for:

- agricultural applications such as irrigation
- parkland irrigation
- industry activities
- toilet flushing and outdoor irrigation in residential developments, through a dual-reticulation system.

The optimal type of recycling in a particular location, if any, will be considered as part of the total water cycle planning process outlined in Section 2.3. Sub-regional total water cycle plans will incorporate a receiving water load-based analysis, taking into account the costs and benefits of recycling and reuse across the study area. Local recycling will be a key consideration in the first sub-regional total water cycle plan for key growth areas in Logan City Council and Scenic Rim Regional Council areas.

Dual-reticulation recycled water schemes

Dual-reticulation recycled water schemes involve constructing separate distribution systems for drinking water and recycled water. In residential areas, the recycled water is plumbed to homes for flushing toilets and outdoor irrigation. Dual-reticulation recycled water schemes can result in a high percentage of recycled water reuse and potentially reduce the impact of any future water restrictions.

A permanent reduction in average outdoor water use could have a negative effect on the economic viability of dual reticulation recycled water schemes. The amount of water supplied would reduce without equivalent savings in terms of the cost of constructing and operating the scheme. As with stormwater, the viability of dual-reticulation systems need to be assessed based on the characteristics of a specific site.

Pimpama Coomera WaterFutures Master Plan

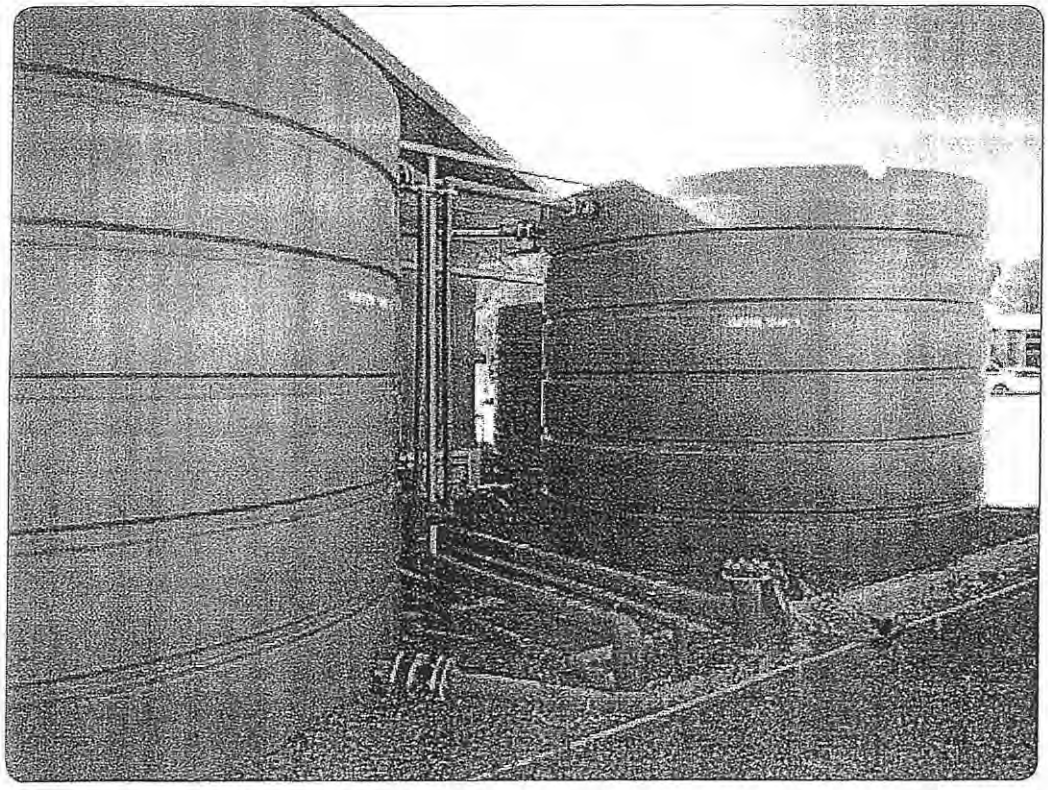
The suburbs of Pimpama and Coomera at the northern end of the Gold Coast are expected to grow from approximately 15 000 people to around 120 000 people by 2056[2]. The Pimpama Coomera WaterFutures Master Plan has been developed by the Gold Coast City Council and is the largest integrated water cycle management program in Australia.

The Master Plan aims to reduce the use of potable water in new homes by up to 84 per cent. Under the Master Plan, all new homes will be supplied with recycled water for toilet flushing and outdoor use. Rainwater tanks will be installed to supply washing machines.

Greywater systems and wastewater mining

Greywater systems can help to reduce demand for potable supplies. These must be carefully managed, due to potential health risks. The Queensland Government introduced new laws in March 2006 to broaden the use of greywater. Under this legislation, anybody is allowed to manually bucket greywater from the laundry and bathroom, or to connect a flexible hose to divert it from the washing machine to the garden. An application to the local government is required for more sophisticated systems, such as a diverter unit or treatment plant. Such systems must be installed by a plumber licensed in Queensland and must meet Australian standards.

Wastewater mining (where wastewater is pumped directly from the sewer, treated and used on-site) is a minor element of the Strategy, due to cost. With advances in technology, wastewater mining may become more economically viable and schemes may be developed where treated wastewater is available.



2 Source: http://www.goldcoastwater.com.au/t_gcw.aspx?PID=7994

Chapter 5

South East Queensland's water supplies

This chapter describes existing and committed water supply sources for SEQ. It explains the yield of these sources using the Level of Service (LOS) approach outlined in Chapter 3, including the benefits of the SEQ Water Grid and the potential impact of climate change. It also describes the opportunities identified for future water supplies, including potential desalination and purified recycled water schemes, as well as surface water and groundwater opportunities.

Key messages

- The SEQ Water Grid is operational, including the desalination facility at Tugun, the Western Corridor Recycled Water Scheme and major interconnecting pipelines.
- A number of other projects are currently underway, including the Hinze Dam upgrade and the construction of Wyaralong Dam.
- Operating the SEQ Water Grid as a single system increases the system yield by about 14 per cent compared to a disconnected system.
- The desalination facility and Western Corridor Recycled Water Scheme provide security of supply as standby facilities. They do not need to be operated at capacity at all times.
- The projects currently underway, including the Western Corridor Recycled Water Scheme, will increase the LOS system yield to 525 000 megalitres per year of high reliability (Category A) water around 2011, rising over time to its maximum capacity of 545 000 megalitres per year .
- An additional 32 000 megalitres per year of recycled water is available for rural irrigation when not required for urban supply.
- The climate change scenario adopted for planning analysis would reduce the yield of surface water storages and groundwater supplies by 10 per cent.
- The Strategy will be revised at least every five years as information on climate change impacts, population growth and water demands improves.
- Based on existing technology and identified alternative water source options, desalination is currently the only practical supply to fill a regionally significant supply gap.
- Priority desalination sites have been confirmed at Lytton and Marcoola. Reserve sites are at Tugun and Bribie Island.
- There are limited opportunities to substantially increase supply by developing new dams in SEQ, beyond those already committed.
- Groundwater in the SEQ region is considered to be almost fully utilised.

5.1 Existing water sources

In August 2006, the Minister for Infrastructure and Planning introduced a range of measures in response to the Millennium Drought in SEQ, including the construction of major new water assets. The measures are set out in the Water Regulation 2002 (Part 8) (Emergency Regulation). This program includes about 20 infrastructure projects, ranging from the first purified recycled water scheme in Australia to a number of local groundwater schemes and SEQ's first desalination plant.

Construction of the projects set out in the Emergency Regulation is almost complete. This section describes the existing bulk water supplies and major interconnections in SEQ as at mid-2010.

Figure 5.1 shows the current bulk water supplies in the SEQ Water Grid. The major surface water sources are:

- the Brisbane River system, comprising the Wivenhoe and Somerset dams, Lake Manchester and the Mt Crosby Weir
- North Pine Dam
- Hinze and Little Nerang dams
- Baroon Pocket Dam.

Borumba, Moogerah and Maroon Dams supply significant quantities of irrigation water. Lake Dyer, Lake Clarendon and Atkinson Dam are small dams that have been constructed specifically to deliver irrigation supplies.

The Cedar Grove Weir and Bromelton Off-stream Storage were operational from July 2008 and are being used to enhance the performance of the Logan River Water Supply Scheme for current entitlement holders. From 2012, these supplies will be operated in conjunction with Wyaralong Dam (refer to Section 5.2).

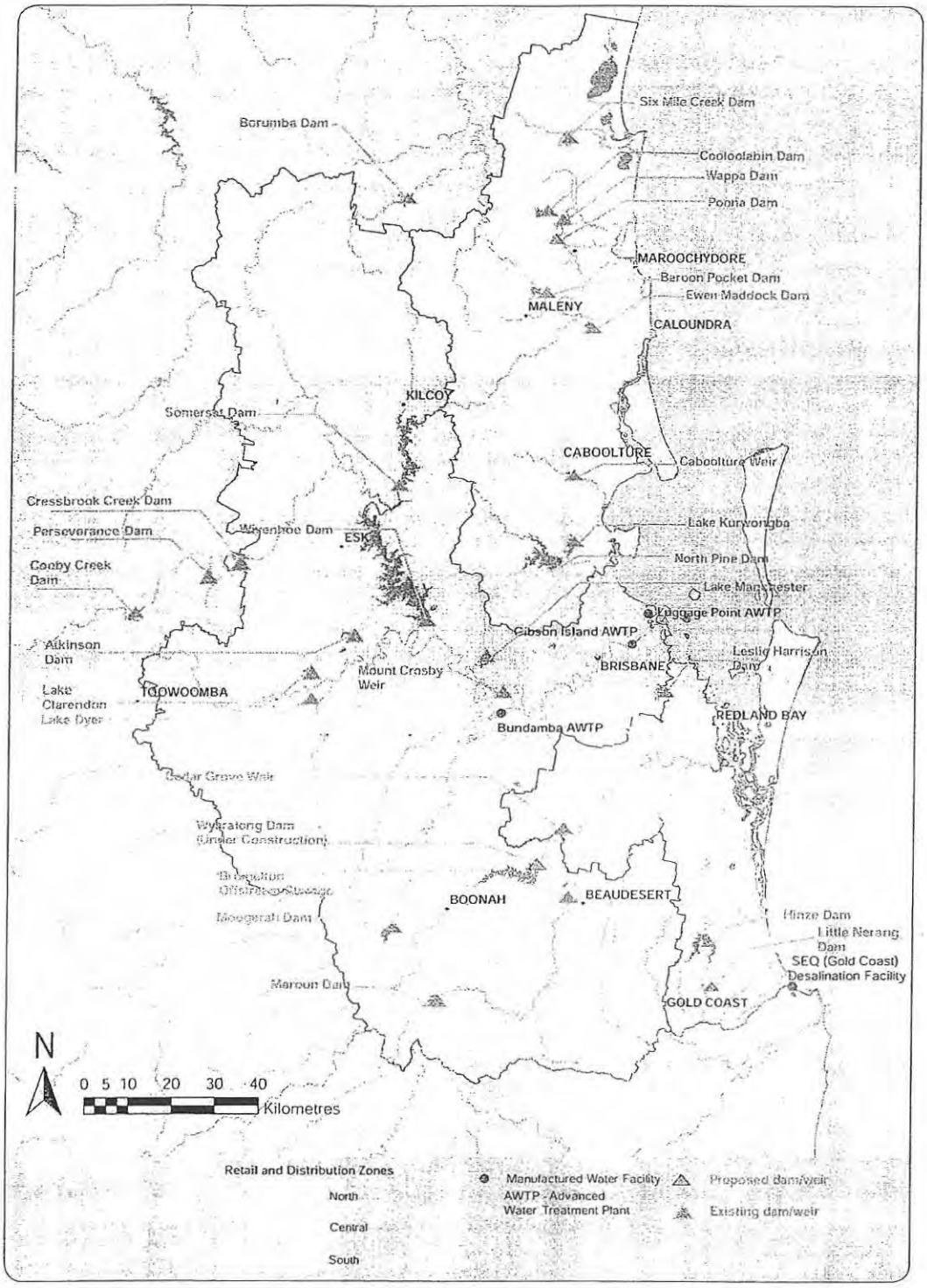


Figure 5.1 Existing bulk water supplies

Groundwater aquifers generally provide relatively high-quality water that, under the right circumstances, requires little treatment before use. In SEQ, water from groundwater aquifers currently supplies:

- significant quantities of drinking water to Bribie Island, Redlands, Toowoomba and some southern suburbs of Brisbane
- drinking water to small communities, such as those on North Stradbroke Island
- irrigation water to the Lockyer and Warrill valleys.

Private bores provide small quantities of water, mainly for garden irrigation. On Tamborine Mountain, some residents use private bores for drinking water supplies.

Two major new climate resilient water supplies have been constructed as part of the response to the Millennium Drought, namely the Western Corridor Recycled Water Scheme and the SEQ (Gold Coast) Desalination Facility, located at Tugun.

The Western Corridor Recycled Water Scheme is now the primary source of supply for water being taken from the SEQ Water Grid to the Swanbank, Tarong and Tarong North power stations. If insufficient purified recycled water is available for the power stations, backup supplies can be sourced from Moogerah Dam and the Brisbane River system. The Tarong Power Station also obtains supplies from Boondooma Dam, which is outside the SEQ Water Grid.

Cressbrook Creek, Perseverance and Cooby Creek dams supply water to Toowoomba and are owned by Toowoomba Regional Council. These dams, and the council-owned groundwater schemes, are not part of the SEQ Water Grid.

Bulk water interconnections

Bulk water interconnections are a key feature of the SEQ Water Grid and are at the core of future water security for the region.

Prior to the Millennium Drought, SEQ was supplied from eight largely discrete water supply zones, with differing levels of security and reliability and, until 2008, different owners and operators. Due to the lack of connection, restrictions were applied in some parts of the region while dams in other parts were full or overflowing. For instance, the Gold Coast experienced a severe drought in 2002, resulting in severe restrictions as well as plans to construct a pipeline from Brisbane. A few years later, while dams on the Gold Coast were overflowing, Brisbane was experiencing the most severe drought on record with the lowest recorded inflow into water storages.

Following the completion of most of the Emergency Regulation projects, there are now bulk water interconnections between most of the region's major water treatment plants. Figure 5.2 shows the new grid of interconnecting pipelines, featuring:

- the Southern Regional Water Pipeline, two-way between Brisbane and the Gold Coast
- the Eastern Pipeline Inter-connector, two-way between Redlands and Logan
- the Northern Pipeline Inter-connector Stage 1, between the Sunshine Coast at Caloundra and Brisbane.

These interconnections enable the coordinated management of treated water supplies across SEQ, allowing:

- water to be moved from areas of surplus to areas that face a shortfall
- risk to be managed on a regional level, rather than on an individual storage or system basis
- supply costs to be optimised, taking into account a range of factors including demand, storage levels and the variable costs of treating and transporting water.

In addition, a 38-kilometre pipeline connecting Wivenhoe Dam to Cressbrook Creek Dam has been completed. The pipeline became operational in January 2010, initially providing the capacity to supply up to 10 000 megalitres per year of untreated water to Toowoomba.

5.2 Projects currently underway

A range of catchment management works will soon be undertaken throughout the Logan River Basin. These works will be integrated with a total water cycle management plan for the Logan and Beaudesert areas, which seeks to optimise the overall outcomes for water supply, waterway health and wastewater management. The total water cycle management plans will incorporate the other projects currently underway, which are detailed below.

Wyaralong Dam is scheduled for completion by the end of 2011. Detailed planning of the Wyaralong water treatment plant is being led by a joint Seqwater—Department of Infrastructure and Planning project team. This planning will provide an accurate assessment of the construction timeframes and costs for the water treatment plant. In the latter half of 2010, the QWC will make a recommendation to the Queensland Government on overall timeframe for the water treatment plant based on the regional water balance and the construction timeframes and costs. The goal is to ensure that the water treatment plant is available to meet growth in demand in the most cost-efficient way.

Planning and preliminary design works have commenced for two interconnecting pipes to bring water from the Logan River system (Cedar Grove Weir, Bromelton Off-stream Storage and Wyaralong Dam) into the SEQ Water Grid. These are:

- the Cedar Grove Connector, from the proposed Wyaralong water treatment plant to the Southern Regional Water Pipeline
- the Karawatha Inter-connector, from the Southern Regional Water Pipeline to Kuraby in Brisbane.

These pipelines will enhance the operating flexibility of the SEQ Water Grid by allowing water to be transferred from the Logan River system into the Brisbane area, Beaudesert and parts of the Logan City Council area.

The Cedar Grove Connector is expected to be built at the same time as Stage 1 of the Wyaralong water treatment plant, to connect to the SEQ Water Grid. The Karawatha Inter-connector will be built, if required, to improve the operational efficiency of the SEQ Water Grid.

Work is progressing on Hinze Dam Stage 3, which is scheduled to be completed by December 2010. This involves raising the dam wall by 15 metres, which will increase water supply from Hinze Dam by at least 6000 megalitres per year and provide additional flood mitigation for downstream communities.

The Northern Pipeline Inter-connector Stage 2 will provide a two-way connection within the Sunshine Coast. As part of the project, reverse flow capacity will also be installed onto the Stage 1 Inter-connector. The project is scheduled to be completed by the end of 2011.

The Northern Pipeline Inter-connector Stages 1 and 2 will ensure that the same level of security can be provided to the Sunshine Coast as to the rest of SEQ. Without connection to the remainder of the SEQ Water Grid, dams on the Sunshine Coast would remain vulnerable to severe drought. Although usually reliable, these dams are relatively small, with a storage-to-yield ratio of less than half that of the Brisbane River system. As a result, drought response plans for the Sunshine Coast region, as a stand-alone system, would need the ability to be implemented within a relatively short period of time—less than 18 months. By comparison, a desalination facility requires at least three years to construct; although this time might be shortened by pre-planning for a preferred site, it would be unlikely to be shortened by more than about six months.

The Northern Pipeline Inter-connector Stages 1 and 2 will also ensure that adequate supplies are maintained in normal conditions, regardless of the location and timing of the next supply on the Sunshine Coast. Without the pipeline, an additional supply capacity of between 10 000 and 40 000 megalitres per year would have been required for this area by 2026, depending on population growth and the extent to which average consumption remained below pre-drought trends.

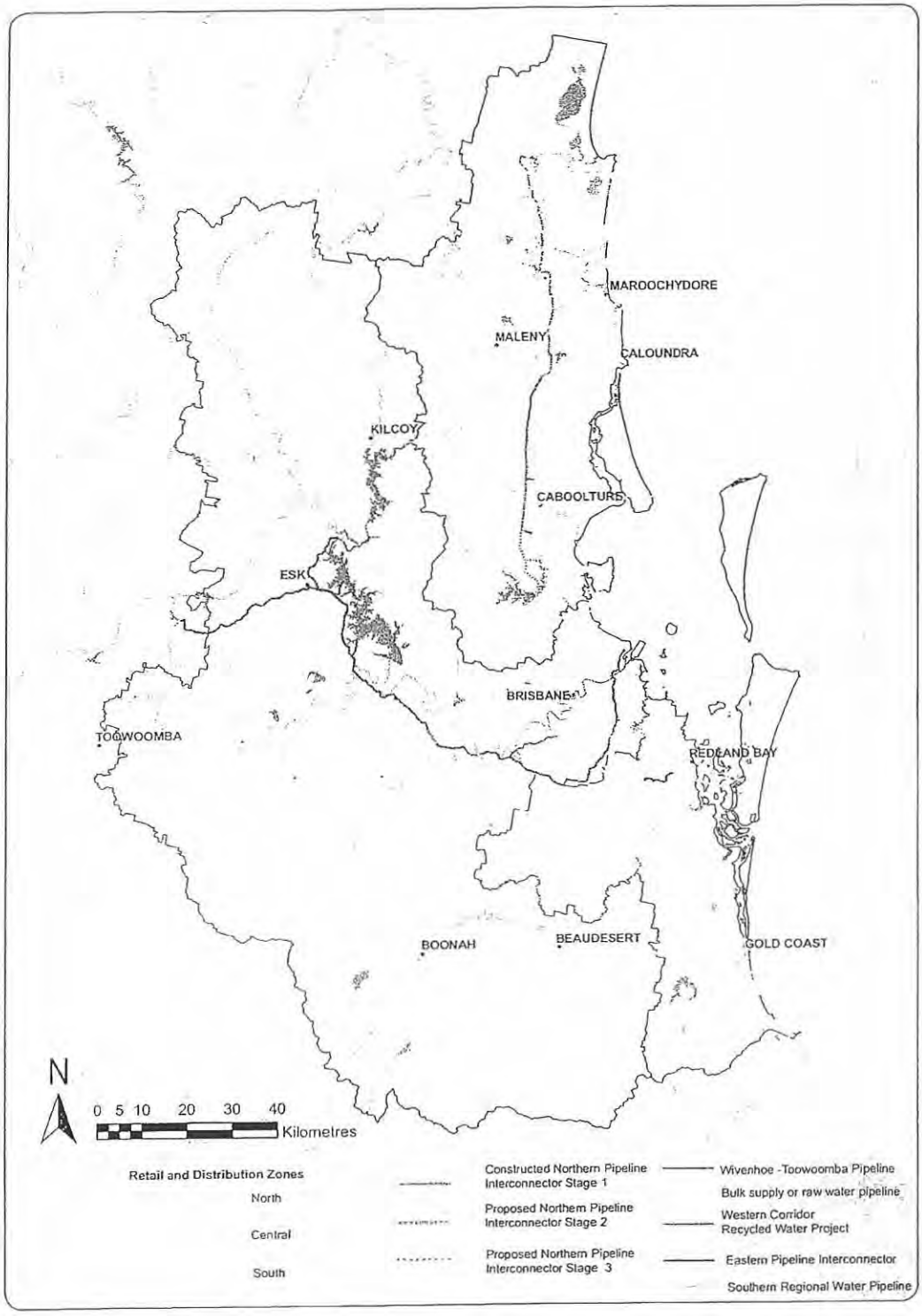
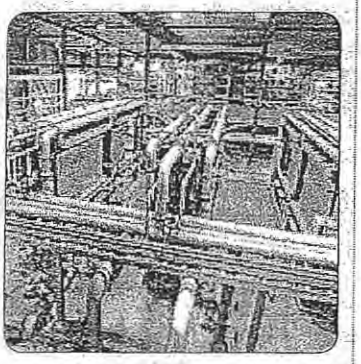


Figure 5.2 SEQ Water Grid interconnections

Major projects

Western Corridor Recycled Water Scheme



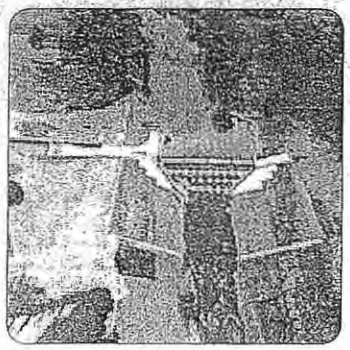
The Western Corridor Recycled Water Scheme is one of the largest purified recycled water schemes in the world. It has the capacity to supply up to 84 680 megalitres per year of high-quality water to power stations and industry, and to replenish Wivenhoe Dam. Water is also available for supply to irrigators in the Lockyer Valley and below Wivenhoe Dam when not required for urban purposes.

The Western Corridor Recycled Water Scheme comprises three advanced water treatment plants at Luggage Point, Gibson Island and Bundamba that treat wastewater from six wastewater treatment plants. The project was completed in 2008.

South East Queensland (Gold Coast) Desalination Facility

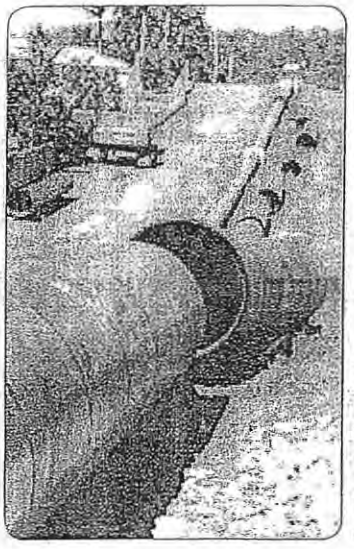
Construction of the SEQ (Gold Coast) Desalination Facility at Tugun was completed in early 2009. The plant has the capacity to supply 46 000 megalitres per year of water into the SEQ Water Grid.

Logan River system



The Cedar Grove Weir and Bromelton Off-stream Storage were completed in December 2007 and July 2008 respectively. The storages are currently releasing water for treatment at South Maclean Weir and supply to areas between Cedar Grove and Logan City.

The Wyaralong Dam is scheduled for completion before the end of 2011. This dam will be operated in conjunction with the Bromelton Off-stream Storage and the Cedar Grove Weir. The three storages are all located in the Logan River catchment. When operated together, the projects will be able to supply more than 30 000 megalitres per year to SEQ.



Interconnections

The SEQ Water Grid is made up of a group of water supply sources connected by a series of large water pipelines.

The key interconnecting pipelines are the:

- the Northern Pipeline Inter-connector between the Sunshine Coast and Brisbane
- the Southern Regional Water Pipeline between the desalination plant at Tugun and Mt Crosby
- the Eastern Pipeline Inter-connector between the Heinemann Road reservoir in Redlands and the Kimberley Park Reservoir in Logan.

The Northern Pipeline Inter-connector Stage 1, Southern Regional Water Pipeline and Eastern Pipeline Inter-connector are all complete and operational. The Northern Pipeline Inter-connector Stage 2 is due for completion in 2011.

The Toowoomba pipeline, between Wivenhoe and Cressbrook Creek dams, became operational in January 2010.

5.3 System yield

The maximum amount of water permitted to be extracted from existing surface and groundwater supplies in SEQ has been established through water resource plans. These plans are implemented through resource operations plans, which have been completed for all SEQ catchments except the Mary River. The resource operations plans specify the operating rules for all dams and weirs. These processes are explained in Chapter 2.

The water resource plans allocate about 530 000 megalitres per year of water from existing major sources of supply for urban use in SEQ. Some 525 000 megalitres per year has been allocated for communities physically attached to the SEQ Water Grid, with the remaining approximately 5000 megalitres per year supplying communities with stand-alone sources of supply. These allocations have differing levels of reliability, and were commonly determined using the Historical No Failure Yield approach without a contingency for drought worse than anything on record.

The Strategy seeks to improve the security of supply in SEQ. One of the means of achieving this has been to apply the LOS approach to assessment of system yield, as described in Chapter 3. By applying the LOS objectives selected for SEQ, less water will be used for urban purposes than is permitted under water resource planning.

The QWC will continue its storage yield investigations, researching the effects of infrastructure operations on evaporative losses, as well as evaluating physical evaporative options.

Operating the SEQ Water Grid

The SEQ Water Grid Manager directs the operation of the SEQ Water Grid, in accordance with the rules described in the SEQ System Operating Plan.

The SEQ System Operating Plan is designed to help achieve the LOS objectives for the region. It guides the SEQ Water Grid Manager in the operation of the SEQ Water Grid. The SEQ System Operating Plan balances the need to maximise water supply security with the need for least-cost operation. It will allow for the take of water from specific sources to vary over time depending on a range of factors, including inflows to dams, operating costs and risk management. The SEQ System Operating Plan is available on the QWC website.

5.3.1 Yield of existing sources and projects currently underway

The LOS system yield will increase from about 485 000 megalitres per year in 2009 to about 525 000 megalitres per year of high priority (Category A) water in 2011, following completion of committed projects. This yield will further increase over time to 545 000 megalitres per year as the Western Corridor Recycled Water Scheme reaches full capacity. Industrial use of purified recycled water will also increase over time.

An additional 32 000 megalitres per year of recycled water is available from the Western Corridor Recycled Water Scheme for rural irrigation (Category B). These Category B supplies will be diverted to Wivenhoe Dam in the event that SEQ Water Grid storage levels decline to 40 per cent of storage capacity. Category B supplies depend on commercial negotiation and could increase over time to about 37 000 megalitres per year, depending on urban demands and increases in wastewater supply to feed the Western Corridor Recycled Water Scheme.

Purified recycled water supplied from the Western Corridor Recycled Water Scheme to the power stations and other industrial users is considered as high priority (Category A) use and is included in the LOS system yield of 545 000 megalitres per year, as these uses would otherwise need to be supplied from other high reliability supplies.

The total combined system yield at 2011 is 553 000 megalitres per year (Categories A and B), increasing to 584 000 megalitres per year over time as the Western Corridor Recycled Water Scheme reaches full capacity.

Depending on the drawdown of sources in the interconnected SEQ Water Grid, there are many alternative scenarios that can achieve the LOS system yield of 545 000 megalitres per year of Category A supplies. Table 5.1 presents an average supply scenario using the existing and committed water sources. It includes the benefit of operating the SEQ Water Grid as a system. The actual amount extracted from any specific source will vary from year to year depending on climate patterns and other influences.

Table 5.1 Supply from existing and committed sources to obtain SEQ LOS system yield

System	Urban allocation (Megalitres per year)[1]	Average contribution to LOS yield (Megalitres per year)	Storage volume (Megalitres)	Minimum operating volumes (Megalitres)
Dams and weirs				
Mary Basin Water Resource Plan area				
Baroon Pocket Dam	36 495	21 900	61 000	4 500
South Maroochy system (Cooloolabin, Wappa, Poona dams)	16 500	7 800	19 470	570
Ewen Maddock Dam	4 315[2]	2 300	16 700	450
Lake Macdonald	3 500	3 300	8 000	800
Borumba Dam	10 144	5 300	46 000	510
Moreton Water Resource Plan area				
Brisbane River system (Wivenhoe, Somerset and Gold Creek dams, Lake Manchester, and Mt Crosby Weir)	285 545	256 300	1 574 650	13 840
Enoggera Dam	1 700	900	4 500	10
North Pine Dam	59 000	33 700	215 000	2 100
Lake Kurwongbah	7 000	3 200	14 370	~ 500
Caboolture Weir	3 600	3 600	1 300	130
Moogerah Dam	890	800	83 700	1200
Toowoomba Pipeline		10 000		
Logan Basin Water Resource Plan area				
Leslie Harrison Dam	7 640[3]	4 300	24 800	2340
Logan River system (Maroon Dam, Cedar Grove Weir, Wyaralong Dam, Bromelton off-stream storage)	19 856 (+ ~ 25 000[4])	36 900	157 140	19 500
Gold Coast Water Resource Plan area				
Hinze Dam	76 300 (+ ~ 7 700[5])	56 300	161 070	2180
Little Nerang Dam			8 400	200
Total dams and weirs	**532 485 (+ ~ 32 700)**	**446 600**	**2 396 100**	**~ 48 830**
Groundwater[6]				
Bribie Island		8 400		
Brisbane aquifers (Algester, Chandler, Forest Lake, Sunnybank, Runcorn)		-[7]		
North Stradbroke Island		9 000		
Total groundwater		**17 400**		
Manufactured water				
SEQ (Gold Coast) Desalination Facility	46 000	46 000[8]		
Western Corridor Recycled Water Scheme	84 680	35 000[9]		
Total manufactured water	**130 680**	**81 000**		
LOS system yield		545 000		

1 Sourced from existing resource operations plans, interim resource operations licences and preparatory information associated with current operating plan development.

2 When the Mary Basin Resource Operations Plan, is released, it is expected to include a licence for taking water from Addlington Creek for 2900 megalitres per year and a licence to take water from the Mooloolah River for 1415 megalitres per year.

3 Expected volume to be included in the final Logan Basin Resource Operations Plan, based on calculations by SunWater.

4 Bracketed values indicate anticipated allocations to be associated with Wyaralong Dam.

5 Bracketed values indicate anticipated allocations to be associated with the Hinze Dam upgrade.

6 Groundwater entitlements are estimated average water take.

7 The sustainable take of these aquifers is currently being determined. A conservative approach has been taken and the yield has been excluded from the calculation of LOS system yield.

8 The desalination facility also increases the LOS system yield by providing the security to take more water from dams. These increases have been included in the take from dams.

9 Supply for high priority (Category A) uses only, including supply to power stations and industry. In normal operating mode, the Western Corridor Recycled Water Scheme also increases the LOS system yield by providing the security to take more water from dams. These increases have been included in the take from dams.

Table 5.1 also highlights some of the differences between SEQ's dams. Without being connected to the SEQ Water Grid, dynamic smaller coastal storages, such as Baroon Pocket Dam, would be vulnerable to severe drought—particularly as the demand approaches the LOS system yield. These dams have high yield-to-storage volume ratios, meaning that the time available to respond to a water crisis would be short.

Figure 5.3 illustrates LOS system yield over time as the projects currently underway are completed and commissioned. It also illustrates the Category B and combined yield.

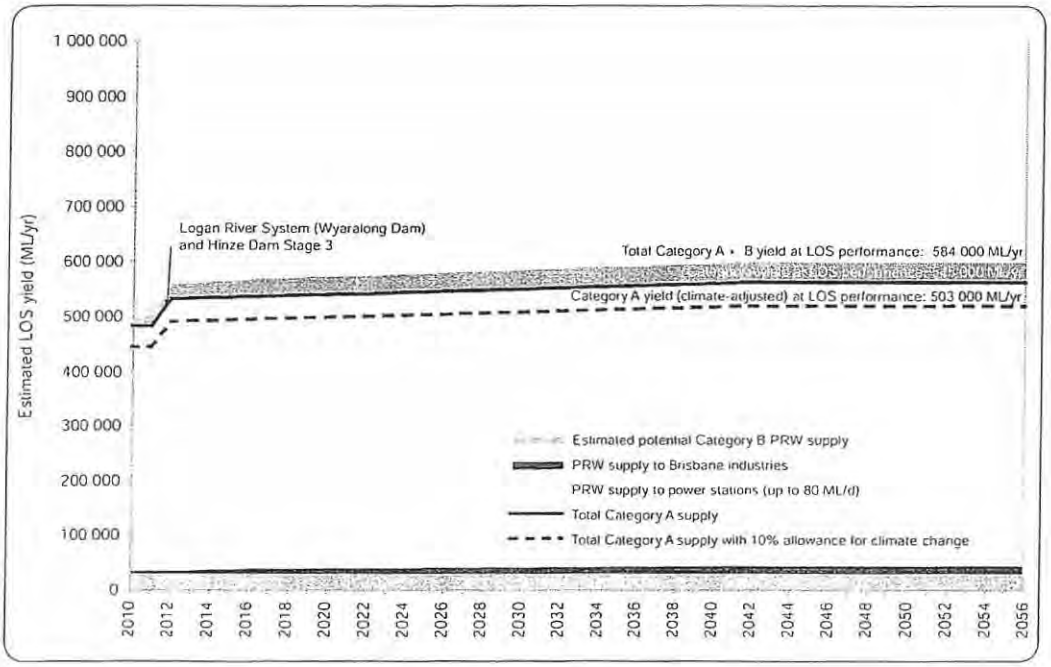


Figure 5.3 System yield of existing and committed infrastructure

Figure 5.4 shows the composition of supplies from the SEQ Water Grid following completion of the committed projects when fully utilised. By comparison, prior to the construction of the SEQ Water Grid, 95 per cent of the region's water supplies were sourced from dams and weirs. The Western Corridor Recycled Water Scheme is included at capacity.

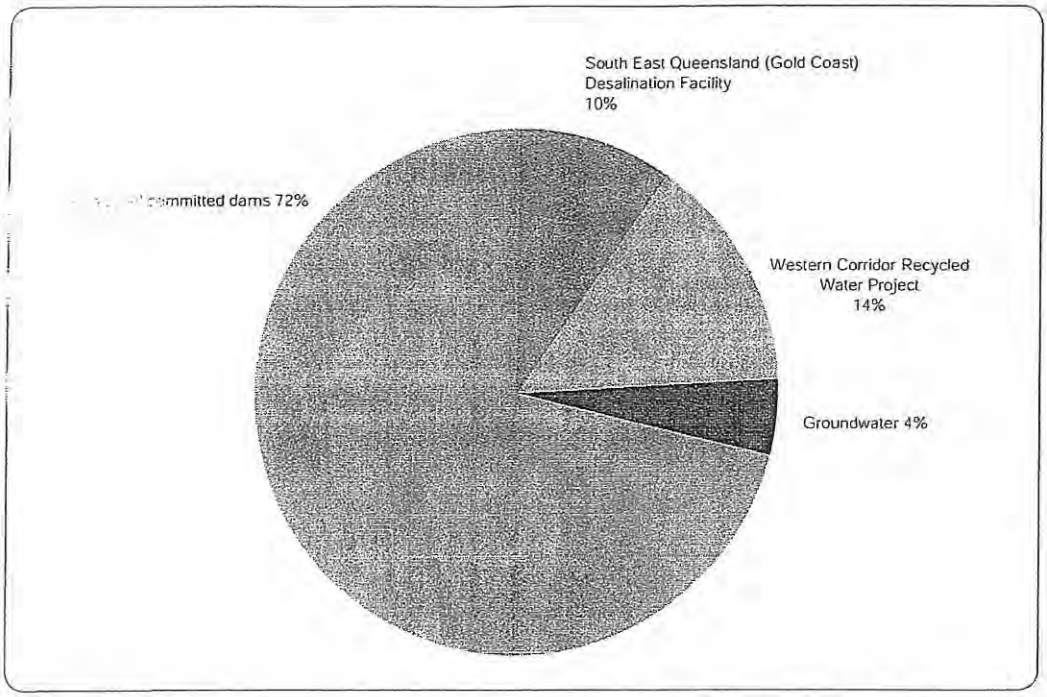


Figure 5.4 Supply distribution from existing and committed infrastructure in 2012

Figure 5.5 illustrates the impact of the LOS system yield on the level of key Water Grid storages using recorded inflows. The analysis is for existing infrastructure and committed projects,where demand equals the LOS system yield and the SEQ Water Grid is operated at capacity. In this scenario, over the past 100 years, restrictions would only have been triggered twice and preparations for constructing new drought-response infrastructure commenced once, as a response to the Millennium Drought. As described in Section 6.1, demand is forecast to equal supply between 2021 and 2033.

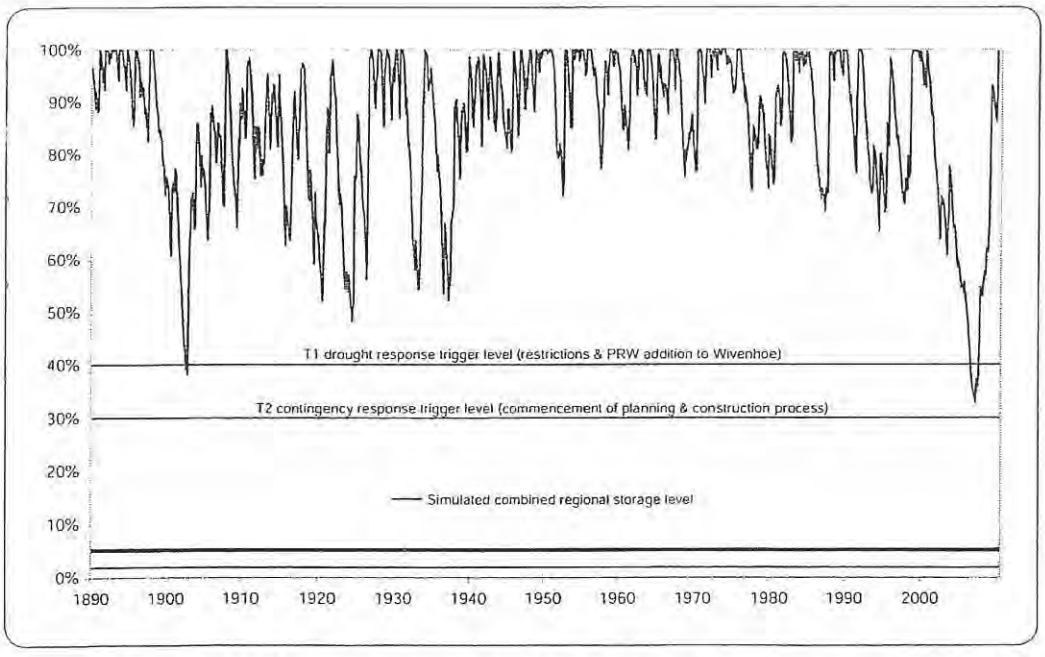


Figure 5.5 Simulated SEQ Water Grid levels based on historic inflows and operation at LOS system yield

Interconnection and diversification benefits of the SEQ Water Grid

An interconnected and diversified SEQ Water Grid increases the LOS system yield above the combined LOS yields of the discrete water supply systems.

Benefits of interconnection

The benefits of interconnection come about because local demands do not need to be met exclusively by local supplies. Likewise, any excess water in a local system can be diverted to supply other areas, rather than be lost as overflow or spill from a dam.

Further benefits can be realised through the cooperative operation of infrastructure that harvests and stores water, and thereby maximises system yield.

Modelling of the regional water balance in two different modes—connected and disconnected—has determined that if the sources of supply existing in 2006 were operated as a connected SEQ Water Grid, there would have been an estimated increase in the system yield of about 14 per cent.

Benefits of diversification

A dam operated in conjunction with a desalination facility or purified recycled water scheme has the potential to yield a greater supply than the same dam operated in isolation.

Desalination facilities and purified recycled water schemes can deliver these benefits as standby facilities—increasing the amount that can be taken from dams when storage levels are high. This mode of operation reduces operating costs and energy consumption.

Purified recycled water will be available to augment Wivenhoe Dam in severe drought, extending the period before drought response infrastructure is needed. The Western Corridor Recycled Water Scheme does not need to be used to augment Wivenhoe Dam at all times, which means that the water can be made available to irrigators on an interruptible basis without affecting the security of supply for urban users.

Without the benefit of the Western Corridor Recycled Water Scheme (WCRWS) introducing purified recycled water into Wivenhoe Dam when the combined key storages fall to 40 per cent of total capacity, the system yield would reduce from 545 000 megalitres per year to about 445 000 megalitres per year (refer to Figure 5.6a).

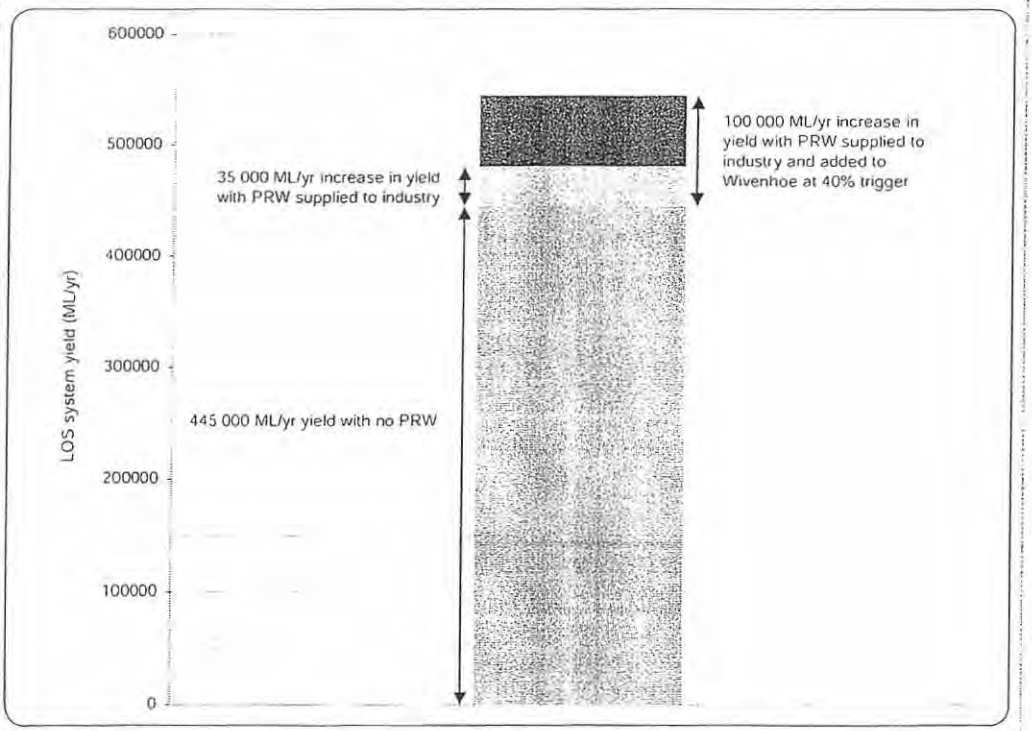


Figure 5.6a Standby value of PRW into Wivenhoe Dam

Using purified recycled water to augment Wivenhoe Dam only when key Water Grid storages fall to 40 per cent of capacity reflects an optimal operating strategy at this time. Using purified recycled water to augment the dam more frequently would have a relatively small impact on the system yield, while significantly increasing our operating costs. It would defer the need for the next major source of supply by up to about 18 months. Figure 5.6 illustrates the impact of varying the trigger level on LOS system yield.

However, when dam levels drop below the 40 per cent trigger point, it is vital that purified recycled water is introduced to Wivenhoe Dam to ensure that LOS is maintained. Figure 5.6b shows that reducing the trigger point would have a relatively significant impact on the LOS system yield.

The impact of varying the trigger depends on the volume of purified recycled water that is supplied directly to power stations, industry and new residential developments, as illustrated in Figure 5.6. The Strategy is based on purified recycled water directly supplying about 35 000 megalitres per year for urban uses including power stations. Higher levels of substitution would increase the LOS system yield and defer augmentation of bulk water supplies.

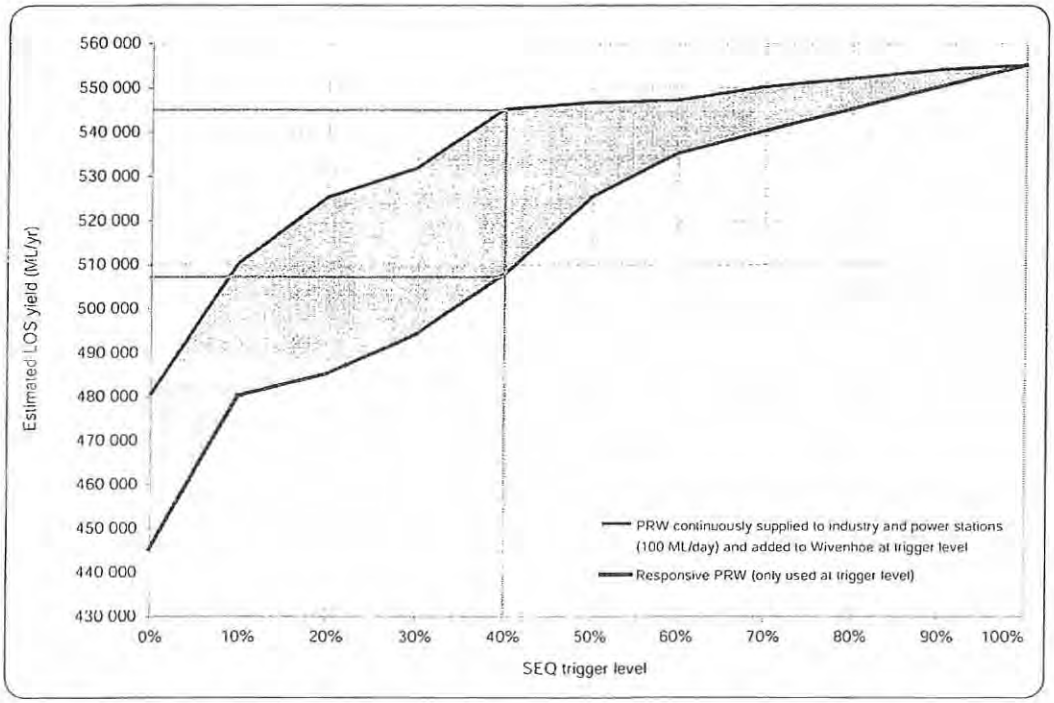


Figure 5.6b Impact of varying the trigger for augmenting Wivenhoe Dam

5.3.2 Potential impacts of climate change

A scenario analysis has been undertaken assuming a 10 per cent reduction in the LOS system yield of surface storages across SEQ due to climate change.

When this climate change scenario is applied, the LOS system yield, including committed infrastructure and the benefits of establishing and operating the SEQ Water Grid, is estimated to reduce from 545 000 megalitres per year to 503 000 megalitres per year. This is shown in Figure 5.3. The system yield in times of drought is discussed in Section 5.3.3.

Case studies have been undertaken for the catchment areas in the western parts of SEQ, as explained in Section 5.3.3. These case studies indicated that changes to annual rainfall could result in annual stream flow for the Brisbane River downstream of Mt Crosby Weir reducing by up to 28 per cent in a dry scenario or increasing by up to 14 per cent in a wet scenario. A preliminary analysis indicates that the upper limit of predicted reduced annual inflows of 28 per cent would result in approximately a 17 per cent reduction in the yield of the system, operating in isolation.

Ongoing work is being undertaken to refine climate impact assessments across the whole of SEQ (refer to Section 3.2). As climate change is unlikely to have a significant impact on supplies in the near future until this work is completed portfolios for new infrastructure will not include climate change impacts

(refer to Section 6.4). However, construction of new infrastructure will be brought forward if evidence of a reduction in yield emerges or if a severe drought triggers the need to construct additional climate resilient or climate independent supplies as part of a drought response plan.

5.3.3 Climate independent and climate resilient supplies

Climate independent and climate resilient water supplies include:

- desalinated water
- recycled water
- the component of inflows to dams that can be relied on under extended and severe drought conditions
- extractions from groundwater aquifers that can be relied on under extended and severe drought conditions.

Producing drinking water from a desalination plant does not depend on the weather. By comparison, producing purified recycled water could be affected by the weather if water restrictions were introduced and access to wastewater was limited. However, at the targeted reduction in demand of 15 per cent in future droughts, Medium Level Restrictions would be highly unlikely to significantly reduce the yield of the Western Corridor Recycled Water Scheme.

Calculating the climate resilient supplies available from dams and aquifers depends on the selection of an appropriate inflow sequence to represent an extended or severe drought. This is discussed in detail in Section 3.1.6. The climate resilient water supplies in the region have been calculated based on the adopted drought inflow sequence. The yields are presented in Table 5.2.

Table 5.2 Climate independent and climate resilient supplies from existing and committed sources

Water supply source	Climate independent and climate resilient yield (Megalitres per year) in severe drought	Indicative contribution to LOS yield (Megalitres per year) in normal times
SEQ surface and groundwater		
• Northern SEQ		89 500
• Central SEQ		268 000
• Southern SEQ		106 500
Subtotal	*220 000*	*464 000*
SEQ (Gold Coast) Desalination Facility	46 000	46 000[1]
Western Corridor Recycled Water Scheme	84 680[2]	35 000[1]
Total	**350 680**	**545 000**

[1] Supply to high priority (Category A) uses. The desalination facility and Western Corridor Recycled Water Scheme also increase the LOS system yield by providing the security to take more water from dams. This benefit has been included in the yield from surface water.

[2] Assumes that sufficient treated effluent will be available to operate at capacity. Treated effluent flows will increase over time due to population growth. Alternatively, flows could be increased by transferring treated effluent from Loganholme to Gibson Island.

Following the completion of the committed projects, climate resilient and climate independent supplies are forecast to increase to about 331 700 megalitres per year in 2012. These supplies will comprise about 63 per cent of LOS system yield at that time. Climate resilient supplies will increase to 350 700 when the Western Corridor Recycled Water Scheme reaches capacity. The volume of available climate resilient yields in the region is critical to the calculation of the drought storage reserve and the T1 and T2 triggers (as described in Section 3.1.6).

The QWC is investigating options to enable the Western Corridor Recycled Water Scheme to operate at capacity should a drought occur in the short to medium term. Options under investigation include:

- diverting additional wastewater into the catchment of the Gibson Island wastewater treatment plant
- transferring treated effluent from the Loganholme wastewater treatment plant to the Gibson Island advanced water treatment plant.

These options would reduce treated effluent discharges to the Logan River, contributing to improved waterway health.

5.4 Potential future water sources

It is important that the best supply options and pipeline routes are preserved now to prevent inappropriate development on or near the sites and to enable a timely and well-informed response to demand growth and future droughts.

The following categories of potential water supply sources have been considered in developing the Strategy:

- desalination
- dams and weirs
- stormwater harvesting to dams
- purified recycled water
- groundwater
- water trading
- supplies outside SEQ.

Rainwater, stormwater and other types of recycling are addressed in Section 4.6, as opportunities to reduce demand for SEQ Water Grid water.

5.4.1 Desalination

Water supply by desalination became part of the SEQ Water Grid in early 2009, when the SEQ (Gold Coast) Desalination Facility commenced operation.

New desalination plants present an option for additional climate independent supplies. Preserving sites where future supply sources might be required is good planning to ensure that we are ready to respond to future droughts that might occur.

How does desalination work?

There are two widely applied and commercially proven desalination technologies—thermal (evaporative) and membrane-based (reverse osmosis). Thermal desalination involves boiling water and condensing the vapour, leaving the impurities behind. Membrane-based desalination involves forcing water at very high pressure through a semi-permeable membrane. Impurities are too large to fit through the pores of the membrane.

Historically, thermal methods have dominated the desalination market. Thermal desalination requires more energy than membrane-based methods, but tends to be more robust. Thermal methods can accept variable feed quality, while reverse osmosis usually requires extensive pre-treatment.

Desalination by reverse osmosis is now the most common process, following recent advances in membrane technology. Reverse osmosis is being used in all major desalination plants in Australia, including at Tugun.

The Queensland Government has announced priority sites for potential future desalination sites in SEQ at Lytton and Marcoola. Table 5.3 lists the site details.

Reserve sites have been identified at Bribie Island and at Tugun. At Tugun, duplication of the facility could be over land currently occupied by a wastewater pumping facility and landfill waste site. Triplication into the sporting fields to the north of the site has been excluded from further investigation. Table 5.3 lists the site details.

Table 5.3 Priority and reserve desalination sites

Category	Site	Property description	Owner
Priority	Lytton	Lot 49 SP193294	State of Queensland
	Marcoola	Lot 753 CG3375	Sunshine Coast Regional Council
Reserve	Tugun (duplication of existing facility)	Lot 30 SP197355	Gold Coast City Council / State of Queensland
	Bribie Island	Lot 67 SP214143	State of Queensland

Alternative sites were investigated at Brisbane Airport and Fisherman Islands. These sites were found to be viable, but are currently not available for development and are therefore not considered to warrant preservation. The current preferred site at the mouth of the Brisbane River would be reviewed, if either of the Brisbane Airport or Fisherman Islands sites becomes available for development prior to significant investment in early works and early construction on the Lytton site.

Technological advances could improve the viability of some sites in the future. Reviews will also take into account population growth and augmentations of the SEQ Water Grid, which might affect where future supplies are required.

Due to environmental considerations the Kawana and North and South Stradbroke Island sites, which were identified in the draft Strategy, have been excluded from any further consideration.

Phase 1 and Phase 2 detailed investigations

Detailed site investigations were undertaken in two phases between 2006 and 2009.

The first phase involved several rounds of investigations by consultants, and identified six potential sites. The QWC considered potential sites along the coastal strip from the New South Wales border to Noosa, including the islands of Moreton Bay and the tidal parts of major rivers, particularly the Brisbane River. Information from previous Gold Coast and Sunshine Coast desalination siting studies was incorporated into the review. The investigations highlighted that opportunities for locating additional desalination facilities in SEQ are limited. The key constraints were the shallow protected areas of Moreton Bay and the extent of urban development and conservation areas along the Sunshine Coast and Gold Coast.

Through consultation on the draft Strategy, additional sites were identified by landholders at:

- Brisbane Airport, on Commonwealth land leased by the Brisbane Airport Corporation
- Fisherman Islands, on Port of Brisbane Corporation land.

The option of expanding the SEQ (Gold Coast) Desalination Facility at Tugun was also considered.

The second phase of investigations was conducted during 2008 and 2009 for the nine potential sites identified in initial investigations and during subsequent consultation. The second phase involved:

- identification of potential environmental and social issues
- engineering pre-feasibility studies to determine the full extent of works required
- preliminary economic assessment of capital and operating costs
- further brine dispersion modelling and mapping of ecologically significant areas in Moreton Bay
- a pre-feasibility study for the expansion of the SEQ (Gold Coast) Desalination Facility
- investigation into potential airport operation issues at the Sunshine Coast Airport.

The priority and reserve sites were selected based on regional water balance considerations and detailed site investigations. In relation to the regional water balance, the sites were selected to:

- potentially accommodate desalination facilities with a combined capacity in excess of 1000 megalitres per day, being the potential supply gap at 2056
- maintain diversity in the location of sites within SEQ.

Phase 1 and 2 reports are available on the QWC website.

Desalination site assessments

The priority and reserve sites are the best available desalination sites in SEQ. A number of issues need to be addressed in further detailed planning for each site.

Northern sub-region

Marcoola is the priority site in northern SEQ. Bribie Island is a reserve site.

The Marcoola site was selected as the priority site in northern SEQ due to lesser environmental impacts, lower costs and fewer construction and operational issues.

Marcoola

The Marcoola site is former cane land, devoid of significant vegetation or permanent structures.

The site is adjacent to the proposed second runway for the Sunshine Coast Airport. Advice indicates that operational issues due to the proximity of the two sites are manageable.

Connecting infrastructure must traverse a strip of Mt Coolum National Park to the east of the site. The impact of construction is likely to be minimised by less invasive construction techniques and thorough site rehabilitation once construction is complete. This matter will be addressed as part of Phase 3 detailed planning.

Bribie Island

Bribie Island is a reserve site. While it is one of the best sites in SEQ, a range of issues would need to be addressed as part of detailed planning.

Bribie Island National Park surrounds most of the land parcel containing the proposed site. To access the sea, pipelines would need to traverse a section of the national park that is also part of the Moreton Bay Marine Park, which is a listed Ramsar Wetland.

The pipelines to transport product water from the desalination facility to the SEQ Water Grid would traverse Pumicestone Passage. The passage is recognised on the directory of important wetlands and is zoned Conservation Park under the Moreton Bay Marine Park. Tunnelling could be required in order to avoid unacceptable impacts, increasing the cost of the project.

Power supply to the Bribie Island site would be more expensive than for Marcoola and traffic would need to be managed during construction, particularly around the bridge.

Central sub-region

In the central sub-region, Lytton is a priority site. This designation might be reviewed if and when the alternatives become available for development. If not already developed, the Lytton site could be immediately released for industrial development. Brine dispersion is a key consideration for all sites at the mouth of the Brisbane River.

Lytton

The Lytton site is currently industrial land. No significant constraints exist on the site that would inhibit the construction of a desalination plant.

Brisbane Airport

The site nominated at the Brisbane Airport could be considered as an alternative to the Lytton site. The site is relatively free from environmental constraints. Subject to airport master planning, it could become available after completion of the parallel runway, which is currently scheduled for 2018.

Fisherman Islands

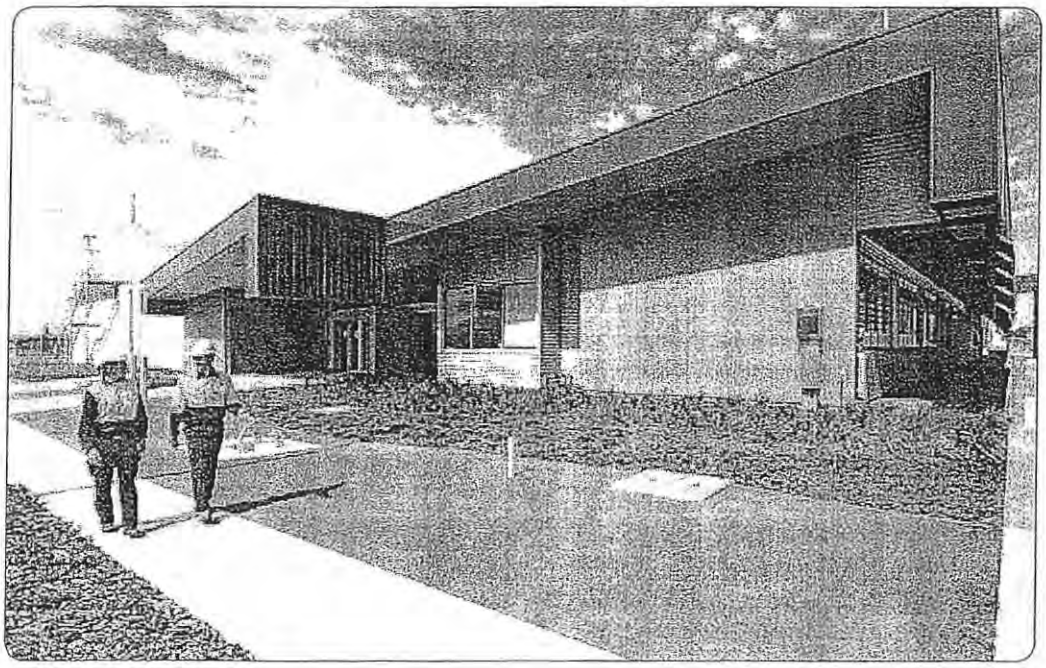
The Fisherman Islands site lies within an operational rail loop at the port. The site is not currently available. In order to develop the site, a planned expansion of the rail loop would need to be completed. Significant ground preparation works would also be required. The Brisbane Airport site is a superior option.

Southern sub-region

No priority sites have been designated in southern SEQ. The reserve site in this sub-region is for a duplication of the existing desalination facility at Tugun.

Duplication of the Tugun desalination facility would involve use of adjoining land occupied by a wastewater pump station, a decommissioned wastewater treatment plant, sporting fields and an active landfill.

Tugun is not a priority site, due to the security of supply in this sub-region with the existing desalination facility and upgrade to Hinze Dam. However, over the long term, demands on the Gold Coast are forecast to exceed existing supplies. Additional capacity at the Tugun site could be used to meet increased local demand, minimising bulk transport costs compared to alternative supplies in other regions.



Future investigations

Detailed investigations of priority sites for desalination have commenced so that they can be delivered whenever required, including as a drought response.

This preparatory phase will culminate in a business case that will recommend the preferred location, size, cost and project delivery mechanism for the facility. The business case is expected to be completed by the end of 2011, for consideration by the Queensland Government.

The business case will recommend a detailed work program for delivering the project when required. Having completed this phase, it could be possible to put the project on hold until about four years prior to when the next facility is required, as guided by the supply and demand balance. Alternative bulk water supplies will also be investigated and, if feasible, might defer the need for additional desalination facilities.

The subsequent phases and key activities are summarised in Table 5.4. This approach will minimise the time and uncertainty involved in construction while providing scope for design innovation at the time that the plant is delivered. In particular, it provides an opportunity for the most recent technologies to be used as part of the detailed design.

Table 5.4 Planning and delivery of the next desalination facility

	Activities	Outcome
Preparatory	• Community consultation • Preservation of sites, land use planning • Identification and preservation of connecting corridors • Detailed engineering options analysis, including for water quality and electricity supply • Detailed review of environmental and cultural factors • Confirmation of environmental approvals processes, including through a referral to the Australian Government Department of the Environment, Water, Heritage and the Arts • Identification of potential project delivery mechanism • Refined cost estimates • Business case for delivering the next desalination facility • Detailed work program, including the approvals process	Recommendation regarding preferred location, size, cost and project delivery mechanism for the next desalination facility
Holding	• Ongoing stakeholder consultation and community information • Baseline environmental monitoring • Feedwater characterisation • Ongoing technology scan • Ongoing review of key assumptions	Detailed and up-to-date basis for project procurement and delivery
Procurement	• Community consultation • Securing of funding • Confirmation of project delivery mechanism • Preparation of project scope and specifications • Acquisition of remaining corridors, if required • Tender, assessment and letting	Engagement of a company to deliver the facility
Design and approvals	• Community consultation • Preliminary design • Piloting of plants • Gaining of environmental and other project approvals • Early works	Approval to construct the facility
Construction	• Community information • Detailed design • Construction • Commissioning • Practical completion and project handover • Monitoring of environmental compliance	An operational desalination facility

The preparatory phase will include consideration of whether it is more cost-effective to construct a larger plant at one site, rather than two smaller plants at different locations. In addition, while the structure and connecting pipelines will all be built as one activity, there could be scope for the treatment trains to be installed in stages.

This phase will also include a review of environmental factors for each site, incorporating terrestrial and marine environmental studies. Input from the key stakeholders will be incorporated and cultural heritage issues addressed, as part of this review. Informed by the review, the approvals process required under the *Environmental Protection and Biodiversity Conservation Act 1999* will be confirmed. The approvals process will inform design and approval stages and the terms of reference for an environmental impact assessment.

A project is already underway to investigate the marine communities that exist in the receiving waters, through the SEQ Healthy Waterways Partnership. This project will determine the range of fauna and flora that live on and in the seabed in the vicinity of a brine discharge point. It will also investigate the resilience of these ecosystems to potential elevations in salinity. Detailed field investigations will be carried out.

The SEQ Healthy Waterways Partnership has also started a project with the CSIRO to develop an enhanced receiving water quality model. The enhanced model will be used to assess the impacts of brine discharges in detail. A range of other issues identified by the Partnership will also be considered as part of detailed planning.

A full assessment of the cultural heritage value of sites will be carried out for both the plant sites and other land that could be required for pipeline construction. Consultation with relevant Indigenous groups will be carried out where required.

Preparatory works will be undertaken for the Marcoola and Lytton sites only. For the Tugun site, the master plan for the local area is being updated to ensure that the potential use of the site for an expanded desalination facility is taken into account. This planning will be undertaken in partnership with the Gold Coast City Council. No further investigations of the Bribie Island site will be undertaken until the need for the site is defined.

Protecting the health of Moreton Bay

Desalination involves removing salt and other impurities from sea water. The salt is then concentrated into a separate stream of high-salinity water, commonly called brine. The most common way of managing the brine is to mix it back into the ocean where it came from. Sometimes this can present environmental risks for the receiving waters, such as Moreton Bay, which has poor flushing characteristics.

The QWC engaged the SEQ Healthy Waterways Partnership to model brine dispersion for different capacity plants and different discharge locations in Moreton Bay, and to provide advice on how species and communities could be affected by the elevated salt concentrations.

Modelling conducted by the SEQ Healthy Waterways Partnership showed that brine dispersion from a 100-megalitre-per-day capacity desalination plant located at the mouth of the Brisbane River would have 'negligible to low risks' on Moreton Bay marine life, with the impacts being further reduced by placing the discharge further out into the bay.

The SEQ Healthy Waterways Partnership recommended that a discharge site located outside the river mouth towards Mud Island could disperse brine from a plant of 73 000 megalitres per year capacity with 'negligible to low risks'.

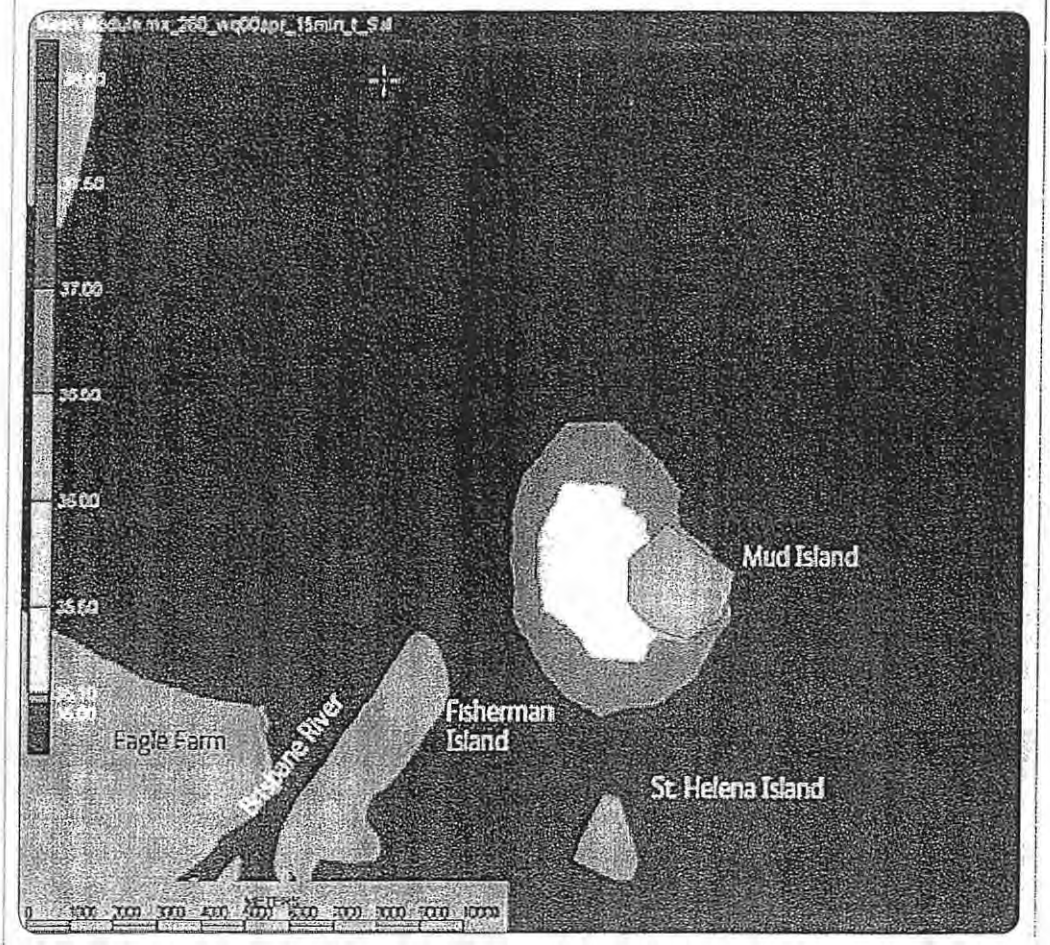


Figure 5.7 Example output from hydrodynamic modelling—median salinity contours

5.4.2 Dams and weirs

Additional surface water supplies could be developed through:

- constructing new dams and weirs
- augmenting existing dams and weirs

  or

- water harvesting during high flow events into off-stream storages.

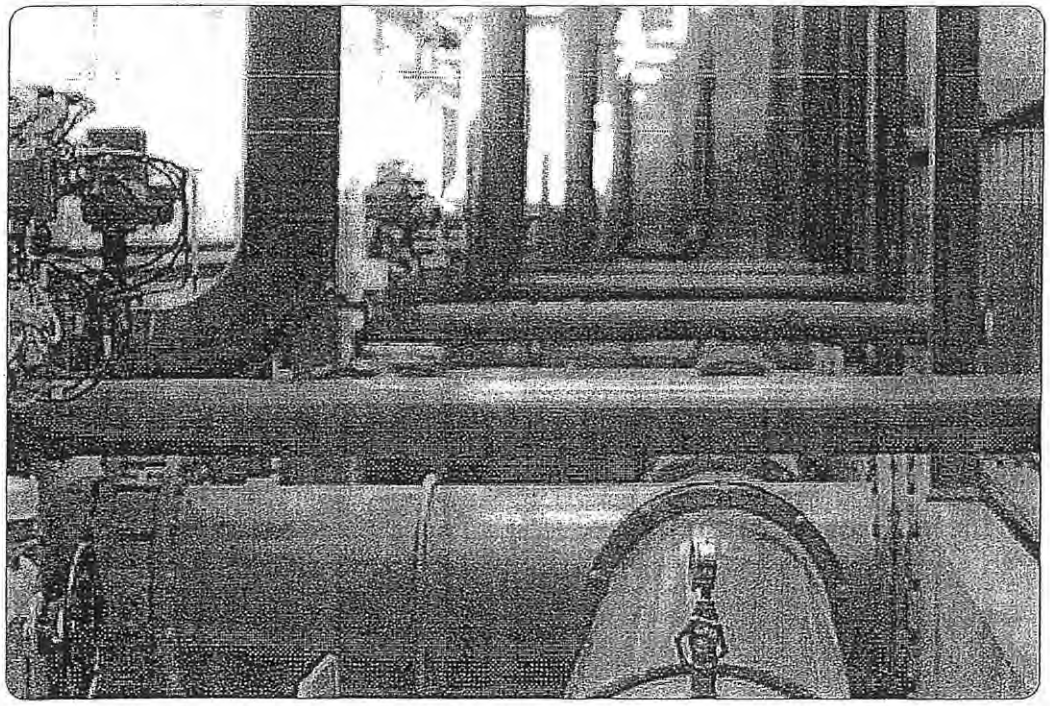
A comprehensive review has highlighted that there are no sound opportunities for developing major new dams in SEQ, beyond committed projects. This is due to the limited availability of additional water for urban use under the water resource plans and the shortage of suitable sites.

Water resource plans specify environmental flow and water allocation security objectives, as described in Section 2.1.3. Through environmental flow objectives, water resource plans for SEQ have already protected a significant portion of surface water flows for the environment.

Water resource plans contain environmental flow objectives at various locations. Table 5.5 specifies the end-of-system flow that must not be jeopardised by future water resource planning decisions in SEQ. This flow is expressed as a percentage of mean annual flow for the area in an undeveloped state. These objectives are a minimum, with actual environmental flows being higher where strategic reserves are not fully allocated for urban or rural use.

Table 5.5 Mean annual flow objectives at river mouth

Water resource plan	Gold Coast	Logan Basin	Mary Basin	Moreton
Location	Mouth of the Nerang River	Mouth of the Logan River	Mouth of the Mary River	Mouth of the Brisbane River
Mean annual flow objective as a proportion of pre-development flows	66 per cent	76 per cent	85 per cent	66 per cent



Mary Basin area

The *Water Resource (Mary Basin) Plan 2006* nominates a strategic reserve of 150 000 megalitres per year as available in the Mary Basin.

The decision of the Commonwealth Minister for the Environment, Heritage and the Arts not to allow the Traveston Crossing Dam project to proceed indicates that it might be challenging to achieve environmental approvals for other water storage projects drawing on this reserve. However, given the limited surface water supply options available to the region, a number of smaller development options will be investigated.

Investigations will be undertaken in partnership with the Department of Environment and Resource Management and in collaboration with Seqwater and the Sunshine Coast and Gympie regional councils. Stakeholder input will be sought in accordance with the proposed project selection process that is outlined in Section 3.5. Options to increase the security and volume of supply to downstream urban and rural users will be considered, including for Gympie.

The options to be investigated include:

- an upgrade to Borumba Dam (Stage 3)
- a weir or pumping pool on the Mary River in the vicinity of Coles Crossing
- one or more off-stream storages
- water harvesting from the Mary River.

Combinations of options will also be considered.

Borumba Dam was raised in 1997 (Stage 2), increasing its storage capacity to 46 000 megalitres. Without water harvesting to the dam, a further (Stage 3) raising to around 350 000 megalitres capacity is considered the upper limit of practical development, taking into account the environmental flow requirements and the probability of filling the dam.

In conjunction with a new weir on the Mary River at Coles Crossing, this raising could provide an additional 20 000 to 30 000 megalitres of water per year. The weir would make available significantly more water than the dam alone, while also providing a pumping pool for extracting water from the Mary River to supply local areas and the SEQ Water Grid.

An off-stream storage could enhance the efficiency of pumping to the dam. Water harvested from the Mary River to the storage could be pumped to the dam over a longer period, reducing the capacity and cost of connecting pumps and pipes. The construction of one or more off-stream storages without pumping to the dam will also be investigated as an option to reduce cost and energy requirements. The off-stream storages could be excavated to below river level and be gravity-fed from the river, or be constructed at a higher level with pumping from the river to the storage.

In addition, the QWC will also investigate options to operate the SEQ Water Grid to provide local benefits. For example, when supply for SEQ exceeds demand, Noosa could be supplied from the Northern Pipeline Interconnector Stage 2 rather than from Borumba Dam. This would enable the SEQ Water Grid Manager to make additional water available from Borumba Dam for local purchase and use, subject to appropriate conditions. This could defer the need for additional supplies in the Mary Basin.

Similarly, should one of the smaller options be viable, the QWC will investigate options to integrate water treatment for the SEQ Water Grid with water treatment for Gympie and other local areas.

The QWC will not investigate further options to raise Borumba Dam to make available 70 000 megalitres per year at a similar level of reliability to Traveston Crossing Dam. A 2007 consultancy report, undertaken as part of the Strategy investigations, estimated that the capital cost of such a scheme was in the order of $3 billion. The scheme would also have high ongoing pumping costs.

Other potential dam options have also been excluded from further consideration, including the construction of dams on:

- Amamoor Creek
- Obi Obi Creek at Kidaman
- Mary River near Cambroon.

The options of future storages on the Mary River (Cambroon) and Obi Obi Creek (Kidaman) were excluded by the Queensland Government from further consideration in a 1994 study due to the high cost and significant environmental and social impacts. The dam on Amamoor Creek would also have significant environmental impacts.

Logan Basin area

In the Logan Basin area, there is still potential for up to around 14 000 megalitres per year of high priority water allocation beyond the allocations for committed projects.

A number of options to make additional water available will be investigated, including:

- raising Cedar Grove Weir
- constructing a raw water pipeline to transfer water from the Bromelton Off-stream Storage to Wyaralong Dam
- constructing a weir on the Albert River, immediately downstream of the proposed Wolffdene Dam site
- constructing an off-stream storage adjacent to the Albert river in the vicinity of the existing Luscombe Weir
- constructing a small on-stream or off-stream storage, in the vicinity of the proposed Glendower Dam site on the Albert River.

Moreton area

In the Moreton Water Resource Plan area, an estimated 25 000 megalitres per year of strategic reserve is available.

The introduction of drought storage reserves has reduced the working volume of dams. This, in turn, has reduced the yield from the storage. In these cases, the reduction can be partially offset by increasing the working storage of the dam. The increase in working storage can be achieved by several methods, including raising the dam wall or modifying the operating rules that balance water storage capacity and flood mitigation capacity. Downstream flood impacts will be a key consideration in investigations into any of these options.

A detailed investigation will be conducted to determine the maximum level to which the working storage of Wivenhoe Dam could be raised without raising the dam wall. The investigation will be carried out in conjunction with Seqwater and the Brisbane and Ipswich City Councils. It will include detailed consideration of:

- the impact on frequency, severity and duration of flooding both upstream and downstream of the dam
- any effect on the structural integrity of the dam and its components or any required spillway upgrades
- environmental and social impacts, including adverse affects on any roads and crossings caused by flooding.

Hydrological investigations will be carried out to determine the increased security of supply or the additional volume of water that could be made available to the SEQ Water Grid while still remaining within the requirements of the water resource plan.

Some of the reserve could be accessed by raising the Mt Crosby Weir. Another possibility is as an additional extraction from Wivenhoe Dam. Some of the reserve might also be accessed in other smaller river systems.

Gold Coast area

In the Gold Coast Water Resource Plan area, an estimated 30 000 megalitres per year of additional high priority water allocation may be made available through the construction of additional infrastructure.

Around 7700 megalitres per year of this will become available through the raising of the wall of Hinze Dam. There is some potential to water harvest from Gold Coast creeks and the Coomera River into Hinze Dam.

5.4.3 Stormwater harvesting to dams

The QWC will investigate opportunities to use stormwater to augment inflows to dams, to improve system yield and benefit the local environment.

Sunshine Coast Water has undertaken preliminary investigations into a scheme for collecting stormwater from the Caloundra South development area to augment Ewen Maddock Dam. The scheme could double the catchment area of the dam, increasing the volume and reliability of supply. It would also reduce stormwater discharges from the development area.

The proposed scheme is likely to be the most feasible in SEQ, because:

- the dam is located only 7 kilometres from the potential development area, meaning that the transfer pipeline would be relatively short

- the dam is at a relatively low height above the potential development area, meaning that the energy required to pump stormwater up to the dam is relatively small
- the dam supplies an advanced water treatment plant with surplus capacity, meaning that upgrades are unlikely to be required
- it is a new development area, meaning that it can be designed around the proposed stormwater harvesting scheme.

A range of issues will need to be investigated before the scheme proceeds, including water quality risks, environmental flow benefits, impacts on the ecology of the dam, and economic viability. The benefits of water-sensitive urban design in removing contaminants of concern will also be considered. The QWC will further investigate the proposal, as part of the proposed sub-regional total water cycle management plan for the area. Investigations will be undertaken in partnership with Seqwater, Unitywater and the Sunshine Coast Regional Council.

Local rainwater and stormwater harvesting are addressed in Section 4.6, as opportunities to reduce demand for SEQ Water Grid water. This includes proposed research projects at Coolum and Fitzgibbon to harvest roofwater for treatment and introduction to water distribution systems.

5.4.4 Purified recycled water

Purified recycled water is wastewater that has been treated to drinking water quality using the best available technology. This high-quality water can be delivered directly to end-users, such as power stations or industries, or used to augment a dam or aquifer. If purified recycled water is added to a dam, natural processes provide an additional environmental and time buffer before treatment of the blended water at the existing water treatment plant and distribution to consumers. More information about the treatment process, including an explanatory video, is available on the QWC website.

The water is subject to water quality monitoring and testing at all stages of this process. In Queensland, purified recycled water must meet health and safety requirements contained in the *Water Supply (Safety and Reliability) Act 2008* and the Public Health Regulation 2005.

Purified recycled water has many benefits:

- Purified recycled water is highly climate resilient. Weather is unlikely to significantly affect the availability of purified recycled water. At the targeted reduction in demand of 15 per cent in future droughts, Medium Level Restrictions would be highly unlikely to significantly reduce the volume of wastewater produced and therefore would not significantly reduce the yield of purified recycled water schemes.
- The treatment process removes about 50 per cent of phosphorus that otherwise would have been released into waterways, rivers and Moreton Bay. Phosphorus from existing wastewater treatment plants is one of the key causes of algal blooms in the Brisbane River and Moreton Bay.
- Energy requirements for purified recycled water are less than for seawater desalination. The pressure required to operate reverse osmosis units is approximately proportional to the salinity of the water being treated. Seawater commonly has a salinity of over 30 times that of treated wastewater, resulting in substantially higher energy requirements. Energy consumption is further discussed in Section 6.8.

Interim Water Quality Report

In February 2009, an *Interim Water Quality Report* on purified recycled water from the Bundamba advanced water treatment plant was published. The report contains the results of more than 8000 tests undertaken during the validation testing program for the plant.

The QWC also published a review from the Expert Advisory Panel, which states that the commissioning of the Western Corridor Recycled Water Scheme is proceeding well, demonstrating that it is capable of consistently producing purified recycled water that is safe to be used to augment Wivenhoe Dam.

Western Corridor Recycled Water Scheme

The Western Corridor Recycled Water Scheme is one of the largest purified recycled water schemes in the world. It has the capacity to supply up to 84 680 megalitres per year of recycled water to industry and power stations and for replenishing Wivenhoe Dam.

Up to 32 000 megalitres per year of recycled water will be available for rural production in the Lockyer Valley and along the middle reaches of the Brisbane River when not required to supplement Wivenhoe Dam. Subject to urban demands, the amount available for supply to irrigators mgiht increase to 37 000 megalitres per year over time as feed water flows to the project increase.

The Western Corridor Recycled Water Scheme will maintain a high level of water quality in preparedness for augmenting water supply as necessary.

An expert advisory panel of world leaders in toxicology, environmental science, microbiology and advanced water treatment provide independent advice on the regulatory framework for purified recycled water and the Western Corridor Recycled Water Scheme. There are nine members on the Panel, which is chaired by Professor Paul Greenfield, AO (Vice-Chancellor, The University of Queensland). More information about the panel is available on the QWC website.

Industrial use of purified recycled water

A number of industrial customers have expressed interest in receiving purified recycled water. The process to receive this water involves negotiations between the industrial customer and the retailer, who negotiates with the SEQ Water Grid Manager for supply and delivery of the purified recycled water to the customer.

The uptake of purified recycled water by current industrial customers is limited by a number of factors:

- Many large industrial users are already using recycled water, including the BP and Caltex refineries.
- The supply of purified recycled water requires dedicated infrastructure, including pipelines to individual customers, pumps, valves and meters, which adds to its cost.
- Many high-volume industrial water users are not situated within a reasonable vicinity of the pipeline that delivers purified recycled water from the Western Corridor Recycled Water Scheme.
- As businesses have established water efficiency management plans (WEMPs), they have already reduced their water consumption.

Over time, there is potential for the supply of purified recycled water via dual reticulation to a number of proposed industrial parks located within reasonable proximity of the Western Corridor Recycled Water Scheme. Planning for supply to industrial areas will focus on locations where one or more large foundation customers can be established to provide an anchor for new recycled water schemes.

Other potential schemes

Increased community confidence in purified recycled water schemes could permit the development of additional schemes and the greater utilisation of the Western Corridor Recycled Water Scheme. The QWC considers that it is prudent to proceed with investigations of these potential schemes, with a view to preserving land for treatment facilities and pipeline corridors if viable.

Two potential purified recycled water schemes have been identified as possible future sources of supply, or as part of the response to a severe drought:

- augmentation of supply to North Pine Dam using purified recycled water produced from the Sandgate wastewater treatment plant and wastewater treatment plants in the Moreton Bay Regional Council area
- augmentation of supply to Hinze Dam using purified recycled water produced from one or more of the Coombabah, Elanora and Merrimac wastewater treatment plants at the Gold Coast.

These additional schemes have the potential to increase the available supply, in total, by about 60 000 megalitres per year by 2056.

The assessment of potential schemes took into account wastewater availability, future water demands, capital and operating costs, options for concentrate disposal, and the potential level of dilution and detention in dams.

Local governments and distributor-retailers should consider alternative uses for any treated wastewater effluent, except that required to feed the Western Corridor Recycled Water Scheme, especially where improvements to the health of receiving waterways can be achieved.

5.4.5 Groundwater

Groundwater resources in SEQ are almost fully developed. The annual volume of groundwater used for urban purposes over the next 50 years is expected to remain largely static. The use of groundwater for rural production is also considered fully developed and, in some cases, over-developed.

Groundwater sources have been developed at Bribie Island and at several aquifers in greater Brisbane. These projects were initiated in 2006 as part of the drought response and are now supplying water to the SEQ Water Grid. The sustainable yield of the Brisbane aquifers is currently being determined.

At this stage, development of any additional groundwater supplies will not be pursued. The identified opportunities within and adjacent to SEQ are generally small and not considered to be economically viable as a regional resource. These opportunities include:

- the offshore sand dune islands, including North and South Stradbroke, Moreton, Bribie and Fraser islands
- localised, onshore sand dune deposits near to the coastline and extending intermittently from Rainbow Beach in the north to the Gold Coast in the south
- an extensive system of mostly fractured volcanic rocks associated with what is known geologically as the Gympie Province, extending from just north of Nambour to Gympie
- sedimentary deposits, mostly sandstones associated with the southern part of the Maryborough Basin and known locally as the Myrtle Creek Sandstone
- limited outcrops of relatively young tertiary basalts in the Maleny, Buderim, Sunnybank, Redland Bay and Tamborine Mountain areas
- reasonably extensive tertiary sedimentary deposits outcropping in the Brisbane metropolitan area to the north and south of the city.

Several of these aquifers were investigated as part of the Millennium Drought. Drilling in the extensive sedimentary deposits associated with the Nambour Basin—extending from north of Maroochydore inland to Maleny and southwards to Caboolture—revealed that the available groundwater supplies are small and do not warrant development as an urban supply.

Of the remaining opportunities, the most significant are the Moreton Island and the Cooloola–Teewah sand masses. These aquifers have not been considered as normal supply options because of their location within national parks and the relatively small quantities that could be extracted without unacceptable environmental impacts.

Increased extraction from the aquifer on North Stradbroke Island was considered as part of the response to the Millennium Drought. The project was not progressed due to the risk of long-term impacts on the sensitive environment of the island. A detailed investigation was undertaken, with potential impacts on Blue Lake and other groundwater dependent ecosystems considered.

Separately, the *Water Resource (Moreton Basin) Plan 2007* has established groundwater management areas in Cressbrook Creek, the Lockyer Valley and the Warrill–Bremer Valley. These management areas are expected to reduce the rate of groundwater extractions to more sustainable levels with the aim of protecting water quality and ecosystem health.

The use of aquifers as storage for recycled water is under consideration as part of the Urban Water Security Research Alliance project, building on earlier work by the CSIRO. Preliminary indications are that a limited number of sites around Brisbane could be developed for stormwater harvesting and aquifer storage. A specific application of aquifer storage and recovery is under investigation on the Gold Coast to store recycled water for irrigation purposes.

5.4.6 Water trading between rural and urban allocations

Water resource plans provide a framework for water trading between water users, as explained in Section 2.1.3. In some cases, this framework can provide for the conversion of medium priority to high priority water allocations, and potentially vice-versa.

For SEQ, converting medium priority water for rural production to high priority water for urban supply is not considered to be a viable alternative for augmenting urban water supplies. In general, rural water allocations are small compared to existing urban demand. With conversion from medium priority to high priority, the volumes would be significantly smaller. Measures to increase the availability of water for rural production are explained in Chapter 6. In the right environment, there could be some small trading opportunities with willing sellers and purchasers of water allocations.

5.4.7 Supplies from outside SEQ

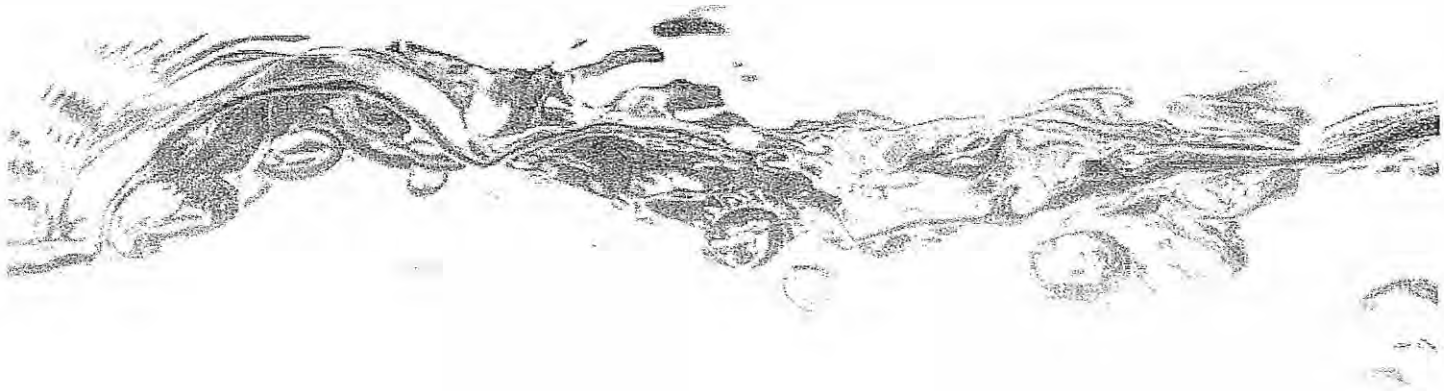
There are opportunities to import water into SEQ from outside the region.

Investigations were completed in October 2007 into a direct pipeline connection between the Burdekin Basin and SEQ. The capital cost estimates for the project were found to be prohibitive at that time. Operating such a scheme would also exceed the total energy cost of a desalination plant. The completed report is available on the Department of Environment and Resource Management website.

Consideration has also been given to supplies from north-eastern NSW, such as the Tweed, Brunswick, Clarence, Richmond and Wilson river catchments. Bulk water supply opportunities were investigated, but were found to be costly compared to committed SEQ projects and to have numerous social and environmental issues.

5.4.8 Supplies from coal seam gas developments

Water extracted as a by-product of coal seam gas developments in the Surat Basin could be a future water supply source for SEQ. Before coal seam gas water is considered for SEQ the highest and best local uses should first be investigated. The supply of coal seam gas water to SEQ for potable use must meet strict water quality regulations. In addition, the supply would be at no cost to the SEQ Water Grid, at least until further water supplies are required.



Chapter 6

The Strategy

This chapter outlines a comprehensive strategy to ensure that SEQ never runs out of water. It describes the water supply and demand management initiatives required to meet the needs of regional growth and provide security of supply during drought.

Key messages

- The Strategy aims to deliver sufficient water to support a comfortable, sustainable and prosperous lifestyle while meeting the needs of urban, industrial and rural growth and the environment.
- Water supply for SEQ is now secure. There is a less than 1 per cent probability of key SEQ Water Grid storages falling to 40 per cent of combined capacity over the next five years, triggering the reintroduction of Medium Level Restrictions.
- The Strategy is sufficiently robust to accommodate uncertainty regarding population growth, lifestyle expectations and climate.
- Demand for water will be managed by continuing to improve structural and operational water efficiency and continuing to encourage efficient water use.
- The Strategy challenges residents to maintain average consumption at or below 200 litres per person per day (Target 200).
- If this target is achieved, new supplies will not be required until around 2027. New supplies could be required from 2021, should the target not be achieved.
- Over time, climate change could reduce the yield of our dams, potentially bringing forward the time at which new supplies are required. The QWC will continue to research the impacts of climate change, in partnership with the CSIRO and local universities.
- Demand management is forecast to almost halve energy consumption for the SEQ Water Grid at 2050, compared to pre-drought trends.
- Local supplies are forecast to reduce demand on the SEQ Water Grid by about 35 000 megalitres per year in 2026 and about 60 000 megalitres per year in 2056.
- The QWC will review the Strategy before providing advice about the next major water supply. Potential supplies will be assessed through a robust and transparent process.
- Additional desalination facilities will underpin future water security. Detailed planning for facilities at Marcoola and Lytton has commenced.
- A range of other options is being investigated that could reduce and defer the need for additional desalination facilities.
- Drought response plans will be prepared for rural towns and for the SEQ Water Grid as a whole.
- 32 000 megalitres per year of recycled water has been made available for rural production.

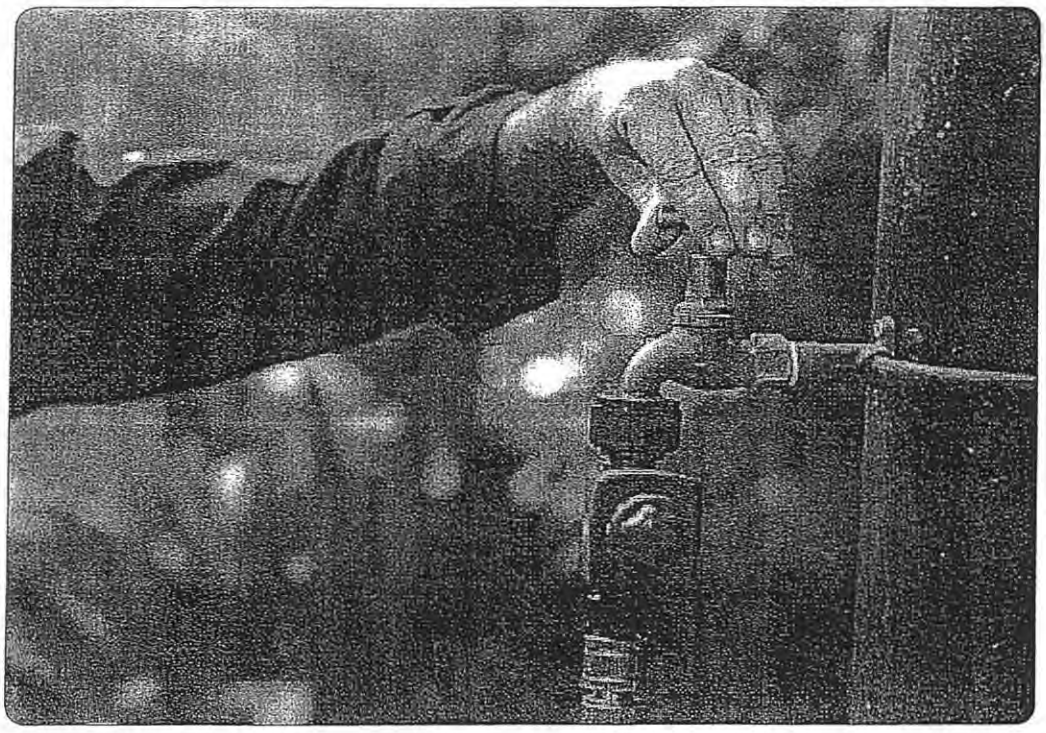
The main purpose of the Strategy is to achieve the LOS objectives. Critical to achieving this outcome is to ensure that water is used efficiently and available supplies always exceed demand.

Many elements of the Strategy are already being implemented. Critical planning elements must be finalised in order to ensure that we are ready to respond to the effects of population growth, consumption trends and climate change.

This chapter applies the planning methodology outlined in Chapter 3 to:

- quantify the potential future supply gap in normal operating mode (refer to Section 6.1)
- identify additional demand management measures (refer to Section 6.3)
- identify a preferred infrastructure program, pending the outcomes of detailed investigations of potential sources of supply (refer to Section 6.4)
- establish drought response plan requirements (refer to Section 6.9).

In addition, the chapter specifically addresses water supplies for rural communities and rural production, water quality, research and development, and energy and greenhouse gas emission implications of the Strategy.



6.1 Water balance

Water supply for SEQ is secure for the short to medium term, due to the SEQ Water Grid being constructed and key Water Grid storages being full or nearly full.

The next major supply will be triggered by demand increasing to the point that it exceeds the LOS system yield or by drought causing dam levels to fall to 30 per cent of capacity.

The next supply is likely to be triggered by demand growth, due to key Water Grid storages being full or almost full. A major new supply might be required in 2021, beyond the completion of projects currently underway. This forecast is based on:

- average total consumption of 375 litres per person per day
- high series population growth.

However, it is more likely that a major new supply will not be required until mid-2020s. For example, a new supply would not be required until around 2026 with:

- average total consumption of 375 litres per person per day
- medium series population growth.

Figure 6.1 presents a scenario for the water balance for Category A supplies to 2056, based on existing infrastructure and projects currently underway, and with demand forecasts based on medium and high series population forecasts.

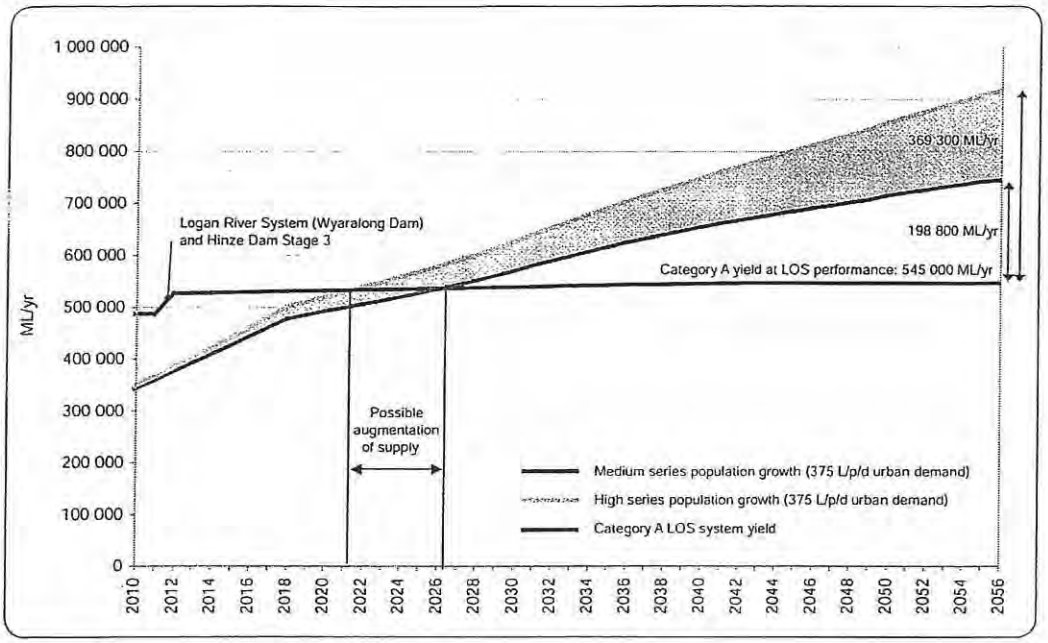


Figure 6.1 Category A water balance in normal operating mode

Figure 6.1 illustrates approximately when supply gaps could occur in the future. A supply gap occurs when demand is greater than the LOS system yield. The potential supply gap depends on the assumptions made regarding the demand for water and the effects of climate change.

As explained in Section 3.2, detailed analysis of the potential impacts of climate change on SEQ water supplies is being undertaken by the Queensland Government Climate Change Centre of Excellence and the CSIRO, through the SEQ Urban Water Security Research Alliance. Until this work is completed, a mid-range climate change scenario of 10 per cent reduction in surface water availability by 2030 has been adopted. In contrast to Perth, these changes are expected to occur over the medium to long term. However, should there be an immediate 10 per cent reduction, the earliest date for supply augmentation would move forward from about 2022 to about 2017. While this scenario is considered unlikely, it is prudent that we continue to plan to be prepared to respond as required.

Having a supply gap does not mean that water supplies will be completely depleted. A supply gap results in an increased likelihood that LOS objectives cannot be met and a greater chance of water restrictions being imposed.

Where supply equals demand, indicated where the demand and system yield lines intersect, the likelihood of entering restrictions is one in 25 years on average. When the system is in surplus, there is a reduced likelihood of entering restrictions, depending on how the SEQ Water Grid is operated.

In accordance with the LOS objectives, the Strategy plans to make sufficient Water Grid water available to meet an average regional urban demand of 375 litres per person per day. As explained in Chapter 4, this is a conservative assumption, and a prudent approach for water supply planning. It takes into account the timeframes for delivering bulk water supply infrastructure, and the level of uncertainty regarding the extent of permanent behavioural changes by the community, population growth, climate variability and the potential impacts of climate change.

6.2 Target 200

The Strategy seeks to build a long-term water savings culture in the SEQ community. It sets a voluntary regional residential consumption target of 200 litres per person per day (Target 200). This challenge is separate from restrictions and will be actively encouraged but not enforced.

The QWC considers that this target can be achieved without significantly changing the lifestyle we enjoy, including the ability to sustain healthy, water-wise gardens. By doing so, the need for additional supplies and the amount of water that is treated and distributed through the SEQ Water Grid can be reduced and deferred, saving money and electricity.

Figure 6.2 shows that reducing average regional consumption by 30 litres per person per day to 345 litres per person per day would defer the need for additional supply beyond projects currently underway from 2026 to around 2033 with medium series population growth and no allowance for climate change.

It would also reduce the supply gap at 2056 by at least 65 700 megalitres per year—equivalent to the Grid water used by about 300 000 houses.

Usage of 345 litres per person per day is equal to the saving that will be achieved if residents of SEQ maintain average regional residential consumption at or below 200 litres per person per day (Target 200). However, changes in the demand profiles can occur for many other reasons.

The sensitivity assessment assumes no adjustments to the LOS objectives relating to the frequency, severity and duration of restrictions and to the frequency of triggering a drought response plan. If the planning assumption for average regional consumption were to be reduced, it would be necessary to consider the impact on effectiveness of future restrictions.

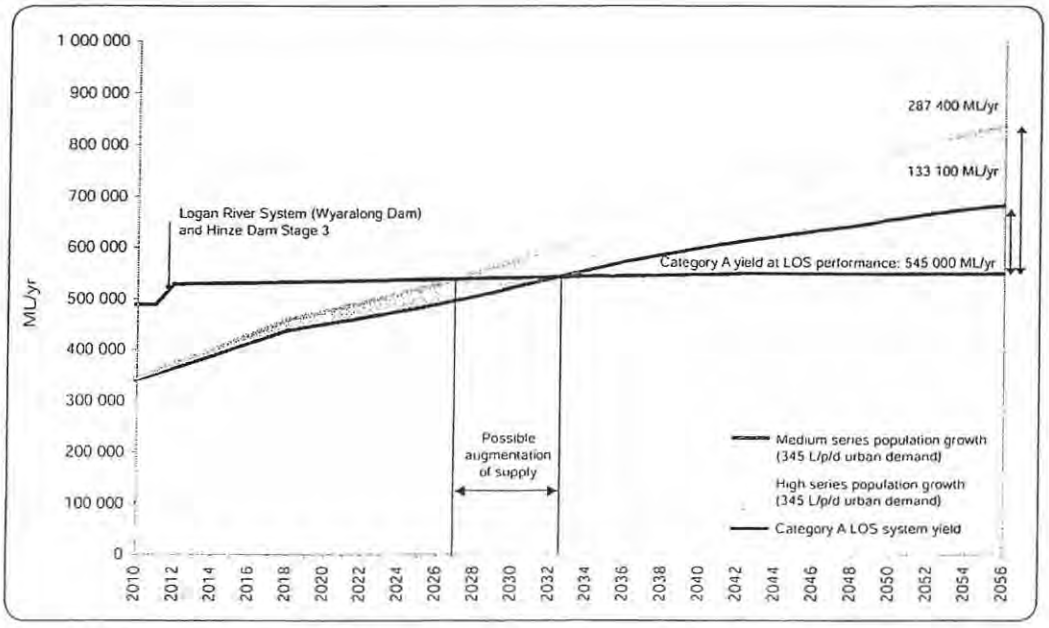


Figure 6.2 Impact of reducing average total consumption by 30 litres per person per day

At the same time, for the reasons outlined in Section 4.3, the QWC recognises that there could be a rebound in water use that might make the consumption target challenging to achieve.

In setting the target, the QWC recognises that actual residential consumption will vary considerably between households and across SEQ due to the type and age of homes, number of occupants, location in terms of climate, soil type conditions and the size and type of gardens. Small households in dry locations might use more, but households in new houses should aim to use less. Actual residential consumption will also vary between seasons and years.

The consumption target will be a key element of an ongoing low level education and communications program. This program will provide timely, well-targeted information and will seek to reinforce some of the basic behavioural changes that enabled residents of SEQ to reduce average demand to below 140 litres per person per day during the Millennium Drought, and to support structural and operational water efficiency measures. The program will include ongoing reporting on achievement of Target 200, with a focus on the long-term benefits of maintaining average regional consumption below 200 litres per person per day.

The collective benefits of these types of behavioural changes can be dramatic, as demonstrated by the success of the Target 140 residential campaign. Once the Target 140 campaign commenced, average residential consumption in central SEQ dropped to below 140 litres per person per day within six weeks and remained below 140 litres per person per day for the year from July 2007 to July 2008. This was a significant drop from the 300 litres per person per day used in 2004–05.

Support for Target 200

Across SEQ, average residential consumption was 165 litres per person per day over six months from 1 December 2009, when Permanent Water Conservation Measures commenced. In central SEQ, average consumption has remained at 148 litres per person per day. Consumption has also:

- remained low on the Gold Coast, where residents were exempted from restrictions from 8 January 2009 until the commencement of Permanent Water Conservation Measures, with average residential consumption of 206 litres per person per day
- reduced on the Sunshine Coast, which has not previously been subject to QWC water restrictions, with average residential consumption of 224 litres per person per day.

These trends reflect the results of a 1000 respondent online survey undertaken from 3 to 8 March 2010, during which combined dam levels rose from 82.3 to 95.8 per cent of capacity. In particular:

- 74 per cent of respondents were either very comfortable or comfortable with 200 litres per person per day as a permanent usage target
- 42 per cent of respondents indicated that we should preserve water and hold people to usage levels similar to those we have now (200 litres per person per day). Nearly a third (29 per cent) of respondents indicated that the target should not go far above 200 litres per person per day.

6.3 Demand management program

The Strategy aims to build on the successful demand management programs that commenced during the Millennium Drought. Existing measures that will be continued are described in Section 4.4 and summarised below. New structural, operational and behavioural elements of this program are described below. Consistent with Section 4.4, demand management measures have been categorised as:

- structural—making sure our homes and businesses have water-efficient devices, appliances and equipment installed
- operational—making sure that water-efficient equipment is used correctly to achieve efficient outcomes
- behavioural—encouraging good water use behaviours and ensuring that the community understands the benefits of conserving water.

The continuing and proposed water savings measures are generally cost-effective compared to new sources of supply and can be achieved without significant changes to lifestyle. Chapter 4 explains the basis for the savings and the impacts for residents.

Continuing water use efficiency measures

A range of water use efficiency measures that were implemented during the drought will continue long term. These measures include:

- public education and communication programs
- requirements for alternative local water sources, such as internally connected rainwater tanks, to be installed in most new buildings
- requirements for water-efficient fittings and fixtures to be installed in new and renovated commercial, industrial and residential buildings
- requirements for businesses using more than 10 megalitres per year to prepare a water efficiency management plan that demonstrates how they will move towards best practice water use efficiency
- requirements for all businesses to ensure that their urinals and cooling towers are efficient
- requirements for businesses using 1 megalitre per year or more to ensure that all internal water fittings on the premises are water-efficient
- requirements for sub-meters to be installed in new residential and commercial multi-unit developments
- provision of water use information to residential tenants, in accordance with guidelines issued by the QWC
- ability for landlords to pass on water consumption charges to tenants of individually metered and water-efficient premises.

6.3.1 Water restrictions

Water restrictions will continue to be part of the demand management program.

Permanent Water Conservation Measures were introduced across SEQ on 1 December 2009. Under these measures, time restrictions have generally been relaxed, but efficiency measures remain in place.

The QWC will continue to review the role of water restrictions as part of the overall demand management program. In doing so, the QWC will seek to ensure that it achieves an appropriate balance between water restrictions and other demand management measures, with the objective of encouraging water efficiency at the lowest possible economic, social and environmental costs.

The QWC will also develop future Medium Level Restrictions as part of the drought response plan. These restrictions will be designed to achieve the LOS objective of reducing average regional consumption of 375 litres per person per day by 15 per cent.

Permanent Water Conservation Measures

Permanent Water Conservation Measures are low-level water restrictions that were introduced across SEQ on 1 December 2009—the first time that common restrictions had applied across the region. These measures reflect feedback on the Strategy that the community supports the ongoing use of low-level restrictions, provided that the focus is on water efficiency rather than water use volume.

Permanent Water Conservation Measures have been designed specifically to capture long-term demand savings, such as through integration with other demand management and water efficiency programs.

Time restrictions on outdoor water use are generally removed, except for a requirement to water gardens and lawns outside the heat of the day. There is also a requirement to use water-efficient devices, such as trigger nozzles on hoses, high-pressure cleaners and efficient irrigation.

Heavy residential water users will continue to be identified and, where high water use cannot be justified, the user will enter a program to assist their household to reduce water use. Section 4.3 highlights the importance of this program.

Permanent Water Conservation Measures also give effect to a small number of structural and operational measures that are not currently implemented through other means, such as the Queensland Development Code.

Outdoor water use requirements for non-residential water users are generally the same as for residents, except where a business wishes to irrigate an area greater than 500 square metres. Where this is the case, the business is required to develop an irrigation water efficiency management plan.

The QWC will review the Permanent Water Conservation Measures during 2010 and 2011. Working with key stakeholders, the QWC will review and refine each measure individually to ensure that it is necessary, effective and efficient. The QWC will specifically investigate whether some requirements should be integrated into end-user contracts, moved to other regulations, or discontinued. The review will focus on non-residential restrictions. Key residential restrictions, such as the restriction on the use of water for irrigation in the middle of the day, are not expected to change.

Target 200 is not part of Permanent Water Conservation Measures. It is a voluntary measure that will be actively encouraged but not enforced.

6.3.2 Demand management measures for investigation

A range of new structural, operational and behavioural water efficiency measures are currently being investigated, as are improvements to existing programs. In combination with the existing measures, these new measures will assist the SEQ community to meet our water savings targets. These new measures are listed below.

Demand management measures under investigation

Structural water use efficiency measures

Promote water use efficiency star ratings for non-residential property

Water consumption in office buildings will be monitored and rated on a scale of one to five stars (best practice is five stars).

Ban the sale of inefficient water devices

With the exception of toilets, plumbing and white goods, producers currently do not have to meet minimum water use performance standards. This measure involves working with the Australian Government and industry to develop and implement minimum standards. Consideration could also be given to expanding the range of products covered by the existing WELS scheme.

School water use efficiency

This measure involves a trial to assess the benefits of installing web-based smart monitoring and alarm systems on water meters in a number of schools. The web-based monitoring system is designed to trigger an alarm if water consumption rises above a pre-set level. Sydney Water has successfully trialled this type of monitoring. An audit of 13 Sydney schools showed that 44 per cent of water used within the grounds was lost through leaks.

Operational water use efficiency measures

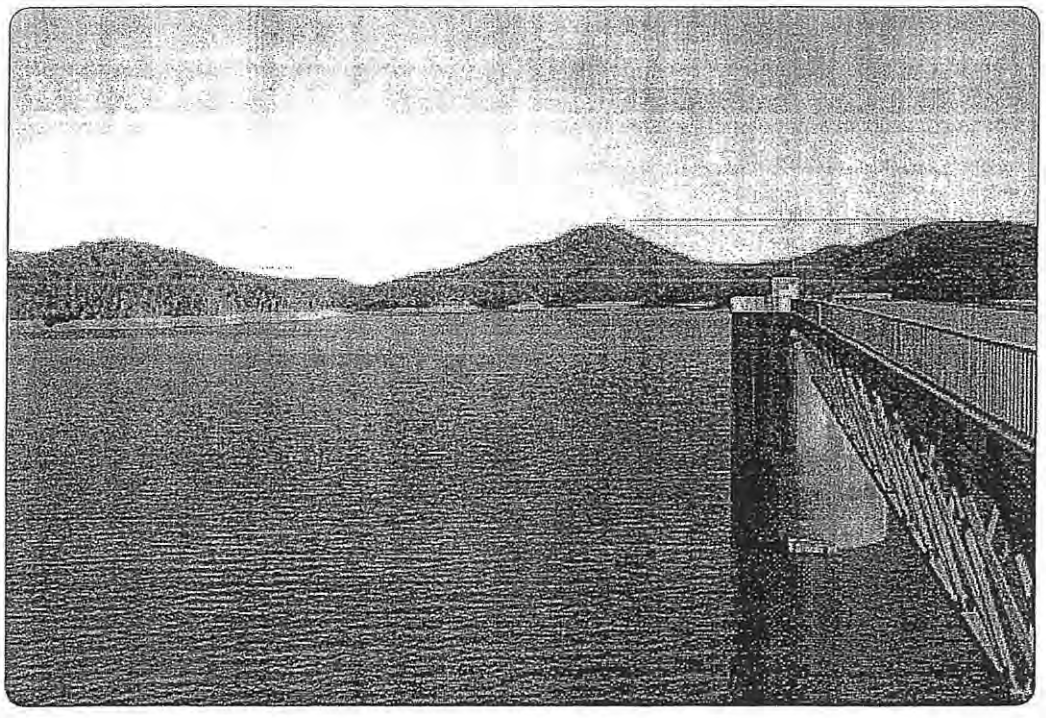
Targeted education programs for selected industries

This measure involves developing a training program for professions and trades involved in the sale and installation of water-using appliances and fixtures, and garden and landscaping products.

Behavioural water efficiency measures

Regionally consistent billing approach

This measure involves phasing in a standardised approach to billing information. Distributor-retailers are required to produce water bills in accordance with guidelines that specify a minimum content and format, with regular billing cycles. This will allow consumers to become more informed about their water consumption.



6.3.3 Updating the demand management program

A comprehensive review of the demand management program will be undertaken regularly and as part of future reviews of the Strategy. Additional demand management measures will be identified as part of continuous improvement. These measures will be informed by changes in population growth, climatic conditions, consumption trends and community expectations, as well as technological developments and the timeframe for constructing additional sources of supply.

The LOS objective for the volume of water to be supplied in normal times (375 litres per person per day for all uses) might be amended at the next review of the Strategy if average water use across the region remains significantly below the planning assumption.

In assessing any changes to the LOS objectives for supply in normal operating mode, consideration will be given to the impact on the scope for future restrictions if the T1 trigger is hit. Once residents, business and industry achieve best practice water use efficiency, consumption cannot be further reduced without significant economic or lifestyle impacts. These matters could affect the LOS objectives relating to the severity of restrictions.

Consistent with the approach adopted in the Strategy, additional demand management measures should be undertaken where they are cost-effective compared to the cost of building new supplies.

6.4 Meeting the supply gap

This section summarises potential supply options and infrastructure programs. Some of the minor dam and weirs projects could also be developed to improve availability of water for rural users, subject to their capacity to pay.

As explained above, major new supplies are unlikely to be required for at least 10 years. The Strategy seeks to further defer when these supplies are required through:

- the efficient operation of existing infrastructure (refer to Sections 3.1 and 7.2.2)
- ongoing water efficiency (refer to Sections 4.4, 6.2 and 6.3)
- the integration of local supplies into new development (refer to Section 4.6).

Section 5.4 outlines a range of investigations into potential supplies that will inform future revisions of the Strategy. The investigations will also establish a benchmark against which water efficiency and local supply options can be assessed. For example, as noted in Section 4.6, some local supplies might be able to exceed the minimum requirements in the Queensland Development Code. Options that improve water savings locally should be implemented if they meet all regulatory requirements and if the incremental cost above the minimum requirements is equal to or less than the cost of major new supplies, compared on a triple bottom line basis. The QWC is investigating methods for objectively undertaking such assessments.

6.4.1 Potential supply options

Future supply options were identified in Chapter 5 and are listed in Table 6.1.

Table 6.1 Potential sources of supply for detailed investigation

Type of source	Potential source
De-salination sites	• Marcoola (priority site) • Lytton, near the Brisbane River mouth (priority site) • Expansion of the facility at Tugun on the Gold Coast (reserve site) • Bribie Island (reserve site)
Dams and weirs	• Borumba Dam Stage 3, water harvesting from the Mary River or a combination of both • Raised operating levels in Wivenhoe Dam • Raising of the Mt Crosby Weir • Additional minor supplies in the Logan and Albert catchment, including potentially a pipeline between the Bromelton Off-stream Storage and Wyaralong Dam
Purified recycled water schemes	• Augmentation of Hinze Dam • Augmentation of North Pine Dam
Decentralised systems	• Investigations into proposed sites, including North Brisbane and the Sunshine Coast for stormwater, rainwater systems and local recycling

Based on existing technology and identified alternative water source options, desalination is currently the only practical supply to fill a regionally significant supply gap. Desalination facilities at the priority and reserve sites will underpin water security for SEQ. Current information indicates that these sites could accommodate desalination facilities with a combined capacity of over 300 000 megalitres per year. With improvements in technology, the same sites could accommodate facilities with more capacity.

There are limited bulk supply options beyond these sites. As explained in Section 5.4.2, dam and weir options could supply an additional 50 000 to 100 000 megalitres per year in normal operating mode. In addition, two purified recycled water schemes that could supply up to 100 000 megalitres per year have been identified for detailed investigation. However, the development of these schemes depends on improved community confidence in purified recycled water.

The supply gap could be reduced if local supplies achieve savings larger than required for new houses under the water savings targets. Detached houses must target savings of 70 000 litres per year, while terrace houses and townhouses must aim to achieve savings of 42 000 litres per year. These savings could be met by internally plumbed rainwater tanks, stormwater harvesting, dual-reticulation recycled water schemes, or the treatment and reuse of greywater. For new houses, the water savings target is forecast to reduce demand by about 60 000 megalitres per year by 2056. However, higher savings might be cost-effective in particular locations and sites—for example by adopting a water-sensitive urban design approach that seeks to integrate stormwater harvesting with stormwater management.

Due to the limited opportunities available, there are currently no plans for substantial increases in the volume of water extracted from groundwater.

6.4.2 Potential supply portfolios

This section presents the preferred portfolio of projects to fill the supply gap, based on current forecasts and pending detailed investigations of potential supplies, as described in Section 3.5

The final selection of each future water supply project will be made based on detailed feasibility studies coupled with the latest information on regional growth patterns and climate change impacts. Section 3.5 describes the process by which the QWC will assess options and make a recommendation to the Minister.

In the meantime, a number of potential infrastructure programs have been developed based on information currently available.

The projects in these programs have been timed to ensure that LOS system yield exceeds forecast demand at all times. This approach does not put water security at risk, but defers both capital expenditure and minimum operating costs. In turn, this defers the impact of price increases. Deferring the next supply also provides time for technology to improve, with a range of potential benefits in terms of cost and efficiency.

The portfolios were based on sub-regional demand and supply analysis. The distribution costs and the capacity of interconnections in the SEQ Water Grid were key considerations for the sequence, timing and location of supply projects. For example, it is expected that the desalination facility at Tugun will only be duplicated from around 2030, following the emergence of significant further population growth on the Gold Coast.

The analysis assumed average total regional consumption across SEQ of 375 litres per person per day, with some differences between locations. Lower consumption could significantly defer the need for augmentation and the sequencing of new supplies across SEQ, including as a result of achieving Target 200.

The portfolios will be reviewed and updated in the future reviews of the Strategy. In particular, detailed investigations could find that some potential projects are not viable or could highlight advantages and disadvantages that were not taken into account at an earlier time. The framework developed for these assessments can also be adapted and applied to any portfolio being considered, including local water supplies or demand management initiatives that exceed the minimum standards.

Medium series population growth

Figure 6.3 illustrates one potential infrastructure program, based on average total consumption of 375 litres per person per day, medium series population growth and no allowance for climate change. This scenario identifies:

- the development of a desalination facility at either Marcoola or Lytton as the next major augmentation of the SEQ Water Grid, with connecting pipelines constructed to enable a duplication of the facility when required
- the expansion of this desalination facility, around 2030
- the third major augmentation being the development of the other priority desalination site
- the final augmentation being the expansion of the existing desalination facility at Tugun, which is identified as occurring beyond 2030 in order to supply new development on the Gold Coast.

In total, this scenario involves development on three of the four desalination sites. While the desalination facilities only provide an additional 155 500 megalitres per year of capacity to the system, the LOS system yield increases by approximately 185 000 megalitres per year due to an improvement in the performance of the dams. Pending detailed investigations other options, such as dams and weirs, could reduce the need for desalination.

In addition, this program includes raising the operating level of Wivenhoe Dam and raising Borumba Dam (with allowances for the impact of climate change). Both of these options require detailed investigations, with a range of technical and environmental issues to be addressed. However, they would be less energy-intensive than desalination and, at least in the case of Wivenhoe Dam, cheaper.

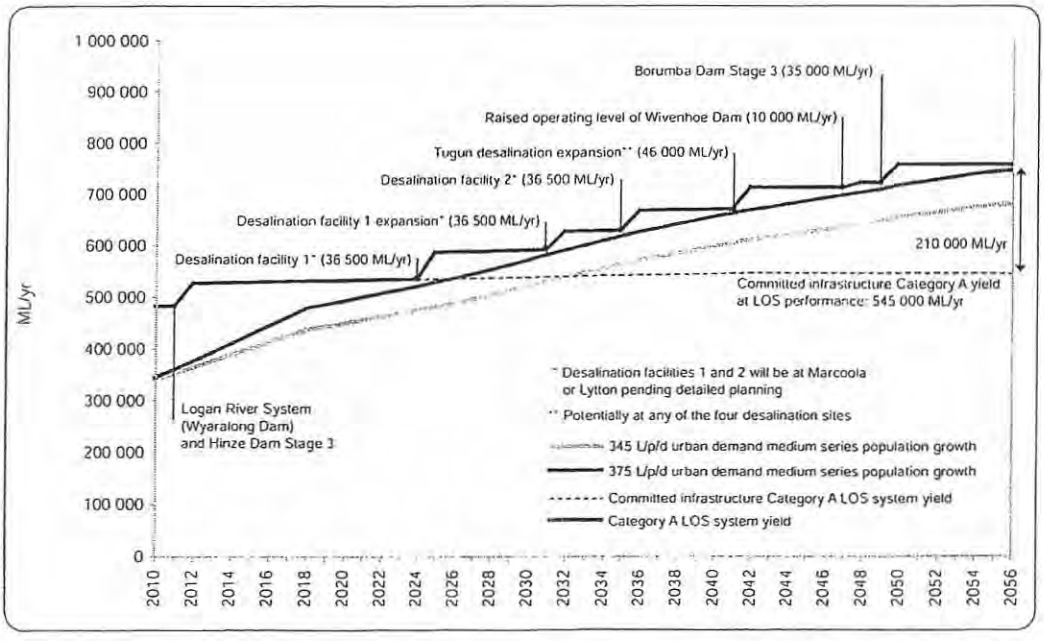


Figure 6.3 Potential portfolio with medium series population growth (subject to detailed planning and assessment)

High series population growth

A sensitivity assessment has been undertaken, indicating the impact of high series population growth and no allowance for climate change. In this scenario, up to 369 300 megalitres per year of additional supply capacity would need to be constructed by 2056.

A possible portfolio of supply options to meet this increased demand is presented in Figure 6.4.

The first augmentations are the same as for the medium series population forecast scenario.

Beyond the upgrades of Wivenhoe and Borumba dams, additional desalination facilities and the expansion of some of these facilities would be required. These facilities could be located at Marcoola, Bribie Island or Lytton. Pipeline costs and environmental considerations would determine the preferred location and sequence of these facilities.

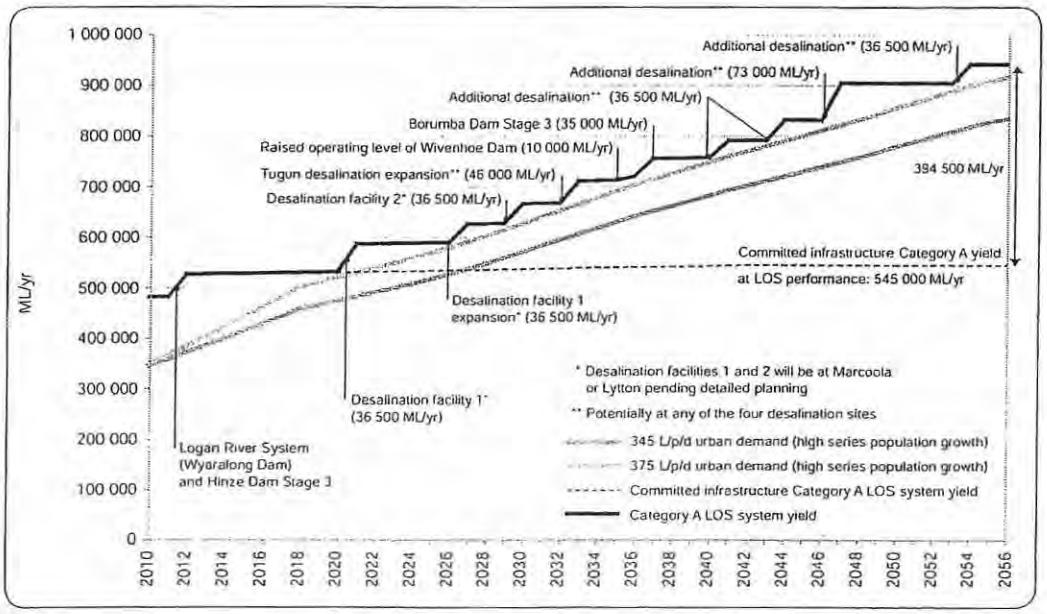
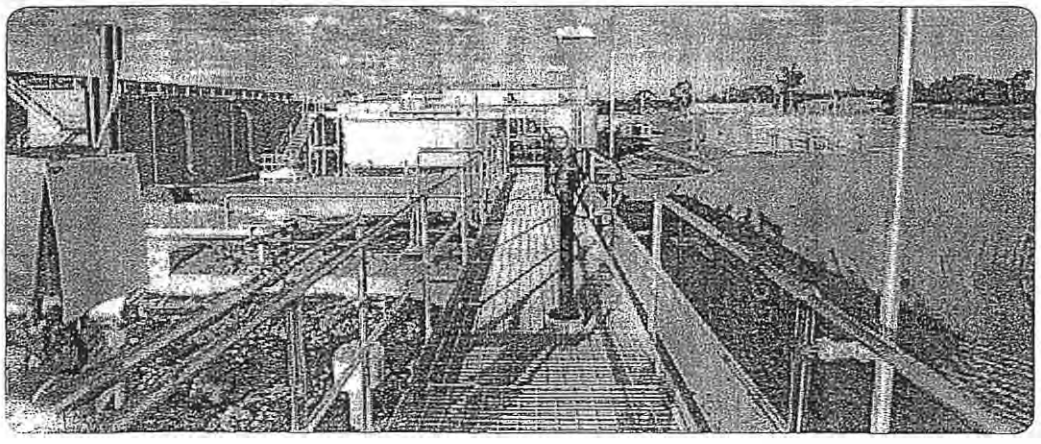


Figure 6.4 Potential portfolio with high series population growth and no allowance for climate change (subject to detailed planning and assessment)

Impact of reduced consumption

Reducing average consumption will defer and reduce the need for additional desalination facilities. Figure 6.3 shows that with medium series population growth and average total regional consumption of 345 litres per person per day, it is possible that only two additional desalination facilities would be required before 2050. The need for the first of these facilities would be deferred to 2033, as explained in Section 6.2.



The portfolio with high series population growth and average total consumption of 345 litres per person per day would be similar to that identified in Figure 6.4. This reduction in consumption, which could be achieved by average residential consumption remaining at or below 200 litres per person per day, could result in fewer desalination facilities being required to meet demand.

Potential impacts of climate change

The extent and timing of any climate change impacts is another key variable for determining when the next bulk water supply might be required. As explained in Section 3.2, the CSIRO is currently undertaking downscaling modelling (reducing the size of modelling grids used for global scale models to smaller scales that are more useful for localised assessments) for SEQ through the Urban Water Security Research Alliance. The preliminary results indicate that, while climate change might reduce yield by about 10 per cent, the impact is likely to occur over decades, rather than immediately. A scenario has been prepared to assess such a possible climate change impact and is shown in Figure 6.5. Such a scenario may bring forward the next possible augmentation date to as early as 2017. However, as discussed above, this climate change impact is unlikely to occur in the immediate future.

The supply gap will reduce if population growth or the average regional consumption is below the planning assumptions outlined above. Conversely, it will increase if climate change impacts are greater than the assumed scenario or if average regional urban water consumption increases to greater than a regional average of 375 litres per person per day, or growth exceeds high series projections.

The volume required will also vary. Without additional water supplies, by 2056 the gap between supply and demand could be between 133 100 and 410 700 megalitres per year, depending on population growth, the demand for water and the impacts of climate change.

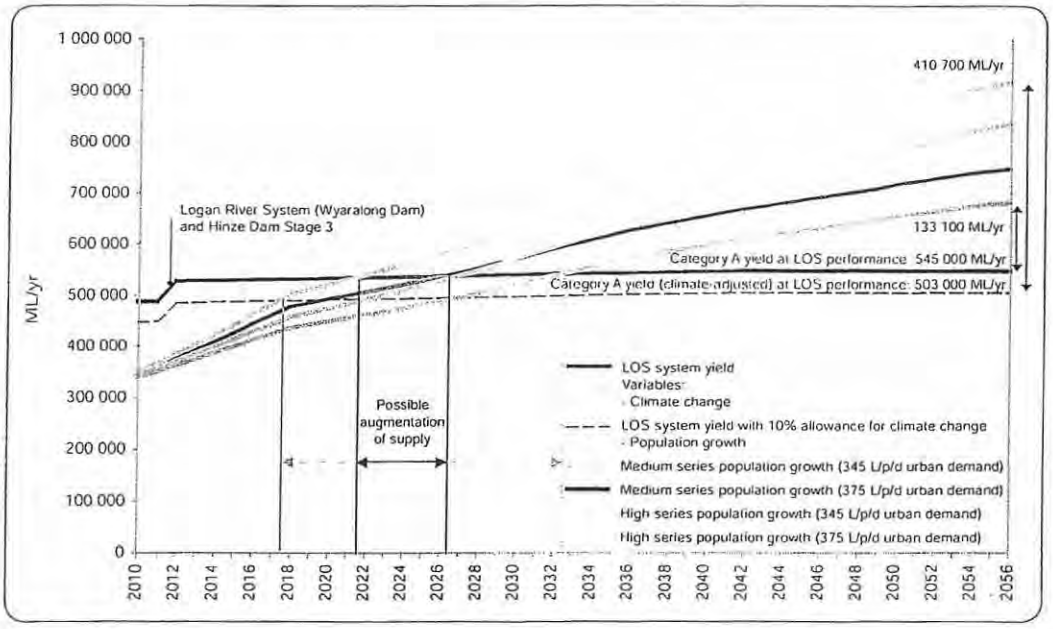


Figure 6.5 Category A water balance in normal operating mode and an allowance for climate change

The purpose of the Strategy is to bring on supplies at appropriate times to prevent this gap from developing. The QWC will monitor demand and supply forecasts on an ongoing basis. Changes to these forecasts will have a direct impact on the potential supply gap, which will be reflected in future revisions of the Strategy and the planning program for potential water supplies.

The construction of major new supplies could also be triggered as part of a drought response. However, with key SEQ Water Grid storages full or almost full, it is likely to be at least 10 years before storages fall to 30 per cent of capacity (refer to Section 6.9.1). The probability of this occurring prior to 2020 is estimated at about 1 per cent.

6.5 Rural towns and villages

The Strategy plans to provide increased security of supply to more than 200 000 residents of SEQ who live in towns that are not connected to the SEQ Water Grid. These residents rely on local surface water or groundwater supplies or on water from rainwater tanks.

6.5.1 Communities with reticulated drinking water

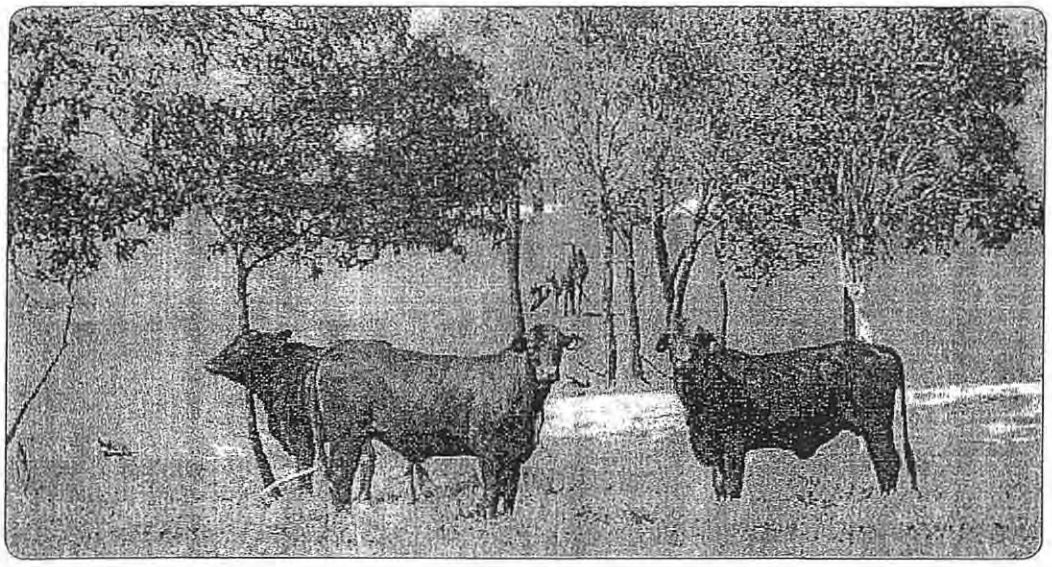
About 20 000 residents of SEQ live in communities that have reticulated drinking water supplies not directly connected to the SEQ Water Grid. These communities have a diverse range of water supply sources and varying levels of security. They also differ in terms of size and forecast population growth.

The Strategy seeks to achieve the same security of supply for these communities in the future as for those connected to the SEQ Water Grid.

A number of these communities are already benefitting from improved security of supply, following the completion of SEQ Water Grid projects.

In the Logan River system, the construction of the Bromelton Off-stream Storage and Cedar Grove Weir has allowed the SEQ Water Grid Manager to reduce the demand on Maroon Dam, increasing supply reliability to the communities of Beaudesert, Kooralbyn and, to a lesser extent, Rathdowney. These communities rely on high priority water allocations from the Logan River Water Supply Scheme and have previously experienced restrictions once every 10 years, on average. With the new supplies, hydrologic modelling indicates that it should be possible to reduce the frequency of restrictions to less than once every 15 years, on average. In the short to medium term, it could even be possible to achieve the LOS objectives.

In the Warrill Valley system, more than 8000 megalitres per year of high priority water allocation has been made available. Previously, 7000 megalitres of this allocation was held by the Swanbank Power Station, which is now supplied from the Western Corridor Recycled Water Scheme. Through the SEQ System Operating Plan, the QWC has reserved this allocation to enhance the short-term security for urban users in Aratula, Boonah, Kalbar and Mount Alford.



The QWC is reviewing the future needs of all rural towns and villages with reticulated supplies. The review will inform decisions regarding supply augmentations and drought response planning. Options to improve security of supply include:

- directly connecting to the SEQ Water Grid through the construction of new pipelines
- augmenting existing sources of supply with additional surface and groundwater supplies
- carting water.

The Sunshine Coast Regional Council began constructing a water supply pipeline to Maleny from the Landers Shute water treatment plant in mid-January 2010. The pipeline is expected to be completed about mid-2010.

A range of options are being investigated for other communities. Table 6.2 lists the key priorities. The QWC will provide advice to the Queensland Government about the preferred means of securing supply to Beaudesert and Canungra in late 2010.

Table 6.2 Options to improve security of supply to rural towns

Town	Current investigations
Beaudesert	Options under investigation are a pipeline to the planned Wyaralong water treatment plant or an upgrade to the existing water treatment plant.
Canungra	Options under investigation include a pipeline to Beaudesert or the construction of an off-stream storage and an upgrade to the existing water treatment plant.
Dayboro	A pipeline from Petrie is being investigated. Moreton Bay Regional Council has completed a planning study concluding that the construction of a pipeline would be the most cost-effective option.
Boonah	A pipeline to either Ipswich or the planned Wyaralong water treatment plant is being investigated as a possible drought response measure.

For some communities, the LOS objectives will be targeted but might not be deliverable in the short term. The priority of connection will be determined based on the likelihood of restrictions and size of the community, including business and industry.

The Lockyer Valley Regional Council communities of Preston, Upper Flagstone and Upper Lockyer (bordering on Highfields) currently have water services supplied by Toowoomba Regional Council. This operating arrangement will continue.

Amity Point, Dunwich and Point Lookout on North Stradbroke Island already have very secure supplies and are unlikely to require augmentation.

For communities that are not physically connected to the SEQ Water Grid, security of supply will generally be maintained by water carting in severe drought.

6.5.2 Communities without reticulated drinking water

About 180 000 residents dispersed across SEQ in small villages and rural residential developments rely on drinking water from rainwater tanks and private bores.

These residents will be able to supplement local supplies from the SEQ Water Grid as necessary, through existing carting services. Water carters will continue to have regulated access to stand pipes, and residents will continue to be responsible for organising and paying for carting. Such arrangements will also continue to apply to communities such as Mt Tamborine. Demand forecasts for the SEQ Water Grid include water to supplement rainwater tanks during periods of low rainfall.

Local government planning schemes specify the minimum size of rainwater tanks required for new houses in areas where reticulated drinking water is not available. These requirements currently vary across SEQ. The QWC will review the minimum requirements for the size of rainwater tanks and connected roof area across SEQ, taking into account the costs of new rainwater tanks and carting. Local governments could choose to mandate larger tanks than the minimum size.

Over time, reticulated drinking water could be supplied to some rural villages that are currently supplied from rainwater tanks and private bores. Factors that will be taken into account when considering supplying these villages with reticulated water include:

- demand from residents and industry
- population growth
- cost and cost recovery
- community views.

Local governments and the new distributor-retailers will decide whether a reticulated drinking water system will be provided to rural villages and determine pricing to provide service delivery to customers.

The QWC will develop a new policy framework to guide decisions regarding the supply of reticulated drinking water to communities that currently rely on drinking water from rainwater tanks and private bores.

6.6 Rural production

Water resource plans have assured access to water for rural production. However access to additional water for rural production and the cost of that water has proven to be a major challenge in parts of SEQ.

While some of the projects that have been constructed as part of the drought response are already delivering benefits for rural users in parts of SEQ, there is potential to do more.

The QWC and the Department of Environment and Resource Management will lead the investigation of a range of options to improve the availability of water for rural production. These options could increase the total amount of water available, or improve the reliability of its supply. They would build on existing entitlements, under which about 150 000 megalitres was used for rural production in SEQ in 2005, excluding recycled water and rural water consumption in the Mary Basin.

Any water supply initiatives in SEQ must directly address the needs of existing and potential producers. In most catchments the volume of unallocated water available under water resource planning is limited, meaning that there are no opportunities for major new rural supply dams. Recycled water could provide further opportunities, but can be expensive to transport over long distances.

Rural water advisory group

A rural water advisory group has been established to assist planning for rural water supply initiatives in SEQ. The group was established by the Queensland Farmers Federation, in partnership with the QWC and the Department of Environment and Resource Management. It will comprise representatives of rural water users, who will provide input to the investigations outlined in this section, ensuring that options address local needs.

6.6.1 Introduce tradeable allocations

Water allocated for rural uses in SEQ includes a range of high priority and medium priority entitlements from supplemented schemes and some unsupplemented water entitlements. A supplemented water supply is one that is made more reliable by releases of stored water from dams.

While available, some of these existing allocations are not being used or only partly used (i.e. 'dozers' and 'sleepers').

There are a range of reasons why allocations are not being used—for example, some farms that were previously irrigated are now used for less water-intensive activities. The reasons for these types of changes range from water not being available during the drought, to the land having been purchased as a hobby farm.

The QWC has received feedback from some irrigators that these entitlements do not match their business needs. For example, some irrigators have explained that major purchasers are increasingly requiring certainty of supply over a number of years. The irrigators have expressed concern that they cannot match these demands under their existing allocations. Some other irrigators have expressed concern that they often do not receive most of their announced allocations until after the planting season.

As water resource plans are progressively implemented in SEQ, water trading is likely to provide opportunities for expanding production through the movement of under-utilised existing water entitlements. The QWC, with the Department of Environment and Resource Management, will investigate options to facilitate trading in key areas as identified through the rural water advisory group.

6.6.2 Investigate options to increase reliability

The SEQ Water Grid provides a range of opportunities to conjunctively manage rural and urban supplies, potentially increasing both the volume and reliability of supply for rural use. Options that could directly benefit rural users include:

- providing access to surplus urban allocations on a temporary basis, in addition to existing rural allocations
- temporarily increasing the reliability of existing rural allocations or the announced allocations earlier in the water year, through under-utilised urban allocations.

Rural users can indirectly benefit if less than the full allocation is used for urban purposes. This occurs when water is held back in the dam, so as to be available during a severe drought, or is simply not needed at that time. Where the water is held back in the dam, announced allocations for rural users will be higher than would otherwise be the case.

Some of these indirect benefits are already being realised. In the Warrill Valley, as a temporary measure, the QWC has reserved 8250 megalitres of interim water allocation to enhance supply reliability for Boonah and connected towns, as explained in Section 6.5.1. As a result, Moogerah Dam will be maintained at a higher level than would otherwise be the case. In turn, announced allocations for rural users will generally be higher.

In the Logan River, the reliability of supplemented supplies to communities and rural irrigators has improved due to the construction of Cedar Grove Weir and the Bromelton Off-stream Storage and applying LOS objectives to the delivery of urban water supplies (refer to Section 6.5.1). Hydrological modelling indicates that application of LOS principles to the operation of the urban supplies will increase supplemented irrigator monthly supply reliability required under the water resource plan by up to 10 per cent. Options to further improve availability or reliability, for the period until Wyaralong Dam and the water treatment plant are constructed and while LOS system yield continues to significantly exceed demand, are being assessed.

Any such supply must occur within a transparent framework, which ensures that the costs are appropriately shared. The QWC will develop this framework in 2010 and 2011. The framework will address a range of issues, including the conditions of supply and the price to rural users. For example, the framework will specify when supply to rural users will be interrupted.

As background to the framework, the QWC will seek input from existing rural producers in partnership with the rural water advisory group and the local governments to establish whether existing entitlements meet local needs. Where they do not, the QWC, in collaboration with the Department of Environment and Resource Management, will assess possible options that address these needs within the water resource planning framework.

Options for conjunctive management of urban and rural water supply apply in specific catchments, generally where an urban water supply source is located upstream of rural irrigation areas. These circumstances apply to:

- Borumba Dam on the Mary River
- Wivenhoe Dam on the Brisbane River
- Maroon Dam and the Bromelton Off-Stream Storage on the Logan River
- Moogerah Dam in the Warrill Valley.

The QWC will also investigate these options in 2010 and 2011.

6.6.3 Increase the use of recycled water

About 245 000 megalitres of treated wastewater was discharged from wastewater treatment plants in SEQ in 2006. About 17 000 megalitres of this was recycled, including about 400 megalitres for rural production. By 2056, it is forecast that the amount of treated wastewater available for recycling will exceed 400 000 megalitres per year.

The QWC is investigating a range of opportunities to increase the use of recycled water for irrigation, as a means of increasing rural production and improving the health of waterways and Moreton Bay. Some of these investigations are discussed below.

Western Corridor Recycled Water Scheme

The Lockyer Valley is generally regarded as one of Australia's most productive horticultural regions. It contains over 40 000 hectares of the most productive horticultural soil in Queensland. However, water availability and reliability has become increasingly critical to growing operations. Declining volume and quality of both surface water and groundwater in the valley has led to a reduction of up to 75 per cent in the productivity of this key horticultural production area. Recent surveys indicate that current production operates at only 20 to 30 per cent of total potential due to the poor reliability of the water supply.

The supply of recycled water from the Western Corridor Recycled Water Scheme has the potential to significantly improve water availability, and especially water reliability. This reliability is fundamental to restoring profitability and productivity to the irrigators, and vibrancy to the area. For example, it could restore farm practices of planting three crops per season and thereby allow local irrigators to secure a stable and sustainable share of the Brisbane and Sydney markets.

It could also help to transform farm practice and crop selection to higher value products. At present, Lockyer Valley irrigators mainly grow cereal, fodder and forage crops that do not have the same value as fruit, flora and vegetable crops. Water reliability would enable more of these farms to grow higher value crops, ensuring their long-term economic sustainability and a more sustainable supply located close to the Brisbane market.

The Queensland Government first announced that 32 000 megalitres per year would be available from the Western Corridor Recycled Water Scheme for supply to irrigators in mid-2006. Supply is contingent on a number of conditions, which were made clear in the business case and have been reflected in draft term sheets and negotiations. These conditions include that:

- supply ceases when key SEQ Water Grid storage levels fall to 40 per cent of combined capacity
- pricing is at short-run marginal cost
- a sustainable management regime is implemented over the Lockyer Valley aquifers.

As outlined in Section 5.4.4, the optimal operating strategy for purified recycled water is currently to use it to augment Wivenhoe Dam only when key Water Grid storage levels fall to 40 per cent of capacity. This mode of operation means that recycled water will be available for supply to Lockyer Valley irrigators at all other times.

In addition, the amount of recycled water available for rural production from the Western Corridor Recycled Water Scheme in normal operating mode could increase over time from 32 000 to 37 000 megalitres per year. The time at which the additional Category B recycled water became available would depend on the rate of increase in feed water flows to the Western Corridor Recycled Water Scheme and demands for urban use.

The Lockyer Water Users Forum has proposed a number of recycled water schemes prior to and following this announcement. Each of these schemes has involved distribution from the Western Corridor Recycled Water Scheme direct to irrigators, and each has relied on further funding commitments by the Queensland and Australian governments to be economically viable.

The SEQ Water Grid Manager and the QWC are now investigating a number of options to enable the supply of recycled water to the Lockyer Valley at less overall cost. These options include using the existing Western Corridor Recycled Water Scheme pipeline and existing irrigation dams as balancing storages. If these investigations prove to be unsuccessful, supply of a smaller volume of recycled water to irrigators near the existing pipeline will be considered. The SEQ Water Grid Manager and the QWC will continue to consult with irrigators.

Other investigations

The QWC is investigating options for regionally significant recycled water schemes across SEQ, as part of sub-regional total water cycle planning (refer to Section 2.4.5).

The first sub-regional total water cycle management plan has involved detailed assessment of the potential for reusing treated wastewater from the Beaudesert and Flagstone areas for irrigation purposes along the Logan River. The advantages of this option include an increase in water for rural irrigation and a significant reduction in the discharge of nutrients into the Logan River.

The QWC will also investigate other local reuse opportunities, in areas such as Redland Bay and Somerset. Some of these opportunities are being investigated as an alternative to, or to supplement, a planned upgrade to a wastewater treatment plant in the area. Studies are required to determine the viability of using the treated wastewater, potential uptake, and costs of any new or upgraded infrastructure.

At the local scale, schemes could be identified as part of local government planning processes or by a distributor-retailer. Any recycled water scheme would be subject to physical supply constraints, pricing that reflects at least the short-run marginal cost of supply and compliance with relevant water resource plan and water quality requirements.

6.6.4 Investigate potential surface storages

Under water resource planning, there are few remaining opportunities in SEQ for surface storages for urban or rural purposes.

The QWC will undertake detailed investigations of remaining options in the Logan and Mary basins, as explained in Section 5.4.2. These investigations could identify small storages that might be used for rural purposes, subject to cost and within the requirements of water resource plans.

Rural water availability in the Warrill Valley area could be further increased if and when a pipeline is constructed to Boonah from the SEQ Water Grid.

6.6.5 Increase efficiency

Improved rural water use efficiency will continue to be driven by:

- programs to improve farm efficiency, such as the SEQ Irrigation Futures program
- water markets and trading
- appropriate pricing to better reflect National Water Initiative pricing principles
- more efficient rural water supply schemes.

Queensland Government initiatives for rural water supply

Rural Futures Strategy

The Rural Futures Strategy has been released as part of the Regional Plan. The Rural Futures Strategy supports the sustainable economic and social development of rural areas in SEQ. It builds on existing strategies, policies and programs, providing a whole-of-government approach to address planning and economic issues in rural SEQ.

SEQ Irrigation Futures

SEQ Irrigation Futures is a partnership program between the Queensland Government, five major irrigation industry groups and SEQ Catchments to help irrigators use water more efficiently. An efficiency gain of 12 per cent was achieved across all irrigation sectors in the region by the end of 2009, equivalent to approximately 21 000 megalitres per year. The program addresses irrigation management and impacts from irrigation. It includes system efficiency assessments, field trials and workshops and, where appropriate, financial incentives to assist irrigators to cut consumption.

Rural Water Use Efficiency Initiative

The Rural Water Use Efficiency Initiative is a partnership between the Queensland Government and seven industry groups. It helps irrigators to improve on-farm management of natural resources and reduce off-farm impacts, particularly through efficient irrigation and management of nutrients. The initiative includes extension activities, on-farm trials, demonstrations and system assessments, and financial incentives to upgrade irrigation and effluent management systems. The Queensland Government has committed $6.5 million over four years.

Knowledge Management System for Irrigation

An internet-based system that assists irrigators to manage a range of water issues on their properties was launched in August 2008. Known as the Knowledge Management System for Irrigation, it is an initiative of SEQ Irrigation Futures and it gives irrigators and industry personnel access to decision making tools, water use calculators and natural resource information. This enables irrigators to improve aspects of their water management, such as irrigation scheduling and pump efficiency.

Water metering project

In 2005, the Queensland Government initiated a statewide policy to establish a consistent approach for metering unsupplemented water taken for irrigation and other commercial purposes. Metering is a cornerstone of the National Water Initiative. It ensures the fair use of resources, enhances entitlement security and reliability, and improves water planning and management outcomes.

6.7 Supplies to outside SEQ

In the same way that SEQ's water supplies could be affected by the ability to source water from outside SEQ, consideration has also been given to supplying water from SEQ to neighbouring communities.

With the completion of key SEQ Water Grid assets, a level of water security has been reached that enables consideration of further opportunities to supply water outside SEQ.

A substantial amount of work is required to prepare a policy framework that would govern supplies from the SEQ Water Grid to urban areas outside the SEQ region, including economic and operational principles, standard contractual provisions and even possible inter-governmental agreements.

Any new supply should be on a full commercial basis. The price will vary depending on whether the supply is interruptible and whether it brings forward the timing of the next major supply.

Any supply of water to irrigators and to urban areas outside of SEQ will not be permitted to impact on the achievement of the LOS objectives for urban customers within SEQ.

6.7.1 Toowoomba

The Queensland Government has made a commitment to supply up to 10 000 megalitres per year from Wivenhoe Dam to the Toowoomba Regional Council area. This supply has been factored into demand forecasts and the water balance.

Supply could increase to 18 000 megalitres per year over time, depending on demand from the Toowoomba Regional Council area.

6.7.2 Cooloola region

The QWC will investigate options to operate the SEQ Water Grid to improve the volume and reliability of supply to towns in the Mary Basin (refer to Section 5.4.2).

In the short to medium term, when supply for SEQ exceeds demand, Noosa could be supplied from the Northern Pipeline Inter-connector Stage 2 rather than from Borumba Dam. This would enable the SEQ Water Grid Manager to make additional water available from Borumba Dam for local purchase and use, potentially deferring the need for additional supplies in the Mary Basin.

In the longer term, new supplies could be developed in the Mary Basin for local use and to supply the SEQ Water Grid.

6.7.3 Tweed

With the current high level of security of supply from the SEQ Water Grid, the Queensland Government will consider supply to the Tweed Shire Council area and other adjoining areas, where supply has no impact on the achievement of the LOS objectives for SEQ and on a full commercial basis, without subsidy or a price path.

6.8 Energy

The SEQ Water Grid will become increasingly energy-intensive over time, due to the operation of manufactured water sources and interconnecting pipelines. This section outlines the energy savings that will be achieved through demand management and the efficient operation of the SEQ Water Grid.

6.8.1 Total water cycle energy use

Energy use for water supply and wastewater collection and treatment represented about 0.1 per cent of energy use in the total urban system in SEQ in 2006–07.

Actual energy consumption for water supply varies across the region. About 2430 megajoules of energy was consumed for every megalitre of water supplied in Brisbane in 2006–07. By comparison, the energy intensity of supplying water to the Gold Coast from Hinze Dam is relatively low (about 750 megajoules per megalitre of water supplied), due to the lower treatment requirements and the height of the dam.

Tertiary treatment of wastewater before discharge to Moreton Bay is a significant user of energy in the SEQ water cycle. In Brisbane, wastewater treatment plants use another 2070 gigajoules for every megalitre of water supplied. On the Gold Coast, wastewater treatment plants use 3600 gigajoules per megalitre of water supplied.

The end uses of water are responsible for substantially more energy consumption and greenhouse gas emissions than its supply. Most of this energy is used to heat water. Across Australia, water heating is responsible for about 25 per cent of residential energy demand and 27 per cent of greenhouse gas emissions in households, excluding transport.

In Brisbane, residential hot water systems are estimated to use about 0.5 per cent of energy use in the total urban system in 2006–07. On the Gold Coast, it is 1.3 per cent—more than nine times the energy used for water supply and wastewater collection and treatment.

This section focuses on the energy used in the operation of the SEQ Water Grid. However, it is acknowledged that water efficiency can also contribute to major reductions in energy consumption for residential and non-residential end uses and for collecting, treating and discharging wastewater.

6.8.2 Avoided energy use due to demand management

A demand management program across all customer groups is an integral part of the Strategy, as outlined in Section 6.2.

Maintaining average regional urban consumption at or below 375 litres per person per day will result in a total energy saving of around 315 000 megawatt hours per year in 2020 compared to pre-drought trends, increasing to around 720 000 megawatt hours per year by 2048 (refer to Table 6.3). Additional savings will be achieved if actual consumption is less than the planning assumption of 375 litres per person per day. These estimates highlight the importance of the demand management program in reducing the need for additional energy-intensive water supplies. The estimates are based on the updated portfolio, including the greater use of desalination and increased energy intensity.

These estimates are also based on most of the additional demand being supplied from desalination and using the energy intensities described in Figure 6.6. It represents a saving of about 40 per cent in energy consumption for the supply of bulk water and is equivalent to the total energy consumption of about 86 000 homes.

These estimated energy savings reflect current technology and do not take into account the effects of state and federal government policies such as the Mandatory Renewable Energy Target, Renewable Energy Target and any future emissions trading scheme.

The savings listed in Table 6.3 relate to SEQ Water Grid assets. Energy consumption for distributing treated water and collecting and distributing wastewater is also likely to be reduced. The analysis also does not include energy savings to residents and businesses inside the home or business associated with the demand management program. Conversely, the estimate does not include additional energy requirements associated with local supply solutions such as rainwater tanks and greywater systems.

Table 6.3 Forecast energy savings from demand management (medium series population growth, no allowance for climate change and including rural communities within the SEQ Water Grid)

	2020		2048	
	Forecast demand for Grid water (Megalitres per year)	Forecast Grid energy consumption (Megawatt hours per year)[1]	Forecast demand for Grid water (Megalitres per year)	Forecast Grid energy consumption (Megawatt hours per year)[1]
Pre-drought trends	608 000	769 000	867 000	1 896 000
With the demand management program	491 000	454 000	701 000	1 176 000
Savings due to water efficiency	**117 000 (19 per cent)**	**315 000 (41 per cent)**	**166 000 (19 per cent)**	**720 000 (38 per cent)**

Note: Data has been rounded, including the savings estimates.

1 Assumes that the SEQ Water Grid is operated to maximise energy efficiency.

6.8.3 Energy to deliver water

Until recently, SEQ's water has been supplied through dams and other low energy intensity infrastructure. Diversifying the sources of supply to achieve the LOS objectives comes with an increased energy cost. Managing this increase is a key consideration for water supply planning.

As illustrated in Figure 6.6, water from desalination is expected to be significantly more energy-intensive to produce than treated dam water. The energy requirements are based on the infrastructure operating at capacity. While the energy requirement for transporting water is similar for all new sources, the increased movement of water around the SEQ Water Grid will increase the overall energy intensity of the region's water supply.

Water supplied from rainwater tanks can vary enormously in its energy intensity. Water that is delivered by gravity, with no additional treatment, does not require any other energy inputs. However, water that is treated to drinking water quality and delivered by pump can exceed the energy intensity of water produced from local dams or even the Western Corridor Recycled Water Scheme.

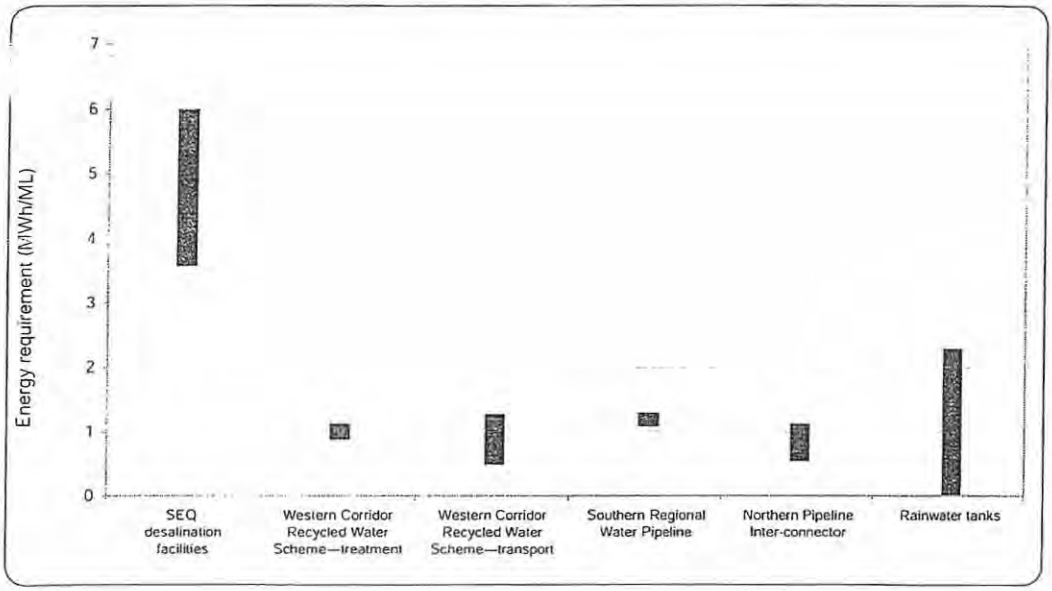


Figure 6.6 Estimated energy intensity of selected components of the SEQ Water Grid

Figure 6.7 shows the forecast energy required to produce water if the SEQ Water Grid were operating at capacity in 2020.

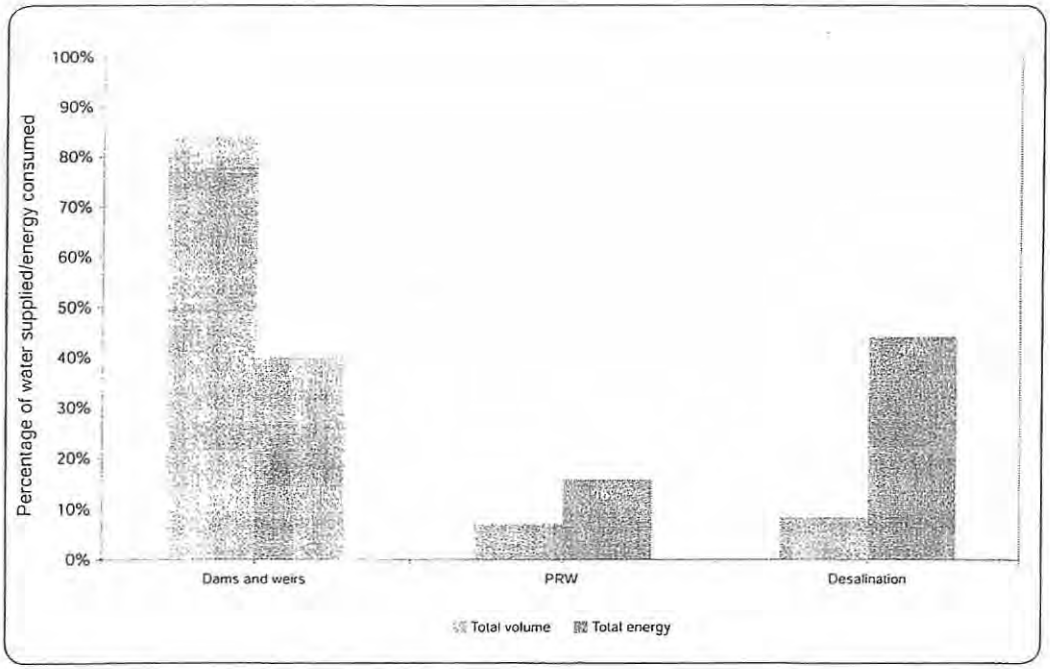


Figure 6.7 Projected water production capacity and associated energy consumed in 2020

In practice, desalination and purified recycled water schemes will not be required to operate at maximum capacity at all times. Figure 6.8a illustrates the estimated energy required to operate the SEQ Water Grid if population grows in line with the medium series projections. Figure 6.8b shows the energy usage if population growth tracks on the high series projections. At any time, actual energy used will be within the ranges shown. Without the demand management program, significantly more water would be required, and the overall energy requirement would increase accordingly.

The average energy intensity of water supplied from the SEQ Water Grid is estimated to be about 0.5 megawatt hours per megalitre per year in 2010. As the proportion of desalination supplies increases over time, the average energy intensity of water will increase to about 0.9 megawatt hours per megalitre per year in 2020 and 1.6 megawatt hours per megalitre per year in 2050.

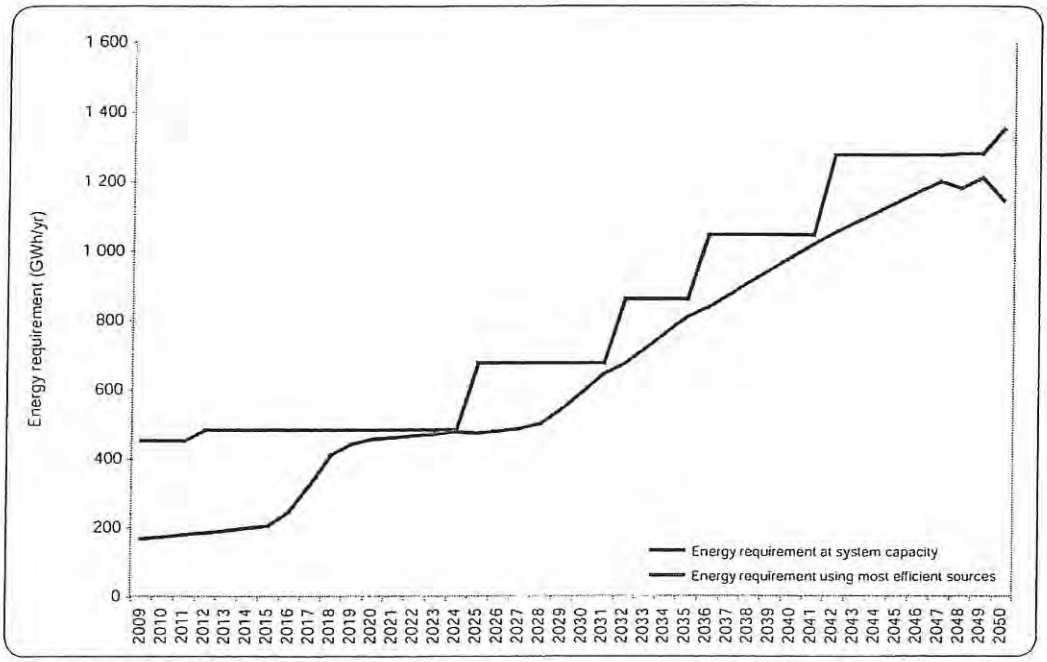


Figure 6.8a Estimated energy consumption for bulk water supply (proposed portfolio, medium series population growth, no allowance for climate change)

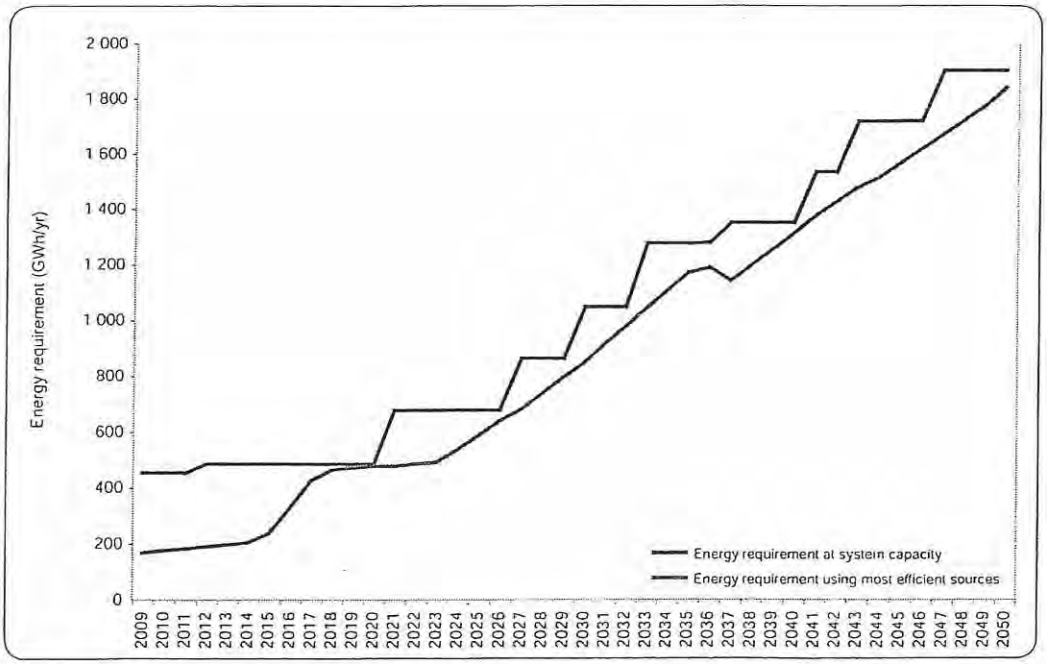


Figure 6.8b Estimated energy consumption for bulk water supply (proposed portfolio, high series population growth, no allowance for climate change)

If average total consumption is maintained at 345 litres per person per day, the projected average energy intensity and greenhouse gas emissions from the grid would reduce.

The QWC will assess all aspects of energy consumption associated with projected new water sources and factor these into water supply planning.

6.8.4 Greenhouse gas emissions of water supplies

Greenhouse gas emissions are calculated from energy use by applying greenhouse gas emissions factors, calculated by considering all the emissions associated with energy production and transmission. Emissions are standardised to carbon dioxide equivalents published by the Australian Government Department of Climate Change and Energy Efficiency. The emissions generated for each kilowatt hour of electricity supplied in Queensland are equivalent to approximately 0.89 kilograms of carbon dioxide.

[redacted]cure is purchasing renewable energy certificates to offset the operational energy requirements of the SEQ (Gold Coast) Desalination Facility.

Conversely, fugitive emission such as nitrous oxide and methane from wastewater treatment processes or methane emissions from water storages could be significant in some systems.

6.8.5 Water and energy reporting

Industries across the country are increasingly required to become more energy- and water-efficient. The co-dependence of energy and water in many industries presents opportunities to improve water and energy efficiency simultaneously, with users receiving a net benefit of lower electricity and water bills.

Industries are currently targeted under mandatory federal and state initiatives to identify and report on energy efficiency opportunities. At the same time, large water using industries in SEQ are required to implement water efficiency management plans.

The overlap between mandatory reporting for energy and water could result in potential for synergies, conflicts and duplication between an individual business's water and energy management plans. The QWC proposes to work in collaboration with water service providers and the Queensland and Australian governments to improve the efficiency of reporting for industry and move towards streamlined water and energy reporting.

6.9 Drought response planning

The purpose of drought response planning is to ensure continuity of supply consistent with the LOS objectives and regardless of climatic conditions, as explained in Section 3.1.2. The proposed process for developing and implementing the regional drought response plan is described in Chapter 7.

Under the LOS objectives, a regional drought response plan is expected to be triggered no more than once every 25 years, on average. Three out of four of these droughts will ease within the preparatory phase, before the construction of new supply sources commences.

Drought response plans will also be maintained for communities that have reticulated drinking water supplies not directly connected to the SEQ Water Grid.

6.9.1 Probability of triggering implementation of a drought response plan

SEQ now has a much more secure water supply than it did prior to the Millennium Drought, due to the efficient use of water and the completion of climate resilient supplies and interconnections. Due to this improved level of security, it is likely that the next augmentation will be triggered by population growth, rather than another severe drought.

The QWC models short-term security based on the combined levels of the twelve key SEQ Water Grid storages, including dams in the Sunshine and Gold Coasts. The combined level of these storages provides the trigger to initiate water strategy measures, such as implementing water restrictions.

Figure 6.9 shows probable dam levels of the next five years, based on different drawdown curves that have defined probabilities that the dams will be drawn down at a greater rate. For example, the 99 per cent curve shows dam levels that have a 99 per cent probability of exceedence at any point along the curve (that is, there is only a 1 per cent chance that these low levels will occur). The drawdown curves use data for inflows, rainfall and weather patterns extending back for 117 years as inputs to stochastic modelling.

The model illustrates that there is a less than 1 per cent probability of dams falling to 40 per cent of combined capacity over the next five years, which would trigger the implementation of the regional drought response plan.

The model also illustrates that there is an even lower probability of key SEQ Water Grid storages falling to 30 per cent of capacity before the end of 2014, triggering the construction of new climate resilient supplies.

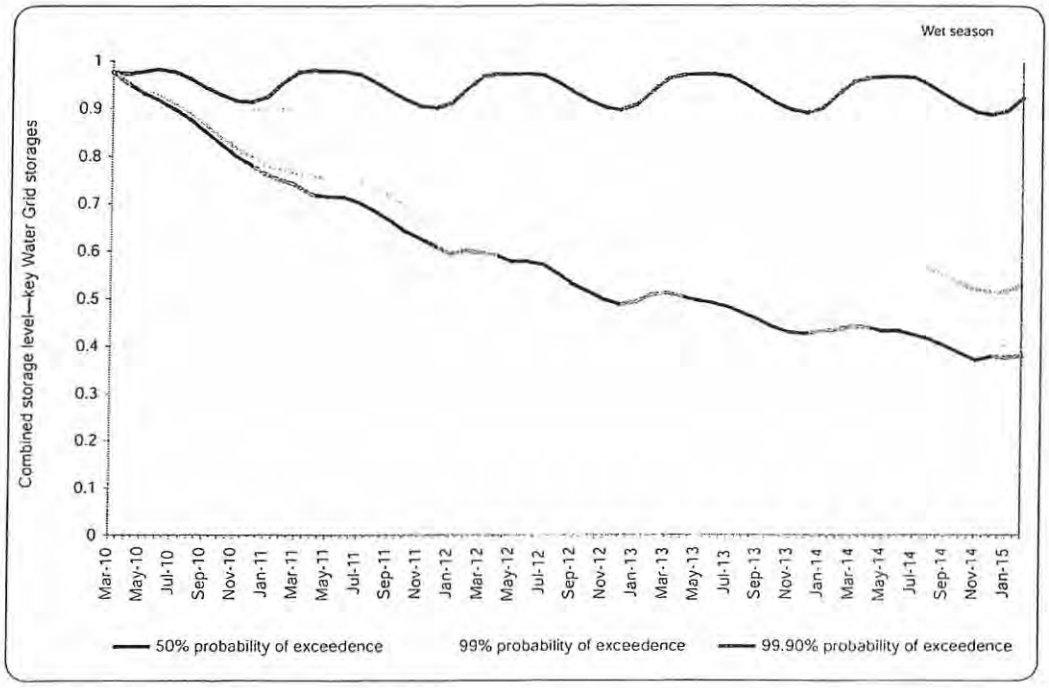


Figure 6.9 Forecast SEQ Water Grid storage levels

The modelling is based on average regional urban consumption across SEQ of 375 litres per person per day, and includes an allowance for medium series population growth. Lower levels of consumption will result in higher dam levels than are reflected in the model. The model is based on operation of the SEQ Water Grid in accordance with the existing SEQ System Operating Plan (for instance, one of the requirements of the existing SEQ System Operating Plan is to reduce production from the SEQ (Gold Coast) Desalination Facility to one-third of capacity when dam levels are high). It also takes into account supply from Wivenhoe Dam to Toowoomba and new sources, including Wyaralong Dam from 2012.

6.9.2 Drought supply requirement

The drought response plan will include a combination of applying Medium Level Restrictions, introducing purified recycled water to Wivenhoe Dam and constructing climate resilient supplies. The drought response plan should consider the ability to construct sufficient new climate resilient infrastructure within a nominal 30 months. This timing would be reviewed based on the preparatory planning outlined above.

The drought supply requirement is the gap between restricted demand and the climate resilient supply capability of existing supplies at any time over the planning horizon. This is the amount that would need to be supplied by the drought infrastructure, which must be able to be commissioned within the 30-month period to achieve the LOS objectives. This timeframe will be refined based on the amount of preparatory work undertaken and the level of preparedness.

As explained in Section 5.3.3, climate resilient and independent supplies are forecast to increase to about 331 700 megalitres per year following the completion of the committed projects. At this time, climate resilient supplies will comprise about 63 per cent of the LOS system yield, compared with 40 per cent in 2006.

As a result, much less infrastructure would need to be constructed in response to another severe drought than was required in response to the Millennium Drought. The drought response plan of the time would need to address these requirements

There might be a practical limit to the amount of infrastructure that can be constructed as part of a drought response. For example, if the drought supply requirement were to become greater than 180 000 megalitres per year at any point in time, it might not be possible, if a drought occurred, to procure and commission sufficient drought infrastructure in time to avoid extreme level restrictions—meaning that the LOS objectives would be at risk of not being achieved. These risks can be reduced through construction of additional climate resilient supplies as part of infrastructure development to maintain supplies during normal conditions. These factors should be considered in future long-term planning decisions as the Strategy is reviewed.

The drought response plan will also set specific triggers to start building infrastructure, based on detailed technical investigations. These triggers are likely to include preparatory work in advance of the 40 per cent trigger to commence drought response activities to enable completion of the projects within the assumed timeframe.

6.9.3 Local drought response planning

Drought response plans will be maintained for communities that are not physically connected to the SEQ Water Grid, including Kenilworth, Kilcoy, Linville, Jimna, Coominya and Canungra. These plans usually involve a combination of water efficiency measures and carting of water, as were implemented in Maleny and Canungra in late 2009.

The costs of implementing local drought response plans will be shared across all customers of the SEQ Water Grid.

Over time, the Strategy seeks to achieve the same security of supply for these communities as for those connected to the SEQ Water Grid, as explained in Section 6.5.

6.10 Strategy outcomes

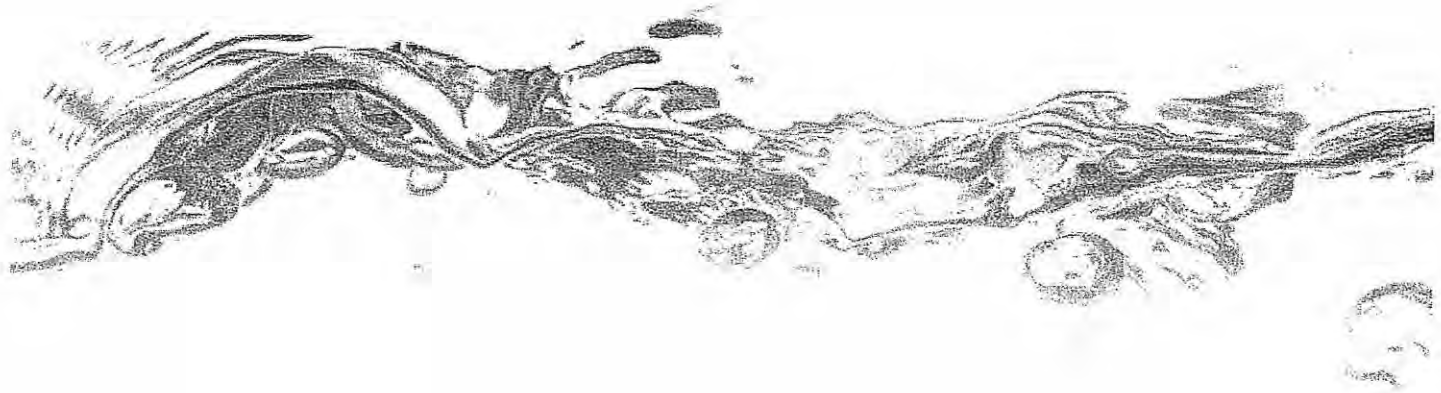
An outcome of the Strategy is a list of actions that, if implemented, would deliver the Water Supply Guarantee. Table 6.4 provides an overview of the key elements of the Strategy and the likely outcomes.

Table 6.4 Key elements of the Strategy

Strategy	Outcomes
Implement LOS objectives	• Infrastructure is planned and operated to meet a regional urban water demand of 375 litres per person per day so that: – Medium Level Restrictions are expected to be required no more than once every 25 years, on average – Medium Level Restrictions are not expected to exceed six months' duration more than once every 50 years, on average – Medium Level Restrictions will require a reduction in demand of 15 per cent. • The system yield is increased by about 14 per cent, due to optimised use of all water sources and taking advantage of variable conditions across the region.
Efficient water use	• Water is used at least 24 per cent more efficiently compared to pre-drought trends, while the active, outdoor lifestyle that residents of SEQ enjoy is maintained. • Planning is based on a conservative assumption of average urban water consumption of 375 litres per person per day. • The community is encouraged to maintain average residential consumption at or below 200 litres per person per day (Target 200). • Business and industry is regulated to move towards best practice water use efficiency. • Urban water system losses are reduced from 14 per cent in 2005 to a target of 8 per cent. • Permanent Water Conservation Measures are introduced. • Power stations in the SEQ region use purified recycled water when taking water from the SEQ Water Grid. • The demand management program encourages efficient water use through an appropriate balance of structural, operational and behavioural measures.

Local supplies	• All new homes in SEQ meet mandatory water savings targets. Rainwater tanks and stormwater harvesting are options to meet the target. • Most new industrial and commercial buildings install alternative water supplies, potentially including a rainwater tank. • Higher savings are pursued where cost-effective, provided that community health and safety are maintained. • Water to top up pools is primarily sourced from a rainwater tank or downpipe rainwater diverter. • Increased recycling and increased capture of rainwater and stormwater contribute to the improved water quality of waterways and Moreton Bay.
Water balance	• Additional supplies could be required in 2021, depending on average consumption, population growth and the impact of climate change on the supply from dams and weirs. • Maintaining average residential consumption at 200 litres per person per day could defer the need for additional supplies by at least five years, to between 2027 and 2033. • The QWC will now undertake detailed planning to ensure that additional supplies can be delivered efficiently and when required. The planning investigations will inform a final decision regarding the preferred location, capacity and timing of future water supplies. • Further investigations will also be undertaken for a range of other potential sources of supply. • Priority desalination sites have been confirmed at Lytton and Marcoola. Reserve sites are at Tugun and Bribie Island. • Investigations to enable a decision on the preferred desalination sites, including a project plan for delivery as a drought response if required are continuing. It is anticipated that the preferred site will be identified in the 2011–12 financial year.
Drought response planning	• A drought response plan is prepared for future droughts. • Drought response plans are prepared for communities with stand-alone sources of supply.
Operating the SEQ Water Grid	• The SEQ System Operating Plan will direct water security, considering cost and a range of other factors including energy use. • Measures will be introduced to ensure that the SEQ Water Grid is managed in accordance with the *Australian Drinking Water Guidelines* and the *Australian Guidelines for Water Recycling*.
Groundwater	• Water from groundwater aquifers will continue to make a small contribution in the delivery of urban supplies. The sustainable take from these aquifers is expected to remain relatively static. • Over time, the overall take from regulated groundwater aquifers in the Warrill Creek and Lockyer Creek catchments is planned to be reduced to sustainable levels.
Rural communities	• Consistent LOS objectives are targeted across communities with reticulated drinking water. • Drought response plans will be prepared for communities that are not directly connected to the SEQ Water Grid. • About 180 000 residents of SEQ rely solely on water from rainwater tanks and groundwater aquifers. These residents will be able to access water from the SEQ Water Grid when required. • A policy position will be developed for providing reticulated drinking water to communities that rely on water from individual rainwater tanks and groundwater aquifers.
Rural production	• Additional supplies could potentially be made available from the SEQ Water Grid for rural production when not required to meet urban needs. • Up to 32 000 megalitres per year of purified recycled water has been made available to irrigators when not needed for urban supplies, subject to conditions. • Options to make supply of recycled water to the Lockyer Valley economically viable will continue to be investigated in detail. • Other recycled water schemes will be investigated, to increase production and reduce wastewater discharges to waterways and Moreton Bay. • Rural water use efficiency will continue to improve, driven by water markets and trading and other factors. • A rural water advisory group has been established to investigate actions for improving the security of water supply for rural production through SEQ Water Grid operation.

Integration with the Regional Plan	• Sub-regional total water cycle plans will be prepared for key development areas and where regionally significant water supply infrastructure is located. The purpose of these plans is to integrate land use planning with planning for waterway health and for water supply for urban and rural purposes. • A water-sensitive urban design approach will be adopted, whereby planning for water supply and sewerage is integrated with planning for stormwater management.
[illegible]mental [illegible]omes	• Environmental flows are maintained under water resource plans. • Using water efficiently will reduce the amount of energy used by the SEQ Water Grid. The savings are equivalent to the total energy consumption of around 67 000 homes in 2048, compared to pre-drought consumption trends. • Further energy will be saved in the distribution and wastewater system, and within buildings.
Flood mitigation	• New or raised dams will provide additional flood mitigation benefits.
Research and development	• Research and development programs will influence and support future water decision making by exploring new technologies and opportunities.
Implementation and review	• The QWC will monitor and report on the implementation of the Regional Water Security Program. • The Strategy will be reviewed at least every five years, in parallel with the Regional Plan, or as changes to key assumptions require. • The QWC will provide an annual report on key issues, progress on actions and a review of assumptions.



Chapter 7

Implementation and review

This chapter summarises the actions that will be undertaken in the short to medium term to implement the Strategy. It also explains the proposed timeframe for future reviews.

Key messages

- The Regional Water Security Program sets out the future planning actions to ensure ongoing water security for SEQ.
- The Strategy will form the basis of advice to the Minister for Natural Resources, Mines and Energy and Minister for Trade about the Regional Water Security Program.
- The QWC is responsible for monitoring, reviewing and reporting on the implementation of the Regional Water Security Program.
- A number of different agencies are responsible for implementing elements of the SEQ water planning framework.
- The Strategy will be reviewed at least once every five years, aligned with the SEQ Regional Plan.
- The QWC will report on implementation annually. The annual report will include an assessment on whether an earlier review may be appropriate.

7.1 Water planning framework

The Strategy is part of a suite of regional water policies that contribute to achieving the outcomes of the SEQ Regional Plan, as described in Figure 2.1. The Strategy will be implemented in conjunction with those policies and strategies.

To deliver the Water Supply Guarantee, a range of detailed plans must also be prepared, as described in Table 7.1. The scope of these plans varies from regional policies to detailed operational plans.

Before building future water infrastructure, detailed feasibility assessments are required to prove project viability and sustainability. All state and Commonwealth government statutory approvals must also be obtained.

The QWC will continue to refine the hydrologic modelling on which the Strategy is based, in partnership with the Department of Environment and Resource Management (DERM) and the Urban Water Security Research Alliance. In particular, the QWC will review and update the modelling as climate change science improves.

Table 7.1 SEQ water planning framework

	Elements	Responsibility
Regional scale	• Strategy	• QWC
	• Regional Water Security Program	• Minister to make program • QWC to provide advice and coordinate implementation
	• SEQ System Operating Plan	• QWC
	• Drought response plan	• QWC
	• SEQ Water Grid Quality Management Plan	• SEQ Water Grid Manager
	• Healthy Waterways Strategy	• Healthy Waterways Partnership
Sub-regional scale	• Water resource planning	• DERM
	• Sub-regional total water cycle planning	• QWC in partnership with key stakeholders
	• Detailed investigation of potential upgrades to the SEQ Water Grid, including potential sources of supply	• QWC in partnership with key stakeholders
	• Waterways and catchment planning	• DERM, Healthy Waterways Partnership, Seqwater and local governments
	• Distribution and wastewater planning	• Local governments and distributor-retailers

	Elements	Responsibility
Local government scale	• Planning schemes, including master plans	• Local government
	• Local total water cycle planning	• Local government
	• Distribution network planning	• Local governments and distributor-retailers
	• Wastewater network planning	• Local governments and distributor-retailers
	• Drinking water quality management plans and recycled water management plans	• SEQ Water Grid Manager and water service providers
On-site development scale	• Development assessment	• Local governments , with the involvement of other stakeholders, as appropriate
	• Water efficiency management plans	• Businesses

7.1.1 Regional Water Security Program

On 5 March 2010, a revised Regional Water Security Program was made. The Program was informed by the revised draft Strategy. It specifies LOS objectives and key projects to achieve water security for the region.

The QWC is responsible for ensuring that the key actions and responsibilities of Queensland Government departments and water service providers are carried out or complied with in delivering the Program.

Based on the final Strategy, the Minister may request that the QWC provide updated advice about revised regional water security options. Within four months of receiving the QWC advice, the Minister will make and publish a revised Program.

The QWC will monitor progress against the Program to ensure that water security continues to be achieved for the region.

7.1.2 Review and updating of the Strategy

In general, it is expected that the Strategy will be reviewed on a five-year cycle, aligned with the review of the Regional Plan. The next review of the Strategy may be undertaken earlier, depending on the rate and extent of rebound in demand following the introduction of Permanent Water Conservation Measures across SEQ.

Implementation and monitoring of the Strategy will be reported and published yearly through a report to the Minister, which is required under the SEQ Water Market Rules. Performance will be measured and reported against the activities, works and initiatives (listed in Table 7.3) that must be undertaken to achieve the goals of the Strategy and the underlying assumptions for determining the required LOS yield.

To ensure successful implementation of the Strategy, the monitoring program will include:

- implementing infrastructure against milestones and performance criteria
- continually analysing and assessing the water balance assumptions against population growth, economic development, climate impacts and regional water efficiency
- regularly reviewing and evaluating the SEQ Water Grid performance, seeking improved efficiencies and service delivery
- integrating outcomes from detailed investigations of demand management measures and potential sources of supply
- incorporating findings from the research and development program
- reviewing outcomes delivered through Strategy implementation.

Based on this assessment, the annual report may recommend that the next review of the Strategy be brought forward. This approach will guide further Strategy development and assist in ensuring that the Water Supply Guarantee can be achieved.

7.1.3 Stakeholder and community engagement

The QWC is committed to open, accountable and inclusive community engagement processes. The QWC will provide stakeholder organisations, individuals and interest groups with opportunities to influence water planning and management. Stakeholders and community groups will be consulted as part of detailed investigations of potential demand management measures and potential sources of supply.

A separate stakeholder group will be formed to provide input and advice on the implementation of the Strategy and its review.

Figure 7.1 identifies the principle stakeholder organisations and interest groups.

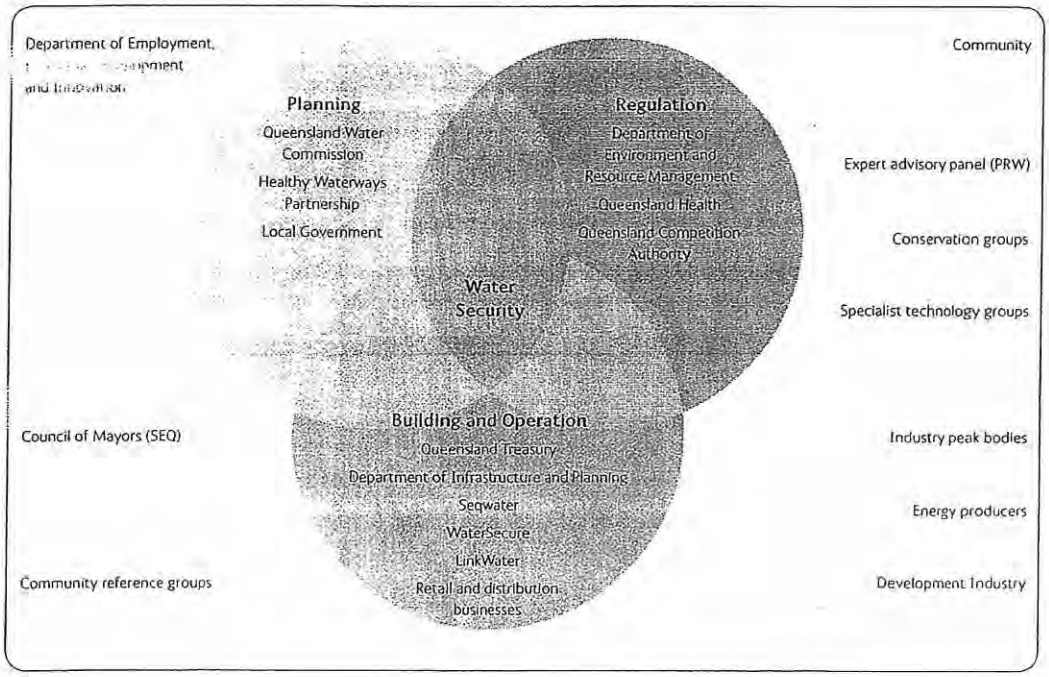


Figure 7.1 Strategy consultative framework

7.2 Efficient operation of the SEQ Water Grid

Water security is the first and foremost purpose of the SEQ Water Grid. A new framework has been established to ensure that this security is delivered as efficiently as possible, taking into account quality and reliability of service. Key features of the framework are:

- the SEQ System Operating Plan
- a detailed operating strategy
- an integrated water quality management framework.

7.2.1 SEQ System Operating Plan

The SEQ System Operating Plan outlines the rules for operating the SEQ Water Grid to help achieve the LOS objectives for the region, as specified in the Regional Water Security Program.

The SEQ System Operating Plan:

- facilitates water sharing across the region by specifying the share of available water that SEQ Water Grid customers may access
- establishes risk criteria for the short- and medium-term management of available water
- provides rules to promote the efficient and cost-effective operation of the SEQ Water Grid
- details minimum requirements, including for the production and supply of manufactured water
- ensures that operating costs are reduced, where possible, without compromising regional water security.

The risk criteria are a key feature of the SEQ System Operating Plan (refer to Table 7.2). The LOS objectives specify the basis for operating the SEQ Water Grid over the long term. The criteria provide the basis for balancing water security and operating costs over the short to medium term.

The risk criteria establish the acceptable levels of risk of triggering restrictions and construction of drought response infrastructure. Through these criteria, the SEQ System Operating Plan effectively mandates that the SEQ Water Grid be operated at capacity as key SEQ Water Grid storages approach 40 per cent of capacity. Under the current rules, it is it is estimated that full operation will be required below about 60 per cent of combined capacity, depending on the time of year and level of demand.

The risk criteria do not guarantee that the defined trigger levels will not be reached. However, they do ensure that potential operational changes to avoid them are taken as and when required.

Table 7.2 SEQ System Operating Plan risk criteria at March 2010

Volume of water stored by all key Water Grid storages	Probability of reaching stored volume		
	within 1 year	within 3 years	within 5 years
40 per cent	Less than 0.2 per cent	Not specified	Less than 5 per cent
30 per cent	Not specified	Less than 0.5 per cent	Less than 1 per cent

When the probability of reaching the trigger levels is less than the risk criteria, the SEQ Water Grid should be operated so as to minimise costs. Options include:

- reducing production from climate resilient supplies, such as desalination
- placing high-cost water treatment plants in standby mode
- reducing transfers through major interconnections
- selling water to irrigators on an interruptible basis (refer to Section 6.6).

The current risk criteria are conservative. They may be revised as new information becomes available on the efficient operation of the SEQ Water Grid and factors such as climate change.

7.2.2 Operating strategy

The SEQ System Operating Plan requires the SEQ Water Grid Manager to prepare an operating strategy outlining how the SEQ Water Grid will be operated.

The operating strategy must demonstrate how the LOS objectives and risk criteria are planned to be achieved as efficiently and effectively as possible. For example, it must address the amount of water that is expected to be taken from key supplies and the amount that is expected to be transferred through major interconnecting pipelines.

The SEQ Water Grid Manager will issue monthly Grid instructions based on the approved operating strategy. The operating strategy will focus on operation over a 12-month period. It will be submitted to the QWC for approval at 6-month intervals.

The operating strategy is based on overarching principles for various water supply assets. These principles include:

- ensuring compliance with resource operations plans and system operating rules
- maximising the use of more efficient supply options
- minimising the use of small, inefficient treatment plants, where an alternative exists
- maintaining minimum production levels at the desalination facility, ensuring that it is available when required
- maintaining minimum water flows through major inter-connectors, minimising the cost of operation and ensuring that they are available at short notice
- maintaining water quality from the Western Corridor Recycled Water Scheme in preparedness to augment Wivenhoe Dam as required.

The operation of the SEQ Water Grid is based on a robust risk management framework. This framework protects water security, quality and reliability by integrating operations across water supply entities. The SEQ Water Grid Manager has given specific consideration to:

- emergency management, ensuring business and service delivery continuity in the event of natural disasters or system failures
- security management, due to water supply being an essential community service
- risk management practices consistent across the seven entities in the supply chain.

7.2.3 Drinking water quality management

The SEQ Water Grid creates the opportunity to improve water quality management across the region by managing multiple treatment plants and potentially the blending of treated water. This is a significant change from the traditional approach where there is a dependency on individual water treatment plants.

Consistent with this approach, the quality of water delivered from the SEQ Water Grid will be assured through an integrated set of management plans for individual assets and across the Grid as a whole.

The SEQ Water Grid Manager manages the overarching water quality strategy through the Water Grid quality management plan. The aim of the quality management plan is to mitigate water quality risks and achieve water quality standards across the SEQ Water Grid as a whole.

Within this framework, each water service provider is required to prepare a drinking water quality management plan in accordance with the requirements in the *Water Supply (Safety and Reliability) Act 2008*. The regulations are being introduced in two stages. Providers are required to:

- carry out an initial mandatory monitoring and reporting program from 2 January 2009, until they have an approved drinking water quality management plan in place
- develop and implement the approved drinking water quality management plan.

In a drinking water quality management plan, the provider is required to:

- assess the risks in the system
- document the process for managing these risks
- outline operational requirements for managing the system, including how mandatory criteria will be monitored, how operational and verification monitoring will be conducted, and what reporting arrangements are in place to ensure safe water.

A recycled water management plan and drinking water quality management plan must be approved before purified recycled water is released into Wivenhoe Dam.

Rainwater tanks

Queensland Health does not recommend the use of water from rainwater tanks for drinking and food preparation if a potable reticulated water supply is available.

Many people in Queensland rely on water from rainwater tanks for their drinking water. Although the risk of contracting illness from these supplies is low when roof catchments and tanks are well maintained, the quality of water from rainwater tanks is not as consistently high as that provided by well-managed reticulated supplies that obtain their water from a high-quality source. The risks from using rainwater for potable purposes, including drinking and food preparation, can be managed through a risk management framework such as the one described in the 2004 enHealth Council document, *Guidance on use of rainwater tanks*.

Improvement program

Improvement programs will also be coordinated across the SEQ Water Grid. Upgrades may be undertaken as part of the renewal of existing infrastructure, or in response to increasing water quality standards or community expectations.

The QWC will coordinate regionally significant water quality improvements, through the Statement of Needs process described in Sections 3.5.2 and 7.3.

In partnership with the SEQ Water Grid Manager, the QWC will also coordinate periodic reviews of water quality standards and infrastructure. In 2010 and 2011, the QWC will review the costs and benefits of moving to a common residual disinfection standard across SEQ. The review will focus on disinfection by-products, residual maintenance, costs and operability and will inform planning for future water treatment plants and major upgrades to existing treatment plants.

Catchment management

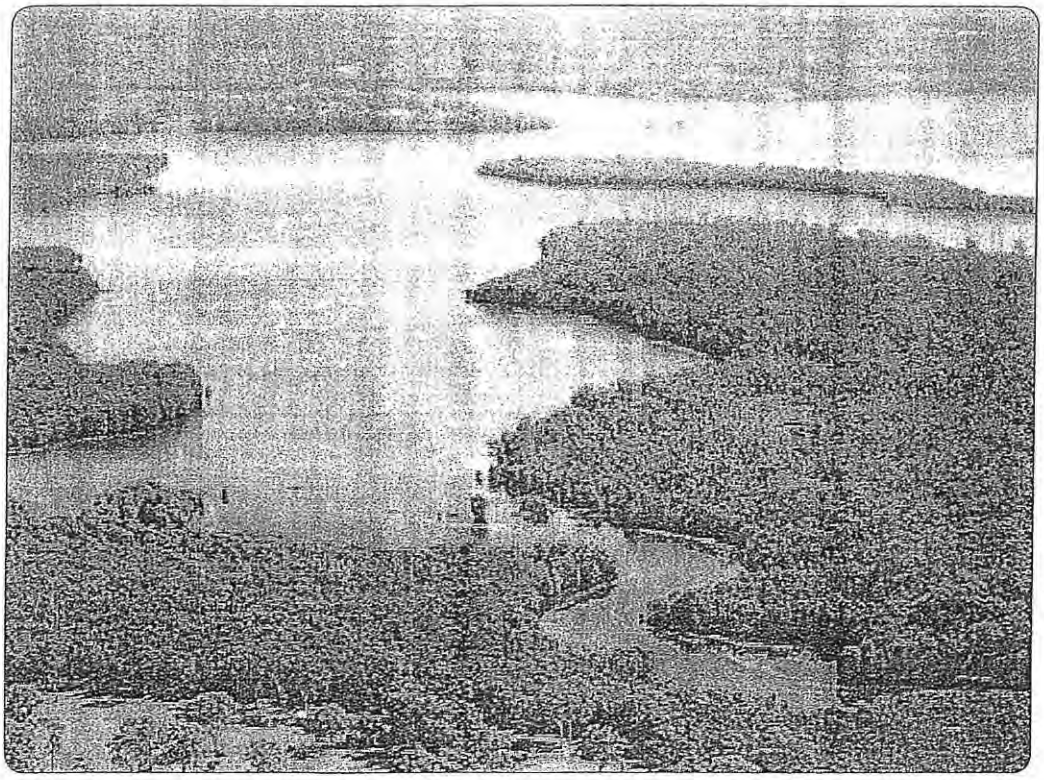
Catchment management is a core element of drinking water quality management. Existing uses need to be managed, and new development planned and assessed, to ensure that risks to water quality are controlled to an acceptable level. These controls need to be applied for all land from which water flows to drinking water supplies.

Local government planning schemes and related policies must identify these catchment areas and include appropriate development controls. Planning studies in these areas must consider how to avoid future types or scales of development that would pose an unacceptable risk to water quality. Where development is permitted, strict controls may be required. Infrastructure should also be located and designed taking into account water quality risks.

Administrative arrangements are being established to refer relevant development applications in dam catchments to Seqwater for consideration. Seqwater has prepared guidelines on how to address development in dam catchments.

In the longer term, Seqwater must have appropriate involvement in land use planning in dam catchment areas. Drinking water quality management plans will involve both planning and development assessment.

The QWC is reviewing current policy for managing the effect of land use and development in water storage catchments on drinking water quality. The purpose of the review is to ensure that arrangements can manage risks to drinking water quality. As an initial step, Seqwater has an assessment role for selected developments surrounding drinking water storages. The review will address the areas and activities that may need improved assessment and management arrangements to protect drinking water quality. Local governments are currently required, under the SEQ Regional Plan, to control the water quality impacts of all development in drinking water catchments.



7.3 Statement of Needs

The Statement of Needs will be based on the Strategy, and will summarise key activities that must proceed over the next ten years to ensure that the LOS objectives can be achieved (refer to Section 3.5.2). Based on the Strategy, the key elements of the first Statement of Needs will be as follows:

- Remaining committed projects in the Regional Water Security Program should be delivered. Timing and staging options should be considered, where applicable.
- Beyond these projects, additional bulk water supplies may be required as early as 2017. However, if SEQ is able to maintain regional average total water use at or below 345 litres per person per day, then new bulk water supplies may not be required until at least 2022.
- Operational improvements and capital upgrades to comply with water quality requirements under the *Water Supply (Safety and Reliability) Act 2008* should continue.
- A drought response plan should be prepared for the region and for towns with stand-alone sources of supply.
- Capital upgrades should be made over time to achieve the same level of service for stand-alone communities as for the remainder of the SEQ Water Grid.

7.4 Research and development

Applied research and development will improve the sustainable and integrated management of water in SEQ. This research will make significant contributions to reducing costs and environmental impacts, as well as improving planning and investment decisions.

7.4.1 Urban Water Security Research Alliance

The Urban Water Security Research Alliance (UWSRA) is the largest urban water research program in Australia. It was formed in 2007 as a partnership between the Queensland Government, the CSIRO, The University of Queensland and Griffith University. The partners have committed $50 million over five years.

The objective of the program is to collaboratively develop the knowledge and tools to inform and support the implementation of the Strategy. The program will address areas such as climate change, changes in technology and the introduction of purified recycled water. Research is being undertaken on three themes, with each theme involving a number of specific projects.

The themes are described in Table 7.3. Further information is available from the UWSRA website at <www.urbanwateralliance.org.au>.

Table 7.3 Projects comprising the Urban Water Security Research Alliance

Reducing demand	
Stormwater harvesting and reuse	Researching the innovative capture and storage of stormwater for additional water supply in SEQ. The impact of harvesting stormwater on creek and ecosystem health is also being investigated.
Decentralised systems	Researching the performance and reliability of rainwater tanks and decentralised water supply systems in residential and commercial developments, including energy use and water quality standards.
Demand management and communication research	Researching community attitudes and behaviour in relation to demand management.
Residential water end-use	A detailed survey into household water end-uses that will quantify the impact of urban water demand management strategies.

Water quality	
Hospital wastewater	Researching the contribution of pharmaceutical and other compounds to domestic wastewater from hospitals.
Pathogens and trace contaminants in dams	Researching sources of target pathogens and organic chemicals and the treatment capacities of dams to remove them under different climatic and seasonal conditions in SEQ.
Bio-assays and risk communication	Development of scientific, technical and communication bases for the implementation of bio-analytical tools in water quality monitoring programs.
Health risk assessment of local source waters	Researching the survival, and removal, of pathogens in rainwater tanks and stormwater.
Enhanced treatment	Evaluating alternative treatment processes that may be able to achieve similar water qualities and risk profiles as the micro-filtration and reverse osmosis process used for purified recycled water.
Disinfection by-product formation in alternative source waters	Researching disinfection by-product formation from blending treated drinking water of different qualities from different sources within the SEQ Water Grid.
Electrochemical treatment of reverse osmosis concentrate	Supporting research into the efficiency of electrochemical treatment of reverse osmosis concentrate to remove total organic carbon, chemical oxygen demand and dissolved organic nitrogen.
Managing efficiently	
Climate and water	Through the use of modelling, this project is examining how the climate has changed, what the key drivers are, and the regional implications for water resources.
Total water cycle analysis	Evaluating the impact of rainwater tanks, recycling, stormwater harvesting and sub-regional scale water cycle plans on the water balance at the regional scale.
Water quality monitoring technology and information collection	Developing systems for online, real-time monitoring of water quality in sewage systems. A proof-of-concept system has been developed to monitor inflows to wastewater treatment plants, providing the capacity to detect sudden changes.
Evaporation losses from water storages	Assessing the reduction in evaporation that can be achieved through the use of mono-layers and the potential impacts of these mono-layers on water quality and ecology.
Purified recycled water in the Lockyer Valley	Evaluating the impacts on soil quality of delivering recycled water to the Lockyer Valley for irrigation.

7.4.2 Water Cycle Sciences Project

The multidisciplinary Water Cycle Sciences Project is another key element of water research in SEQ. Managed by DERM, the project has a focus on identifying the barriers and solutions to achieving a sustainable long-term water cycle.

7.4.3 Queensland Climate Change Centre of Excellence

In March 2007, the Queensland Government established the Queensland Climate Change Centre of Excellence as a specialist unit within DERM. The Centre provides policy advice and scientific information on climate change and its impact on the community, economy and environment. The Centre has formed links with national and international researchers to ensure that Queensland benefits from global research on climate change, as well as having strong links with national policy initiatives. At the same time, that knowledge will be applied at a regional level so that the local climate change impacts can be assessed and managed.

7.5 Key actions

Table 7.4 summarises the activities, works and initiatives that the QWC considers should be undertaken over the next 10 years to achieve the goals of the Strategy.

The activities are additional to:

- existing measures, such as the demand management program
- committed projects, such as those listed in the Emergency Regulation
- legislative and regulatory requirements, such as the preparation of drinking water quality management plans
- requirements under the SEQ System Operating Plan and market rules, including the development of a SEQ Water Grid operating strategy.

Table 7.4 Recommended planning activities and initiatives

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
Total water cycle planning				
1	2.3	Finalise the Mt Lindesay and Beaudesert sub-regional total water cycle management plan.	Short-term	QWC in partnership with key stakeholders
2	2.3	Prepare sub-regional total water cycle management plans for key development areas, including in the Moreton Bay and Sunshine Coast Regional Council areas.	Medium-term	QWC in partnership with key stakeholders
3	2.3	Prepare and publish a guideline for sub-regional and local total water cycle planning.	Medium-term	QWC in partnership with DERM and local governments
Strategy review and implementation				
4	3.5 and 7.1.1	Provide updated regional water security options to the Minister based on the key elements of the Strategy.	By the end of 2010	QWC
5	3.5 and 7.1.1	Report on the status of the implementation of the Regional Water Security Program.	Annually	QWC
6	3.5 and 7.1.2	Publicly report on the implementation of the Strategy and currency of key assumptions.	Annually	QWC
7	3.5	Develop a triple bottom line assessment framework for potential demand management measures and potential water supplies.	Short-term	QWC
8	7.1.3	Establish an expert stakeholder forum to discuss issues associated with the implementation of the Strategy—as a priority.	Short-term	QWC
9	3.5	Review the Strategy as required, and prior to a decision regarding the next major supply.	At least once every five years, aligned with the Regional Plan	QWC
Drought response planning				
10	6.5.1	Finalise drought response plans for towns with stand-alone sources of supply.	Short-term	QWC
11	6.9	Prepare a drought response plan for the SEQ Water Grid in accordance with legislative requirements.	Medium-term	QWC
Demand and supply modelling				
12	3.2 and 5.3.2	Undertake further hydrologic modelling to better address the potential impact of climate change on inflows of major dams.	Medium-term	UWSRA, QWC and DERM
13	7.1.2	Publish an annual water report, summarising key consumption and demand trends in SEQ.	Annually	QWC
14	7.1.2	Monitor and analyse consumption and demand trends, and review and refine future demand forecasts as appropriate.	Ongoing basis	QWC

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
Demand management program				
15	6.2	Deliver information and education campaigns related to efficient water use and Target 200, including through the development and delivery of targeted education programs for schools and selected industries.	Ongoing	QWC, DERM and Seqwater
16	6.3.1	Review the efficiency and effectiveness of the existing Permanent Water Conservation Measures. Investigate whether individual measures can be integrated into end-user contracts, moved to other regulations, or discontinued.	2010 and 2011	QWC, distributor-retailers and other stakeholders
17	6.3.3	Review the overall demand management program to ensure that it continues to achieve an appropriate balance between water restrictions and other demand management measures, with the objective of encouraging water efficiency at the lowest possible economic, social and environmental costs.	Ongoing	QWC
18	4.4 and 6.3	Develop an online reporting facility and templates for businesses with water efficiency management plans.	Short-term	QWC
19	6.3.2	Work with the Commonwealth and other jurisdictions to develop a national approach to water efficiency for large water users, potentially including a star-rating system.	Long-term	QWC and DERM
20	6.3.2	Work with the Commonwealth Government to promote the Water Efficiency Labelling Scheme and ban the sale of appliances that do not meet these requirements.	Ongoing	QWC and DERM
21	6.3.2	Assess viability and trial the use of web-based water monitoring systems to detect leaks within schools.	Long-term	QWC and Department of Education and Training
22	6.3.2	Implement standardised water billing requirements across SEQ.	Commencing July 2010	Distributor-retailers
23	6.3.3	Undertake a comprehensive review of the potential demand management measures.	As part of future reviews of the Strategy	QWC
24	4.5	Review medium- to long-term non-residential demand forecasts based on updated development and water use trends.	Medium-term	QWC and distributor-retailers
25	4.3	Undertake a detailed review of system leakage targets for bulk and distribution infrastructure using the Infrastructure Leakage Index approach.	Long-term	QWC, LinkWater and distributor-retailers
26	4.3	Review peaking factors recommended in the Planning Guidelines for Water Supply and Sewerage based on the planning assumption for average total consumption, with allowance for local demand and supplies.	Medium-term	QWC and DERM

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
Local supplies				
27	4.6	Research options to enhance the efficiency of the water saving target acceptable solutions, including by increasing the average yield, cost-effectiveness or energy efficiency.	Ongoing basis	QWC, Department of Infrastructure and Planning and the UWSRA
28	4.6	Quantify and assess the performance and reliability of rainwater tanks in residential and commercial developments, including the costs and benefits of larger tanks.	Medium-term	QWC and UWSRA
29	4.6	Research the survival and removal of pathogens in rainwater tanks and stormwater.	Long-term	QWC, UWSRA and Queensland Health
30	4.6 and 5.4.3	Investigate opportunities to use stormwater to safely and efficiently provide alternative water supplies. Potential impacts on environmental flows and the benefits of water-sensitive urban design in removing contaminants of concern will also be investigated.	Medium-term	QWC and the UWSRA
31	4.6	Facilitate the development of major stormwater harvesting demonstration projects that achieve the water saving target through supply to toilet cisterns and washing machines.	Medium-term	QWC with local governments and developers
32	4.6	Deliver an education program for local governments and developers regarding options to achieve the water saving target.	Medium-term	QWC
33	4.4	Research into community attitudes and behaviour in relation to demand management.	Medium-term	UWSRA and QWC
Committed projects				
34	5.1	Complete remaining Emergency Regulation projects.	As specified in the Emergency Regulation	Responsible entities
35	5.2	Construct the first stage of the Wyaralong water treatment plant and Cedar Grove Connector.	Medium- to long-term (to be based on QWC's recommendation)	Department of Infrastructure and Planning
36	5.2	Construction the second stage of the Wyaralong water treatment plant and Karawatha Inter-connector.	Medium- to long-term (based on QWC's recommendation)	Department of Infrastructure and Planning
Potential desalination facilities				
37	5.4.1	Preserve priority sites at Marcoola and Lytton and reserve sites at Bribie Island and at Tugun.	Short-term	QWC
38	5.4.1	Establish community reference groups and consultation programs for investigations of priority sites. Conduct community consultation on the Phase 3 investigation work at and surrounding the priority sites.	Short-term	QWC
39	5.4.1	Prepare a land use master plan for land surrounding the existing SEQ (Gold Coast) Desalination Facility as a priority to enable coordination of planning activities for a range of different uses in the area.	Short-term	Gold Coast City Council and the QWC
40	5.4.1	Identify and preserve pipeline corridors required to connect priority sites to the SEQ Water Grid and to augment the Water Grid as required.	Medium-term	LinkWater

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
41	5.4.1	Undertake detailed engineering investigations at priority sites to investigate such issues as ground conditions and flooding risk to provide input into the design and approvals processes.	Medium-term	QWC
42	5.4.1	Undertake detailed investigations into the composition and condition of flora and fauna communities in Moreton Bay in order to establish a baseline condition of potentially affected marine ecosystems.	Medium-term	QWC and SEQ Healthy Waterways Partnership
43	5.4.1	Commence appropriate water quality monitoring for priority sites to establish baseline seawater conditions.	Medium-term	QWC and SEQ Healthy Waterways Partnership
44	5.4.1	Through the SEQ Healthy Waterways Partnership, develop an advanced three-dimensional receiving water quality model to investigate potential effects of brine dispersion.	Medium-term	QWC and SEQ Healthy Waterways Partnership
45	5.4.1	Commence ecological investigations at priority sites and adjoining areas to confirm the presence of any native habitats and any significant environmental values not yet identified.	Medium-term	QWC
46	5.4.1	Compile a review of environmental factors, which could constitute a project referral document for referral of a proposed new desalination plant to the Commonwealth environmental regulator.	Medium-term	QWC, LinkWater and Watersecure
47	5.4.1	Based on the investigations outlined above, develop a business case for the development of additional desalination capacity as a future bulk water supply source.	Medium-term	QWC
Potential dams and weirs				
48	5.4.2	Undertake a detailed investigation of the option to further raise Borumba Dam and the potential of water harvesting from the Upper Mary River to the dam.	Short-term	QWC, DERM and local government
49	5.4.2	Undertake a detailed investigation of options to increase supply from the Logan Basin, including by development of a small storage on the Glendower Dam site or by a pipeline to transfer water from the Bromelton Off-stream Storage to Wyaralong Dam.	Medium-term	QWC
50	5.4.2	Review the operation of the Brisbane River system to optimise the water supply yield and balance flood storage and water supply storage volume requirements.	Medium-term	QWC and Seqwater
51	5.4.2	Review the potential to water harvest from Gold Coast creeks and the Coomera River into Hinze Dam.	Long-term	QWC
Stormwater harvesting to dams				
52	5.4.3	Investigate opportunities to use stormwater to augment dams, including a scheme to augment Ewen Maddock Dam.	Medium-term	QWC, local government, Unitywater and Seqwater

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
Purified recycled water				
53	5.4.4	Enhance community access to information regarding purified recycled water, including in relation to water quality, environmental benefits and the role of the Western Corridor Recycled Water Scheme as a standby facility with the capacity to supplement Wivenhoe Dam at appropriate times.	Ongoing	WaterSecure
54	5.4.4	Publish water quality reports for the Western Corridor Recycled Water Scheme.	At least annually	WaterSecure
55	5.4.4	Develop a strategy to maximise cost-effective supply of purified recycled water to existing and future industrial users.	Short-term	SEQ Water Grid Manager and QWC
56	5.4.4	Investigate options to increase treated effluent flows to the Gibson Island advanced water treatment plant, as a drought response measure or normal operating practice.	Medium-term	QWC with distributor-retailers
57	5.4.4	Investigate projected wastewater volumes available for supply, and potential viable sources of demand, as well as ecosystem consequences of wastewater discharge and recycling options.	Medium-term	QWC with distributor-retailers
58	5.4.4	Investigate potential purified recycled water schemes to augment Hinze Dam and North Pine Dam.	Long-term	QWC
59	5.4.4	Commence baseline hydrodynamic and water quality monitoring on Hinze and North Pine dams, informed by detailed investigations.	Long-term	Seqwater
Rural towns				
60	6.5.1	Recommend options to improve water security for Beaudesert and Canungra.	Short-term	QWC
61	6.5.1	Investigate water security options for other towns with a stand-alone source of supply, including Dayboro and Boonah.	Medium-term	QWC
62	6.5.2	Review minimum requirements regarding rainwater tank capacity and connected roof area where reticulated drinking water supplies are not available.	Medium-term	QWC
63	6.5.2	Investigate the volumes of water required to augment supply from rainwater tanks during drought, where reticulated drinking water supplies are not available.	Medium-term	QWC and distributor-retailers
64	6.5.2	Develop a policy position regarding the provision of reticulated water supplies to communities that currently rely on drinking water from rainwater tanks and groundwater bores.	Long-term	QWC, distributor-retailers and local governments
Rural production				
65	6.6	Establish a rural water advisory group to oversee planning for rural water supply initiatives in SEQ.	Short-term	QWC
66	6.6.2 and 6.6.3	Develop a framework, including pricing policies, to make additional water available for rural production, when not required for urban supply.	Short-term	QWC, DERM, SEQ Water Grid Manager and Seqwater

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
67	6.6.2	Undertake a survey of existing rural producers in partnership with the rural water advisory group and local governments to establish whether existing entitlements meet local needs.	2010	QWC, DERM and local governments
68	6.6.2	In the Warrill Valley, investigate an option to enhance the reliability of supply to rural irrigators through an amendment to the interim resource operations licence.	Short-term	QWC and Seqwater
69	6.6.2	Investigate opportunities to make additional SEQ Water Grid water available for rural production, when not required for urban supply.	Medium-term	QWC and SEQ Water Grid Manager
70	6.6.3	Investigate alternative schemes to make the supply of recycled water from the Western Corridor Recycled Water Scheme to the Lockyer Valley economically viable, including options involving use of existing infrastructure and, if necessary, a reduction in the irrigation area.	Short-term	SEQ Water Grid Manager, QWC and DERM
71	6.6.3	Investigate opportunities to supply recycled water for rural irrigation, including as part of sub-regional total water cycle planning.	Medium-term	QWC, distributor-retailers and local governments
Supply to outside SEQ				
72	6.7	Develop a framework for the supply of water to areas outside SEQ, on a full commercial basis and without impacting on the ability to deliver LOS reliability to SEQ. The framework should include economic and operational principles, standard contractual provisions and possible inter-governmental agreements.	Short-term	QWC
System operation				
73	7.2.1	Review the SEQ System Operating Plan as required.	As required	QWC
74	7.1.2	Report annually to the Minister on the operation of the SEQ Water Grid, as part of the annual market rules review.	No later than 30 November each year or by such other time as the Minister may determine	QWC
75	7.2.3	Review the costs and benefits of moving to a common residual disinfection standard across SEQ.	Short-term	QWC with water service providers
76	7.2.3	Implement appropriate development controls in the catchment area of Cedar Grove Weir, while preserving appropriate development rights.	Medium-term	QWC and Scenic Rim Regional Council
77	7.2.3	Develop a policy approach on catchment management controls for management of water quality risks in dam catchments.	Medium-term	QWC, DERM and Seqwater
78	7.2.3	Participate in future planning scheme reviews and in the development assessment process as a concurrence agency.	Ongoing	Seqwater

Number	Section reference	Activity, work or initiative	Timeframe	Responsible agency
Other research				
79	7.4	Quantify residential water end-uses and develop options for target interventions to improve water use efficiency.	Medium-term	UWSRA and QWC
		Research opportunities to further improve the quality of purified recycled water through source control, wastewater treatment technologies and management within natural water bodies.	Medium-term	UWSRA and WaterSecure
81	7.4	Research sources of target pathogens and organic chemicals and the treatment capacities of dams to remove them under different climatic and seasonal conditions in SEQ.	Medium-term	UWSRA and Seqwater
82	7.4	Evaluate alternative treatment processes that may be able to achieve similar water qualities and risk profiles as the micro-filtration and reverse osmosis process used for purified recycled water.	Medium-term	UWSRA
83	7.4	Research disinfection by-product formation from blending treated drinking water of different qualities from different sources within the SEQ Water Grid.	Medium-term	UWSRA, QWC and Seqwater
84	7.4	Research and evaluate options to reduce evaporation from dams.	Medium-term	UWSRA and DERM

Key terms

Term	Definition
Allocation	A right to take water that is an asset separate from land title and can be traded. Water allocations are generally granted via processes contained within resource operations plans.
Brisbane River system	Wivenhoe and Somerset dams, Lake Manchester, Gold Creek Dam and the Mt Crosby Weir.
Bulk water price path	Ten-year price path projected for bulk water prices based on assumed interest rates and consumption patterns.
Category A water	Category A water is supplied from the SEQ Water Grid at the reliability specified in the LOS objectives. Category A water is used for high priority uses including for urban and some industrial purposes. It includes purified recycled water that is supplied to power stations and those industrial customers that require LOS reliability.
Category B water	Category B water is supplied from the SEQ Water Grid at a lower reliability than that specified in the LOS objectives. Category B water includes purified recycled water that is available from the Western Corridor Recycled Water Scheme for rural irrigation. These supplies will be used to augment Wivenhoe Dam if SEQ Water Grid storage levels decline to 40 per cent of capacity.
Climate independent supply	Climate independent water supplies are not affected by rainfall or inflow patterns. Water from desalination and artesian water are examples of climate independent supplies.
Climate resilient supply	Climate resilient supplies are not likely to be significantly affected by climate variability. Such supplies include: - climate independent supplies, such as desalination - purified recycled water - adopted net inflows to dams and extractions from groundwater aquifers under extended and severe drought conditions. For the Strategy, the climate resilient supply from dams and weirs across SEQ is based on 30 months of inflows equivalent to a drought with a severity of between one in 1000 and one in 10 000 year occurrence, adjusted for evaporation and river transport losses.
Demand management	Any program that reduces water consumption and the demand for water from the region's bulk water sources. Demand management programs may include water use efficiency measures, reductions in water losses, water trading to make better use of existing supplies, and substitution of existing supplies with alternative supplies such as rainwater tanks, recycled water and stormwater.
DERM	Department of Environment and Resource Management.
Destination price point	Under the water price path, councils will reach the final price point at different times, reflecting the fact that councils have different bulk water costs at present. Once the final price point is reached, bulk water increases should only be based on inflation. The years in which the relevant councils reach the final destination price point are: - Lockyer: 2011-12 - Somerset: 2014-15 - Scenic Rim: 2015-16 - Logan: 2015-16 - Gold Coast: 2016-17 - Brisbane, Ipswich, Moreton Bay, Sunshine Coast and Redlands: 2017-18.
DIP	Department of Infrastructure and Planning.
Drought response mode	The mode of operation when the combined regional storage levels drop below the T1 trigger and enter the regional Drought Storage Reserve. This mode has two phases – the preparation phase and the construction phase.
Drought response plan	A pre-determined suite of restrictions, demand management programs and new sources of supply that will be implemented once combined dam levels reach a specified trigger.
Drought storage reserve	Volume of water located below the working storage. The SEQ Water Grid drought storage reserve is sized to provide, in conjunction with climate resilient sources, a minimum of 36 months supply of water at a restricted demand.
Effective evaporation	Losses due to surface evaporation and seepage minus infiltration.
Emergency Regulation	*Water Regulation 2002* (Part 8)

Term	Definition
Entitlement	A term used to describe some water authorities granted under the *Water Act 2000*. A water entitlement is a water allocation, interim water allocation or a water licence.
Environmental flows	Flow requirements specified in Water Resource Plans necessary to maintain and support aquatic biota and ecosystem processes.
Federation Drought	The drought experienced in SEQ from 1898 to 1903. Prior to the Millennium Drought, it was the most severe drought in recorded history in SEQ.
Greywater	Wastewater from the bath, spa bath, shower, wash basins and laundry, which can be diverted for use on lawns and gardens. It does not include water from the kitchen, swimming pool or toilet, as this water would pose health and environmental risks.
Grid Water	Any water supplied into or extracted from the SEQ Water Grid.
Groundwater	Groundwater, as defined in the Water Regulation 2002, is water from an underground source.
Key Water Grid storages	Baroon Pocket, Ewen Maddock, Cooloolabin, Wappa, Somerset, Wivenhoe, North Pine, Leslie Harrison, Hinze and Little Nerang dams and Lakes McDonald and Kurwongbah. Key Water Grid storages are used to calculate current dam levels and critical drought response triggers.
Levelised cost	The cost of a measure expressed in terms of dollars per megalitre. Levelised cost is generally calculated by dividing the net present value of the cost of the measure by the net present value of the water saved or supplied.
Level of Service (LOS) objectives	LOS objectives provide a basis for establishing a secure water supply. The objectives define inter alia the desirable maximum frequency, duration and severity of water restrictions, and the average amount of water per capita that must be supplied in normal times. For the purposes of the Strategy, LOS objectives are the same as 'desired Level of Service objectives' as defined in the *Water Act 2000*.
L/p/d	Litres per person per day.
LOS system yield	The LOS system yield is the volume of water that can be supplied from the SEQ Water Grid, on average every year and still achieve the LOS objectives.
Logan River system	Wyaralong Dam, Cedar Grove Weir, Bromelton Off-stream Storage and Maroon Dam.
ML	A megalitre or 1 000 000 litres.
ML/yr	Megalitres per year.
Measures	Used to describe initiatives or projects which are expected to achieve a defined outcome.
Millennium Drought	The drought that occurred in SEQ (and other parts of Australia) from 2001 until 2009. The Millennium Drought was declared over in SEQ on 20 May 2009 when Wivenhoe, Somerset and North Pine dams reached 60 per cent of their combined capacities.
Minimum operating level	The minimum operating volume for any storage is included in the appropriate resource operations plan and might be referred to as the dead storage level. Water below the minimum operating level cannot be accessed with existing infrastructure.
Minimum security volume	The minimum security volume is set at 5 per cent by the LOS objective that regional water storages must not be permitted to reach 5 per cent of combined storage capacity.
Normal operating mode	This is the mode of operation when the combined regional water storage level is within the working storage. Most commonly, the region will operate in this mode.
Priority	Groups of water allocations and interim water allocations are assigned a priority, largely based on the performance of the groups and the rules in place to provide for the sharing of available water between the priority groups. High priority A group of water allocations and interim water allocations that perform more reliably than lesser priority groups. High priority water allocations are mainly used for urban purposes and for power generation, although they are also sometimes utilised for irrigation. Medium priority A group of water allocations or interim water allocations that have less security than high priority. Once the available water in a scheme has been set aside for the high priority group, the remainder is divided amongst those in the medium priority group. Access to medium priority water is often prohibited before access to higher priority water begins to reduce. Medium priority allocations are generally used in the rural production sector.
Purified recycled water (PRW)	Purified recycled water is wastewater that has been treated to a very high standard using world's best technology through an advanced water treatment process. The Public Health Regulation 2005 and the *Water quality guidelines for recycled water schemes* specify the water quality standards that must be met for recycled water and drinking water.

Term	Definition
Queensland Water Commission (QWC)	A statutory authority established to advise the Queensland Government on matters relating to water supply and demand management, and to facilitate and implement the regional water security program.
Regional water security options	Advice from the QWC regarding options to achieve water security in SEQ. Among other things, the options must address: • LOS objectives • demand management for water • the extent to which implementation of the desired LOS objectives would involve modifying existing water supply works or building new water supply works • the likely costs and pricing implications and the preferred ways of sharing the cost.
Regional water security program	A program to achieve water security for the region made and published by the Minister for Natural Resources, Mines and Energy and Minister for Trade within four months of receiving regional water security options from the QWC. A revised regional water security program was made in March 2010.
Reliability of supply	An indication of the proportion of time that a supply system is able to meet the full assumed demand. Reliability may be expressed as the proportion of time over a historical period that the full demand is met or conversely not met.
Resource operating plan (ROP)	A plan that details the water sharing rules, infrastructure operating rules and other water management rules that will be applied in the day-to-day management of water supplies within a catchment or water supply scheme.
Restricted demand	The volume of water required to meet the region's needs if the combined regional storage drops below the T1 trigger. The LOS objective for Medium Level Restrictions is to reduce demand by 15 per cent below the demand when Permanent Water Conservation Measures are in force. See also Water Restrictions.
Regional Plan	*South East Queensland Regional Plan 2009-2031*.
SEQ	South East Queensland, as defined in the SEQ Regional Plan.
SEQ Water Grid	The connected group of bulk supply and transport assets in South East Queensland that when operated conjunctively can deliver the LOS objectives.
SEQ Water Grid Manager	A Government owned, not for profit, entity established to purchase bulk supply, treatment and transport services, sell water and water services to Water Grid customers, and oversee the physical operation of the SEQ Water Grid.
Sewer mining	The extraction of raw sewage effluent from the wastewater collection system for treatment and use as recycled water. Waste from the treatment plant is generally returned to the sewer. The final quality of the water produced can be fit to purpose.
South Maroochy system	Cooloolabin, Poona and Wappa dams.
Standards of service	The characteristics of product delivered by water retailers to their customers. The *Water Act 2000* describes the requirements for establishing standards of service. Examples of standards of service relate to water quality, delivery pressure and continuity of supply.
Stochastic modelling	A stochastic model is a tool for estimating probability distribution of potential outcomes by allowing for random variation in one or more inputs over time. The random variation is usually based on fluctuations observed in historical data for a selected period using standard time-series techniques.
System losses	The difference between the amount of water extracted from water supplies and that delivered to water users. The difference may be due to approved activities such as fire fighting or unapproved such as theft or due to leakage losses.
SEQ System Operating Plan	A plan made under section 360V of the *Water Act 2000* to give effect to the regional water security program. The SEQ System Operating Plan describes rules for operating water supply infrastructure in order to achieve the LOS objectives, as specified in the regional water security program.
Urban activity	A residential, industrial, retail, commercial, sporting, recreation, tourism or community activity within the urban footprint.
Urban footprint	One of the regional land use categories in the Regional Plan. The urban footprint identifies land to provide for the region's urban development needs to 2031.
Waterhub	The SEQ water accounting framework managed by the Queensland Water Commission.
Water harvesting	The taking of unsupplemented water during high flow events. Water harvesting generally involves extraction of water when set flow thresholds are exceeded and pumping and storing the water off-stream for later use.

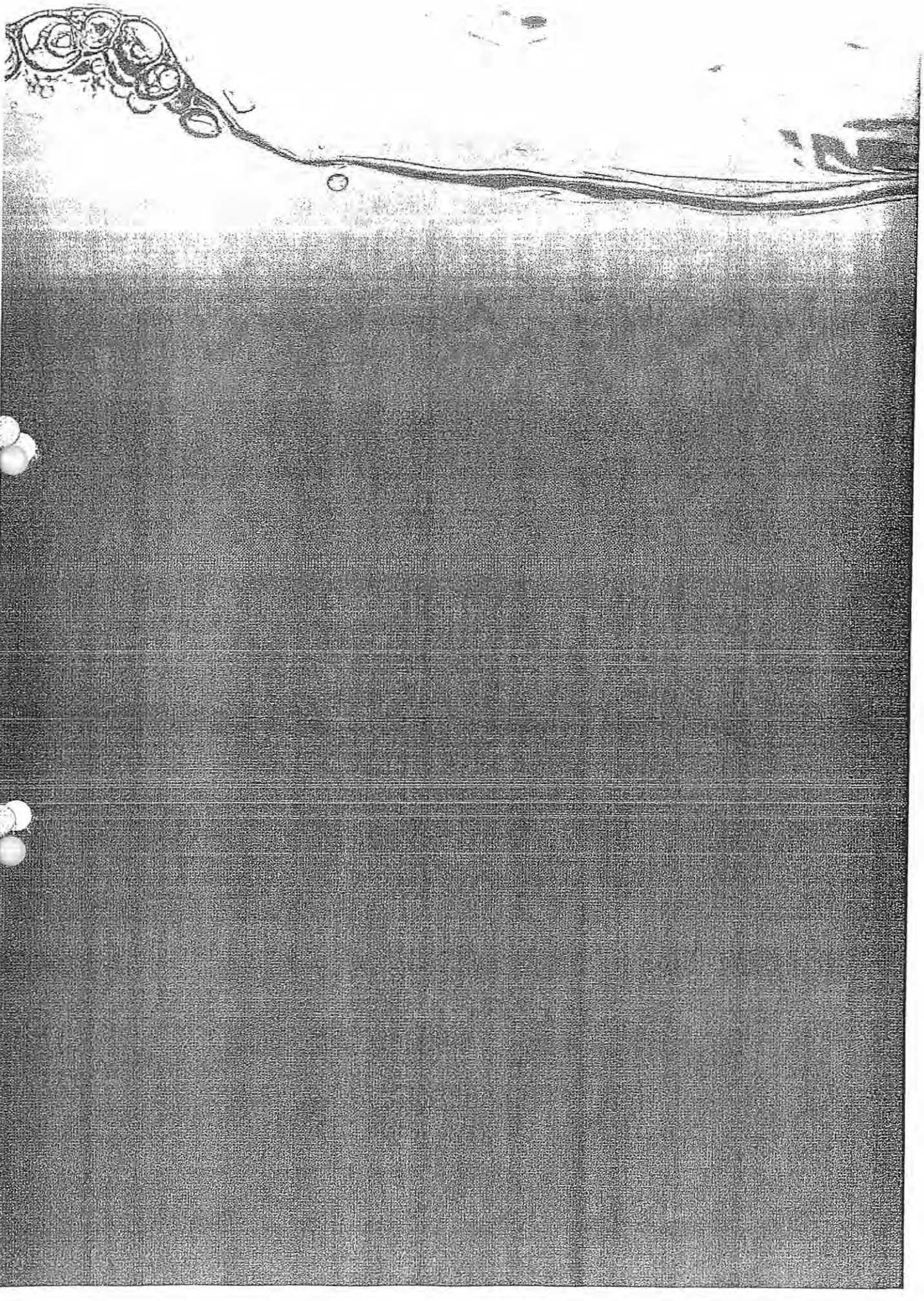
Term	Definition
Water resource plan (WRP)	Subordinate legislation under the *Water Act 2000* that provides the framework for defining the balance between water for consumptive use and environmental requirements. These plans also provide the basis for establishing tradable water allocations including the specification of: • water allocation security objectives (WASOs) • environmental flow objectives (EFOs).
Water restrictions	Permanent Water Conservation Measures Permanent low level restrictions that will be introduced across SEQ. Medium Level Water Restrictions Initiatives that form part of the drought response plan to reduce demand for SEQ Grid Water by 15 per cent.
Western Corridor Recycled Water Scheme (WCRWS)	Waste water treatment and recycling project that manufactures drought resilient water supplies for emergency use (when the combined volume of SEQ storages falls below 40 per cent of capacity. The project includes: • more than 200 kilometres of large-diameter underground pipeline, reaching from Luggage Point on Brisbane's east to Caboonbah north-west of Ipswich • three advanced water treatment plants at Bundamba, Luggage Point and Gibson Island • the capacity to supply up to 232 million litres of purified recycled water per day When not required for emergency water supply, the WCRWS supplies purified recycled water to power stations
Water year	An annual cycle associated with the natural progression of the hydrologic seasons. It is intended to commence with the start of the season of soil moisture recharge, includes the season of maximum run-off, stream flows and groundwater recharge and concludes with the season of maximum evapo-transpiration. In SEQ, it is generally described as the period 1 June to 31 May but does vary from catchment to catchment.
Working storage	The portion of a dam or weir above the drought storage reserve that is drawn upon in normal operating mode.
Yield	The average annual volume that can be drawn from a supply source or a supply option to meet a specified demand at a specified probability of occurrence. Historical no failure yield (HNFY) The maximum amount that, if it had been extracted in each year for which flow data exists, the storage would not have reached minimum operating level. That is, extraction of the HNFY every year would not cause the dam to be drawn down below the dead storage level during the worst drought on record. This approach does not accommodate a drought worse than the worst drought on record. LOS yield The yield of a dam, weir or other water storage to achieve the LOS objectives. LOS system yield The yield that can be supplied from a system, such as the SEQ Water Grid, on average every year and still achieve the LOS objectives.

Reference List

The following documents have informed the development of the Strategy. The Strategy also drew on a range of technical reports that have been published on the QWC website.

Title	Website
Regional planning framework	
South East Queensland Regional Plan 2009-2031	http://www.dip.qld.gov.au/regional-planning/regional-plan-2009-2031.html
South East Queensland: Infrastructure Plan and Program 2007-2026	http://www.dlp.qld.gov.au/regional-planning/south-east-queensland-infrastructure-plan-and-program.html
Our Water – Urban Water Supply Arrangements in South East Queensland May 2007	http://www.qwc.qld.gov.au/Urban+Water+Supply+Arrangements+Report
Planning, Information and Forecasting Unit (PIFU), Population and Housing Fact Sheet for SEQ Region	http://www.oesr.qld.gov.au/queensland-by-theme/demography/population-characteristics/profiles/pop-housing-fact-sheets-reg-planning/pop-housing-fact-sheets-south-east-qld-200908.pdf
Queensland Government Population Projections to 2051: Queensland and Statistical Divisions 2008 Edition	http://www.oesr.qld.gov.au/queensland-by-theme/demography/population/tables/pop-proj/proj-pop-sd-qld/index.shtml
Improving water use efficiency in Queensland urban communities Nov 2000	http://www.derm.qld.gov.au/publications/water_management.html
Related legislation	
Water Act 2000	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WaterA00.pdf
Water Supply (Safety and Reliability) Act 2008	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/S/SouthEQWA07.pdf
Water Regulation 2002	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WaterR02.pdf
South East Queensland Water (Restructuring) Act 2007	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/S/SouthEQWA07.pdf
Sustainable Planning Act 2009	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/S/SustPlanA09.pdf
Queensland Development Code 2003	http://www.dip.qld.gov.au/building/queensland-development-code.html
Water resource plans	
Gold Coast	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WatResGCP06.pdf
Logan Basin	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WatResLBP07.pdf
Mary Basin	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WaterReMaryP06.pdf
Moreton	http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WatResMorP07.pdf
Resource operations licences and interim resource operations licences	
Logan River water supply scheme (rol)	http://www.derm.qld.gov.au/water/management/rols.html
Lower Mary River water supply scheme	http://www.derm.qld.gov.au/water/management/irols.html
Upper Mary River water supply scheme	http://www.derm.qld.gov.au/water/management/irols.html
Nerang water supply scheme	http://www.derm.qld.gov.au/water/management/rols.html
Warrill Valley water supply scheme	http://www.derm.qld.gov.au/water/management/irols.html
Climate	
South East Queensland Drought to 2007	http://www.longpaddock.qld.gov.au/AboutUs/Publications/HiddenArea/seq_drought_2007.pdf
Intergovernmental Panel on Climate Change Fourth Assessment Report Climate Change 2007: Synthesis Report	http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html

Title	Website
Energy demand and water supply	
Energy use in the provision and consumption of urban water in Australia and New Zealand	http://www.clw.csiro.au/publications/waterforahealthycountry/2008/wfhc-urban-water-energy.pdf
Drinking water quality guidelines	
Australian Drinking Water Guidelines	http://www.nhmrc.gov.au/publications/synopses/eh19syn.htm
Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)	http://www.ephc.gov.au/taxonomy/term/39
Guidance on use of rainwater tanks 2004	http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-publicat-document-metadata-env_rainwater.htm
National Performance Report -: Urban water utilities	https://www.wsaa.asn.au/Publications/Pages/PerformanceReports.aspx



Tab 5

SEQ Water Grid

Emergency Response Plan version 2.1

Whole-of-Grid response

Activate Emergency Response Plan

To activate this Plan, in the event of an Alert or Level 3–5 incident, notify the SEQ Water Grid Manager Duty Manager

NOTIFY BY BOTH Phone: [redacted]
Email: [redacted]

Published by the Queensland Government, September 2010, 100 George Street, Brisbane Qld 4000.

Contents

Document control

Version control

Date	Author	Change and/or action	Version
10.08	Sean Rhodes		1.0
09.09	Sharon McHugh	Revision of structure and content	Draft
11.09	Brett Spink	Interim copy prepared for release	Interim
03.10	Brett Spink	Annual review	2.0
05.10	Brett Spink	Exercise Matrix recommendations changes	2.0
07.10	Brett Spink	SEQ Water Grid Communications Unit changes	2.0
11.10	Lee Hutchison	Contact details updated in line with change to Attachment A	2.1

Please note: changes to Attachments A and D–N are not included in version control, but will include the date of issue (Refer to 'About this Plan – Amendment').

Approval

Date	Approval received from	Version
10.08	The Hon. Craig Wallace MP, Minister for Natural Resources and Water	1.0
12.09	The Hon. Stephen Robertson MP, Minister for Natural Resources, Mines and Energy and Minister for Trade	Interim
09.10	The Hon. Stephen Robertson MP, Minister for Natural Resources, Mines and Energy and Minister for Trade	2.0
11.10	Chief Executive Officer (contact detail changes only)	2.1

Distribution

Copies of the SEQ Water Grid Emergency Response Plan will be issued electronically by the SEQ Water Grid Manager. Grid Participants uncertain of the currency of their copy of the SEQ Water Grid Emergency Response Plan are to contact the SEQ Water Grid Manager in order to obtain a current version.

About this Plan

How to use this Plan

This SEQ Water Grid Emergency Response Plan is structured to provide all Grid Participants with clear, step-by-step guidance in responding to SEQ Water Grid emergencies.

It is the overarching whole-of-Grid Emergency Response Plan, under which each Grid Participant will have its own internal Emergency Response Plan for more specific detail on incident management and asset recovery.

About this Plan Policy	The first two tabbed sections include general information about the Plan and Emergency Response Policy.
Quick guide to emergency response	This is a one-page summary of the key steps in emergency response.
❶ Identify and assess incident severity ❷ Notify ❸ Establish command and control ❹ Manage the emergency ❺ Manage the recovery ❻ Improvement actions	These numbered and colour-coded tabs form a user manual, with step-by-step information on 'who-what-when' for each stage of emergency response.

Throughout this Plan there are some useful tools to help you:

	Snapshots	Located at the start of each section, these summarise the key steps at each stage of the emergency response process.
	Tool/resource boxes	These refer you to additional information or resources elsewhere in this Plan, or in another document.
	Action checklists	Located at the end of each section, these are an aid to ensure no actions are missed at each stage of the emergency response process.
Emergency response outline roadmap		Attachment B is a flowchart which illustrates the overall emergency response process.
	Emergency response action checklist	Attachment M brings together all the action checklists to form a handy worksheet which can be used to track progress during emergency responses.

Purpose

This document describes the SEQ Water Grid Emergency Response Plan (Emergency Response Plan). The purpose of this Emergency Response Plan is to coordinate an effective response across the SEQ Water Grid (Water Grid) in the event of an incident which meets the Water Grid's definition of 'emergency'.

Background

This Emergency Response Plan has been developed in accordance with section 4.24 of *The Market Rules SEQ Water Market* (Market Rules), which requires the SEQ Water Grid Manager (Water Grid Manager) to prepare and publish an Emergency Response Plan that specifies:

- incidents which must be reported to the Water Grid Manager
- response levels for the types of incidents reported to the Water Grid Manager
- escalation and notification paths for each response level
- reporting and monitoring requirements for each response level
- responsibilities for preparing and issuing public statements, if required, for each response level
- any changes to the process for issuing Grid Instructions following a reported incident
- the process for operating the Water Grid following a Water Supply Emergency Declaration
- the process for preparing, issuing and amending Emergency Operating Instructions following a Water Supply Emergency Declaration
- arrangements, where applicable, for providing the Water Grid Manager with access to Grid Service Provider operated control rooms, real-time information, equipment and personnel following a Water Supply Emergency Declaration
- any other matter the Water Grid Manager considers appropriate.

This Plan provides guidance to the following entities:

- SEQ Water Grid Manager
- Queensland Bulk Water Supply Authority, trading as Seqwater
- Queensland Manufactured Water Authority, trading as WaterSecure
- Queensland Bulk Water Transport Authority, trading as LinkWater
- Distribution Service Providers, including:
  - Queensland Urban Utilities
  - Allconnex Water
  - Unitywater
- Tarong Energy Corporation
- Tarong North Energy Corporation
- CS Energy
- Toowoomba Regional Council.

This Emergency Response Plan covers the Declared Water Services under the *Water Act 2000* and the wastewater treatment plants associated with critical purified recycled water schemes or within a drinking water catchment.

Objectives

The objectives of this Emergency Response Plan are to provide:

- guidance, where appropriate, for Grid Participants on rating incidents and their role in managing emergencies
- information to Grid Participants on notification, reporting and communication processes and protocols pertinent to the Water Grid Manager, other entities and relevant authorities
- processes to ensure timely, appropriate and accurate information is relayed to relevant stakeholders relative to the severity of an incident or emergency
- a mechanism to assist Grid Service Providers to comply with sections 4.26 and 4.28 of the Market Rules
- a mechanism to assist Distribution Service Providers to comply with sections 4.27 and 4.29 of the Market Rules
- links to the Queensland Disaster Management System and the incident management plans of other agencies.

Tool/resource

Refer to 'Attachment D: Grid Participant Emergency Response Plan approval requirements'.

Emergency Response Plan implementation and sustainability

This section applies to both this Emergency Response Plan, controlled by the Water Grid Manager, and the individual Grid Participant emergency response plans.

Regular testing and review

At least once each year all emergency response plans must be tested by:

- undertaking a review that enables a gap analysis between this Emergency Response Plan and Grid Participant emergency response plans
- participating in at least one exercise with the Water Grid Manager and/or Grid Participants, allowing incident classification assessment, notification procedures and communication protocols to be practiced
- ensuring members of the Emergency Coordination Teams and Grid Participant Incident Management Teams understand their roles and responsibilities
- ensuring the Emergency Coordination Teams and Grid Participant Incident Management Teams take part in any emergency management planning activities that are undertaken within the Water Grid
- circulating a receipted copy of the formally documented results from any audits or reviews to all Grid Participants.

Tool/resource

Refer to 'Policy – General roles and responsibilities' and '⚙ Establish command and control' for descriptions of the incident management and emergency coordination functions.

Training

- All Grid Participants are to implement a schedule to train staff new to their organisations regarding their internal emergency response plans.
- All staff who have specific roles within Grid Participant Incident Management Teams are to regularly receive appropriate training and verification of understanding.
- The Water Grid Manager will provide advice on training in relation to this Emergency Response Plan, and will make its training materials available, to all Grid Participants for their further internal use.
- All training associated with emergency response plans is to be documented.

Internal understanding and document control

- All amendments to this Emergency Response Plan must be dated and recorded in the document control section.
- The Water Grid Manager takes no responsibility for the currency and accuracy of any uncontrolled copies of this Emergency Response Plan.
- Minutes from all meetings of the Emergency Coordination Teams and Incident Management Teams must be kept on record.

Tool/resource

'Document control' is the first section at the start of this Plan.

Amendment

Subject to the exceptions below, this Emergency Response Plan must only be amended through submission to the Minister in accordance with section 4.25 of the Market Rules.

The Water Grid Manager may amend and re-issue the following attachments to this Emergency Response Plan at any time:

- Attachment A: Emergency contact list
- Attachment D: Grid Participant Emergency Response Plan approval requirements
- Attachment E: *E. coli* alert escalation process
- Attachment F: Chlorine and monochloramine level exemptions
- Attachment G: Incident Notification Form
- Attachment H: Sample Situation Report (SITREP) template
- Attachment I: Informal Ministerial briefing template
- Attachment J: Incident Close-out Report
- Attachment K: Debriefing minutes template
- Attachment L: Post-emergency Report template
- Attachment M: Emergency response action checklist
- Attachment N: Emergency Management Team structure.

Acknowledgements

The following documents were used to assist in the preparation of this Emergency Response Plan:

- *The Australasian Inter-service Incident Management System* (third edition)
- Gold Coast Water Emergency Response Plan
- Ipswich Water Emergency Management Plan
- LinkWater Incident Management Plan
- *The Market Rules SEQ Water Market*
- Melbourne Water General Emergency Response Plan
- National Electricity Market Management Company Emergency Response Plan
- 'Queensland Health protocol for the management of major drinking water health-related incidents' (draft)
- *Queensland Infrastructure Protection and Resilience Framework*
- *Queensland Plan for the Protection of Critical Infrastructure from Terrorism*
- Seqwater Emergency procedure manual.

Definitions and terms

Command	The responsibility for directing personnel and resources of a participant in the performance of its role and tasks.
Control	The overall direction of response activities in an incident situation.
Coordination	The bringing together of elements to ensure effective response to emergencies.
Communications coordination	The emergency response function largely involving coordinating Water Grid internal and external communications.
Critical infrastructure	Infrastructure which, if destroyed, degraded or rendered unavailable for an extended period, will impact water supply to South East Queensland.
Emergency	A situation or occurrence that happens as a consequence of an incident and demands immediate action. For the purposes of this Plan, an 'emergency' is an incident that impacts on water quality, water supply reliability and/or public reassurance, and has an overall severity rating of Level 3, 4 or 5 under the severity classification approach outlined in this Plan.
Emergency management	The emergency response function largely involving strategic command and external communications.
Emergency Operating Instructions	Emergency Operating Instructions issued by the Water Grid Manager.
Emergency Response Plan	A plan prepared by the Water Grid Manager or by a Grid Participant in accordance with the Market Rules.
Grid Customer	A Grid Customer of the Water Grid Manager as defined in Schedule 4 of the *Water Act 2000*.
Grid Instructions	Instructions prepared by the Water Grid Manager and given to the Water Grid and Distribution Service Providers in accordance with the Market Rules.
Grid Participant	An entity that is referred to in section 2.3 of the Market Rules.
Grid Service Provider	Has the meaning given in Schedule 4 of the *Water Act 2000* and includes a Bulk Supplier, Manufactured Water Provider and Bulk Transporter.
Incident	Any occurrence within or caused by the Water Grid that has resulted in, or has the potential to result in adverse consequences to water supply, water quality, people, the environment, property, reputation or a combination of these and classified against a gradient from 1 to 5. Ongoing conditions that have the potential to result in adverse consequences and non-compliance with legal and regulatory requirements are also considered to be incidents.
Incident management	The emergency response function largely involving managing the physical incident on-site.
Interagency Operations Team	An expert reference panel assembled by the Water Grid Manager when required to provide technical, operational and risk assessment advice and recommendations on any aspect of managing a given emergency.
Market Rules	*The Market Rules SEQ Water Market*.
Public reassurance	Used in this Plan to refer to the confidence of the general public in the quality and security of the water supply, and in the ability of the Water Grid and Grid Participants to deliver their contracted services.

Risk	The chance of something happening that will have an impact on objectives. It is measured in terms of the consequences of an event and their likelihood. (ISO 31000:2009 'Risk management'.)
Technical coordination	The emergency response function largely involving coordinating whole-of-Grid operations and support. It will often involve the use of Grid Instructions and Emergency Operating Instructions.
Water Supply Emergency Declaration	A Water Supply Emergency Declaration made in accordance with section 25B of the *Water Act 2000*.

Policy

Definition of 'emergency' for this Plan

For the purposes of this Plan, an 'emergency' is an incident that impacts on water quality, water supply reliability and/or public reassurance, and has an overall severity rating of Level 3, 4 or 5 under the severity classification approach outlined in this Plan.

An emergency is usually called by the impacted Grid Participant on initial identification. However, the Water Grid Manager reserves an overriding right to call or escalate emergencies.

The following table clarifies the difference between an incident and an emergency for this Plan.

Table 1: Incident vs emergency

	Incident	Emergency
Definition	Any occurrence that has resulted in, or has the potential to result in adverse consequences to water supply, water quality, people, the environment, property, reputation or a combination of these	A situation or occurrence that happens as a consequence of an incident and demands immediate action
General nature	Physical event	Broader whole-of-Grid and public interface outcomes – may be physical and/or intangible
Location	Site-based	Not usually location-based
Management focus	Operational – physical rectification	Corporate/supporting services – e.g. coordinating whole-of-Grid assistance, stakeholder management, communications, etc.
Relevant severity levels	1, 2 ■ Alert ■ 3 ■ 4, 5	■ 3 ■ 4, 5

This Plan is not concerned with the physical rectification of the incident (incident management), which is managed via the impacted Grid Participant's internal Emergency Response Plan, but with the broader whole-of-Grid and public interface outcomes of the emergency. While Alerts are not defined as an emergency, they do have the same notification requirements as Level 3, 4 and 5 incidents.

Level 1, 2 and Alert incidents, as smaller-scale events, do not typically have these broader impacts and therefore are not subject to this Emergency Response Plan. The exception to this is when an Emergency Management Team has been formed to respond to a Level 3, 4 or 5 emergency, then the Level 1, 2 or Alert incident must fall under the Emergency Response Plan. Level 3, 4 and 5 incidents, however, can be expected to have broader impacts and result in associated emergency situations; therefore their management is subject to this Emergency Response Plan.

Tool/resource

Refer to '❶ Identify and assess incident severity' for more detailed descriptions of incidents and severity ratings.

Link to SEQ Water Grid Risk Management Framework

The Emergency Response Plan provides a framework for managing whole-of-Grid emergencies and aligns with the SEQ Water Grid Risk Management Framework (Risk Management Framework).

The Risk Management Framework integrates the preventative, monitoring and contingent controls and ensures the Water Grid is best positioned to prevent, prepare, respond and recover from strategic and operational risks that threaten its ability to deliver a secure water supply for South East Queensland. Specifically, the Risk Management Framework integrates the management of risk, security, business continuity and emergency response.

Figure 1: SEQ Water Grid Risk Management Framework

Emergency Response Plan priorities

The priorities of this Emergency Response Plan are as follows:

1. maintaining the safety of employees and the public
2. protecting the quality of the water supply to Grid Customers
3. protecting the environment
4. protecting continuity of supply to Grid Customers
5. protecting landowner and community property
6. protecting Water Grid assets and infrastructure
7. maintaining the Water Grid's reputation.

Critical infrastructure

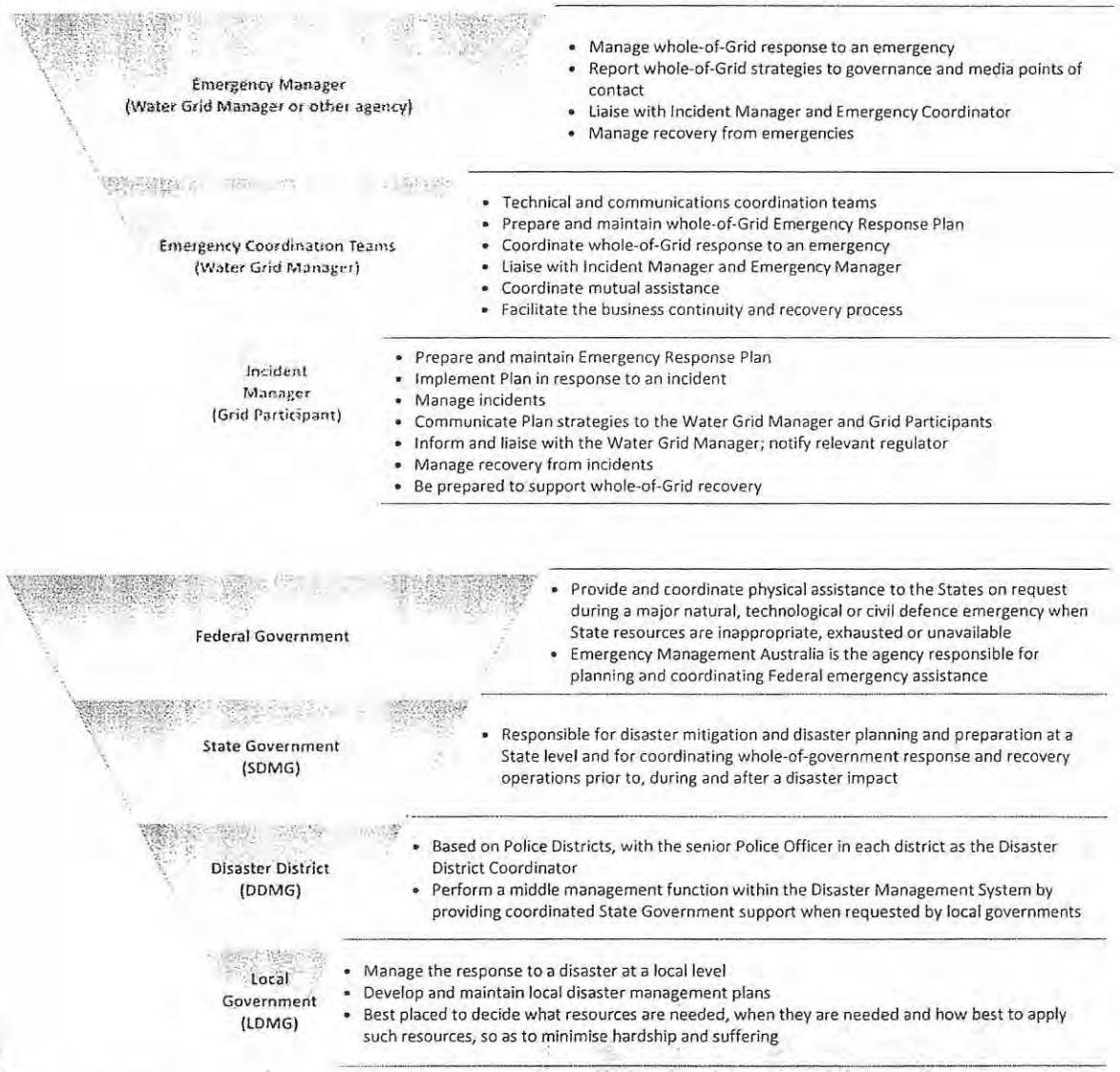
The Water Grid as a whole is deemed 'critical infrastructure' under the *Queensland Plan for the Protection of Critical Infrastructure from Terrorism*. This document is intended to be consistent with current Queensland Disaster Management System arrangements for such infrastructure.

General roles and responsibilities

Emergency response hierarchy

The Water Grid has a three-tiered response for managing incidents and emergencies (refer to Figure 2). Within each level of the structure, Grid Participants are responsible for managing the incident to a successful resolution, while informing the next level to assist in emergency response. Also included in Figure 2 is the Queensland Disaster Management System, which is activated, when required, to manage and coordinate support for disaster-stricken communities.

Figure 2: Water Grid emergency response hierarchy and the Queensland Disaster Management System



Emergency response functions

The four key functions involved in emergency response are as follows:

Table 2: Command and control function responsibilities

Function	Description	Responsible entity
Incident management	Managing the physical incident on-site	Impacted Grid Participant/s
Technical coordination	Coordinating whole-of-Grid operations and support	Water Grid Manager
Communications coordination	Coordinating Water Grid internal and external communications	Water Grid Manager
Emergency management	Strategic command and key stakeholder management	Normally the Water Grid Manager (In some circumstances this function may be assumed by another agency with relevant expertise or a strong interest in the incident)

Tool/resource

Refer to '⚙ Establish command and control' for more detail on key emergency response functions.

All Grid Participants

Under the Emergency Response Plan, all Grid Participants have the following general responsibilities:

- develop an Emergency Response Plan that is consistent with this Emergency Response Plan and the Market Rules
- manage the response to incidents and emergencies in accordance with this Plan and more detailed plans specific to each Grid Participant, including Business Continuity, Emergency Response, Risk Management, and other risk management mechanisms
- communicate the incident (as per agreed communications protocols) as appropriate to:
  - the relevant emergency authorities, where applicable
  - the Water Grid Manager
  - the relevant regulator
  - responsible Ministers, Mayors or Chief Executive Officers (CEOs), where applicable
  - other affected Grid Participants
- work cooperatively with the Water Grid Manager Emergency Coordination Teams and any appointed Emergency Manager
- utilise the Emergency Response IT Solution when implemented for all Emergency Response related activities.

Tool/resource

The emergency response outline roadmap at Attachment B illustrates Grid Participant responsibility for emergency

esponse processes at asset, Grid Participant and whole-of-rid levels.

Water Grid Manager

In the event of an incident, the Water Grid Manager is effectively a Grid Participant, albeit with a specific role.

The Water Grid Manager is *not* to:

- manage the on-site response to the incident itself (incident management).

The Water Grid Manager *is*, for a Level 3 incident and above, to:

- conduct emergency coordination for both the technical and communication streams
  - liaise with the Incident Management Team established by the impacted Grid Participant
  - undertake modelling for the Water Grid and issue new Grid Instructions, if required
  - provide mutual assistance as agreed between the Water Grid Manager and other Grid Participants
- conduct emergency management – unless another Emergency Manager is put in place
  - coordinate the combined Emergency Management Team
  - be the coordination point (conduit) for communications about the incident
  - facilitate debriefings of incidents at Level 3 or above as part of the recovery and close-out process

SEQ Water Grid Communications Unit

The SEQ Water Grid Communications Unit (Communications Unit) was established to act on behalf of the State-owned entities as a 'single' voice for communications of the Water Grid operational activities.

In the event of an emergency, the Communications Unit is responsible for managing all communications events relating to the emergency, including:

- arranging media interviews, press releases and responding to media enquiries
- briefing the Minister's office
- preparing and distributing (following Emergency Manager approval) situation reports (SITREPs)
- preparing and distributing Product Quality Notifications, Q&As and fact sheets as appropriate
- liaising with Communications Managers in the affected Grid Participants to ensure consistency of messaging.

The agreed communications protocols provide further detail on the procedures to be followed in an emergency.

Quick guide to emergency response

Step		Key tasks	Tools
1	**Identify and assess incident severity** Actions to determine initial incident level	Assess the incident	Table 3: Incident severity classification levels Office of the Water Supply Regulator water quality reporting guideline
2	**Notify** Actions to alert impacted Grid Participants and stakeholders	Notify Grid Participant emergency contact	Attachment A: Emergency contact list
		Notify the Office of the Water Supply Regulator, if required	Drinking water incident hotline – ☎ 1300 596 709
		Notify the Water Grid Manager Duty Manager of Alert and Level 3–5 incidents: • Alert/Level 3 – ☎ and email form – ✉ within 2 hours • Levels 4 and 5 – ☎ and email form – ✉within 1 hour	Water Grid Manager Duty Manager – ☎ (07) 3405 5201 Attachment G: Incident Notification Form
		Notify other key stakeholders as required	Attachment A: Emergency contact list
		Open Emergency Response Log/s	Emergency Response Log
3	**Establish command and control** Actions to determine the Emergency Manager, and continuously assess risk level and command and control structure	Establish the Emergency Management Team	Table 7: Command and Control Framework
		Review initial risk assessment	Table 3: Incident severity classification levels
4	**Manage the emergency** Actions to eliminate the immediate risk to Water Grid operations	Grid Participant manages incident at asset/site level	Grid Participant internal Emergency Response Plan
		Coordinate the emergency at whole-of-Grid level	Grid Instructions and Emergency Operating Instructions
		Implement communication protocols	Water Grid communication protocols Attachment C: Communication workflow
5	**Manage the recovery** Actions to return Water Grid operations to normal	Agree recovery objectives	Recovery consultation process
		Recover asset	Recovery checklist
		Implement close-out communications protocols	Water Grid communication protocols Attachment J: Incident Close-out Report
6	**Improvement actions** Actions to improve future Water Grid operations	Debrief following emergency close-out	Attachment K: Debriefing minutes template
		Draft Post-emergency Report	Attachment L: Post-emergency Report template
		Update Risk Registers	Risk Registers

An outline roadmap illustrating the emergency response process is provided at Attachment B.

❶ Identify and assess incident severity

Snapshot: Identify and assess incident severity

Actions to determine the initial level of incident classification:

- **Assess its level of severity.**
- **Determine if the incident can be considered an emergency under this Emergency Response Plan.**

Refer to the emergency response outline roadmap provided at Attachment B.

Is it an emergency?

This Emergency Response Plan is primarily concerned with Alert and Levels 3, 4 and 5 incidents that impact on:

- water quality
- water supply reliability
- public reassurance.

An emergency is usually called by the impacted Grid Participant on initial identification. However, the Water Grid Manager reserves an overriding right to call, escalate or de-escalate emergencies.

What is its level of severity?

Table 3: Incident severity classification levels details the incident classifications and criteria that form the basis of this Emergency Response Plan for the Water Grid. In situations where an incident level is not clearly defined by Table 3, determination of the incident level is at the discretion of the Water Grid Manager.

While the 'public reassurance' criterion may not always seem an active concern at the outset, it is important to consider the likelihood of media attention and the risk of negative coverage.

Alert level

A classification level known as Alert is to be used for incidents or occurrences that may become more severe. An incident meets the Alert level criteria if:

- it is currently a Level 1 or 2 incident but has potential impacts that, if realised, would trigger a Level 3–5 emergency
- it has not yet occurred, but is considered highly likely to be imminent with a Level 3–5 severity level.

Examples would include a cyclone headed for the South East Queensland area or a positive first exceedence of the *Australian Drinking Water Guidelines (2004)* where a second test for confirmation has not yet been done.

Table 3: Incident severity classification levels

Level 1 – Insignificant

General principles	Incident criterion – direct impacts on water supply		Examples
• Little disruption to normal operations, low increase in normal operating costs • Local incident with impact limited to a single facility within one Grid Participant Overall system impact limited to temporary or no reduction in capacity • No effect on monthly Grid Instruction volumes • Minor or no impact on bulk Grid Customers • Minor short-term impact on a small number of retail Grid Customers • Managed by the resources of the affected Grid Participant without the need to notify other Grid Participants, Emergency Services or the Water Grid Manager • These incidents occur as part of normal operations and are managed by a site supervisor or relevant duty officer as part of their normal responsibilities	Water quality	• A critical control point alert exceeded but within critical limits • Insignificant impact, little disruption to normal operation	• Local water quality incident isolated to a zone; possibly caused by valve change
	Water asset failure	• Minor unplanned asset failure – no facility output affected	• Localised pump breakdown; minor burst in a suburban street within distribution
	Water quantity	• Limited or no impact on bulk Grid Customers • Minor short-term disruption to retail Grid Customers	• Early indications of blue-green algae – storage being monitored
	Security and natural disaster	• Localised natural disaster damage	• Minor storm damage to asset
	Incident criterion – ancillary impacts associated with water supply		**Examples**
	Health and safety of employees or public	• Employee minor injury sustained requiring first aid • Slight injury or health affects • Low risk of other injuries	• Slip or fall resulting in lacerations requiring first aid
	Environment	• Brief pollution event but no environmental impact. Insignificant risk of breaching environmental regulatory requirements	• Minor spike in discharge concentrations
	Public reassurance	• Lack of public interest (e.g. reporting, not front page) in suburban newspapers	• Single adverse local radio report • Call centre receives a number of complaints but limited to a small area, e.g. a street or two

Level 2 – Minor

General principles	Incident criterion – direct impacts on water supply		Examples
• Minor or no impact on bulk Grid Customers • Minor short-term impact on a small number of retail Grid Customers • The incident has no effect on monthly Grid Instruction volumes • Can be handled within the scope of normal operating protocols between Grid Participants • Can be dealt with by the resources of the affected Grid Participants	Water quality	• Critical control point limits exceeded, even with corrections in place: – still within *Australian Drinking Water Guidelines (2004)* health values – minor impact for small population, some manageable operation disruption	• Turbidity increased to 1.2 NTU due to lime dosing but reduced to 0.8 at exit of clear water storage
	Water asset failure	• Unplanned asset failure and reductions to asset output, less than or equal to one day duration where: – supply is reduced, but not lost – supply can be sourced from elsewhere if necessary	• A mechanical failure occurs at a water treatment plant and the estimated time to repair the failure exceeds the current endurance of the clear water storage. Seqwater contacts the Distribution Service Provider who reduces the water demand from the water treatment plant to allow time for the rectification works
	Water quantity	• Single raw water supply source within the Water Grid is showing indications of failure	• Blue-green algae bloom or major turbidity event occurs whereby use of a single supply source needs to be reduced
	Security and natural disaster	• Localised natural disaster damage	• Storm causes minor interruptions due to loss of power supply
	Incident criterion – ancillary impacts associated with water supply		**Examples**
	Health and safety of employees or public	• Employee medical attention required – restricted work duties or limited lost work time. Public injury • Inherent risk for more injuries. Immediate action to be taken at Grid Participant level to ensure public safety	• Slip or fall resulting in broken limbs, lacerations requiring stitches or hospitalisation.
	Environment	• Minor transient environmental impact • Low risk of breaching environmental regulatory requirements • Grid Participant level corrective action	• A spike in discharge concentrations but unlikely to exceed 95 percentile licence limits
	Public reassurance	• Public questioning of Water Grid operations and decisions for local assets (e.g. local newspaper)	• Short-term adverse media at a local level • Call centre receives a number of complaints, but limited to one suburb

Alert		
General principles	**Incident criterion**	**Examples**
• Classification for incidents with a possible severity of 3–5 where the consequences have not yet occurred • A potential Level 3–5 incident is considered highly likely to be imminent • An incident has occurred with severity below Level 3, however, there is a possibility that further deterioration of the situation will breach a Level 3–5 threshold • An incident has occurred with severity below Level 3, however, the Grid Participant has notified the responsible Minister/s of media interest or other circumstances of interest, and therefore must also notify the Water Grid Manager • The Water Grid is on standby to manage a potential incident • Where possible, relevant Grid Participants/Water Grid Manager take action in advance to prepare for the incident eventuating • When the incident eventuates, reclassify its severity level in accordance with this Plan	Water quality	• *E. coli* has been detected, and an Alert is raised while a re-sample is carried out to confirm the contamination event (see 'Attachment E: *E. coli* Alert escalation process')
	Security and natural disaster	• Natural disaster, such as cyclone, flood, fire, etc., forecast or in progress and likely to cause an impact, though this has not yet happened • National counter-terrorism Alert level is raised one level
	Public reassurance	• Any incident or potential incident that has /could attract media interest, making negative coverage a possibility

Level 3 – Moderate

General principles	Incident criterion – direct impacts on water supply		Examples
• Minor impact for a large population • Major impact for small population • Minor impact for retail Grid Customers • The Water Grid Manager may issue new Grid Instructions • Can be dealt with within operating protocols but not 'normal' protocols	Water quality	• *Australian Drinking Water Guidelines (2004)* health values confirmed as exceeded [1, 2] • Aesthetic impact for large population, but manageable through modification to operations	• Chlorine in a service reservoir is low and *E. coli* has been detected, re-sampled and confirmed • The reservoir is required to be dosed with chlorine and mixed with fresh water for dilution • A chronic health guideline value is exceeded, e.g. total trihalomethanes, with no associated public health risk
	Water asset failure	• Significant unplanned asset failure and reductions to asset output greater than one day duration, and may impact Grid Contract obligations being met • Any single supply source failure	• Unplanned halt to production by water treatment plant for longer than 24 hours, resulting in failure to meet Grid Contract obligations and interruption to customer supply to a small population for less than 8 hours
	Water quantity	• Single raw water supply source within the Water Grid is out of service whereby supply is affected by >20% of Grid Instruction volume	• Single raw water supply source taken offline due to blue-green algae or other event • The period to rectify the problem exceeds 12 hours or is likely to result in low levels in the local storage reservoirs
	Security and natural disaster	• Natural disaster or security event that would disrupt operations and/or service delivery	• Poison containers found at water storages • Large fire occurs in a major catchment area
	Incident criterion – ancillary impacts associated with water supply		**Examples**
	Health and safety of employees or public	• Single fatality involving an employee or a member of the public • Significant risk of further injuries • Immediate corrective action by Grid Participant	• A drowning occurs within the assets of a Grid Participant
	Environment	• Significant release of pollutants with mid-term recovery • High risk of environmental regulatory requirements breach with the potential to affect drinking water supply works • Notification of an incident to a regulator	• Exceedence of a concentration limit whereby the Queensland Manufactured Water Authority cannot access water from a sewage treatment plant • Exceedence of a discharge licence where discharge is likely to make its way to a drinking water source
	Public reassurance	• Public questioning of Water Grid operations and decisions for local assets (e.g. regional newspaper, regulator enquiry)	• Medium- term adverse media at a regional or State level, such as large increase in volume of adverse calls to call centre

[1] The Water Grid Manager to use *E. coli* Alert escalation process flowchart (Attachment E)

[2] LinkWater and Seqwater chlorine level exemptions apply (Attachment F)

Level 4 – Major			
General principles	**Incident criterion – direct impacts on water supply**		**Examples**
• Single or multiple regions affected. Multiple Grid Participants and the Water Grid Manager with State Government departments involved or on standby • Minister may issue a Water Supply Emergency Declaration • Moderate impact for a large population or major impact for a small population • Major impact for Grid Customers • The Water Grid Manager is likely to issue new Grid Instructions (depending on the type of incident) • The Water Grid Manager may need to access the Seqwater or LinkWater control (or incident) rooms to obtain real time data and information • Impacts on drinking water regarded as relatively short-term, but involving multiple Water Grid entities and government agencies	Water quality	• Major impact for small population, systems significantly compromised and operation ceased or abnormal • Significantly enhanced level of monitoring required	• *Cryptosporidium* event at a minor water treatment plant only supplying an isolated small town, which results in a Boil Water Notice being issued • There are repeated exceedences of a chronic health guideline value affecting a small population, e.g. total trihalomethanes, where Queensland Health or The Regulator determines there may be a risk to public health
	Water asset failure	• Major unplanned asset failure leading to service interruptions – days to weeks to rectify • Impacts on Grid Contract obligations or multiple Grid Customer disruptions	• Any water treatment plant that cannot produce water to serve the local community and the Water Grid cannot fully meet demand, resulting in interruption to customer supply for over 8 hours. Local area needs to go on restrictions, e.g. water treatment plant supplying isolated local government area
	Water quantity	• Drought trigger is reached within any Water Grid supply reserves	• Future drought declaration – restrictions implemented
	Security and natural disaster	• Localised natural disaster or security event	• Fire has destroyed a single water treatment plant • Credible threat to major infrastructure within the Water Grid received by a Grid Participant or the Government • Australian pandemic Alert phase 6a, 6b or 6c [3]
	Incident criterion – ancillary impacts associated with water supply		**Examples**
	Health and safety of employees or public	• Multiple fatalities	• Accident caused by water craft on recreational waters resulting in multiple fatalities
	Environment	• Significant long-term environmental effects with the potential to affect drinking water supply works • Significant risk of breaching environmental requirements long-term (weeks)	• Major release of water treatment plant sludge into a water course • Major sewage spill upstream of a water treatment plant
	Public reassurance	• Public confidence in Water Grid operations diminished and looking to validate information decisions (e.g. national TV news and/or regulator investigation)	• Adverse State-wide or national media attention • Call centre receives a number of complaints related to multiple suburbs or two or more retailers

[3] Depending on Water Grid impacts assessment

Level 5 – Catastrophe			
General principles	**Incident criterion – direct impacts on water supply**		**Examples**
• Large-scale impact across South East Queensland, other utilities affected. Requires Government intervention at State and Federal levels to manage the incident • Minister is likely to issue a Water Supply Emergency Declaration • Major impact for large populations, complete failure of systems • An emergency incident or combination of incidents with the potential for large-scale short- and long-term impacts to human well-being and the environment including terrorism impacts or natural disasters	Water quality	• Major impact for large population, extreme volume of complaints • Complete failure of systems	• *Cryptosporidium* event at a major water treatment plant which results in a Boil Water Notice being issued for a region • There are repeated exceedences of a chronic health guideline value affecting a large population, e.g. total trihalomethanes, where Queensland Health or the Regulator determines that there may be a risk to public health or a public health risk is confirmed
	Water asset failure	• Extreme unplanned asset failure – weeks to months to rectify • Major rectification works to re-establish water supply	• Dam wall breach
	Water quantity	• Drought supply reserves are reaching the emergency volumes	• Extreme restrictions apply and emergency supply projects instigated
	Security and natural disaster	• Extreme natural disaster or security event	• Bomb blast impacts major asset • Flood, fire and cyclone impacts on multiple assets • Australian pandemic Alert phase 6a, 6b or 6c [4]
	Incident criterion – ancillary impacts associated with water supply		**Examples**
	Health and safety of employees or public	• Multiple fatalities • Extreme risk of further fatalities and injuries leading to a Declared State of Emergency	• Breach of dam wall causing flooding and multiple casualties
	Environment	• Catastrophic, long-term environmental impacts with the potential to affect drinking water supply works • Extreme risk of breaching environmental regulatory requirements. Immediate notification of relevant authorities	• Any incident causing the loss of a water source for more than one month, or the loss of an entire ecosystem
	Public reassurance	• Widespread concerns expressed by public and loss of trust in Water Grid operations (e.g. international TV news headlines and/or government investigation)	• Adverse national or international media attention • Call centre receives an extreme number of serious complaints related to multiple retailers

[4] Depending on Water Grid impacts assessment

Tool/resource

- Refer to the Office of the Water Supply Regulator's 'Water quality and reporting guideline for a drinking water service', and 'Drinking water quality: incident reporting' form available at www.derm.qld.gov.au.
- For information on carrying out impact assessments, refer to the SEQ Water Grid Risk Management Plan.

Action checklist – have you...☑

- established that the incident can be classed as an emergency? ☐
- assessed the incident's initial severity classification level using the descriptions and examples in Table 3: Incident severity classification levels? ☐
- considered potential risks arising as the emergency situation progresses, staying on the side of caution? ☐

2 Notify

Snapshot: Notify

Actions to alert impacted Grid Participants and stakeholders:

- **Site staff to follow Grid Participant internal Emergency Response Plan notification procedures.**
- **For Alert and Level 3, 4 and 5 incidents, Grid Participant nominated emergency contact to notify the Water Grid Manager Duty Manager.**
- **Notify the Office of the Water Supply Regulator, if required.**
- **Notify other key stakeholders, as required.**
- **Open Emergency Response Log/s.**

Refer to the emergency response outline roadmap provided at Attachment B.

Notification responsibilities

The essential notification responsibilities upon detection of an incident are summarised in the following table.

Table 4: Notification responsibilities

Incident level	Grid Participant emergency contact		Water Grid Manager Duty Manager	
1 and 2	Yes	As per Grid Participant internal Emergency Response Plan and operating protocols	No	
Alert	Yes	As per Grid Participant internal Emergency Response Plan and operating protocols	Yes	☎ Within 2 hours of incident detection ✉ Email Incident Notification Form within 2 hours of incident detection
3	Yes	As per Grid Participant internal Emergency Response Plan and operating protocols	Yes	☎ Within 2 hours of incident detection ✉ Email Incident Notification Form within 2 hours of incident detection
4 and 5	Yes	As per Grid Participant internal Emergency Response Plan and operating protocols	Yes	☎ Within 1 hour of incident detection ✉ Email Incident Notification Form within 1 hour of incident detection

Grid Participant emergency contact

Each Grid Participant must identify a nominated single point of contact to provide formal notification of incidents and to liaise initially with the Water Grid Manager. The nominated person or position must be available for contact 24 hours a day.

Tool/resource

Refer to Attachment A: Emergency contact list.

Water Grid Manager Duty Manager

The impacted Grid Participant's nominated delegate must contact the Water Grid Manager Duty Manager:

- by phone
  - Alert and Level 3 – within 2 hours of the incident being identified
  - Levels 4 and 5 – within 1 hour of the incident being identified

and

- by emailing a completed Incident Notification Form
  - Alert and Level 3 – within 2 hours of the incident being identified
  - Levels 4 and 5 – within 1 hour of the incident being identified.

Activate Emergency Response Plan

To activate this Plan, in the event of an Alert or Level 3–5 incident, notify the Water Grid Manager Duty Manager

NOTIFY BY BOTH **Phone:** [redacted]
Email: [redacted]

Tool/resource

Refer to Attachment G for a copy of the Incident Notification Form. This is also available as a separate Word file on request from [redacted]

Office of the Water Supply Regulator

For Alert, Level 3, 4 and 5 water quality incidents requiring the Office of the Water Supply Regulator to be notified, a completed Drinking water quality: incident reporting form, Part A will be accepted by the Water Grid Manager instead of the Incident Notification Form. As this form contains much of the same information as the Incident Notification Form, if the incident only involves water quality, it is not necessary to send both forms. However, the copy of the Office of the Water Supply Regulator form sent to the Water Grid Manager should be accompanied by supplementary information advising on:

- incident rating
- media interest
- other additional relevant information.

Tool/resource

The Office of the Water Supply Regulator's Drinking water quality: incident reporting form, Part A is available at www.derm.qld.gov.au.

Notify other key stakeholders

During an incident, impacted Grid Participants may need to alert other internal stakeholders. The following table outlines some key stakeholders who may require notification depending on the classification of the incident. This table is for indicative purposes only. For more detail on stakeholder notification responsibilities, refer to '⚙ Manage the emergency – Communication'.

Grid Participants should confirm with the Water Grid Manager which stakeholders they have notified.

For any incident of any level where a State-owned Grid Participant is involved and requires notification to the Minister's office, the Communications Unit must be notified to facilitate this. The Informal Ministerial briefing template at Attachment I should be used.

Initial notification of incidents to the Minister's office will be made as soon as practicable.

Table 5: Key stakeholder notification

Incident level	Grid Participant responsible Ministers/ CEO/Mayor/Board	Queensland Water Commission/Department of Environment and Resource Management	Other impacted Grid Participants	Office of the Water Supply Regulator	Queensland Health (major drinking water health-related incident)	Queensland Police Service	Department of Community Safety (Emergency Services)	Department of Employment, Economic Development and Innovation
1			●			As required	As required	As required
2			●					
Alert	●	●	●	●	●			
3	●	●	●	●	●			
4	●	●	●	●	●			
5	●	●	●	●	●			

Tool/resource

- Refer to Attachment A: Emergency contact list.
- Refer to 'Queensland Health protocol for the management of major drinking water health-related incidents'.
- Refer to Attachment I: Informal Ministerial briefing template.

Record keeping – Emergency Response Log

To keep a record of all relevant communications, meetings, events and actions, each party to the emergency response must keep a log from the time the incident is first identified or notified. By the end of the emergency response, all relevant logs must be consolidated by the Water Grid Manager/lead agency. Details captured must include:

- entry date and time
- type – e.g. phone call, email, meeting, event, action
- participants
- location
- description
- actions arising.

Tool/resource

A copy of the Water Grid Manager's Emergency Response Log template is available on request.

Action checklist – have you...☑

- notified the Grid Participant internal emergency contact? ☐
- phoned to notify the Water Grid Manager Duty Manager if it is an Alert or a Level 3, 4 or 5 emergency? ☐
- emailed the Water Grid Manager Duty Manager a completed Incident Notification Form (Attachment G)? ☐
- sent the Office of the Water Supply Regulator a completed Drinking water quality: incident reporting form, Part A, if applicable (copy to Water Grid Manager Duty Manager)? ☐
- notified the relevant key stakeholders? ☐
- opened an Emergency Response Log? ☐

Establish command and control

Snapshot: Establish command and control

Actions to determine the Emergency Manager, and continuously reassess risk level and command and control through more detailed risk assessment:

- **Establish the Emergency Team.**
- **Review the initial risk assessment and the command and control structure continuously throughout steps 3 and 4.**

Refer to the emergency response outline roadmap provided at Attachment B.

Defining incident vs emergency

The division of command and control functions is to a great extent dependent on differentiating between the physical incident and the broader emergency situation.

Table 6: Incident vs emergency

	Incident	Emergency
Definition	Any occurrence that has resulted in, or has the potential to result in adverse consequences to water supply, water quality, people, the environment, property, reputation or a combination of these	A situation or occurrence that happens as a consequence of an incident and demands immediate action
General nature	Physical event	Broader whole-of-Grid and public interface outcomes – may be physical and/or intangible
Location	Site-based	Not usually location-based
Management focus	Operational – physical rectification	Corporate/supporting services – e.g. coordinating whole-of-Grid assistance, stakeholder management, communications, etc.
Relevant severity levels	1, 2 ■ Alert 3 ■ 4, 5	3 ■ 4, 5

Level 1, 2 and Alert incidents, as smaller-scale events, do not typically have the broader impacts which result in an associated emergency situation, and therefore are not subject to this Emergency Response Plan. The exception to this rule is when there is already an emergency response for a higher level incident being managed as per the protocols contained in this Plan. This requires the Level 1, 2 or Alert incident to be managed as part of the higher emergency response.

Level Alert, 3, 4 and 5 incidents, however, can be expected to have broader impacts and result in associated emergency situations, and therefore their management is subject to this Emergency Response Plan. While Alerts are not defined as an emergency, they do have the same notification requirements as Level 3, 4 and 5 incidents.

Command and control functions

The four key functions for command and control of an emergency are as follows:

Table 7: Command and control function responsibilities

Function	Description	Key responsibilities
Incident management	Managing the physical incident on-site	Actions undertaken to manage the incident under Grid Participant's internal Emergency Response Plan, including both the operational response and the supporting staff functions, including legal, insurance, human resources, security, Grid Participant operability and liabilities etc.
Technical coordination	Coordinating whole-of-Grid operations and support	• Assist the Emergency Manager • Facilitate interagency liaison • Facilitate resource sharing and mutual assistance among Grid Participants from an operations perspective • Seek and share additional expert advice • Remodel the water security position • Issue Grid Instructions and Emergency Operating Instructions, as necessary • Facilitate close-out debrief • Prepare Technical Operations Strategy for Emergency Management Team approval
Communications coordination	Coordinating Water Grid internal and external communications	• Assist the Emergency Manager • Internal stakeholder management • Facilitate interagency liaison • Prepare all internal and external communications materials as required • Issue all internal communications • Facilitate resource sharing and mutual assistance among Grid Participants from a communications perspective • Seek and share additional expert advice • Prepare Communications Strategy for Emergency Management Team approval
Emergency management	Strategic command and key stakeholder management	• Strategically manage response to the emergency • Determine risk management strategy • Coordinate investigations • Single contact point (Emergency Manager) for the emergency unless this is delegated to other Emergency Response Team member/s • Key stakeholder management • Approve all external communications: • Briefings • Media releases • Public interface • Approve Technical Operations and Communications Strategies • Issue all external communications

Tool/resource

Refer to the emergency response outline roadmap at Attachment B.

Function ownership

Under normal circumstances, the Water Grid Manager will combine the emergency management function with the coordination functions. However, in some circumstances the emergency management function may be assumed by another agency with relevant expertise or a strong interest in the incident.

When an external agency takes the emergency management role, the Water Grid Manager will continue to act as the lead for the Water Grid, representing the Water Grid to the Emergency Manager.

Table 8: Emergency function ownership

Function	Owner	Circumstances
Incident management	Impacted Grid Participant/s	Always
Technical coordination	Water Grid Manager	Always
Communications coordination	Water Grid Manager	Always
Emergency management	Water Grid Manager	Most emergencies – 'default' Emergency Manager The Water Grid Manager will combine the emergency management and emergency coordination functions unless another agency with an overriding interest assumes the emergency management function
	Office of the Water Supply Regulator	May assume the emergency management function for emergencies involving water quality The Water Grid Manager will contact the Office of the Water Supply Regulator in the event of a relevant emergency to establish who will take the emergency management role
	Queensland Health	Will assume the emergency management function for major drinking water health-related emergencies, as the organisation best able to manage public health risk The Water Grid Manager will contact Queensland Health in the event of a health-related emergency to establish who will take the emergency management role
	Premier's Department	May assume the emergency management function for Level 4 and 5 emergencies that are particularly severe incidents or have attracted a particularly high level of public interest The Premier's Department will be briefed on the emergency via the Department of Environment and Resource Management, and will advise the Water Grid Manager if it decides to take the emergency management role

Function	Owner	Circumstances
	Emergency Services/ State Disaster Management Group	May assume the emergency management function for Level 4 and 5 emergencies that require a very large-scale response or which fall under the Queensland Disaster Management System (e.g. terrorism, natural disasters) The Water Grid Manager will contact Emergency Services/State Disaster Management Group in the event of a relevant emergency to establish who will take the emergency management role

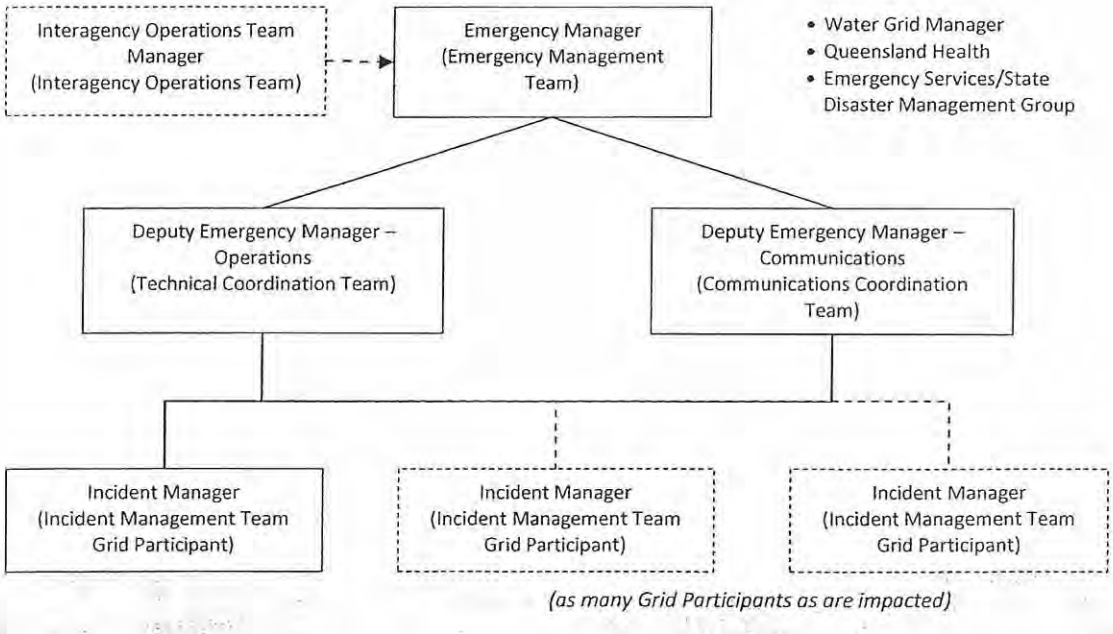
Tool/resource

- Refer to the Grid Participant's internal Emergency Response Plan and operating protocols.
- Refer to '❹ Manage the emergency'.
- Refer to 'Queensland Health protocol for the management of major drinking water health-related incidents'.
- Refer to Attachment A: Emergency contact list.

Emergency Response Team structure

Based on the above functions and their 'owners', the Emergency Response Team structure will be as follows:

Figure 3: Emergency Response Team structure



For emergencies where the Water Grid Manager is the Emergency Manager, the Water Grid Manager will determine the composition of the Emergency Management Team. For uncomplicated Level 3 incidents, the Emergency Management Team may consist at the minimum of a designated Emergency Manager from within the Water Grid Manager, who may also be designated as the Emergency Coordination Teams.

Function teams membership

In general terms, the function teams shown above will be made up as follows:

Table 9: Function teams membership

Function	Agency	Team	Team leader	Team members
Incident management	Grid Participant	Incident Management Team	Incident Manager	• Grid Participant staff
Technical coordination	Water Grid Manager	Technical Coordination Team	Deputy Emergency Manager - Operations	• Water Grid Manager staff • Grid Participant staff
Communications coordination	Water Grid Manager	Communications Coordination Team	Deputy Emergency Manager - Communications	• Water Grid Manager staff • Grid Participant staff
Emergency management	Water Grid Manager	Emergency Management Team	Emergency Manager	• Water Grid Manager staff • Grid Participant executive staff • Communications staff
	Queensland Health	Emergency Management Team based on Major Water Incident Management Group	State Health Incident Coordinator (Chief Health Officer)	• Senior Health Officer Queensland Health • CEOs of Water Grid entities • Premier's Department • Ministerial staff • Communications staff • State regulators • Specialist advisors, as needed
	Emergency Services/ State Disaster Management Group	Emergency Management Team based on State Disaster Management Group	State Disaster Manager	

Incident Management Team

The structure and composition of the Incident Management Team will be in accordance with the impacted Grid Participant/s' internal Emergency Response Plan. It will largely rely upon internal staff resources.

Technical Coordination Team

The structure and composition of the Technical Coordination Team will be as directed by the Emergency Management Team Deputy Emergency Manager – Operations. It will rely upon staff resources from within the Water Grid Manager, but may also draw upon technical and operations staff of the impacted Grid Participants.

The function of the Technical Coordination Team is to coordinate and manage implementation within the Water Grid of actions required by the Emergency Management Team. For straightforward emergencies, the Technical Coordination Team and the Communications Coordination Team may be combined with the Emergency Management Team.

Communications Coordination Team

The structure and composition of the Communications Coordination Team will be as directed by the Emergency Management Team Deputy Emergency Manager – Communications. It will rely upon staff resources from within the Water Grid Manager, but may also draw upon communications and media staff of the impacted Grid Participants.

The function of the Communications Coordination Team is to coordinate and manage implementation within the Water Grid of actions required by the Emergency Management Team. These actions will focus on internal and external communications. For straightforward emergencies, the Technical Coordination Team and the Communications Coordination Team may be combined with the Emergency Management Team.

Emergency Management Team

The structure and composition of the Emergency Management Team will vary according to the emergency situation and the entity undertaking this function. As a guide, for incidents in which no external entities are involved, the Emergency Management Team is likely to consist of the Emergency Manager, an executive from each impacted Grid Participant and Water Grid Manager staff. All invitations will be made by the Emergency Manager, by phone or face-to-face. Email is not to be solely relied upon.

An indicative structure has been included in Attachment N for use as a default. Depending on the emergency situation, it may require some changes to effectively manage the response. The Emergency Manager will be the single point of contact for the emergency, unless this function is delegated to other team member/s.

Normally a staff member from the Water Grid Manager will be appointed as the Deputy Emergency Manager – Communications for the emergency response. A staff member from the Water Grid Manager will be appointed as the Deputy Emergency Manager – Operations as well. The appointment of these positions will be confirmed by the Emergency Management Team at its first meeting. For very straightforward emergencies, the Emergency Management Team may consist of a single manager from the Water Grid Manager.

For most emergencies, the Water Grid Manager will combine this function with its emergency coordination roles. The Emergency Management Team will therefore be the same as the Emergency Coordination Teams.

Where Queensland Health undertakes this function, the Emergency Management Team structure and composition will be in accordance with the 'Queensland Health protocol for the management of major drinking water health-related incidents'. The team will include senior representatives from the Water Grid.

Where the State Disaster Management Group undertakes this function, it will be in accordance with the *State Disaster Management Plan*.

The Emergency Management Team may draw upon the Interagency Operations Team for specialist advice, if required.

Interagency Operations Team

The Interagency Operations Team is an independent expert reference panel assembled by the Emergency Management Team to provide technical or specialist advice and recommendations on any aspect of managing a given emergency, for example, specialist chemicals advice. It will essentially contain skills that are not readily available from within the Water Grid. Its size and composition are not fixed, as these will be determined for each event in view of the technical knowledge or expertise required. The Emergency Manager will designate a Grid Participant or external agency staff member to be the manager of the Interagency Operations Team.

Table 10: Indicative Interagency Operations Team meeting requirements

Level	Frequency	Format
1, 2, Alert	Interagency Operations Team not required	
3	• If Emergency Management Team establishes Interagency Operations Team – at the start of the emergency response – thereafter, as required	• Teleconference
4 and 5	• Minimum once daily • Increase frequency, as required	• Daily in-person meeting at combined Emergency Response Team location/incident room • Additional meetings may be by teleconference or in person as appropriate

Location

Unless the Emergency Manager advises otherwise, the emergency response function teams will be located as follows:

Table 11: Normal emergency response function team locations

Function team	Location
Incident management	As directed by impacted Grid Participants
Technical coordination	As directed by the Deputy Emergency Manager – Operations. It will be an appropriate location to achieve efficient situational awareness
Communications coordination	Water Grid Manager's office • Level 15, 53 Albert Street, Brisbane
Emergency management	Water Grid Manager's incident room • Level 15, 53 Albert Street, Brisbane
Interagency Operations Team	As directed by the Emergency Manager

Continuous reassessment

Risk assessment needs to be a continuous process throughout the entire emergency response.

The initial incident severity classification may require adjustment as the incident and its wider impacts evolve and are better understood.

As the emergency is notified, and the Emergency Management Team and Emergency Coordination Teams are mobilised, each should reassess the risk classification in view of their different perspectives and expertise. For example, Queensland Health will be the lead agency for major drinking water health-related incidents, and will use health risk assessment tools to review the severity level classification.

Reassessment should also follow milestones in managing the emergency and recovery, or as often as deemed necessary, depending on the nature of the incident.

Tool/resource

- Refer to Table 3: Incident severity classification levels.
- Refer to 'Queensland Health protocol for the management of major drinking water health-related incidents'.

Escalation

The escalation of an incident through to Level 5 is based on a combination of factors including:

- the consequence of the incident to:
  - water quality
  - water assets
  - water quantity
  - security
  - public health
  - the environment
  - public confidence
- the ability of the deployed people and resources to manage the consequence.

The appropriate person within a Grid Participant, e.g. Grid Participant Duty Manager, has the authority to escalate an incident to a higher level and send appropriate notification to the Water Grid Manager corresponding to the escalation. The Water Grid Manager reserves an overriding right to escalate emergencies.

Prompts for the escalation to a higher level include:

- actual or potential impact on the Water Grid, its Grid Customers, community and environment is more widespread
- the available people and resources associated with the original incident severity level are inadequate to manage the incident
- more information is known about the incident, justifying a reclassification
- an upward trending pattern of the initial incident (i.e. a domino effect), which may result in the escalation of the incident
- emergency services are required to assist
- water quality issues require notification to the Queensland Water Commission, Department of Environment and Resource Management and/or Queensland Health
- potential for secondary issues to develop and be more damaging than the original incident
- widespread attention by the media, regulators, or Members of Parliament
- potential for major asset damage or loss.

Action checklist – have you...☑

- mobilised the Grid Participant's Incident Management Team as per its internal Emergency Response Plan? ☐
- mobilised the Technical and Communications Coordination Teams? ☐
- determined the 'Emergency Manager' and mobilised its emergency command structure? ☐
- activated the Emergency Management Team? ☐
- convened an Interagency Operations Team, if required?
- begun the process of continuous risk reassessment, drawing on specialised expertise as appropriate? ☐

4 Manage the emergency

Snapshot: Manage the emergency

Actions to eliminate the immediate risk to Water Grid operations:

- **Manage the incident at asset/site level.**
- **Coordinate the emergency at whole-of-Grid level.**
- **Implement communications protocols.**

Refer to the emergency response outline roadmap provided at Attachment B.

Incident management

Impacted Grid Participants are responsible for carrying out incident management in accordance with their internal emergency response plans and operating protocols.

Tool/resource

- See 'Command and control functions' for a description of the 'incident management' role.
- Refer to Grid Participants' internal emergency response plans and operating protocols.

Emergency coordination

The Water Grid Manager is responsible for establishing the Technical and Communications Coordination Teams. A range of coordination activities will be required to facilitate the total emergency response and to ensure whole-of-Grid operations maintain supply (as distinct from managing the incident at the entity or asset level).

These coordination activities include:

- liaison between Grid Participants and other interested agencies
- facilitating resource sharing among Grid Participants
- seeking and sharing additional expert advice
- assisting the Emergency Manager, when this function has been transferred to another agency (see 'Command and control – Function ownership')
- coordinating and preparing key communications (both internal and external)
- issuing Grid Instructions and Emergency Operating Instructions, as necessary.

For most emergencies, the Water Grid Manager will combine the emergency coordination and emergency management functions. However, when the emergency management function is transferred to another agency, its associated activities, including a range of communication activities, are transferred with it.

Liaison and resource sharing

The Water Grid Manager provides a single point of contact and clearing house for information across all interested parties in the emergency response. This simplifies liaison processes, prevents confusion and ensures information ends up where it is needed.

Typical examples of this liaison include:

- among Grid Participants
- with State agencies
- with Federal agencies (e.g. Department of the Environment, Water, Heritage and the Arts; National Water Commission)
- with Emergency Services (see Figure 2: Water Grid emergency response hierarchy and the Queensland Disaster Management System).

The Water Grid Manager also acts as a central point for sharing or coordinating a variety of resources, such as:

- sharing plans and tools among Grid Participants
- coordinating and providing mutual assistance
- solving short-term staff and equipment shortages for incident management by sourcing loans from other Grid Participants.

Major drinking water health-related emergencies

For major drinking water health-related emergencies, Queensland Health will take the Emergency Manager role. In this case, the Water Grid Manager's coordination function will involve supporting Queensland Health, including:

- providing senior representation on the Emergency Management Team
- providing or sourcing expertise for the Health Reference Panel, if necessary
- seconding staff to the Interagency Operations Team to act on the agreed strategy
- coordinating the environmental investigation with the relevant Grid Participants
- providing and coordinating logistics support, as required
- giving full, proactive cooperation in general.

Tool/resource

Refer to 'Queensland Health protocol for the management of major drinking water health-related incidents'.

Whole-of-Grid operations

Amendments to Grid Instructions

Under section 4.15 of the Market Rules, the Water Grid Manager can issue new Grid Instructions:

- when there is a change in circumstances such as distribution and storage capacity
- for any reason that the Water Grid Manager, at its discretion, considers appropriate.

During emergencies, the Water Grid Manager is to perform an assessment of the impact upon security of supply and ability to meet Grid Customer demand, and issue new Grid Instructions as necessary. To make this assessment Grid Participants may be required to make arrangements to provide the Water Grid Manager with access to timely, accurate and verified information.

Water Supply Emergency Declarations and Emergency Operating Instructions

A Water Supply Emergency can be declared by the Minister responsible for Chapter 2, Part 2, Division 2A of the *Water Act 2000* if the Minister is satisfied there is a water supply emergency or that one is developing. A water supply emergency is an event or situation where there is a demonstrably serious risk of not being able to meet part of the State's essential water supply needs. The following examples of some potential situations are included in the *Water Act 2000*:

- failure of a large part of water supply, treatment or distribution infrastructure
- extended severe drought conditions
- water storage used for essential water supply needs becoming unfit for use due to contamination.

An incident of such a magnitude to prompt the making of a Water Supply Emergency Declaration will likely be a Level 4 or 5 under this Emergency Response Plan.

When the Minister declares a Water Supply Emergency, the Water Grid Manager may issue Emergency Operating Instructions. Emergency Operating Instructions issued under this section are to be published in a manner determined by the Water Grid Manager and are to be issued to the Grid Participants they affect. The Water Grid Manager may provide a copy of the Emergency Operating Instructions to other Grid Participants and any other entity the Water Grid Manager considers appropriate.

The Water Grid Manager will determine the timeframe over which the Emergency Operating Instructions apply, which will be subject to the type of incident taking place.

The Water Grid Manager can amend Emergency Operating Instructions if it judges necessary. The frequency of these amendments will depend on the nature of the incident. For example, a major asset failure may necessitate frequent amendments to Emergency Operating Instructions, whereas a drought emergency would probably not require amendments to be made so frequently.

Tool/resource

Refer to the Market Rules, sections 4.15 and 4.23–4.24.

Communication

Overview

Effective communication plays a major part in successfully managing emergencies. All interested parties in the emergency response need to focus on providing and supporting communications which:

- are timely
- are up-to-date
- are accurate
- include a caution or indication of confidence based on the completeness of the information available
- assist the overall emergency management effort
- create a single voice, to avoid confusion and conflicting messages
- maintain public and stakeholder confidence
- do not adversely affect insurance cover, where possible.

Any information advised to the Emergency Management Team for use in briefing the Minister's office must be authorised by the Grid Participant's CEO.

The Emergency Management Team is responsible for managing most communication functions. The Emergency Management Team will use the Communications Coordination Team in supporting this role. Refer to '[redacted] Establish command and control' for an outline of the emergency management role. For a diagram of the emergency management communication process, refer to Attachment C: Communication workflow.

For incidents not deemed an emergency under this Plan, and where a State-owned Grid Participant is involved, all communication activities must be coordinated through the Communications Unit.

Tool/resource

- Refer to Attachment C: Communication workflow.
- For Level 1 and 2 incident communications, refer to the Communications Unit protocols.
- A Sample Situation Report (SITREP) template is provided at Attachment H. This is available as a separate Word file on request from [redacted]
- Refer to Attachment I: Informal Ministerial briefing template.

'Internal' communication activities

Among members of the Water Grid and Government stakeholders.

Table 12: 'Internal' communication roles

Level	Communication	Incident Management Team (Impacted Grid Participant/s)	Communications Coordination Team (Water Grid Manager)	Emergency Management Team (Water Grid Manager or other)[5]
1–2	Notification	Notify internal key stakeholders as required, e.g. CEO, Mayor, Board Notify other impacted Grid Participant/s	No involvement	No involvement
	Stakeholder briefings	Manage internal stakeholders at own discretion	No involvement	No involvement
	Liaison/support	Liaise with other impacted Grid Participant/s	No involvement	No involvement
Alert	Notification	Notify internal key stakeholders as required, e.g. CEO, Mayor, Board Notify other impacted Grid Participant/s. Notify Water Grid Manager Notify Office of the Water Supply Regulator, if required	Water Grid Manager Duty Manager to notify Minister's office (use Attachment I template)	Water Grid Manager Duty Manager to notify Minister's office (use Attachment I template)
	Stakeholder briefings	Manage internal stakeholders at own discretion	No involvement	No involvement
	Liaison/support	Liaise with other impacted Grid Participant/s	No involvement	No involvement

Level	Communication	Incident Management Team (Impacted Grid Participant/s)	Communications Coordination Team (Water Grid Manager)	Emergency Management Team (Water Grid Manager or other)[5]
3 - 5	Notification	Notify Water Grid Manager Notify Office of the Water Supply Regulator, if required Notify internal key stakeholders as required, e.g. CEO, Mayor, Board • Confirm with the Water Grid Manager which stakeholders have been notified	Notify other relevant stakeholders, as appropriate: • Water Grid Manager CEO • Responsible Minister/s office • Other Grid Participants • Water Grid Manager Board • Queensland Water Commission • Department of Environment and Resource Management • Queensland Health • Premier's Department • Emergency Services	
	Stakeholder briefings	Proactively provide information to Emergency Manager/Emergency Coordinator to enable preparation of briefings Assist Emergency Manager Teams in preparation and approval of briefings. Forward approved briefings to internal stakeholders as required, e.g. Grid Participant senior management, CEO, Mayor, Board Do not issue briefings independent of Emergency Manager/Emergency Coordinator	Proactively provide information to Emergency Manager to enable preparation of briefings Assist Emergency Manager in preparation and approval of briefings Forward approved briefings to internal stakeholders, as required Do not issue briefings independent of Emergency Manager	Manage preparation and approval of briefings, as appropriate (including SITREPs) Issue briefings Respond to enquiries about briefings and other stakeholder enquiries Unless another organisation takes the Emergency Manager role, the Water Grid Manager's responsible Minister has final approval of briefings, etc.
	Liaison/support	Proactively provide information and support to the Emergency Management Teams Provide SITREPs to summarise available information, as requested by the Emergency Manager/Emergency Coordinator	Proactively provide information and support to the Emergency Manager Coordinate liaison and communications support across the emergency response teams	Manage preparation and approval of briefings, as appropriate (including SITREPs)

[5] See '◈ Command and control - Function ownership'

'External' communication activities

Directed at the public and stakeholders outside Water Grid.

Table 13: 'External' communication roles

Level	Communication	Distribution Service Providers Incident Management Team (Impacted Grid Participant/s) #	Communications Coordination Team (Water Grid Manager) #	Emergency Management Team (Water Grid Manager or other) [6]
1–2	Strategy and messaging	Formulate any appropriate communications strategy messaging at their discretion	Provide whole-of-Grid messaging, if required	No involvement
	Public face	Designate spokesperson	No involvement	No involvement
	Media management Public information and enquiries	Manage media at their own discretion Respond to media/public enquiries May only comment on the incident as it relates to their assets No comment to be made on whole-of-Grid issues	Manage comments on the Water Grid, if required	No involvement
Alert	Strategy and messaging	Formulate any appropriate communications strategy messaging at their discretion	Provide whole-of-Grid messaging, if required	No involvement
	Public face	Designate spokesperson	No involvement	No involvement
	Media management Public information and enquiries	Manage media at their own discretion Respond to media/public enquiries May only comment on the incident as it relates to their assets No comment to be made on whole-of-Grid issues	Manage comments on the Water Grid, if required	No involvement

All SEQ Water Grid communication activities for the State-owned entities are coordinated through the SEQ Water Grid Communications Unit, including Levels 1, 2 and Alert level incidents.

Level	Communication	Distribution Service Providers Incident Management Team (Impacted Grid Participant/s) #	Communications Coordination Team (Water Grid Manager) #	Emergency Management Team (Water Grid Manager or other) [6]
3–5	Strategy and messaging	Work with the Emergency Manager to develop the communications strategy for the emergency response, and key messages for inclusion across all communications	Work with the Emergency Manager to develop the communications strategy for the emergency response, and key messages for inclusion across all communications	Conduct risk assessment and incident verification Manage development of a communications strategy for the emergency response, and key messages for all communications Unless another organisation takes the Emergency Manager role, the Water Grid Manager's responsible Minister has final approval of messaging, etc.
	Public face	Support spokesperson, as requested Do not present public face independent of Emergency Manager	Support spokesperson, as requested Do not present public face independent of Emergency Manager	Designate spokesperson
	Media management Public information Public enquiries	Assist Emergency Manager in preparation and approval of media releases and other public information Disseminate finalised and approved media releases, and other public information Forward media/public enquiries to Emergency Manager Do not issue releases or information independent of Emergency Manager	Assist Emergency Manager in preparation and approval of media releases and other public information Disseminate finalised and approved media releases, and other public information Forward media/public enquiries to Emergency Manager Do not issue releases or information independent of Emergency Manager	Manage preparation and approval of media releases and other public information, as appropriate Issue media releases (initial statement and further releases as appropriate) and other public information (Grid Participant websites, call centres, etc.) Respond to media/public enquiries Unless another organisation takes the Emergency Manager role, the Water Grid Manager's responsible Minister has final approval of media statements, etc.

[6] See ' Command and control - Function ownership'

All SEQ Water Grid communication activities for the State-owned entities are coordinated through the SEQ Water Grid Communications Unit, including Levels 1, 2 and Alert level incidents.

Action checklist – have you...☑

- verified the incident level? ☐
- continually reassessed risk, command and control, and interagency communications? ☐
- implemented incident management at the asset/site level as per the Grid Participant's internal Emergency Response Plan and operating protocols? ☐
- established effective liaison among all interested parties in the emergency response and with key stakeholders? ☐
- used the Water Grid Manager to coordinate additional resources from other Grid Participants? ☐
- for major health-related incidents, committed the necessary support to Queensland Health? ☐
- modelled the impacts on security of supply and issued new Grid Instructions, if required? ☐
- issued Emergency Operating Instructions, if required? ☐
- briefed relevant key stakeholders and established a schedule for ongoing updates? ☐
- issued an approved holding initial statement to the media? ☐
- developed a communication strategy and key messages for this incident? ☐
- established who will be the public face/ spokesperson for the response? ☐
- developed further media statements as appropriate? ☐
- developed and disseminated further public information releases, e.g. for publication via Grid Participant websites and call centres? ☐

Manage the recovery

Snapshot: Manage the recovery

Actions to return Water Grid operations to normal:

- **Agree recovery plan and objectives.**
- **Recover asset and restore full service/product delivery.**
- **Implement close-out communications protocols.**

Refer to the emergency response outline roadmap provided at Attachment B.

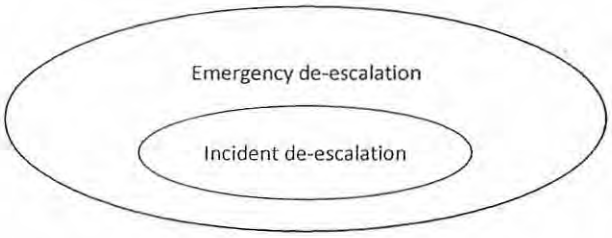
Context

Recovery begins immediately once an incident has been contained. The focus is on maintaining continuity of operations while restoring the Water Grid to normal status. The Water Grid Manager's 'strategic Water Grid management' function provides direction as to the approach to be applied.

De-escalation

There are two elements of de-escalation in the emergency response context:

Figure 4: De-escalation



As shown, incident de-escalation is a sub-set of emergency de-escalation.

Incident de-escalation relates to incident management, and the status of the physical event. The impacted Grid Participant is therefore responsible for incident de-escalation. Each Grid Participant is to have a procedure which details the process to close-out an incident once it has been rectified.

Emergency de-escalation takes into account a broader range of factors including emergency coordination and management, which may continue well after the incident that caused the emergency has be rectified. As such, it is possible that the emergency may stay ongoing after the Grid Participant has de-escalated their incident. As a result, only the Emergency Manager can de-escalate the Water Grid emergency.

Roles and responsibilities

Action	Incident Management Team (Grid Participant/s)	Technical Coordination Team (Water Grid Manager)	Communications Coordination Team (Water Grid Manager)	Emergency Management Team (Water Grid Manager or other) [7]
Agree recovery plan and objectives	•	•	•	•
Recover asset	•			
Issue Grid Instructions, as necessary		•		
Implement close-out communications protocols			•	•
Close-out incident	•			
Complete Incident Close-out Report	•			
Close-out emergency				•

[7] See 'Command and control - Function ownership'

Incident Manager (Grid Participant/s)

Grid Participants are responsible for managing the recovery of their assets, services and/or products in accordance with the agreed recovery objectives and the Water Grid Manager's Grid Instructions. Grid Participants are also responsible for providing information and resources to the Emergency Management Team and Emergency Coordination Teams in order to assist the whole-of-Grid recovery effort.

Tool/resource

Refer to the Grid Participant's internal Emergency Response Plan and operating protocols for asset recovery processes.

Incident Close-out Report

For all Alerts, Level 3, 4 and 5 incidents, the impacted Grid Participant/s must complete the Incident Close-out Report provided at Attachment J, including the results of any investigation and rectification procedures performed, and copy to the Water Grid Manager (and Emergency Manager, if this is not the Water Grid Manager).

Tool/resource

A copy of the Incident Close-out Report is provided at Attachment J. This is also available as a separate Word file on request from [redacted]

Office of the Water Supply Regulator

For all incidents that have required the Grid Participant to submit Part A of the form 'Drinking water quality: incident reporting' to the Office of the Water Supply Regulator, the Grid Participant should also submit Part B of the form on close-out in addition to the Water Grid Incident Close-out Report sent to the Water Grid Manager.

Tool/resource

Refer to the 'Drinking water quality: incident reporting' form available at www.derm.qld.gov.au.

Emergency Coordination Teams (Water Grid Manager)

The Emergency Coordination Teams assist the Emergency Management Team in coordinating the whole-of-Grid recovery process, based on recovery objectives and subsequent priority of work provided by the Emergency Management Team.

The Emergency Coordination Teams must work with Grid Participants to determine the most effective method of implementing the recovery objectives. The Water Grid Manager will then issue Grid Instructions to Grid Participants, if required, in accordance with the recovery priorities and at a frequency which assists the recovery.

Emergency Management Team (Water Grid Manager or other)

The Emergency Management Team is responsible for directing the whole-of-Grid recovery process. This is primarily achieved by outlining the recovery objectives and the subsequent priority of work.

This process may involve input and assistance from a number of other government departments and stakeholders such as:

- Grid Participants
- Queensland Treasury
- Department of Community Safety (Emergency Services)
- Department of Premier and Cabinet
- Department of Infrastructure and Planning
- Grid Customers
- Queensland Health
- Department of Employment, Economic Development and Innovation
- Queensland Water Commission
- Department of Environment and Resource Management.

Communications and media

The Emergency Management Team is responsible for managing recovery communications across the Grid Participants and to external stakeholders such as Grid Customers and relevant parts of government. The Emergency Management Team is also responsible for issuing a close-out statement/media release, if appropriate.

Tool/resource

Refer to ⚙ 'Manage the emergency' for media release protocols.

Action checklist – have you...☑

- established the recovery objectives? ☐
- recovered the asset? ☐
- issued Grid Instructions, if required, to achieve whole-of-Grid recovery? ☐
- issued an approved close-out statement to the media, if appropriate? ☐
- completed an Incident Close-out Report and copied it to the Water Grid Manager (and other Emergency Manager) (Attachment J)? ☐
- Submitted Part B of the Office of the Water Supply Regulator form 'Drinking water quality: incident reporting'? ☐

6 Improvement actions

Snapshot: Improvement actions

Actions to improve future Water Grid operations:

- **Debrief following incident close-out.**
- **Draft Post-emergency Report.**
- **Update Risk Registers.**

Refer to the emergency response outline roadmap provided at Attachment B.

Debriefing

The Emergency Manager will decide if a formal debriefing process is to be carried out, based on the nature of the incident.

The following table outlines responsibilities for carrying out debriefings following incident close-out.

Table 14: Debriefing responsibilities

Level	Incident Manager (Impacted Grid Participant)	Emergency Manager (Water Grid Manager or other)[8]
1, 2 and Alert	Refer to Grid Participant's internal Emergency Response Plan	No involvement
3, 4 and 5	Carry out 'hot' debrief – informal debriefing which must occur as soon as practicable following the event to capture immediate learning's and details	Water Grid Manager to facilitate a 'cold' debrief including all entities involved in the emergency response in order to: • carry out a root cause analysis • capture and disseminate experiences and lessons learnt throughout the incident • enable process improvements and modifications

[8] See '☆ Command and control – Function ownership'

Debriefings must be fully documented, with copies of the minutes distributed to all entities involved. Attendees will need to bring copies of all documentation associated with the incident, such as notification forms, logs, SITREPs, briefings, media releases, correspondence, photographs, etc.

Tool/resource

- Refer to debriefing procedures in Grid Participant internal emergency response plans.
- A Debriefing minutes template is provided at Attachment K. This is also available as a separate Word file on request from emergency@seqwgm.com.au.

Post-emergency Report

The Post-emergency Report functions as a summary of information and feedback on an emergency and as a cover form for the file of associated documentation. It is a vehicle for information consolidation, analysis and formalised recommendations.

It should be completed by the Emergency Manager or Emergency Coordinator following a thorough debriefing process.

The Emergency Manager/Emergency Coordinator will distribute copies of the Post-emergency Report to all entities involved in the emergency response.

Tool/resource

Refer to the Post-emergency Report template provided at Attachment L.

Risk Register

Recommendations arising from the debriefing process and Post-emergency Report must be forwarded to Grid Participant Risk Managers for inclusion in the entities' Risk Registers, as appropriate.

The impacted Grid Participant/s are responsible for incorporating recommended actions addressing their own assets and systems. The Water Grid Manager is responsible for incorporating recommendations which address:

- whole-of-Grid systems and continuous improvement
- learning's from the experience that have value for all Grid Participants, and should be shared with others not involved in the incident.

Following risk assessment in accordance with the Grid Participants' internal risk management plans, recommendations and mitigations will flow through to update operational documentation such as:

- operational procedures
- training schedules
- water quality improvement plans
- asset improvement plans.

Tool/resource

- Refer to Grid Participant and Water Grid Manager Risk Registers and risk management plans.
- Refer to the Water Grid Manager's Workforce Capability Strategy.

Action checklist – have you...☑

- carried out a 'hot' debrief? ☐
- carried out a 'cold' debrief (Attachment K)? ☐
- completed a Post-emergency Report (Attachment L)? ☐
- forwarded recommendations for inclusion in Risk Registers? ☐

Attachment A: Emergency contact list

Grid Participants are to provide an update of their contact list to the Water Grid Manager as changes occur, and as a minimum, on the first working day in February, May, August and November, whether or not any changes have been made.

Grid Participant – first priority contacts

Entity	Contact person	Role	Contact details
SEQ Water Grid Manager	Duty Manager (24/7)	*(first point of contact for incidents)*	T E
LinkWater	Control Room (24/7)	*(first point of contact for incidents)*	T E
WaterSecure	Philip Surtees	Senior Operations Manager *(first point of contact for incidents)*	T M E
Seqwater	David Roberts	Principal Coordinator, Incident and Emergency Management *(first point of contact for incidents)*	T: M E:
Unitywater	Duty Shift Officer	Network Operations Control Room (South) - MBRC *(first point of contact for incidents)*	T: M E:
Queensland Urban Utilities	Control Room Operator	East Operations Control Room Operates 24/7 *(first point of contact for incidents)*	T: F:
Allconnex Water	Paul Gear	Acting Group Manager Policy & Systems *(first point of contact for incidents)*	T: M E:

Grid Participant – additional contacts

Entity	Contact person	Role	Contact details
SEQ Water Grid Manager	Barry Dennien	Chief Executive Officer	T M E
	Scott Denner	Director, Risk & Technology	T M E
	Dan Spiller	Director, Operations	T M E
	Lee Hutchison	Risk & Emergency Manager	T M E
	Brett Spink	Risk Program Manager	T M E
	Media Duty Manager		T M E
LinkWater	Duty General Manager		M E
	Andrew Moir	General Manager Operational Services	T M E
	Stacey Renouf	Corporate Communications Manager	T M E
	Call Centre		T
WaterSecure	Keith Davies	CEO	T M E
	Paul Rees	Manager Communications and External Relations	T M E
	Matt Service	Operations Manager Purified Recycled Water	M E
	Sean McCagh	Operations Manager Desal	M E

Entity	Contact person	Role	Contact details
	Call Centre	Western Corridor Recycled Water	T: 1800 997 464
	Call Centre	Gold Coast Desalination Plant	T: 1300 366 190
Seqwater	Jim Pruss	Executive General Manager Operations	T M E
	Stan Stevenson	Coastal Operations Manager	T M E
	Brett Myatt	Central Operations Manager	T M E
	Arran Canning	Water Quality Product Manager	T M E
	Incident Management Hotline		T:1800 737 928
Unitywater			
Southern Region (Moreton Bay Regional Council Area)	Graeme Arthy	Principal Engineer Network Control	T: M E:
	Robert Stringfellow	Senior Manager Network Operations	T: M E:
	Barry Holcroft	Executive Manager Operations South	T: M: E:
Northern Region (Sunshine Coast Regional Council Area)	Duty Shift Officer	Network Operations Control Room (North) *(secondary point of contact for incidents)*	T: M: E:
	Michael Doherty	Network Operations Manager	T: M: E:
	Peter Willey	Manager Operations	T: M: E:

Entity	Contact person	Role	Contact details
	Gary Sabburg	Executive Manager Operations North	[redacted]
Head Quarters	Call Centre	Customer Service Team	
	Helen Mohr	Manager Communications & Marketing	
	Dave Archbold	Business Resilience Coordinator	
	Martin Doré	Manager Business Sustainability	
	Jon Black	CEO	
	Peter Scott	CFO & Dep. CEO	
Queensland Urban Utilities			
Queensland Urban Utilities (QUU)	West Duty Officer	West Control Room *(secondary point of contact for incidents)*	
	Media Duty Manager	24/7 Communications and Media Duty Officer	
	Manager - Source Control & Product Quality	Water quality contact	
	Robin Lewis	COO	
	Noel Faulkner	CEO	

Entity	Contact person	Role	Contact details
			Email contact for East QUU incident Management room (when activated) [redacted] Email contact for West QUU incident Management room (when activated) [redacted] Email contact for West QUU Emergency Management room (when activated) [redacted] ***THESE EMAILS ARE ONLY MONITORED WHEN AN INCIDENT OR EMERGENCY HAS BEEN DECLARED AND THE ROOM/S ACTIVATED***
Allconnex Water			
Gold Coast District	Duty Manager	On-call Incident Manager	T: [redacted]
	Duty Operator	24hr Call Centre *(secondary point of contact for incidents)*	T: 1300 000 928 F: E: [redacted]
	Dick Went	District Manager	T: M [redacted] E:
Logan District	Duty Operator	24hr Call Centre	T: 1300 000 928
	Daryl Ross	District Manager	T: M [redacted] E:
	Palith Siriwardana	Operations Manager	T: M E:
Redland District	Gary Soutar	District Manager	T: M [redacted] E:
	Brad Taylor	Manager Treatment Operations	T: M E:
	Kevin McGuire	Manager Reticulations Operations	T: M E:
	Sherryn Filip	Customer Relations Officer *(for communications/ media)*	T: M E:

Other key stakeholder contacts

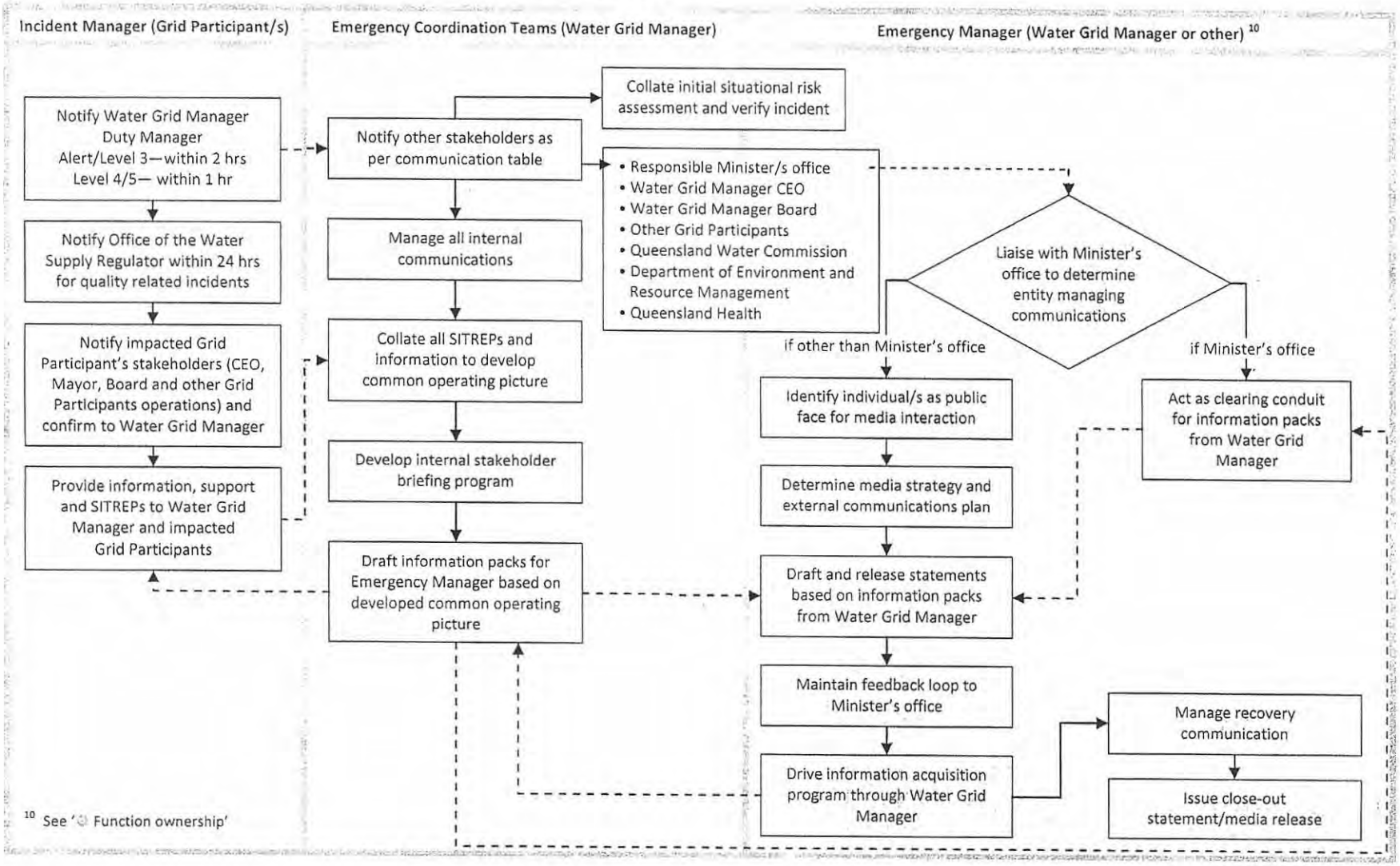
Entity	Contact person	Role	Contact details
Emergency Services			
Police, Ambulance, Fire – 000			
Emergency Management Queensland	State Disaster Coordination Centre	Watch Desk Officer	T: F:
Queensland Fire and Rescue Service	Head Office		T:
	Media Liaison		T:
Chemical Hazards and Emergency Management (CHEM)			T: E:
Queensland Police Service	Head Office		T:
	Counter Terrorism Coordination Unit		T: F: E:
	Water Police		Brisbane T: 3895 0333 Wynnum T: 3829 4124
	Media and Public Affairs Branch		T:
Queensland Government			
Ministers' offices			
Do not contact Ministers' offices directly other than that of the Minister for Natural Resources, Mines and Energy—who will contact the Premier and other Ministers as necessary.			
Minister for Natural Resources, Mines and Energy	Lance McCallum	Principal Advisor	T: M E:
	David Robertson	Media Advisor	T: M E:
	Tim Watts	Policy Advisor	T: M E:

Entity	Contact person	Role	Contact details
Departments			
Department of Environment and Resource Management	Debbie Best	Office of the Deputy Director-General Water and Catchment Services	T: M E:
	Greg Oliver	General Manager, Urban Water	T: M E:
	Kerry Waters	General Manager, Client Communications and Information	T: M E:
	Drinking Water Incidents	Office of Water Supply Regulator	T: E:
	Recycled Water Incidents	Office of Water Supply Regulator	T: E:
	Peter Allen	Office of Water Supply Regulator Director, Dam Safety	T:
	EPA Hotline	Environmental Protection Agency *(for reporting wildlife emergencies and pollution incidents)*	T: 1300 130 372 *(24hrs)*
Queensland Water Commission	Karen Waldman	Executive Director	T M E
Queensland Police Service Counter Terrorism Strategic Policy Branch	Peter Hallinan (Stakeholder Engagement)		T: M E:
Queensland Police Service Security Planning and Coordination	Adrian Pate	Principal Policy and Programs Officer	T: M E:
Queensland Police Service Security Intelligence Branch			T: E:

Entity	Contact person	Role	Contact details
Treasury	Ken Sedgwick	Assistant Under Treasurer	T E
	Kellie Reeves	Treasury Advisor	T E
Queensland Health	Dr Greg Jackson	Water Quality Unit Environmental Health Branch Health Protection Directorate	T M E
	Water Quality Unit Emergency Contact		M
	Forensic and Scientific Services	*(Analytical support, water-related health problems)*	T
Department of Employment, Economic Development and Innovation	WHS Inspector and Workplace Accident Notification	Workplace Health and Safety	T: 1300 369 915 *(24hrs)*
Department of Transport and Main Roads	Steve Hallam	Transport Senior Advisor, Emergency Management	T M E
	Brian Balwin	Main Roads Senior Advisor, Critical Incident Coordination	T M E

Grid Customers			
CS Energy	David Christy	Coal and Water Resources Manager	[redacted]
	Swanbank Power Station Shift Supervisor		
	Steve Watterston	Swanbank Power Station Operations Superintendent	
Tarong Energy Corporation	Dave Barram	Acting Manager Operations	
	Jay Merritt	Senior Communications Advisor	
	Tim Loth	Community Relations Manager	
Toowoomba Regional Council	Kevin Flanagan	Director Water Services	
	Alan Kleinschmidt	Manager Water Operations	

Attachment C: Communication workflow



Attachment D: Grid Participant Emergency Response Plan approval requirements

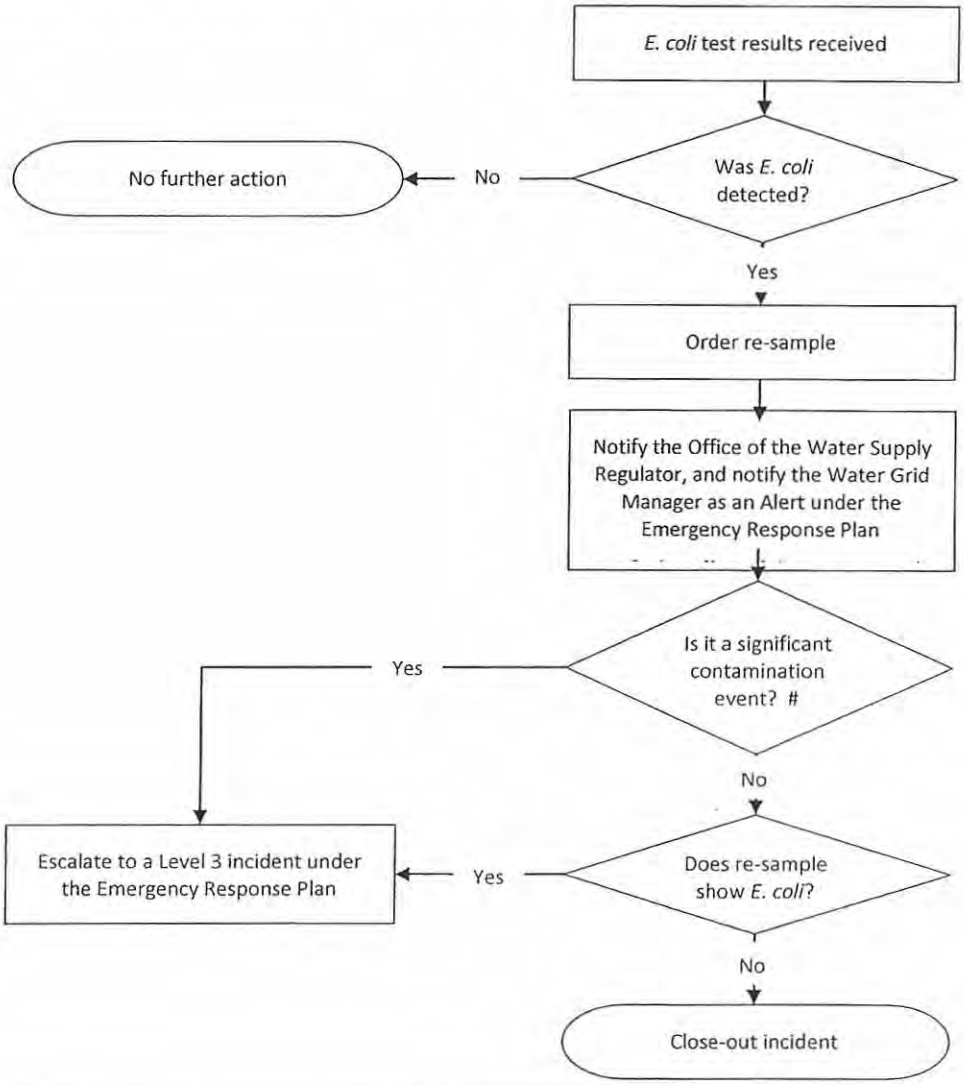
These approval requirements will be used by the Water Grid Manager to ensure Grid Participants' internal Emergency Response Plans are consistent with and meet the objectives of the SEQ Water Grid Emergency Response Plan. When submitting plans for approval, Grid Participants are to include this table with a note giving the page/s of the plans on which each requirement is met.

Market Rules reference	Components	To be included in Grid Participant emergency response plans		Pg/s in Plan
		Recommendations (best practice)	Requirements (compulsory)	
4.30 (a) (i) [provide] 'comments regarding the extent (if any) to which the draft Grid Service Provider Emergency Response Plan or Distribution Service Provider Emergency Response Plan is inconsistent with, or does not reasonably meet the objectives of the SEQ Water Grid Emergency Response Plan'.	General	• To facilitate effective interaction during an emergency, Grid Participant emergency response plans should mirror the six-step process detailed in the SEQ Water Grid Emergency Response Plan.		
	Governance and policy		• A Testing and Review Plan aligned with that detailed on page 7 of the SEQ Water Grid Emergency Response Plan is to be included. • A Training Plan aligned with that detailed on page 8 of the SEQ Water Grid Emergency Response Plan is to be included. • The general responsibilities of Grid Participants detailed on page 14 of the SEQ Water Grid Emergency Response Plan are to be included.	
	❶ Identify and assess incident severity		• Table 3 (Incident severity classification levels) is to be reproduced verbatim. • The trigger levels contained within ❶ must be reproduced, with Grid Participant information for action on Level 1, 2 and Alert incidents included as appropriate.	

Market Rules reference	Components	To be included in Grid Participant emergency response plans		Pg/s in Plan
		Recommendations (best practice)	Requirements (compulsory)	
	② Notify		• Table 4 (Notification responsibilities) is to be reproduced with the Grid Participant emergency contacts substituted as appropriate. • Contact details for the Water Grid Manager Duty Manager and Media Duty Manager to be reproduced within the body of the Plan in the section on notifications as well as in the contacts list in the annexes to the Plan. • A key stakeholder notification table, similar to Table 5 (Key stakeholder notification) but specific to the Grid Participant is to be included. • The Plan is to specify that records are to be kept in accordance with the instruction on record keeping in ②.	
	Establish command and control		• Table 7 (Command and control function responsibilities) is to be reproduced with Grid Participant details inserted as appropriate. • Figure 3 (Emergency Response Team structure) is to be reproduced with Grid Participant details substituted as appropriate. • Table 9 (Function teams membership) is to be reproduced with Grid Participant details inserted as appropriate. • A description of the structure, role and management of the Incident Management Team, the Interagency Operations Team and the Emergency Management Team are to be included and aligned with the detail in ⑦. • Table 11 (Normal emergency response function team locations) is to be reproduced with Grid Participant details inserted as appropriate. • The Plan is to include the continuous reassessment process in ⑧. • The Plan is to include the escalation process in ⑨.	

Market Rules reference	Components	To be included in Grid Participant emergency response plans		Pg/s in Plan
		Recommendations (best practice)	Requirements (compulsory)	
	Manage the emergency		• The Plan is to note that incident management is carried out by the Grid Participant. • The Plan is to note the emergency coordination functions carried out by the Water Grid Manager as detailed in . • Table 12 ('Internal' communication roles) is to be reproduced with Grid Participant details inserted as appropriate. • Table 13 ('External' communication roles) is to be reproduced with Grid Participant details inserted as appropriate.	
	Manage the recovery		• Incident de-escalation and emergency de-escalation are to be included in the Plan as detailed in . • The requirement for an Incident Close-out Report as detailed in is to be included in the Plan. • The role of the Emergency Management Team in managing the recovery as detailed in is to be included in the Plan.	
	Improvement actions		• Table 14 (Debriefing responsibilities) is to be reproduced with Grid Participant details inserted as appropriate. • Post-emergency Report and Risk Register actions as detailed in are to be included in the Plan.	
4.29 (d) [for Distribution Service Providers] 'in the case of Water Supply Works constituting Isolated Supply Schemes, contingencies for securing alternate water supply'.			• All isolated supply schemes are to be identified in an annex to the Plan, with a suitable contingency plan for the provision of an alternate water supply detailed for each.	

Attachment E: *E. coli* Alert escalation process



 # Is it a significant contamination event?

The Water Quality Managers of the reporting Grid Participant and the Water Grid Manager will discuss the initial sample results and determine whether they consider it to be a significant contamination event. The type of questions they will ask to assist this determination will be:

- number of *E. coli* detected
- historical frequency of detections at the sample point
- any other detections at surrounding sample points
- has the detection occurred at the same time as another event or incident (i.e. asset failure, major storm, disinfection problem)
- is there a known contamination source?

(Where the Water Quality Managers of the Grid Participant and the Water Grid Manager disagree on whether the incident is significant, the higher level will be adopted).

Attachment F:
Chlorine and monochloramine level exemptions

In accordance with the Office of the Water Supply Regulator advice, levels of chlorine and monochloramines that exceed *Australian Drinking Water Guidelines (2004)* health values are not reportable as incidents under this Plan, provided the following conditions are met:

- The exemption only applies to incident reporting for chlorine or monochloramine levels above the *Australian Drinking Water Guidelines (2004)* found in the water treatment or transmission system, where as an operational practice, dosing of chlorine or monochloramine levels higher than the *Australian Drinking Water Guidelines (2004)* health value is required to achieve adequate disinfection in the reticulation system.
- The exemption only applies when there is a monitoring point prior to the delivery of water to customers to demonstrate the disinfection values are within *Australian Drinking Water Guidelines (2004)* health value guidelines.
- Where water is supplied from a transmission system owned by one Drinking Water Service Provider to a reticulation system owned by another provider, the owner of the reticulation system must be aware of the practice.
- Drinking water service providers must continue to report on chlorine or monochloramine levels above the *Australian Drinking Water Guidelines (2004)* in a reticulation system.
- The Office of the Water Supply Regulator recommends that all providers who choose to dose chlorine or monochloramine at levels higher than the *Australian Drinking Water Guidelines (2004)* health values in order to achieve adequate disinfection in the reticulation system consider the risks of disinfection by-products being formed and include these in their regular monitoring program, if appropriate.

Tool/resource

Refer to the following correspondence:

- Uwins, Heather (Office of the Water Supply Regulator) 16 June 2009, letter to Andrew Moir (LinkWater), 'Re: Incident reporting: monochloramine levels in transmission systems'.
- Hortz, Michael (LinkWater) 22 June 2009, letter to SEQ Water Grid Manager.
- Dennien, Barry (SEQ Water Grid Manager) 26 June 2009, letter to Michael Hortz (LinkWater).

Attachment G: Incident Notification Form

Incident Notification Form: standard format

To be completed and forwarded to the SEQ Water Grid Manager via email:

[redacted]

Incident number	2010-xxx	
Reporting organisation		
Date		
Time		
Location	**Site**	
	Address	
Reported by		

Nature of incident/emergency

Water quality	☐	Health and safety of employees or public	☐
Water asset failure	☐	Environment	☐
Water quantity	☐	Public reassurance	☐
Security or natural disaster	☐	Other *(please specify)*	

Details

(what happened, contributing factors, immediate actions taken)

Incident rating

☐ Level 1 (insignificant) ☐ Level 2 (minor) ☐ Alert

☐ Level 3 (moderate) ☐ Level 4 (major) ☐ Level 5 (catastrophe)

Actions recommended to be taken

Action	Assigned to	Completion date

Regulatory authorities notified

☐ Not applicable ☐ Yes – complete table

Time	Regulatory authority/name	Response

Other stakeholders notified

Time	Stakeholder	Response

Media interest

☐ No ☐ Yes – provide details

(provide details of media interest)

Comments

(any other relevant information)

Incident Notification Form: Blackberry-friendly format

To be completed and forwarded to the SEQ Water Grid Manager via email: [redacted]

Incident no: 2010-xxx
>

Reporting organisation:
>

Date:
>

Time:
>

Location:
>

Address:
>

Reported by:
>

Nature of incident/emergency:
(delete unwanted responses)
Water quality
Water asset failure
Water quantity
Security or natural disaster
Health and safety (public or employees)
Environment
Public reassurance
Other (please specify)>

Details:
(what happened, contributing factors, immediate actions taken)
>

Incident rating:
(delete unwanted responses)
Level 1 (insignificant)
Level 2 (minor)
Alert
Level 3 (moderate)
Level 4 (major)
Level 5 (catastrophe)

Actions recommended to be taken:
(action, assigned to, completion date)
>

Regulatory authorities notified:
(delete unwanted responses)
Not applicable
Yes *(provide details of who was contacted and their response)*
>

Other stakeholders notified:
(delete unwanted responses)
Not applicable
Yes *(provide details of who was contacted and their response)*
>

Media interest:
(delete unwanted responses)
No
Yes (provide details) >

Comments:
(any other relevant information)>

Attachment H:
Sample Situation Report (SITREP) template

From		**Date**	
To		**Time**	

Incident name	
Incident number	
Incident level	
Notification date	
Impacted organisation/s	
Emergency contacts	

Summary and background of incident

(insert brief summary of incident details)

Incident Management Team

Name	Role

Status of asset/operations

(outline condition of asset and impact on Grid Participant's operations)

Actions to date

Timing	Action

Overall assessment

(summarise assessment of incident response and recovery actions)

Future actions

Timing	Action

Issue of SITREPs

Next SITREP due	Date		Time	
SITREP issue contact details	Name			
	Phone			
	Email			

Authorised by

(name of Grid Participant Incident Manager)

Attachment I: Informal Ministerial briefing template

This template is intended for use by the SEQ Water Grid Communications Unit to informally brief the responsible Ministers' offices directly on issues relating to incidents within the SEQ Water Grid on behalf of all State-owned Grid Participants.

Briefing to:
• Minister for Natural Resources, Mines and Energy
• Treasurer

Briefing from:
(organisation, title, name, contact details)
>

Date:
>

Subject:
>

Reason for briefing:
>

Incident timing:
>

Incident location:
>

Incident rating:
(delete unwanted responses)
Level 1 (insignificant)
Level 2 (minor)
Alert
Level 3 (moderate)
Level 4 (major)
Level 5 (catastrophe)

What we know:
>

What we don't know:
>

What we are doing:
>

What we need the Minister's office to do:
(e.g. approve, endorse, agree, note)
>

Key contact person:
(organisation, title, name, contact details)
>

Next briefing:
(timing, type of briefing)
>

Copy completed form to the responsible Minister's office and the SEQ Water Grid Manager Duty Manager.

Attachment J: Incident Close-out Report

Incident Close-out Report: standard format

To be completed and forwarded to the SEQ Water Grid Manager via email:

[redacted]

Incident number	2010-xxx
Reporting organisation	

Actions taken

Action	Completion date

Actions requiring follow-up

Action	Assigned to	Completion date

Verification and closure

1. I am satisfied the actions taken have been effective to reduce both the likelihood and severity of the issues recurring and to effect improvement, and that the incident can be closed-out.
2. All relevant parties have been advised of the corrective/preventative actions taken, or decisions made in relation to this incident.

Name		Title		Date	

System close-out

Name		Title		Date	

Incident Close-out Report: Blackberry-friendly format

To be completed and forwarded to the SEQ Water Grid Manager via email: [redacted]

Incident no: 2010-xxx
>

Reporting organisation:
>

Actions taken:
(action, completion date)
>

Actions requiring follow-up:
(action, assigned to, completion date)
>

Verification and closure:

1. I am satisfied the actions taken have been effective to reduce both the likelihood and severity of the issues recurring and to effect improvement, and that the incident can be closed-out.

2. All relevant parties have been advised of the corrective/preventative actions taken, or decisions made in relation to this incident.

Name:
>

Title:
>

Date:
>

System close-out:

Name:
>

Title:
>

Date:
>

Attachment K: Debriefing minutes template

Incident name	
Incident number	
Incident time period	
Debriefing date	
Debriefing start time	

Debriefing attendance

Present

Name	Organisation	Name	Organisation

Apologies

Name	Organisation	Name	Organisation

Facilitator/s

Name	Organisation

Debriefing introduction

Facilitator's remarks	*(insert facilitator's opening remarks, e.g. aims of debriefing, any particular focus of debriefing, context of emergency, etc.)*
Other remarks	

Emergency response structure

Notification and close-out

Incident level	**Initial level**		**Date**	
	Revised level		**Date**	
	Revised level		**Date**	
Notification date				
Notification time				
Close-out date				

Command and Control Framework

Role	Entity	Comments
Incident management	*(insert Grid Participant)*	
	(insert Grid Participant)	
Technical coordination	*(insert Grid Participant)*	
Communications coordination	*(insert Grid Participant)*	
Emergency management	*(insert agency – normally Water Grid Manager)*	

Impacted Grid Participants

Grid Participant	Nature of impact

Emergency timeline

Date	Entity	Action

Incident classification/consequences

Question/prompt	Responses
Describe the incident.	
What was the incident classification against the SEQ Water Grid Emergency Response Plan? What criteria were applied?	
What were the consequences of the incident?	
Who was impacted by the incident? How?	
Other comments.	

Incident details/notification and response

Question/prompt	Responses
When was the incident first noticed?	
Who first noticed the incident?	
Who alerted other people to the incident?	
Who did they first alert to the incident?	
How was the incident communicated: • internally • externally to stakeholders?	
How were communications initiated and maintained between affected entities?	
• How... • When... • Where... were the media involved?	
What were the communication protocols relevant to the incident?	
Who briefed the media?	
What organisations were involved?	
Who was in command at each impacted Grid Participant?	
Which organisation was the 'lead agency'?	
Which organisation managed the incident?	

Question/prompt	Responses
What were the SEQ Water Grid Emergency Response Plan procedures relevant to the incident?	
Were there any damages to: • people • property • asset • reputation?	
What actions were taken by the affected organisation/s?	
What were the production impacts of the incident?	
What... • materials • equipment • resources were used to respond to the incident?	
What was the cost of response to the event: • time • money?	
What were the impacts on: • customers • stakeholders?	
Which entities had which roles in recovery and restoration from the incident?	
Other comments.	

Analysis of emergency response/rectification

Question/prompt	Responses
What were the key responses that contributed to the successful management of the incident?	
What actions were required by the SEQ Water Grid Emergency Response Plan?	
What could be done differently next time if there was a similar incident?	
What could be done to prevent similar consequences in the future?	
What could be done to reduce the incidence of: • damage/loss of production • stakeholder/ customer confidence?	
Any other: • gaps • issues • key learning's • comments?	

Actions arising from debriefing

Action	Entity	Timeframe

Debriefing close

Facilitator's remarks	*(insert facilitator's closing remarks)*
Other remarks	
Reminders/notices/ further meetings	
Debriefing close time	

Attachment L: Post-emergency Report template

This Report functions as a summary of information, documentation and feedback on an emergency. It should be completed following a thorough debriefing process, and incorporate its results. The Post-emergency Report is a vehicle for information consolidation, analysis and formalised recommendations.

Notification and close-out

Incident number				
Incident name				
Incident level	**Initial level**		**Date**	
	Revised level		**Date**	
	Revised level		**Date**	
Incident location	**Site**			
	Address			
Notification date				
Notification time				
Notifying organisation				
Close-out date				
Close-out signed off by				

Description

Command and Control Framework

Role	Entity	Comments
Incident management	*(insert Grid Participant)*	
	(insert Grid Participant)	
Technical coordination	*(insert Grid Participant)*	
Communications coordination	*(insert Grid Participant)*	
Emergency management	*(insert agency – normally Water Grid Manager)*	

Refer also to Attachment 1: Emergency response team members.

Impacted Grid Participants

Grid Participant	Nature of impact

Key issues/risks

Water quality	☐	Health and safety of employees or public	☐
Water asset failure	☐	Environment	☐
Water quantity	☐	Public reassurance	☐
Security or natural disaster	☐	Other *(please specify)*	

Summary and background of incident

(insert brief summary of incident details)

Actions taken

Date	Action	Responsible entity/team member

End status

(outline condition of asset and impacted Grid Participant/s' operations at incident close-out)

Communications

Strategic messages	•
	•
	•
Information sharing	*(outline information sharing actions)*
Stakeholder management	*(outline stakeholder management actions)*
External communications and media management	*(outline external communications and media management actions)*
Public spokesperson	
Other	*(outline)*

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of emergency response

Strengths	Weaknesses
•	•
•	•
•	•
•	•
•	•
Opportunities	**Threats**
•	•
•	•
•	•
•	•
•	•

Key findings

1.	
2.	
3.	
4.	
5.	

Recommendations

Action		Entity	Timeframe
1.			
2.			
3.			
4.			
5.			

Tool/resource

Please refer to the SEQ Water Grid Emergency Response Plan for more information on emergency response processes and requirements.

Attachment 1: Emergency Response Team members

Entity	Name and title	Emergency response role

Attachment 2: Media coverage summary

Date	Time	Publication/station/program	Subject	Tone/assessment

Attachment 3: Incident documentation attached

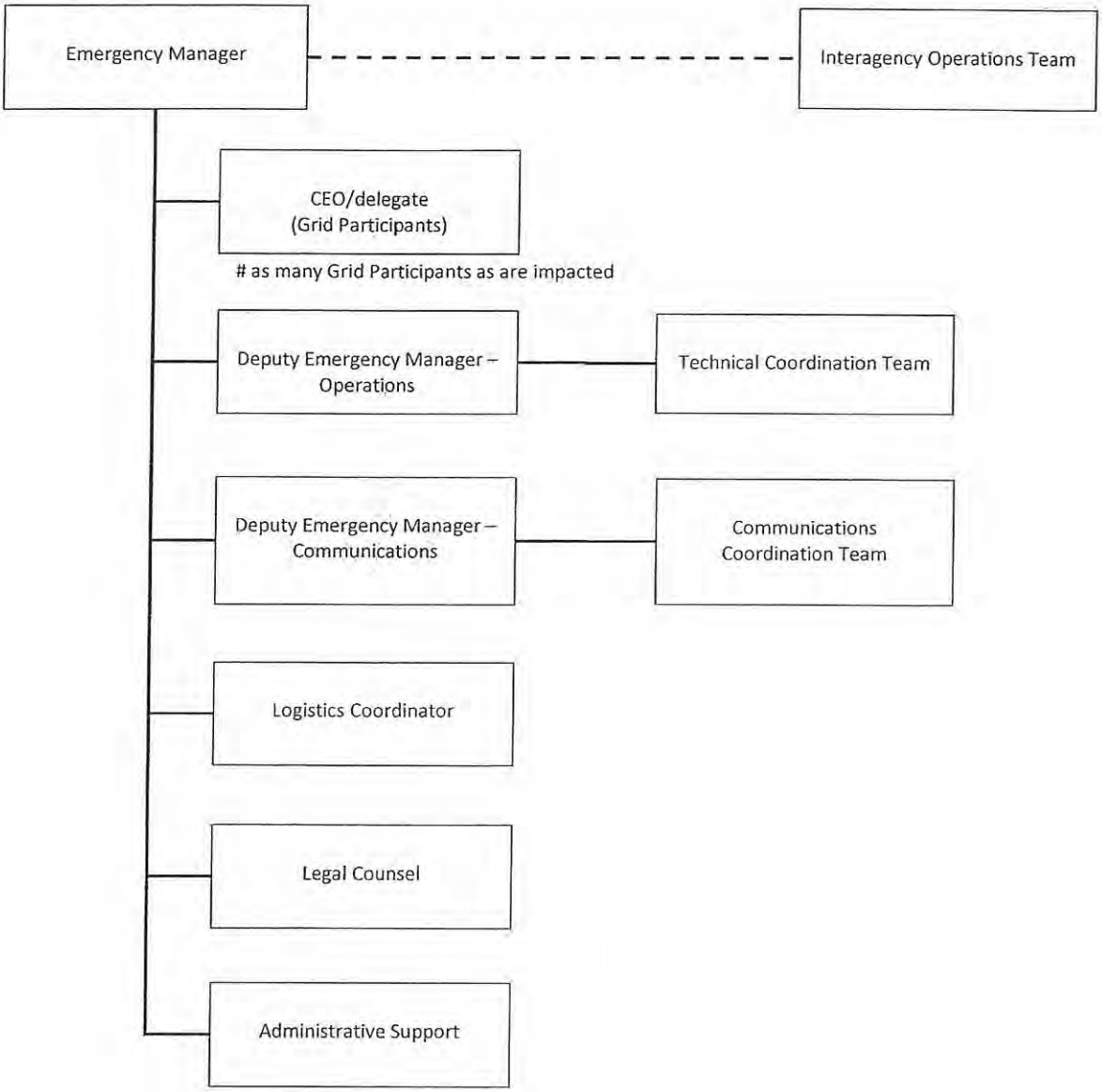
Originating entity	Title	Date	Author	Purpose/comments

Attachment M: Emergency response action checklist

Step		Have you...	☑
1	**Identify and assess incident severity**	• established that the incident can be classed as an emergency?	☐
		• assessed the incident's initial severity classification level using the descriptions and examples in Table 3: Incident severity classification levels of SEQ Water Grid Emergency Response Plan?	☐
		• considered potential risks arising as the emergency situation progresses?	☐
2	**Notify**	• notified the Grid Participant internal emergency contact?	☐
		• phoned to notify the Water Grid Manager Duty Manager if it is an Alert or Level 3, 4 or 5 emergency?	☐
		• emailed the Water Grid Manager Duty Manager a completed Incident Notification Form (Attachment G)?	☐
		• sent the Office of the Water Supply Regulator a completed Drinking water quality: incident reporting form, Part A, if applicable (copy to Water Grid Manager Duty Manager)?	☐
		• notified the relevant key stakeholders?	☐
		• opened an Emergency Response Log?	☐
	Establish command and control	• mobilised the Grid Participant's Incident Management Team as per its internal Emergency Response Plan?	☐
		• mobilised the Technical and Communications Coordination Teams and incident room?	☐
		• determined the 'lead agency' and mobilised its emergency command structure and Interagency Operations Team, if required?	☐
		• activated the SEQ Water Grid Emergency Response Plan?	☐
		• begun the process of continuous risk reassessment, drawing on specialised expertise as appropriate?	☐

Step	Have you...	☑
4 Manage the emergency	• verified the incident level?	☐
	• continually reassessed risk, command and control, and interagency communications?	☐
	• implemented incident management at the asset/site level as per the Grid Participant's internal Emergency Response Plan and operating protocols?	☐
	• established effective liaison among all interested parties in the emergency response and with key stakeholders?	☐
	• used the Water Grid Manager to coordinate additional resources from other Grid Participants?	☐
	• for major health-related incidents, committed support to the Queensland Health Emergency Coordination Team?	☐
	• modelled the impacts on security of supply and issued new Grid Instructions, if required?	☐
	• issued Emergency Operating Instructions, if required?	☐
	• briefed relevant key stakeholders and established a schedule for ongoing updates?	☐
	• issued an approved holding statement to the media?	☐
	• developed a communication strategy and key messages for this incident?	☐
	• established who will be the public face/spokesperson for the response?	☐
	• developed further media statement as appropriate?	☐
	• developed and disseminated public information releases, e.g. for publication via Grid Participant websites and call centres?	☐
Manage the recovery	• established the recovery objectives?	☐
	• recovered the asset?	☐
	• issued Grid Instructions, if required, to achieve whole-of-Grid recovery?	☐
	• issued an approved close-out statement to the media, if appropriate?	☐
	• completed an Incident Close-out Report and copied it to the Water Grid Manager (and other Emergency Manager)(Attachment J)?	☐
	• submitted Part B of the Office of the Water Supply Regulator form 'Drinking water quality: incident reporting'?	☐
6 Improvement actions	• carried out a 'hot' debrief?	☐
	• carried out a 'cold' debrief (Attachment K)?	☐
	• completed a Post-emergency Report (Attachment L)?	☐
	• forwarded recommendations for inclusion in Risk Registers?	☐

Attachment N: Emergency Management Team structure



 # Please note: this is an indicative structure. Depending on the emergency situation, it may require some changes to effectively manage the response.

Tab 6

SEQ Water Grid

Risk Management Plan

For use by all Grid Participants

Published by the Queensland Government, April 2010, 100 George Street, Brisbane Qld 4000.

Contents

Document control

Version control

Date	Author	Change and/or action	Version
1.03.2011	Scott Denner	First release	Version 1

Please note that changes to all attachments are not included in version control, but will include the date of issue (refer to 'Review and amendment').

Approval

Date	Approval received from	Version

Distribution

Copies of the SEQ Water Grid Risk Management Plan will be issued electronically by the SEQ Water Grid Manager annually. Grid Participants uncertain of the currency of their copy of the SEQ Water Grid Risk Management Plan are to contact the SEQ Water Grid Manager in order to obtain a current version.

Purpose

This document is the SEQ Water Grid Risk Management Plan (Risk Management Plan) as required under *The Market Rules SEQ Water Market* (Market Rules). The Risk Management Plan implements a framework detailing a set of components that provide the foundations and organisational arrangements for designing, implementing, monitoring, reviewing and continually improving risk management throughout the SEQ Water Grid (Water Grid). The purpose of the Risk Management Plan is to enhance the resilience of the Water Grid by strategically integrating preventative, monitoring and contingent controls. This ensures the Water Grid is best positioned to prevent, prepare, respond and recover from strategic and operational risks that threaten its ability to deliver a secure water supply for South East Queensland.

The Risk Management Plan addresses the essential areas of:

- strategic and operational business risk management
- business continuity planning
- critical infrastructure security
- emergency response planning.

The Risk Management Plan provides for a holistic approach to risk management throughout the Water Grid and is strategic in nature. A series of guidelines issued by the SEQ Water Grid Manager (Water Grid Manager) provide direction to Grid Participants on best practice implementation of the Risk Management Plan. The diagram below (figure 1) outlines the relationships between the fundamentals making up the Risk Management Plan and how these assist in the delivery of a safe, secure and efficient water supply.

Figure 1: SEQ Water Grid Risk Management Framework

Background

The Risk Management Plan has been developed in accordance with section 4.34 of the Market Rules. This requires the Water Grid Manager to prepare and publish a Water Grid Risk Management Plan which provides an integrated framework for identification, analysis, evaluation and management of risks related to the operation of the Water Grid and achievement of the Market Outcomes.

The Risk Management Plan provides guidance to the following Grid Participants:

- SEQ Water Grid Manager
- Queensland Bulk Water Supply Authority, trading as Seqwater
- Queensland Manufactured Water Authority, trading as WaterSecure
- Queensland Bulk Water Transport Authority, trading as LinkWater
- Unitywater
- Queensland Urban Utilities
- Allconnex Water
- Tarong Energy Corporation Limited
- Tarong Energy Corporation Limited – Tarong North Power Station
- CS Energy Limited.

The Risk Management Plan covers the Declared Water Services under the *Water Act 2000* and the wastewater treatment plants associated with supplying feedwater for purified recycled water schemes or within a drinking water catchment. The Risk Management Plan is aligned with the international risk management standard ISO 31000 (2009) *Risk management—Principles and guidelines* (Standard). This Standard was adopted in December 2009 by the Risk Management Institute of Australasia as the replacement for AS/NZ 4360 *Risk Management*.

The SEQ Water Grid Risk Register (Water Grid Risk Register), at **Attachment D**, is utilised to record and manage risks for the Water Grid, defined in the Market Rules as the Water Supply Works within the South East Queensland region that are used to provide a Declared Water Service. The SEQ Water Grid Risk Register therefore only includes strategic risks within the following four Grid Participants:

- SEQ Water Grid Manager
- Queensland Bulk Water Supply Authority, trading as Seqwater
- Queensland Manufactured Water Authority, trading as WaterSecure
- Queensland Bulk Water Transport Authority, trading as LinkWater.

Objectives

The objectives of the Risk Management Plan are to provide:

- a single coherent approach to the management of risk across the Water Grid
- guidance, where appropriate, for Grid Participants on rating risks and their role in managing risks in a Water Grid context

- information to Grid Participants on notification, reporting, escalation and communications regarding risks, and the protocols surrounding such processes
- a mechanism to assist Grid Participants to comply with section 4.34 to 4.37 of the Market Rules.

Risk Management Plan implementation and sustainability

Review and amendment

In accordance with section 4.35 of the Market Rules, the Water Grid Manager must review the Risk Management Plan no less than once each year and submit the revised plan to the Rules Administrator for approval. Additionally, in accordance with section 4.36 of the Market Rules, each Grid Participant must provide evidence to the Water Grid Manager that the Grid Participant has in place appropriate strategies to address risks identified in the Risk Management Plan. These Grid Participant strategies must be provided to the Water Grid Manager within one month of the issue or review of the Risk Management Plan. The attachments to the Risk Management Plan may be modified by the Water Grid Manager as required, external to the approval process.

Internal understanding and training

The training requirements for effective implementation of the Risk Management Plan are as follows:

- All Grid Participants are to implement a schedule to train new staff on the Risk Management Plan and their organisation's own Risk Management Plan/Strategy.
- All staff who have specific roles with respect to risk management are to regularly receive appropriate training and verification of understanding.
- The Water Grid Manager will provide advice on training in relation to the Risk Management Plan to all Grid Participants, and will make its training materials available to the Grid Participants for their further internal use. This does not obligate the Water Grid Manager to train Grid Participant staff in risk management, or remove the obligation for Grid Participants to conduct their own staff training in risk management.
- All training associated with risk management is to be documented on a register.

Document control

The following processes for document control are to be applied:

- All amendments to the Risk Management Plan must be dated and recorded in the document control section.
- Holders of the Risk Management Plan are responsible for informing their staff of all updates and replacements to the Risk Management Plan.
- The Water Grid Manager takes no responsibility for the currency and accuracy of any uncontrolled copies of the Risk Management Plan.
- Minutes from all meetings of the SEQ Water Grid Risk Officers Committee (Risk Officers Committee) must be kept on record by the Water Grid Manager.

Acknowledgements

The following documents were used to assist in the preparation of this Risk Management Plan:

- ISO 31000 (2009), *Risk management—Principles and guidelines*
- ISO Guide 73 (2009), *Risk management – Vocabulary*
- ISO/IEC 31010 (2009), *Risk management – Risk assessment techniques*
- *The Market Rules SEQ Water Market*
- Queensland Department of Natural Resources and Water (2008) *Risk management standard ORU/2008/3409—Version 1*
- Australian Government Attorney-General's Department (March 2006) *Water industry risk context statement*
- Queensland Audit Office (October 2007) *Better practice guide: Risk management*
- *Queensland Infrastructure Protection and Resilience Framework* (July 2005)
- *Queensland Plan for the Protection of Critical Infrastructure from Terrorism* (July 2005)
- *National Guidelines for Protecting Critical Infrastructure from Terrorism* (NCTC 2005)
- Water Directorate (November 2008) *Business Continuity Management Guidelines*
- *Australasian Inter-service Incident Management System* (Edition 3)
- AS/NZ 5050, *Business continuity – Managing disruption-related risk*
- ISO IWA 6 (2008) *Guidelines for the management of drinking water utilities under crisis conditions*
- Victorian Water Utilities *Security Vulnerability – Risk Assessment Guide v 2.6*
- Risk Management Institution of Australasia *Security Risk Management Body of Knowledge* 2008

Definitions and terms

Alternate site	An alternate operating site to be used when an organisation's primary facilities are inaccessible or inoperable.
Asset attractiveness	How a threat source views an asset in terms of the activity they wish to undertake.
Audit	A process of checking if existing plans and arrangements have been effectively implemented.
Business Continuity Management Plan	A collection of procedures and information that is developed, compiled and maintained in readiness for use should an event occur, which would otherwise disrupt the organisation or it's through chain.
Business impact analysis	A management level analysis that assesses the risks associated with disruption, including a consideration of the required resources, interdependencies and the nature, impact and likelihood of capability loss over time.
Business interruption	Any event, whether anticipated or unanticipated that disrupts the organisation's normal course of routine operations.
Business resilience	A process that takes a holistic or integrated approach to risk management, compliance, security, emergency and crisis management, business continuity and disaster recovery.

Capability	The ability, experience and knowledge of a threat source to undertake an activity.
Command	The responsibility for directing personnel and resources of a participant in the performance of its role and tasks.
Consequence	Outcome of an event affecting objectives.
Control (risk management)	A measure that is modifying risk.
Control (emergency management)	The overall direction of response activities in an incident situation.
Coordination	The bringing together of elements to ensure effective response to emergencies.
Crisis	A situation where organisations shift from routine to non-routine operation, requiring management to divert a proportion of their attention, time, energy and resources away from normal operations to managing an event.
Critical business functions	Vital functions without which an organisation will either not survive or will lose the capability to effectively achieve its critical objectives.
Critical infrastructure	Those physical facilities, supply chains, information technologies and communication networks, which if destroyed, degraded or rendered unavailable for an extended period, would significantly impact water supply to South East Queensland.
Critical objectives	Those objectives, as determined by the organisation, which must continue to be achieved.
Current risk	The level of risk, taking account of the affect of any controls and/or treatments currently in place.
Declared Water Service	A water service declared by the Minister under Chapter 2A, Part 5a, Division 2 of the Water Act.
Emergency	A situation or occurrence that happens as a consequence of an incident and demands immediate action. For the purposes of the Risk Management Plan, an 'emergency' is an incident that impacts on water quality, water supply reliability and/or public reassurance, and has an overall rating of level 3, 4 or 5 under the severity classification approach outlined in the Water Grid Emergency Response Plan.
Emergency coordination	The emergency response function that largely involves coordinating Water Grid internal communications, support and whole-of-Grid operations. It will often involve the use of Grid Instructions and Emergency Operating Instructions.
Emergency management	The emergency response function that largely involves strategic command and external communications.
Emergency Operating Instructions	Emergency Operating Instructions issued by the Water Grid Manager.

Emergency Response Plan	A plan prepared by the Water Grid Manager or by a Grid Participant in accordance with the Market Rules.
Event	An occurrence or change of a particular set of circumstances.
Exercise	An activity to practise or test plans and arrangements. This can involve a theory-based approach such as discussion or desk top exercise, a practical approach such as a deployment exercise, or a combination of both.
Exposure	Extent to which an organisation and/or stakeholder is subject to an event.
Frequency	The number of events or outcomes per defined unit of time.
Grid Customer	A Grid Customer of the Water Grid Manager as defined in Schedule 4 of the *Water Act 2000*.
Grid Participant	An entity that is referred to in section 2.3 of the Market Rules.
Grid Participant risk	A risk, the consequence of which is completely contained within that Grid Participant in which the risk arises.
Grid Service Provider	Has the meaning given in Schedule 4 of the *Water Act 2000* and includes a Bulk Supplier, Bulk Transporter and/or Manufactured Water Provider.
Hazard	A source of potential harm.
Incident management	The emergency response function that largely involves managing the physical incident on site.
Inherent robustness	The degree to which the composition, design, location or function of a particular facility or asset would hinder the level of harm that could affect quality, supply or both, depending on the threat being considered.
Interagency Operations Team	An expert reference panel assembled by the Water Grid Manager or the Emergency Operations Team when required to provide technical, operational and/or risk assessment advice and recommendations on any aspect of managing a given emergency.
Level of risk	The magnitude of a risk or combination of risks, expressed in terms of the combination of consequences and their likelihood.
Likelihood	The chance of something happening.
Market Rules	*The Market Rules SEQ Water Market* govern operational and commercial aspects of the South East Queensland Water Market, as they apply to all entities participating in the Market.
Maximum acceptable outage	The maximum period of time that an organisation can tolerate the disruption of a critical business function, before its ability to achieve its objectives is adversely affected.
Public reassurance	Used in the Risk Management Plan to refer to the confidence of the general public in the quality and security of the water supply, and in the ability of the Water Grid and Grid Participants to deliver their contracted services.
Recovery point objective	The capability at a pre-event point in time to which systems, operations and capacity must be recovered after an event.

Recovery time objective	The period of time required to fully re-establish adequate resources to recover a critical activity, process, function or other capability to a required minimum operational level.
Residual risk	The risk remaining after risk treatment.
Resilience	Adaptive capacity of an organisation in a complex and changing environment.
Review	A process of comparing existing plans and arrangements with the current environment to ensure these plans and arrangements remain valid and appropriate.
Risk	The effect of uncertainty on objectives (ISO 31000 (2009)).
Risk acceptance	Informed decision to take a particular risk.
Risk Action Plan	The detailed plan on how a particular risk is to be managed, including risk treatments, resources, timelines and responsibilities.
Risk Action Owner	The entity responsible for delivery of a particular action that will manage a particular risk. There may be multiple Risk Action Owners assigned actions to manage a single risk.
Risk aggregation	The combination of several risks into one risk to develop a more complete understanding of the overall risk.
Risk analysis	The process to comprehend the nature of risk and to determine the level of risk.
Risk appetite	Amount and type of risk that an organisation is willing to pursue or retain.
Risk assessment	The overall process of risk identification, risk analysis and risk evaluation.
Risk avoidance	An informed decision not to be involved in, or to withdraw from, an activity in order not to be exposed to a particular risk.
Risk evaluation	The process of comparing the results of risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable.
Risk identification	The process of finding, recognising and describing risks.
Risk management	Coordinated activities to direct and control an organisation with regard to risk.
Risk Management Plan	A scheme within the Risk Management Framework specifying the approach, the management components and resources to be applied to the management of risk.
Risk management process	The systematic application of management policies, procedures and practices to the activities of communicating, consulting and establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk.
Risk owner	Person or entity with the accountability and authority to manage a risk.
Risk retention	Acceptance of the potential benefit of gain, or burden of loss, from a particular risk.

Risk sharing	A form of risk treatment involving the agreed distribution of risk with other parties.
Risk tolerance	An organisations readiness to bear the risk after risk treatment in order to achieve its objectives.
Risk treatment	Process to modify risk.
Stakeholders	Person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity.
Supply chain	The end-to-end value chain (through chain) encompassing the supply, process and distribution chains, including information, knowledge and financial flows.
Vulnerability	In a security context, vulnerability is a measure of the likelihood that various types of security/control measures (physical, personnel, policies, etc.) against a threat source will fail. Vulnerability comprises 'resilience' and 'susceptibility'. Resilience is related to existing controls and susceptibility is related to exposure.
Water Act	The *Water Act 2000* (QLD)
Water Supply Emergency Declaration	A Water Supply Emergency Declaration made in accordance with section 25B of the Water Act.
Whole-of-Grid risk	A risk, the consequence of which impacts upon more than one Grid Participant.

1. Standards, principles, guidelines and responsibilities

The Risk Management Plan consists of standards, principles and elements. Guidelines to support the implementation of the Risk Management Plan will be issued by the Water Grid Manager following publication of this document.

Standards

The international risk management standard, ISO 31000 (2009), *Risk management—Principles and guidelines* is the common standard the Risk Management Plan is aligned with. The application of the Risk Management Plan allows all Grid Participants to apply the Standard to managing risk in their organisations. The Risk Management Plan is a living document and will continue to align with modifications and handbooks to the Standard as they are released.

Principles

To ensure a consistent application of the Standard across the Water Grid, the Risk Management Plan subscribes to the following six principles:

- Risk ownership – ownership of risk should lie with the organisation most able to manage that risk.
- Transparency – each Grid Participant will communicate its risks in an open, honest and transparent manner.
- A comprehensive approach – ensuring the Risk Management Plan encompasses an 'all-hazards' risk approach across the Water Grid.
- Embedded process, culture and systems – embedding risk management activities through all levels and activities within each organisation.
- Mutual assistance – Grid Participants commit to assisting each other with a view to optimising the resources of the Water Grid.
- Continual improvement – performance against the Standard will be regularly measured and the performance of Grid Participants and the Water Grid measured against the Risk Management Institute of Australasia Enterprise Risk Management maturity model.

Elements

Elements refer to the functional areas of the Risk Management Plan. The elements outline the measures that will be applied within the Water Grid to ensure it manages risk to a level that is 'as low as reasonably practical'. This measurement level ensures risks are managed in the best way possible, taking into account costs, resources and tolerable levels of risks within an organisation.

The Risk Management Plan consists of four main elements as follows:

- strategic and operational business risk management
- business continuity planning
- critical infrastructure security
- emergency response planning.

Guidelines

The guidelines provide Grid Participants with a 'how to' guide on applying elements of the Risk Management Plan to their business. Guidelines will be released for risk management, critical infrastructure security and business continuity management planning. The approved SEQ Water Grid Emergency Response Plan (Water Grid ERP) is to be utilised for the emergency response planning element.

These guidelines detail best practice application of the Risk Management Plan elements. However, they should not in any way limit the manner in which a Grid Participant applies the Risk Management Plan. Utilisation of these guidelines by Grid Participants further ensures the standardisation and alignment of risk management across the Water Grid.

Documentation

Grid Participants are to develop their own risk management plans and documentation that aligns with this Risk Management Plan. They are to ensure they have a documented system for managing risk that is aligned with the elements and is suitable for appropriate audits and continuous improvement.

The Water Grid Manager is responsible for facilitating the SEQ Water Grid Risk Register and associated management plans; Critical Infrastructure Security Register, Business Continuity Management Plan and the Water Grid ERP.

Roles and responsibilities

The general roles and responsibilities for each Grid Participant are as follows:

- Develop and operate a risk management system within their organisation as directed by the Risk Management Plan.
- Manage risk in a preventative/proactive rather than reactive fashion.
- Manage risk to a level that is 'as low as reasonably practicable'.
- Communicate risks or hazards to other Grid Participants in a timely manner in order to minimise the likelihood of impact upon the Water Grid.
- Maintain a current Risk Register and, for those entities providing a Declared Water Service, provide accurate and timely risk information for inclusion in the Water Grid Risk Register.
- Carry out risk treatments in a timely manner as directed through the Water Grid Risk Register.
- Collaborate to further develop the Risk Management Plan.
- In the case of the Board of the Water Grid Manager, approve the Water Grid Risk Register.

2. Elements

1 Business and operational risk management

Snapshot: Business and operational risk management

Actions to:

- **prepare risk management plans**
- **adopt likelihood and consequence tables and the risk matrix**
- **identify the Water Grid risk tolerance**
- **understand the role of the Risk Officers Committee**
- **identify responsibilities with regard to risk management**
- **identify monitoring and review responsibilities with regard to risk management.**

Refer also to the SEQ Water Grid Business and Operational Risk Management Guideline.

Defining risk management

The Standard defines risk management as 'coordinated activities to direct and control an organisation with regard to risk', where risk is the 'effect of uncertainty on objectives'. The effect of a risk can be either positive or negative, and is measured in terms of a combination of two dimensions:

- the consequence (severity or magnitude) if the event occurs
- the likelihood (or chance) of the event occurring.

Once identified, risks within the Water Grid are to be managed, either by accepting a risk at its current level, sharing the risk with another party, reducing the risk, transferring the risk or avoiding it altogether.

Preparation of a Risk Management Plan

The Market Rules include the following review requirements:

- In accordance with section 4.36 of the Market Rules, each Grid Participant must review its own Risk Management Plan/Strategy within a month of any approved amendment to the Risk Management Plan to ensure consistency and appropriateness.
- As an outcome of this review, each Grid Participant must, no later than one month after the date of any approved amendment to the Risk Management Plan, provide evidence to the Water Grid Manager of the consistency and appropriateness of its own Risk Management Plan/Strategy.

To support this, the Water Grid Manager, through the Risk Officers Committee, will prepare the Business and Operational Risk Management Guideline to facilitate the effective establishment of Grid Participant risk management plans.

Tool/resource

Refer to the SEQ Water Grid Business and Operational Risk Management Guideline.

Likelihood and consequence tables and risk matrix

In order to promote effective measurement and understanding of risk across the Water Grid, all Grid Participants are to utilise common consequence and likelihood tables and a common risk calculator. This does not prevent the use of individual specialised risk metrics by Grid Participants for specific tasks (such as project management or water quality). However, the information captured utilising such tools must be translated utilising the common tables and calculator before it is shared between Grid Participants or notified to the Water Grid Manager for inclusion in the Water Grid Risk Register.

Tool/resource

Refer to: Attachment A – SEQ Water Grid Consequence Table
Attachment B – SEQ Water Grid Likelihood Table
Attachment C – SEQ Water Grid Risk Matrix.

Risk tolerance

The Water Grid risk tolerance is set by the Board of the Water Grid Manager, in consultation with the SEQ Water Grid CEOs Forum (CEOs Forum) and other Grid Participant Boards, and denoted on the SEQ Water Grid Risk Matrix.

In general, all risks to individual Grid Participants up to and including the agreed tolerance level are to be managed by the impacted Grid Participant. All risks assessed by Grid Participants as above the agreed tolerance level are to be escalated to the Water Grid Manager. The Water Grid Manager, in their role as the manager of the Water Grid Risk Register, will determine if the risk is to the whole-of-Grid. If this occurs, the Water Grid Manager, through the Risk Officers Committee, will recommend a management plan for those risks for approval through the CEOs Forum.

SEQ Water Grid Risk Register

The Water Grid Risk Register is a living document used to record whole-of-Grid risks that are identified as exceeding the risk tolerance for the Water Grid. The Water Grid Risk Register also contains an outline of treatments for the identified risks. The Water Grid is defined in the Market Rules as the Water Supply Works within the South East Queensland region that are used to provide a Declared Water Service . As such, the Water Grid Risk Register only includes strategic risks within the following four Grid Participants:

- SEQ Water Grid Manager
- Queensland Bulk Water Supply Authority, trading as Seqwater
- Queensland Manufactured Water Authority, trading as WaterSecure
- Queensland Bulk Water Transport Authority, trading as LinkWater

The Water Grid Risk Register is approved by the Board of the Water Grid Manager. Development of the SEQ Water Grid Risk Register is initially undertaken through the Risk Officers Committee and CEOs Forum, before review and endorsement by the executive of the Water Grid Manager. This same process is utilised to maintain the currency of the Water Grid Risk Register.

Tool/resource

Refer to the Water Grid Risk Register contained at Attachment D.

SEQ Water Grid Risk Officers Committee

The Risk Officers Committee is a reference group of risk professionals from the Grid Participants. In addition to the headline responsibilities listed in table 2, the Risk Officers Committee's further responsibilities are detailed in the SEQ Water Grid Risk Officers Committee Charter.

Tool/resource

Refer to the SEQ Water Grid Risk Officers Committee Charter contained at Attachment E.

Risk management responsibilities

Table 1: Risk management responsibilities

Entity	Responsibilities
Grid Participant	• Develop, implement and operate own Risk Management Plan/Strategy • Maintain own Risk Register and provide appropriate and updated information on a regular basis to the Water Grid Manager • Notify whole-of-Grid risks to the Water Grid Manager and other impacted Grid Participants as appropriate • Align own Risk Management Plan and processes to the Risk Management Plan and the associated Guideline to ensure consistency in the approach, assessment and management of risks • Effectively manage and implement risk treatments • Establish effective governance arrangements through the Grid Participant's Board to ensure compliance with all responsibilities under the plan.
Water Grid Manager (in addition to responsibilities as a Grid Participant)	• Develop and review the Risk Management Plan • Approve, through its Board, the Water Grid Risk Register • Facilitate the whole-of-Grid risk assessment process • Monitor and review Grid Participant risk treatment progress and benefits realisation for identified Water Grid risks • Communicate risk issues and treatment information across the Water Grid • Chair the Risk Officers Committee.

Entity	Responsibilities
Risk Officers Committee	• Align the standards, language and approaches for managing risk across the Water Grid • Monitor Water Grid risks • Report on risks and risk action plans to the CEOs Forum, including the use of a Water Grid Risk Register Exception Report • Other accountabilities as defined in the SEQ Water Grid Risk Officers Committee's Charter
CEOs Forum	• Approve the Water Grid Risk Register • Ensure risk action plans for Water Grid risks are actioned in a timely manner

Monitoring and review

Table 2 lists the regular monitoring and review actions.

Table 2: Scheduled monitoring and reviews

Responsibility	Frequency	Action
Grid Participant	Monthly	Headline risk assessment of Grid Participant risks
		Monitor risk treatments
	Quarterly	Headline risk assessment of Water Grid risks
		Headline review of risk action plans
	Annually	Comprehensive risk assessment of Grid Participant risks
		Comprehensive risk assessment of Water Grid risks
		Comprehensive review of risk action plans
Water Grid Manager (in addition to responsibilities as a Grid Participant)	Quarterly	Headline risk assessment of Water Grid risks
		Headline review of Water Grid risk action plans
	Annually	Comprehensive risk assessment of Water Grid risks
		Comprehensive review of Water Grid risk action plans
		Comprehensive review of the Water Grid Risk Management Plan and Guidelines
Risk Officers Committee	Quarterly	Monitor progress of treatments and control implementations
	Annually	Comprehensive review of the Risk Management Plan
CEOs Forum	Quarterly	Monitor SEQ Water Grid Risk Register Exception Report

2 Business continuity management planning

Snapshot: Business continuity management planning

Actions to:

- **prepare business continuity management plans**
- **identify critical objectives and critical business functions**
- **identify maximum acceptable outage and develop specific continuity and recovery plans**
- **identify responsibilities with regard to business continuity management**
- **identify monitoring and review responsibilities with regard to business continuity management.**

Refer also to the SEQ Water Grid Business Continuity Management Guideline.

Preparation of a Business Continuity Management Plan

A Business Continuity Management Plan is a pre-determined contingency plan designed to deal with a specific incident or disruption. The Business Continuity Management Plan takes the results of risk assessment of events that may impact the organisation's critical objectives and introduces procedures to be initiated to mitigate and/or workaround those specific events if they occur, in order to minimise any unplanned disruption. In addition to aligning with the Standard, this element aligns with AS/NZ 5050, *Business continuity – Managing disruption-related risk.*

The Market Rules include the following requirements:

- In accordance with section 4.34 of the Market Rules, risk management plans must include identification and mitigation strategies for business continuity risks.

To support this, the Water Grid Manager, through the Risk Officers Committee, will prepare the Business Continuity Management Planning Guideline to facilitate the effective establishment of Grid Participant business continuity management plans.

Grid Participants may include their business continuity management plans as part of their Risk Management Plan or Emergency Response Plan, or as a separate plan.

Tool/resource

Refer to the SEQ Water Grid Business Continuity Management Guideline.

Critical objectives

Critical objectives are those objectives that must continue to be achieved in order for core business to continue. Critical objectives are enabled by the critical business functions, which are vital functions without which a Grid Participant will lose the ability to effectively achieve its critical objectives.

Grid Participants are responsible for identification of critical objectives and critical business functions for their individual organisations. The Risk Officers Committee is responsible for initial identification of Water Grid critical objectives and critical business functions, which are then to be approved through the CEOs Forum. The Water Grid Manager is responsible for maintenance of whole-of-Grid level information.

Continuity risk identification

Grid Participants are responsible for identification of risks that may affect the continuity of their organisation. The Risk Officers Committee and then the CEOs Forum are responsible for the identification of whole-of-Grid continuity risks as part of the risk management process.

Maximum acceptable outage, continuity and recovery plans

Grid Participants are responsible for identifying the maximum acceptable outage for each of their own critical business functions, and for developing appropriate continuity and recovery plans for each business function based on the identified continuity risks.

The Risk Officers Committee will identify the maximum acceptable outage for each of the Water Grid critical business functions, and will develop appropriate continuity and recovery plans for each business function based on identified continuity risks. The maximum acceptable outage and the plans will then be approved through the CEOs Forum. Grid Participants are responsible for implementing their own plans and parts of the Water Grid plans allotted to them. The Water Grid Manager is responsible for maintenance of the information relevant to the Water Grid plans.

Business continuity responsibilities

Table 3: Business continuity responsibilities

Entity	Responsibilities
Grid Participant	• Develop, implement and operate own Business Continuity Management Plan • Implement relevant aspects of the Water Grid Business Continuity Management Plan • Identify continuity risks through own risk management program • Notify whole-of-Grid continuity risks to the Water Grid Manager and other impacted Grid Participants as appropriate • Align processes to the Risk Management Plan and the associated Guideline to ensure consistency in the approach, assessment and management of business continuity • Identify critical objectives, critical business functions and maximum acceptable outages • Develop continuity and recovery plans to address identified continuity risks within the parameters identified with respect to critical business functions and maximum acceptable outages • Establish effective governance arrangements through the Grid Participant's Board to ensure compliance with all responsibilities under the Plan
Water Grid Manager (in addition to responsibilities as a Grid	• Facilitate the development and review of the Water Grid Business Continuity Management Plan

Entity	Responsibilities
Participant)	• Monitor and review Grid Participant progress against assigned elements of the Water Grid Business Continuity Management Plan • Communicate business continuity management issues and information across the Water Grid • Chair the Risk Officers Committee
Risk Officers Committee	• Align the standards, language and approaches for business continuity across the Water Grid • Report on Water Grid continuity risks and critical business functions to the CEOs Forum • Develop Water Grid Business Continuity Management Plan for CEOs Forum approval • Report to the CEOs Forum on progress against Water Grid Continuity Management Plan • Other accountabilities as defined in the SEQ Water Grid Risk Officers Committee's Charter
CEOs Forum	• Approve the Water Grid Business Continuity Management Plan

Monitoring and review

Table 4 lists the regular monitoring and review actions.

Table 4: Scheduled monitoring and reviews

Responsibility	Frequency	Action
Grid Participants	Quarterly	Verify planned continuity resources are still viable
	Annually	Comprehensive review of Grid Participant Business Continuity Management Plan
		Comprehensive review of Water Grid Business Continuity Management Plan
Water Grid Manager (in addition to responsibilities as a Grid Participant)	Annually	Comprehensive review of Water Grid Business Continuity Management Plan
		Comprehensive review of the SEQ Water Grid Business Continuity Management Guideline
Risk Officers Committee	Annually	Review and recommend Water Grid Business Continuity Management Plan to the CEOs Forum
		Comprehensive review of the SEQ Water Grid Business Continuity Management Guideline
CEOs Forum	Annually	Review recommended Water Grid Business Continuity Management Plan against recommendations from annual emergency response planning exercise

Critical infrastructure security

Snapshot: Critical infrastructure security

Actions to:

- **prepare critical infrastructure security plans**
- **understand security alert levels**
- **prepare security threat assessments and security risk identification**
- **identify asset criticality**
- **apply control measures and measure their effectiveness**
- **comply with Queensland Government assurance requirements**
- **identify responsibilities with regard to critical infrastructure security**
- **identify monitoring and review responsibilities with regard to critical infrastructure security.**

Refer also to the Critical Infrastructure Security Guideline.

Preparation of a Critical Infrastructure Security Plan

The Queensland Government defined the Water Grid as critical infrastructure due to its function in supplying water as an essential service to a major population. Criticality is the measure of the consequences that arise when a critical infrastructure asset is disrupted and whether a substitute asset can be sourced within Queensland.

There are nodes, assets and functions within the Water Grid whose effective operation are a critical requirement to the performance of the Water Grid. The purpose of the Critical Infrastructure Security Plan is to facilitate economy of effort through the identification of these critical requirements and investing the effort of Grid Participants into protecting these assets. In addition to aligning with the Standard, this element aligns with the *Queensland Plan for the Protection of Critical Infrastructure from Terrorism* (July 2005) and the *National Guidelines for Protecting Critical Infrastructure from Terrorism* (NCTC 2005).

The Market Rules include the following requirements:

- In accordance with section 4.34 of the Market Rules, risk management plans must include identification and mitigation strategies for operational risks.

To support this, the Water Grid Manager, through the Risk Officers Committee, will prepare the Critical Infrastructure Security Guideline to facilitate the effective establishment of Grid Participant critical infrastructure security plans.

Grid Participants may include their Critical Infrastructure Security Plan as part of their Risk Management Plan or as a separate plan.

Tool/resource

Refer to the SEQ Water Grid Critical Infrastructure Security Guideline.

Security alert levels

Grid Participants are to utilise the national counter-terrorism alert levels to facilitate a graduated whole-of-Grid response to changes in threat from terrorism. The alert levels are as follows:

- Low – Terrorist threat is not expected.
- Medium – Terrorist attack could occur.
- High – Terrorist attack is likely.
- Extreme – Terrorist attack is imminent or has occurred.

These guidelines will provide advice to Grid Participants on security measures to be undertaken at each national counter-terrorism alert level. In addition, for each of the alert levels there will be an appropriate definition that applies to security threats other than terrorism, such as theft, extortion, malicious activity and vandalism.

Security threat assessment and risk identification

Grid Participants are responsible for threat assessment and identification of security risks that may affect the continuity of their operations. The Risk Officers Committee and then the CEOs Forum are responsible for the identification of Water Grid security risks as part of the risk management process.

Asset criticality

Grid Participants are responsible for identifying the criticality of individual nodes, assets or functions. Criticality ratings are to be derived from a combination of the attractiveness of the asset from a threat perspective, and the consequence if the threat event occurs. Detailed guidance on the production of criticality ratings is contained in the SEQ Water Grid Critical Infrastructure Security Guideline. Where multiple threat events are considered for a particular asset, the highest of the resultant criticality ratings is to be used when determining appropriate control measures.

Control measure application and effectiveness

Grid Participants are responsible for producing a standardised range of control measures (including physical security and procedural control) that are to be applied dependent upon the determined asset criticality rating and threat level. They are also responsible for developing an appropriate audit program to determine the effectiveness of the control measures ability to:

- aid detection
- delay
- enable response
- assist in recovery.

Queensland Government assurance requirements

In accordance with section 3.3.4 of the *Queensland Plan for Protection of Critical Infrastructure from Terrorism* (July 2005), Grid Participants who own assets defined as critical infrastructure by the Security Planning and Coordination cell within Queensland Police are responsible for providing an annual statement addressing the validation and audit requirements outlined in the National Guidelines. With respect to the exercise requirements needed for assurance, testing of critical infrastructure protection and business continuity may occur concurrently as part of the annual exercising of the Water Grid ERP.

Critical infrastructure security responsibilities

Table 5: Critical infrastructure security responsibilities

Entity	Responsibilities
Grid Participant	• Develop, implement and operate own Critical Infrastructure Security Plan • Identify security risks through own risk management program • Notify Water Grid security risks to the Water Grid Manager and other impacted Grid Participants as appropriate • Align processes to the Risk Management Plan and the associated Guideline to ensure consistency in the approach, assessment and management of security • Identify asset criticality and develop standardised control measures • Establish effective governance arrangements through the Grid Participant's Board to ensure compliance with all responsibilities under the Plan
Water Grid Manager (in addition to responsibilities as a Grid Participant)	• Identify Water Grid level redundancy for critical nodes within individual Grid Participants • Communicate security issues across the Water Grid • Chair the Risk Officers Committee
Risk Officers Committee	• Align the standards, language and approaches for critical infrastructure security across the Water Grid • Report on Water Grid critical infrastructure security risks to the CEOs Forum • Advise the CEOs Forum on programs to meet annual assurance requirements for critical infrastructure security • Other accountabilities as defined in the SEQ Water Grid Risk Officers Committee's Charter
CEOs Forum	• Approve the application of a Water Grid assurance program for critical infrastructure security if required to do so by the Security Planning and Coordination Cell of the Queensland Police Service under the *Queensland Plan for the Protection of Critical Infrastructure from Terrorism* (2005)

Monitoring and review

Table 6 lists the regular monitoring and review actions.

Table 6: Scheduled monitoring and reviews

Responsibility	Frequency	Action
Grid Participant	On change of threat level	Implement control measures appropriate to the new threat level
	Annually	Comprehensive review of Grid Participant Critical Infrastructure Security Plan
		Comprehensive review of security threat assessment and risk identification
		Audit the effectiveness of control measures and provide annual assurance statements to the Security Planning and Coordination cell of Queensland Police
Water Grid Manager (in addition to responsibilities as a Grid Participant)	Annually	Comprehensive review of Critical Infrastructure Security Plan
		Provide a consolidated assurance statement to the Security Planning and Coordination cell of Queensland Police in the event that individual assurance statements are not required
Risk Officers Committee	Annually	Comprehensive review of Critical Infrastructure Security Plan
CEOs Forum	Annually	Provide a consolidated assurance statement to the Security Planning and Coordination cell of Queensland Police, if required

4 Emergency response

Snapshot: Emergency response

Actions to:

- **prepare emergency response plans**
- **comply with Water Grid ERP priorities**
- **identify responsibilities with regard to emergency response planning**
- **identify monitoring and review responsibilities with regard to emergency response planning.**

Refer also to the SEQ Water Grid Emergency Response Plan.

Preparation of an Emergency Response Plan

The purpose of an Emergency Response Plan is to coordinate an effective response across the Water Grid in the event of an incident, which meets the Water Grid's definition of an 'emergency'.
The Water Grid ERP is to be developed in accordance with section 4.24 of the Market Rules, which requires the Water Grid Manager to prepare and publish an Emergency Response Plan that specifies:

- incidents that must be reported to the Water Grid Manager
- response levels for the types of incidents reported to the Water Grid Manager
- escalation and notification paths for each response level
- reporting and monitoring requirements for each response level
- responsibilities for preparing and issuing public statements for each response level, if required
- any changes to the process for issuing Grid Instructions following a reported incident
- the process for operating the Water Grid following a Water Supply Emergency Declaration
- the process for preparing, issuing and amending Operating Instructions following a Water Supply Emergency Declaration
- arrangements, where applicable, for providing the Water Grid Manager with access to Grid Service Provider operated control rooms, real-time information, equipment and personnel following a Water Supply Emergency Declaration
- any other matter the Water Grid Manager considers appropriate.

All Grid Participants are required to develop their own Emergency Response Plan that is consistent with the Water Grid ERP and the Market Rules.

Tool/resource

Refer to the *SEQ Water Grid Emergency Response Plan.*

Emergency Response Plan priorities

The priorities of the emergency response plans are to be as follows:

1. maintaining the safety of employees and the public
2. protecting the quality of the water supply to Grid Customers
3. protecting the environment
4. protecting continuity of supply to Grid Customers
5. protecting landowner and community property
6. protecting Water Grid assets and infrastructure
7. maintaining the Water Grid's reputation.

Emergency response planning responsibilities

Table 7: Emergency response planning responsibilities

Entity	Responsibilities
Grid Participant	• Develop an Emergency Response Plan that is consistent with the Water Grid ERP and the Market Rules • Manage the response to incidents and emergencies in accordance with Water Grid ERP and own Emergency Response Plan • Communicate incidents as appropriate to: – the relevant emergency authorities, where applicable – the Water Grid Manager – the relevant regulator – responsible Ministers, Mayors or Chief Executive Officers, where applicable – other affected Grid Participants • Work cooperatively with the appointed Water Grid Emergency Manager • Establish effective governance arrangements through the Grid Participant's Board to ensure compliance with all responsibilities under the Plan
Water Grid Manager (in addition to responsibilities as a Grid Participant)	• Prepare and publish the Water Grid ERP • Conduct emergency coordination • Conduct emergency management—unless another Emergency Manager is put in place
Risk Officers Committee	• Align the standards, language and approaches for emergency response planning across the Water Grid • Advise the CEOs Forum on programs to meet annual assurance requirements for emergency response planning • Other accountabilities as defined in the SEQ Water Grid Risk Officers Committee's Charter
CEOs Forum	• Recommend an assurance program for Water Grid emergency response capability to the Ministers Office for approval

Monitoring and review

Table 8 lists the regular monitoring and review actions.

Table 8: Scheduled monitoring and reviews

Responsibility	Frequency	Action
Grid Participant	Annually	Conduct at least one exercise of the Grid Participant's Emergency Response Plan
		Comprehensive review of Grid Participant Emergency Response Plan
Water Grid Manager (in addition to responsibilities as a Grid Participant)	Annually	Comprehensive review of Water Grid ERP
		Undertake a review that enables a gap analysis between the Water Grid ERP and Grid Participants emergency response plans
		Facilitate at least one exercise with the Water Grid Manager and Grid Participants, allowing incident classification assessment, notification procedures and communication protocols to be practised
		Circulate a copy of the formally documented results of the annual exercise and any audits or reviews to all Grid Participants
Risk Officers Committee	Annually	Review recommendations from the annual emergency response planning exercise and individual Grid Participant exercises to facilitate continual improvement
CEOs Forum	Annually	Review recommendations from annual emergency response planning exercise

Attachment A: SEQ Water Grid Consequence Table

Level	General principles	Economic	Business continuity	Legal and regulatory	Reputation	Environment	Customer service and public health and safety		
							Water quality (drinking)	Water quantity	Public safety
5—Catastrophic	Incidents that have an intolerable impact on the Water Grid. Large-scale impact across South East Queensland, other utilities affected. Requires government intervention at State and Federal levels to manage incident. Minister is likely to issue a Water Supply Emergency Declaration. Water quality incident (aesthetics) impacting the whole-of-Grid, or asset failure leading to a no-supply situation. An emergency incident or combination of incidents with the potential for large-scale short and long-term impacts to human well being and the environment, including terrorism impacts or natural disasters. Financial impacts to Grid Participant/s (≥$100 M).	**Impact/issue:** Unplanned balance sheet effect (increase in debt) ≥$100 M to a Grid Participant/s. **Example:** Grid Participants require combined government funding, as result of an event impacting their financial stability. Uninsured risk or insurance excess eventuates as result of claim. Additional out-of-budget funding required for a new or already approved project.	**Impact/issue:** Intolerable business continuity issue which impacts on the operations of the Grid Participants concurrently—impacting on the normal operation of the Water Grid, where workarounds are not possible within acceptable timeframes. **Example:** Key asset failure resulting in an impact to the Water Grid, e.g. dam breach. Loss of key IT systems used for critical Water Grid information (e.g. SCADA, telecommunications—including data channels provided by third-party providers) or access to office, resulting in an intolerable impact to the Water Grid. **Impact/issue:** Water Grid staffing capacity severely restricted, affecting the ability to staff key operations. **Example:** Pandemic issues, restricting movement of staff or contracted provider/s to manage operations, resulting in Water Grid inability to supply or manage an incident. Inability to manage a Water Grid issue effectively as per agreed protocols due to lack of availability/training of staff, resulting in impacts to the Water Grid.	**Impact/issue:** Class action or major criminal prosecution against the organisation, resulting from an impact on the public. Combination of civil and criminal claims brought relating to: • gross negligence/wilful misconduct • illegal conduct • personal injury/death. Cost implications have a detrimental impact on the organisation. **Example:** Grid Participant's deliberate or negligent failure to comply with their significant Grid Contract, regulatory or common law obligations, e.g. failure to ensure water meets all agreed quality standards by not considering sampling test results, lack of supply significantly affecting a whole suburb—leading to a class action. Significant damages or criminal penalty awarded against a Grid Participant either resulting in the: • Grid Participant's ability to pay the damages/penalty • Grid Participant's insurer refusing to indemnify • State winding up the organisation.	**Impact/issue:** National and international or governmental concerns expressed and loss of trust in Water Grid operations. **Example:** International TV news headlines and/or government investigation centred on Grid Participant/s. **Impact/issue:** Lack of confidence in water supply and/or quality, resulting in sustained and widespread public, community, or media attention affecting confidence in Grid Participants. **Example:** Sustained and widespread national or international media attention. Call centre receives a significant number of serious complaints related to multiple retailers. **Impact/issue:** Fraudulent activity resulting in a significant reputational impact or financial loss to a Grid Participant.	**Impact/issue:** Intolerable long-term environmental impacts with the potential to affect drinking water supply works. **Example:** A Grid Participant releases water to a protected area, resulting in an impact to an environmental area. A Grid Participant ignores or incorrectly implements a Grid Instruction, resulting in the loss of an entire eco-system. A Grid Instruction is issued incorrectly or against advice, and is implemented.	Consequences of actions performed, initiated, or acted upon (or not) due to Grid Participants undertaking their responsibilities under the Market Rules or contracts result in intolerable impacts for Grid Participants, customers or the public.		
							Impact/issue: Regional health impact for an acute health related parameter (declared outbreak expected). Water taste, colour or odour incident impacting the whole-of-Grid. **Example:** *Cryptosporidium* event at a major water treatment plant which results in a substantial number of hospital admissions or fatality/ies. Fatality or extreme risk of fatalities, leading to a declared outbreak. Regional health incident (e.g. boiled water notice) – declared outbreak expected. MIB/geosmin incident affecting the whole Water Grid. Complete failure of monitoring systems, and lack of accurate water quality information and/or data supplied by Grid Participant/s, impacting remedial actions within accepted timeframes and the resultant impact to customers.	**Impact/issue:** Asset failure leading to no supply (widespread regional loss of water supply to customers > 48 hours). **Example:** Main water treatment plant failure which results in demands not being met as either no alternate source or alternative sources cannot meet total demand and will be unavailable for weeks to months. Main pipeline failure such that restrictions need to be imposed immediately or periods of water unavailability.	**Impact/issue:** Any fatality or permanent impairment to a member of the public, which has resulted from a shortfall in the Grid Participants duty of care. **Example:** Grid Participant/s either ignore advice or do not take appropriate action to warn other Grid Participants or members of the public of events that result in a fatality. Accident on recreational waters resulting in a fatality, either as the result of the public actions, or a Grid Participants action. Key asset failure—weir or dam breach resulting in a fatality. Fatality through public cause, where a Grid Participant is potentially culpable.

Level	General principles	Economic	Business continuity	Legal and regulatory	Reputation	Environment	Customer service and public health and safety		
							Water quality (drinking)	Water quantity	Public safety
4—Major	Single or multiple suburbs affected. Multiple Grid Participants and State Departments involved or on standby. Minister may issue a Water Supply Emergency Declaration. Impact on an isolated supply. New Grid Instructions likely to be issued (depending on the type of incident). Impacts on drinking water regarded as relatively short-term, but involving multiple Water Grid entities and government agencies. Financial impacts to Grid Participants ($50 M–$100 M).	**Impact/issue:** Unplanned balance sheet effect (increase in debt) of $50 M–$100 M to a Grid Participant/s. **Example:** Grid Participant requires government funding as result of an event impacting its financial stability. Uninsured risk eventuates, resulting in cost to Grid Participant/s, or asset is under insured by same amount. Additional out-of-budget funding required for a new or already approved project.	**Impact/issue:** Significant Grid Participant business continuity issue affecting the ability of the Water Grid to operate effectively (when normal workarounds are very limited), impacting on some agreed timeframes. **Example:** Loss of key IT systems (supporting Water Grid Operations), resulting in a significant impact to the Water Grid. Grid Participant staffing capacity or capability impacted by health or industrial relations issues, affecting the ability to manage the operations effectively or safely, having an impact on Water Grid continuity.	**Impact/issue:** Major legal action taken against the organisation, resulting from an impact on the public. Combination of civil and criminal claims brought relating to: • gross negligence/wilful misconduct • illegal conduct • personal injury/death. But, legal action being brought by either an individual or specific organisation. Cost implications have a significant impact on the organisation. **Example:** Successful legal action against a Grid Participant and their insurance does not adequately cover the damages. Therefore, the Grid Participant is required to liquidate assets or obtain a loan to meet the liability. Breach of a water quality parameter that poses a significant risk to those with a particular health condition, resulting in a fatality.	**Impact/issue:** Public confidence in Water Grid operations diminished due to national news or regulator investigation. **Example:** Adverse state-wide or national media attention as a result of a Grid Participant's actions impacting water supply or water quality. Regulator review of Water Grid operations and/or Grid Participant as a result of systemic issues, thus impacting the reputation of Grid Participant/s. Serious breakdown in communications and trust across Grid Participants, resulting in reputational issues for the Water Grid. **Impact/issue:** Fraudulent activity resulting in a major reputational impact or financial loss to a Grid Participant.	**Impact/issue:** Significant long-term effects with the potential to impact drinking water supply works. **Example:** A Grid Participant's actions result in the bypass of primary or secondary treated effluent due to poisoning of biomass (loss of nitrification) at sewerage treatment plant. Major chemical spill from a water treatment plant to a water course. A Grid Participant ignores or implements incorrectly a Grid Instruction, resulting in a significant impact to an environmental area.	Consequences of actions performed, initiated, or acted upon (or not) due to Grid Participants undertaking their responsibilities under the Market Rules or contracts result in major impacts for Grid Participants, customers or the public.		
							Impact/issue: Regional health impact for an acute health related parameter (no declared outbreak expected). Water taste, colour or odour incident impacting the population of a region. **Example:** Health incident (e.g. boiled water notice) on a population of a region. A Grid Participant has not notified other Grid Participants of a water quality issue, or has not acted upon advice received to address a water quality issue, resulting in a major water quality issue for the public. *Cryptosporidium* event at a major water treatment plant impacting a region, or a major impact on an isolated supply. Aesthetic parameter (e.g. Geosmin) affecting a regional area. Water contamination impacting water quality, boiled water notices issued, but no outbreak of disease.	**Impact/issue:** Asset failure—Loss of water supply to customers over multiple suburbs > 48 hrs. **Example:** Bulk supply pipeline burst, e.g. Southern Region Water Pipeline, or water treatment plant stops production and will be offline, so that multiple suburbs are not supplied with water for > 48 hours. Distribution system with no alternative bulk supply fails, resulting in multiple suburbs not being supplied with water for > 48 hours.	**Impact/issue:** Multiple members of the public being seriously injured or disabled as result of an accident, or near-drowning incident, which has resulted from a shortfall in the Grid Participants duty of care. **Example:** A Grid Participant either ignores advice or does not take appropriate action to warn other Grid Participants or the public, resulting in a permanent disability injury or near-drowning.

Level	General principles	Economic	Business continuity	Legal and regulatory	Reputation	Environment	Customer service and public health and safety		
							Water quality (drinking)	Water quantity	Public safety
3—Moderate	Water quality impact – aesthetics for multiple suburbs. New Grid Instructions may be issued. An issue may be able to be dealt with within operating protocols but not 'normal' protocols. Financial impacts to Grid Participants ($10 M–$50 M).	**Impact/issue:** Unplanned balance sheet effect (increase in debt) of $10 M–$50 M to a Grid Participant/s. **Example:** Uninsured risk eventuates, resulting in moderate cost to Grid Participant. Project write-off cost which does not severely impact continuing Water Grid operations.	**Impact/issue:** A Grid Participant business continuity issue affecting the ability to operate their organisation effectively, or impact as result of third parties' inability to deliver contracted services. **Example:** Loss of IT systems, telephones or other telecommunication channels as a result of internal issues only impacting a Grid Participant. Data interchange or application compatibility issues between Grid Participants, resulting in delays to contracted service standards. Data management and security standards differ between Grid Participants, impacting reliability, consistency, accuracy, and the ability to provide information on which Water Grid management decisions are based (e.g. data used to support Grid instructions). Staffing availability or knowledge not readily available to support a Water Grid incident, resulting in an impact to services to the Water Grid.	**Impact/issue:** Civil claim brought against the organisation for commercial loss. No physical harm to the public. Deliberate breach of a procedural Grid Contract or regulatory obligation. **Example:** A faulty pump station that the Grid Participant neglected to repair results in a significant interruption to supply. This results in a lack of supply to a food manufacturing business that has had to cease production for the majority of its business hours, thereby incurring commercial loss. A contractual breach with a large financial impact on Grid Participant/s, resulting in a lack of public confidence in current government and public scrutiny of the Grid Participant's operations.	**Impact/issue:** Public questioning of Water Grid operations and decisions. **Example:** Legal, regulatory breaches or bad publicity reflecting poorly on Grid Participants, and resulting in medium-term adverse media attention at a regional or state level. **Impact/issue:** Fraudulent activity resulting in a reputational impact issue or financial loss to a Grid Participant.	**Impact/issue:** An environmental issue as the result of a release of pollutants, with resulting mid-term impact to drinking water supply works and notification of an incident to a regulator. **Example:** Exceeding a concentration limit in wastewater effluent so that the responsible Grid Participant cannot access water from a sewage treatment plant. Exceeding Department of Environment and Resource Management discharge licence where the discharge is likely to make its way to a drinking water source. Small spill from a water treatment plant resulting in a regulator notification.	Consequences of actions performed, initiated, or acted upon (or not) due to Grid Participants undertaking their responsibilities under the Market Rules or contracts result in moderate impacts for Grid Participants, customers or the public.		
							Impact/issue: Health impact on suburb for an acute health related parameter (no declared outbreak expected). Repeated exceedence for a chronic health related parameter relating to the whole-of-Grid. Water taste, colour or odour impact over multiple suburbs. **Example:** A Grid Participant has not notified other Grid Participants of a water quality issue, or has not acted upon advice received to address an issue, resulting in a moderate water quality issue for the public. Operational measures implemented to address water quality issues, e.g. a reservoir is required to be dosed with disinfection and mixed with 'fresh' water for dilution. Aesthetic health parameter e.g. manganese affecting multiple suburbs. Repeated results of trihalomethanes that exceeds the *Australian Drinking Water Guidelines 2004*.	**Impact/issue:** Loss of water supply to customers over an entire suburb for > 24 hrs. **Example:** Single raw water supply source taken offline due to cyano bacteria or other event. Desalination (or any other water treatment plant) stops production for more than 24 hours, impacting the supply of water to an entire suburb.	**Impact/issue:** Member of the public sustaining serious injury, required to be admitted to hospital as a result of an accident, which has resulted from a shortfall in the Grid Participants duty of care. **Example:** A Grid Participant either ignores advice or does not take appropriate action to warn other Grid Participants or the public, resulting in a near drowning. Key trunk failure flooding homes.

Level	General principles	Economic	Business continuity	Legal and regulatory	Reputation	Environment	Customer service and public health and safety		
							Water quality (drinking)	Water quantity	Public safety
2—Minor	Incident can be dealt with by the resources of the affected Grid Participant/s. Minor short-term impact on a local area. An incident has no effect on monthly Grid Instruction volumes and can be handled within the scope of normal operating protocols between Grid Participants. Financial impacts to a Grid Participant ($1 M–$10 M).	**Impact/issue:** Unplanned balance sheet effect (increase in debt) of $1 M–$10 M to a Grid Participant/s. **Example:** Uninsured risk eventuates, resulting in minor cost to a Grid Participant. Project write-off cost that is managed within the context of a Grid Participant and does not impact continuing operations.	**Impact/issue:** Inability to operate key organisational processes/systems which have an impact on a number of Grid Participants at the same time. Possible workaround solutions are available. **Example:** Not able to always be fully staffed in key technical roles, with potential to impact Water Grid operations. Failure of IT systems – outsource or implement disaster recovery plan	**Impact/issue:** A moderate, non-deliberate, breach of procedural Grid Contract or regulatory obligations leading to the issuance of a formal breach or non-compliance notice. **Example:** A total failure to provide a report, plan or other information required under legislation of a Grid Contract due to oversight.	**Impact/issue:** Public undecided but accepting of information/decisions (e.g. suburban newspaper). **Example:** Short-term adverse media attention of a local event.	**Impact/issue:** Minor transient environmental impact or result of Grid Instructions not being correctly implemented. **Example:** A spike in discharge concentrations but unlikely to exceed 95%ile licence limits. Localised spill contained on-site. Grid Instruction results in minor environment impact either result of being incorrect or implemented incorrectly.	Consequences of actions performed, initiated, or acted upon (or not) due to Grid Participants undertaking their responsibilities under the Market Rules or contracts result in minor impacts for Grid Participants, customers or the public.		
							Impact/issue: Isolated exceedence for a chronic health related parameter. Potential taste, colour or odour impact. **Example:** Water quality critical control point limit exceeded, even with corrections in place. Manganese levels resulting in noticeable colour, above operating protocol triggers but below *Australian Drinking Water Guidelines 2004*.	**Impact/issue:** Limited local loss of water supply to customer for > 8 hours. **Example:** Cyano bacteria or major turbidity event occurs whereby use of a single supply source needs to be reduced. A mechanical failure occurs at a water treatment plant and the estimated time to repair the failure exceeds the current endurance of the clear water storage. Pipe inter-connector failure resulting in short shutdown.	**Impact/issue:** Multiple members of the public injured, resulting in medical attention being supplied. **Example:** Slip or fall resulting in broken limbs or lacerations requiring stitches.
1—Insignificant	Little disruption to normal operations, low increase in normal operating costs <$1 M.	**Impact/issue:** Unplanned balance sheet effect (increase in debt) of <$1 M to a Grid Participant/s. **Example:** Additional unplanned expense by a Grid Participant.	**Impact/issue:** Inability to operate key organisational processes/systems which have an impact on a single Grid Participant, and unlikely to impact the Water Grid. **Example:** Ability to provide staff workarounds for a period of time, while recruiting.	**Impact/issue:** Minor, non-deliberate, breach of procedural Grid Contract or regulatory obligations leading to a follow-up notice (no formal breach). **Example:** Providing a report, plan or other information outside of the due date.	**Impact/issue:** Lack of public interest (e.g. reporting, not front page) in suburban newspapers. **Example:** Single adverse local radio report. Grid Participant retail call centre receives a number of complaints but limited to a small area, e.g. a street or two.	**Impact/issue:** Brief pollution as a result of Grid Participant action but no environmental impact. Insignificant risk of breaching environmental regulatory requirements. **Example:** Small spike in discharge operations. Localised spill contained within bunds.	Consequences of actions performed, initiated, or acted upon (or not) due to Grid Participants undertaking their responsibilities under the Market Rules or contracts result in insignificant impacts for Grid Participants, customers or the public.		
							Impact/issue: Little or no aesthetic impact. **Example:** Water quality critical control point alert exceeded but within critical limits. Local water quality incident isolated to a zone, possibly caused by valve change.	**Impact/issue:** Water quantity issue, with limited or no impact on bulk customers or short-term disruption to retail customers. Limited local loss of water supply to customer for < 8hrs **Example:** Early indications of cyano bacteria—storage being monitored. Localised pump breakdown. Minor burst in a suburban street within distribution network.	**Impact/issue:** Minor injury to member of the public. **Example:** Lacerations requiring stitches or hospital visit.

 # Please note that examples given above are exactly that, examples, and consequences to an organisation are not limited to only the examples listed above. These are just a guide as to potential consequences that may occur.

Risk consequence table—summary

Level	Economic	Business continuity	Legal and regulatory	Reputation	Environment	Customer service and public health and safety		
						Water quality	Water quantity	Public safety
5—Catastrophic	Unplanned balance sheet effect (increase in debt) of ≥$100 M to the Water Grid or >100% of earnings before interest and tax for a Grid Participant.	More than 2 week outage. Impacting on the normal operation of the Water Grid, where workarounds are not possible within acceptable timeframes.	Actions resulting from an impact on the public: • the public bringing class action • major cost implications unable to be met by the organisation • major breach of Grid Contract, regulatory or common law obligations that impacts on a region/suburb of the South East Queensland community.	Sustained and widespread concerns expressed by public and/or all levels of Government leading to a loss of trust and confidence in Grid Participant/s impacting whole-of-Grid operations.	Intolerable or repeated or long-term environmental harm with the potential to permanently affect an eco system.	Regional health impact for an acute health related parameter (declared outbreak expected). Sustained and widespread whole of Grid impact on water taste, colour or odour impact.	Widespread regional loss of water supply to customer > 48 hours.	Any fatality or permanent impairment to a member of the public, with incident relating to Grid Participant's duty of care.
4—Major	Unplanned balance sheet effect (increase in debt) of $50 M–$100 M to the Water Grid or between 50%–100% of earnings before interest and tax for a Grid Participant.	1–2 weeks outage. When normal workarounds are very limited, impacting on some agreed timeframes.	Actions resulting from an impact on the public: • the public bringing legal action (not a class action) • the Regulator imposing maximum statutory penalty • major cost implications that the organisation will need to seek additional funding to meet • major breach of Grid Contract, regulatory or common law obligations that impacts on an individual/discrete organisation of the South East Queensland community.	Concerns expressed at a national level by public, and loss of trust and confidence in Water Grid operations on a particular issue.	Significant long-term environmental harm.	Regional health impact for an acute health related parameter (no declared outbreak expected). Taste, colour or odour impact over a regional area.	Loss of water supply to customer over multiple suburbs > 48 hrs	Serious injury to multiple members of the public resulting in hospitalisation, with incident relating to Grid Participant's duty of care.
3—Moderate	Unplanned balance sheet effect (increase in debt) of $10 M–$50 M to the Water Grid or between 10%–50% of earnings before interest and tax for a Grid Participant.	3–7 days impact Affecting the ability to operate an organisation effectively.	Action results from commercial loss: • the Regulator imposing a moderate statutory penalty • moderate cost implications able to be absorbed by the organisation • breach of Grid Contract, regulatory or common law obligations that: – also includes a deliberate breach of a procedural Grid Contract or regulatory obligation.	Concerns expressed at a regional level by public, and loss of trust and confidence in Water Grid operations on a particular issue (non life threatening).	Significant release of pollutants with environmental harm requiring mid-term recovery.	Health impact on suburb for an acute health related parameter (no declared outbreak expected). Repeated exceedence for a chronic health related parameter relating to whole-of-Grid. Taste, colour or odour impact over multiple suburbs.	Loss of water supply to customer over an entire suburb for > 24 hrs	Serious injury to a single member of the public resulting in hospitalisation, with incident relating to Grid Participant's duty of care.
2—Minor	Unplanned balance sheet effect (increase in debt) of $1 M–$10 M to the Water Grid or between 1%–10% of earnings before interest and tax for a Grid Participant.	1–3 days impact. Workarounds possible, but requires greater coordination.	Regulator imposing a low statutory penalty. Low cost implications for the organisation. Moderate, non-deliberate, breach of procedural Grid Contract or regulatory obligations.	Public undecided but accepting of information/decisions.	Minor transient environmental harm.	Isolated exceedence for a chronic health related parameter. Potential taste, colour or odour impact over suburb.	Local loss of water supply to customer for > 8 hrs	Medical attention to multiple members of the public, with incident relating to Grid Participant's duty of care.
1—Insignificant	Unplanned balance sheet effect (increase in debt) of ≤$1 M to the Water Grid or <1% of earnings before interest and tax for a Grid Participant.	Less than 1 day impact—workarounds possible, with only minor delays.	Minor, non-deliberate, breach of procedural Grid Contract or regulatory obligations. Little to no cost implications for the organisation.	Lack of public interest.	Brief pollution but no environmental impact.	Little or no taste, colour or odour impact.	Local loss of water supply to customer for < 8hrs	Minor injury sustained to a member of the public, with incident relating to Grid Participant's duty of care.
Mandatory #	No*	No*	Yes	Yes	No*	No*	No*	No*

#* Mandatory category means the Grid Participant must utilise the exact same descriptor within their Consequence Table for risk assessment purposes. Flexible categories may be re-calibrated to better represent the range of consequence outcomes specific to that Grid Participant when utilised internally for their organisation, however the risk must be calibrated utilising the above table when it is communicated to the Water Grid Manager and other Grid Participants.

Attachment B: SEQ Water Gri [illegible] Table

Likelihood	Timeframe	Description
5 Almost certain	≤1 year	There is likely to [illegible] nce a year or frequently. It often occurs wit [illegible] in similar environments. Probably more [illegible] rational or procedural failure.
4 Likely	>1 year to ≤3 years	There is likely to [illegible] ge every 1 to 3 years. It is likely to have b [illegible] the Water Grid that you are aware of, and y [illegible] heard of it occurring in similar environments.
3 Possible	>3 years to ≤10 years	There is likely to [illegible] ge every 3 to 10 years. There may have been [illegible] Water Grid that you are aware of. You [illegible] curring elsewhere, and have definitely hea [illegible] us possibility.
2 Unlikely	>10 years to ≤50 years	It is possible th [illegible] ry 10 to 50 years. You may have read or h [illegible] u have heard it discussed as a possibility, but [illegible] ne.
1 Rare	>50 years	It is theoretica [illegible] an event occurring no more than once eve [illegible] It is unlikely that you will have heard of i [illegible] vent that you have, the incident will b [illegible] thers as unique. Professional literature ma [illegible] occurrence, generally noting a combination [illegible] ents that facilitated the occurrence.

Attachment C: SEQ Water Grid Risk Matrix

		Likelihood				
		Rare	Unlikely	Possible	Likely	Almost certain
Consequence	Catastrophic	Medium (6)	High (10)	High (15)	Extreme (20)	Extreme (25)
	Major	Medium (5)	Medium (8)	High (12)	High (16)	Extreme (20)
	Moderate	Low (3)	Medium (6)	Medium (9)	High (12)	High (15)
	Minor	Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)
	Insignificant	Low (1)	Low (2)	Low (3)	Medium (5)	Medium (6)

Please note that 'rare'/'major' risk and 'likely'/'insignificant' risk have been given additional weighting to raise their scores from 4 to 5 and their risk rating from low to medium. This weighting reflects the seriousness of the consequence severity level ('major') and frequency of the event ('likely').

This additional weighting has been carried through to 'rare'/'catastrophic' risk and 'almost certain'/'insignificant' risk, raising their scores from 5 to 6 and lifting their risk rating levels.

The risk tolerance for the Water Grid, as developed utilising the process detailed in this Plan, is set at 'medium'

Attachment D: SEQ Water Grid Risk Register

Attachment E:
SEQ Water Grid Risk Officers Committee Charter

Purpose/objectives

The SEQ Water Grid Risk Management Framework ("the Framework") provides a platform on which each SEQ Water Grid ("the Grid") participant is to develop their own risk management techniques and practices that are fit for purpose from both an individual Grid participant perspective and a whole of Grid perspective.

The SEQ Water Grid Risk Officers Committee ("the Committee") has been formed to support the efforts of Grid participants and share information, knowledge and resources to assist in the implementation of the Framework. The Committee is committed to open channels of communications and establishing best practices for whole-of-Grid risk management.

The Committee is concerned with developing guidance that enables best practice risk management of whole-of-Grid risks. The Committee is to advise the key stakeholders of the Grid on the practical application of this guidance.

This Committee is one element of an overall mechanism to address key Grid operational issues.

Definitions

CEO's Group	The Chief Executive Officers of the Grid Participants, as a collective.
Whole-of-Grid risk	A risk or issue that has the potential to impact the Water Grid as a 'supply chain' or 'end-to-end' process, or a risk or issue that has the potential to impact more than one Grid participant.
Risk Officer/Coordinator	The primary risk management point of contact within a Grid Participant.

Authority

The Committee is established under the authority of the CEO's Group.

The Committee is empowered to review or research any risk management related matter within its objective or as requested by the CEO's Group.

The Committee has the authority to facilitate the endorsement of the whole-of-Grid risk register prior to its submission to the CEO's Group.

Duties and responsibilities of the Risk Officers Committee

Risk management

- Align the standards, language and approaches for managing risk across the Grid, including operational risk, business continuity, emergency response and critical infrastructure security
- Monitor whole-of-Grid Risks
- Report on progress against risk action plans to the CEO Group
- Develop whole of Grid Business Continuity Plan/s for CEO Group approval.
- Report on whole of Grid critical infrastructure security risks to the CEO Group
- Advise the CEO's Group on programs to meet annual assurance requirements for critical infrastructure security
- Advise the CEO's Group on programs to meet annual assurance requirements for emergency response planning.

Audit and review

- Annual review of the SEQ Water Grid Risk Management Framework
- Annually review and recommend whole of Grid Business Continuity Plan/s to CEO Group
- Annually review the SEQ Water Grid Business Continuity Management Guideline
- Annually review of Critical Infrastructure Security Guideline
- Review recommendations from annual emergency response planning exercise and individual Grid participant exercises to facilitate continual improvement
- Provide assistance to external auditors as directed by the CEO's Group.

Evaluating performance

- On an annual basis, evaluate the Committee's performance.
- Assess the achievement of the duties specified in the charter and report the findings to the CEO's Group.

Review of Committee Charter

- Review the Risk Officers Committee's charter annually and recommend any required changes to the CEOs.
- Ensure the CEOs approval of the charter as necessary.

Membership and meetings

Membership

The Director of Risk and Technology for the SEQ Water Grid Manager shall be appointed Chair of the Committee. The remainder of the Risk Officers Committee will comprise:

- SEQ Water Grid Manager – Risk Manager
- Seqwater – Risk Manager
- LinkWater – Risk Manager
- WaterSecure – Risk Manager
- Distribution – Until 1 July 2010, the Manager Services Planning and Operations Ipswich Water will represent the councils. After that date, the Risk Manager of each of the three distribution entities will be a Committee member

It is the obligation of Committee members to ensure they are present or represented at all Committee meetings. Where Committee members are unable to attend meetings they must delegate responsibility to an appropriately authorised person from their organisation. Where such a delegation occurs the Committee member retains full responsibility for the achievement of the objectives of the Committee.

Meetings

The Risk Officers Committee is to meet on a quarterly basis. Special meetings may be convened at the request of any committee member and upon agreement of the Chair. The Chair may also call a meeting at their discretion.

The proceedings of all meetings are to be minuted.

Working Groups

To facilitate the efficient working of the Committee, the Chair may direct the formation of working groups to carry out specific tasks and then report back to the Committee.

Secretarial

The Committee shall be assigned a secretary, provided by the Water Grid Manager. The secretary shall be responsible, in conjunction with the Chair, for drawing up and circulating the agenda along with supporting explanatory documents to Committee members prior to each meeting. The meeting agenda will be circulated at least three business days prior to the scheduled meeting.

The secretary will also be responsible for recording and keeping the minutes of each meeting. The meeting minutes and action list will be circulated to Committee members within five business days of the meeting.

Attendance

The Chair has the right to request the attendance of other officers from the participating entities on particular agenda items as deemed necessary.

Subject to the prior approval of the Chair, other Committee members can also request the attendance of other officers (subject matter experts) on particular agenda items.

Quorum

A quorum must be available for each meeting. A quorum is a majority of the members.

Reporting

The Risk Officer Committee shall report directly to the CEO's Group. The Committee shall report on a bi-monthly basis and, where it is necessary to assist in expediting the CEO's Group consideration of any issue. All reporting to the CEO's Group shall be in a timely manner.

In general, these reports may include:

- A copy of the meeting minutes.
- Notification of the change in the risk profile of the Grid
- Notification on progress against treatments to manage specific risks
- Procedure or policy amendment recommendations

Attachment D: SEQ Water Grid - Risk Register

Scope

The SEQ Water Grid Risk Register identifies and is utilised to manage risks within the Water Grid as defined in the Market Rules. As such, its scope is limited to the Water Grid Manager and those organisations providing a Declared Water Service.

Each organisation is responsible for facilitating the completion of detailed Risk Action Plans and ensuring the organisation delivers the proposed treatment strat

Ref No.	Risk Name	Risk Description	Current Control Strategies	Consequence	Current Circumstances			Risk Action	Proposed Treatments	After Treatment			Risk Action Owner	Due Date	Fin Year 2010 / 2011	Fin Year 2011 / 2015	Complete (Y/N)
				Area Most Affected	Likelihood Rating	Consequence Rating	Risk Rating			Likelihood Rating	Consequence Rating	Risk Rating					
1	Emergency Management	Failure to effectively manage an emergency (real or perceived by public / key stakeholder). Key components of the emergency being: communications, response and recovery.	1. An approved Emergency Response Plan is in place across Water Grid Participants. 2. Executive ERP desktop exercise. 3. Operational staff ERP workshop for Grid Participants. 4. Grid Participant operational protocols.	Reputation	Likely	Moderate	High (12)	Reduce	1. Communication protocols to be prepared and agreed between Grid participants to further improve communication channels both within Grid participants, stakeholders, media and public.	Likely	Moderate	High (12)	Grid Service Providers, WGM	Mar-10			
									2 Full whole-of-Grid ERP exercise undertaken and lessons incorporated into ERP and GPs protocols.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Mar-10			
									3. Water Grid Manager appointed as the public face for emergency management communications.	Possible	Moderate	Medium (9)	WGM	Mar-10			
									4. Media training of executive management teams of each Grid participant.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Jun-10			
2	Drinking water quality - health parameters for connected supplies.	Australian Drinking Water Guideline values are exceeded to a level that impacts upon the health of a small population for a connected supply, due to for example a natural disaster or failure in system controls.	1. Provider Strategic Asset Management Plans (SAMPS). 2. Water Quality monitoring is undertaken by all Grid Participants within their own infrastructure, assisting in meeting contractual requirements. 3. ERP in place requiring notification to WGM in event of Alert (or above) level incident. 4. Water Quality Technical Committee. 5. Treatment plant operator training. 6. The Water Grid - ability to source alternate supply of water. 7. Grid Contracts in place including water quality specifications. 8. Operating protocols.	Customer Service and Public and OH&S	Possible	Moderate	Medium (9)	Reduce	1. Water Grid quality management plans and companion plans developed and implemented.	Possible	Moderate	Medium (9)	WGM	Dec-10			
									2. Drinking water quality management plans and risk assessments for all entities completed and collated into a whole-of-Grid assessment.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Jul-11			
									3. Water quality parameters to be included in the operating protocols and grid contracts.	Unlikely	Moderate	Medium (6)	Grid Service Providers, WGM	Oct-11			
									4. Implementation of improved and standardised laboratory service protocols.	Unlikely	Moderate	Medium (6)	Grid Service Providers, WGM	Dec-11			
									5. Continual improvement in water quality operational procedures.	Unlikely	Moderate	Medium (6)	Grid Service Providers	Ongoing			
3	Drinking water quality - health parameters for non-connected supplies.	Australian Drinking Water Guideline values are exceeded to a level that impacts upon the health of a population for a non-connected supply, due to for example a natural disaster or failure in system controls.	1. Provider Strategic Asset Management Plans (SAMPS). 2. Water Quality monitoring is undertaken by all Grid Participants within their own infrastructure, assisting in meeting contractual requirements. 3. ERP in place requiring notification to WGM in event of Alert (or above) level incident. 4. Water Quality Technical Committee. 5. Treatment plant operator training. 6. Partial improvements in place at small WTPs. 7. Grid Contracts in place including water quality specifications. 8. Operating protocols.	Customer Service and Public and OH&S	Likely	Moderate	High (12)	Reduce	1. Water Grid quality management plans and companion plans developed and implemented.	Likely	Moderate	High (12)	WGM	Dec-10			
									2. Drinking water quality management plans and risk assessments for all entities completed and collated into a whole-of-Grid assessment.	Likely	Moderate	High (12)	Grid Service Providers, WGM	Jul-11			
									3. Water quality parameters to be included in the operating protocols and grid contracts.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Oct-11			
									4. Implementation of improved and standardised laboratory service protocols.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Dec-11			
									5. Capital works plan for vulnerable assets is prepared and approved by Boards and the asset regulator.	Possible	Moderate	Medium (9)	Grid Service Providers	Jun-12			
									6. Implementation of the capital works program.	Unlikely	Moderate	Medium (6)	Grid Service Providers	Jun-14			
									7. Continual improvement in water quality operational procedures.	Unlikely	Moderate	Medium (6)	Grid Service Providers, WGM	Ongoing			
4	Drinking water quality - aesthetic parameters (both connected and non-connected supplies).	Australian Drinking Water Guideline values are exceeded to a level that the community perceive impacts upon the aesthetic parameters of the water supply, due to for example a natural events or failure in system controls.	1. Provider Strategic Asset Management Plans (SAMPS). 2. Water Quality monitoring is undertaken by all Grid Participants within their own infrastructure, assisting in meeting contractual requirements. 3. ERP in place requiring notification to WGM in event of Alert (or above) level incident. 4. Water Quality Technical Committee. 5. Treatment plant operator training. 6. The Water Grid - ability to blend water from a variety of sources for connected supply areas. 7. Grid Contracts in place including water quality specifications. 8. Operating protocols.	Customer Service and Public and OH&S	Likely	Moderate	High (12)	Reduce	1. Water Grid quality management plans and companion plans developed to ensure accurate aesthetic water quality specifications in contract.	Likely	Moderate	High (12)	WGM	Oct-10			
									2. Drinking water quality management plans and risk assessments for all entities completed and collated into a whole-of-Grid assessment.	Likely	Moderate	High (12)	Grid Service Providers, WGM	Jul-11			
									3. Water quality parameters to be included in the operating protocols and grid contracts.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Jul-11			
									4. Continual improvement in water quality operational procedures.	Possible	Moderate	Medium (9)	Grid Service Providers	Jul-11			
5	Personnel Risk	Inability to attract, recruit and retain capable staff (The risk could be exacerbated if all four Statutory Authorities are moved to Ipswich in 2012/2014).	1. Individual Grid Participant HR policies	Business Continuity	Likely	Moderate	High (12)	Reduce	1. Grid workforce planning and capacity project - phase 2 report complete.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Dec-10			
									2. Targeted plan to recruit and retain vulnerable skills affected by the Ipswich move.	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Dec-10			
									3. Entity workforce plans are prepared and link with the whole-of-Grid plan. (Implement outcomes of phase 2 recommendations).	Possible	Moderate	Medium (9)	Grid Service Providers, WGM	Dec-11			

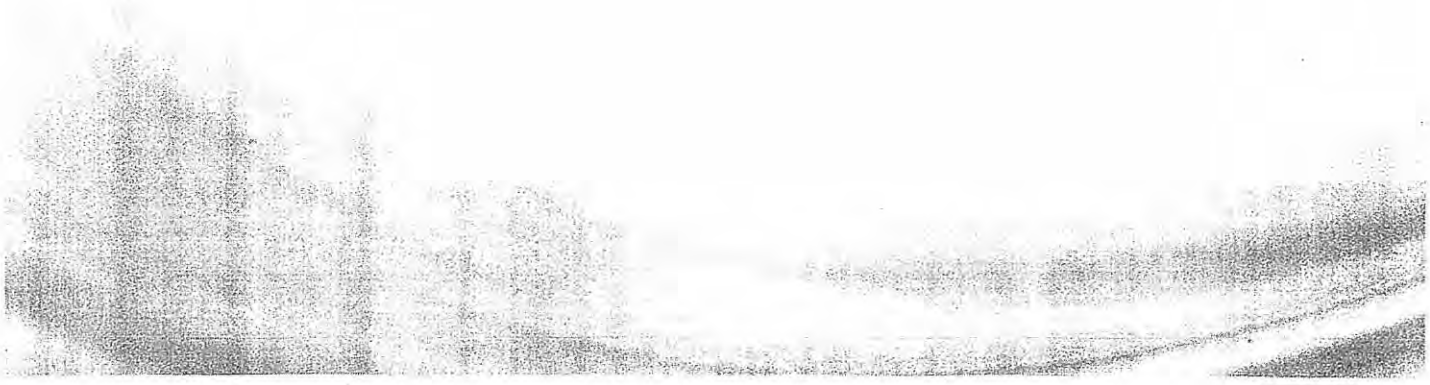
Ref No.	Risk Name	Risk Description	Current Controls	Consequence Area Most Affected	Current Circumstances Likelihood Rating	Current Circumstances Consequence Rating	Current Circumstances Risk Rating	Risk Action	Proposed Treatments	After Treatment Likelihood Rating	After Treatment Consequence Rating	After Treatment Risk Rating	Risk Action Owner	Due Date	Fin Year 2010 / 2011	Fin Year 2011 / 2015	Complete (Y/N)
6	Water quantity - for a connected supply.	Failure to match demand with supply within a connected supply area resulting from an asset failure.	1. Individual Grid Participant asset management plans 2. Individual Grid Participant critical spares holding plans 3. Individual Grid Participant procurement and contract management plans 4. Service Level Agreements and performance monitoring by SEQ Water Grid Manager 5. Water Grid 6. Water Grid Performance Standard - Capacity Assessment	Customer Service and Public and OH&S	Possible	Moderate	Medium (9)	Reduce	1. Operating protocols include contingency plans for unplanned asset failures.	Possible	Moderate	Medium (9)	Grid Service Providers	Jun-10			
									2. Protocols to ensure new infrastructure is communicated to planning and operational staff and included in operating protocols of impacted stakeholders at earliest possible stages of project.	Possible	Moderate	Medium (9)	Grid Service Providers	Sep-10			
									3. Analysis of criticality of assets to be understood and documented.	Possible	Moderate	Medium (9)	Grid Service Providers	Sep-10			
									4 Water Grid Performance Standard to include system reliability risk assessments (ie requirements for operating protocols and critical asset spares etc).	Possible	Minor	Medium (6)	WGM	Oct-10			
									5. Water Grid Manager to utilise above Grid Participant criticality assessments to undertake Grid modelling redundancies.	Possible	Minor	Medium (6)	WGM	Dec-10			
7	Water quantity - for a non-connected supply.	Failure to match demand with supply within a non-connected supply area resulting from an asset failure or loss of water supply.	1. Individual Grid Participant asset management plans 2. Individual Grid Participant critical spares holding plans 3. Individual Grid Participant procurement and contract management plans 4. Service Level Agreements and performance monitoring by SEQ Water Grid Manager 5.Water Grid Performance Standard - Capacity Assessment 6. Drought Management and Contingency Plans 7. Isolated town supply monitoring	Customer Service and Public and OH&S	Likely	Moderate	High (12)	Reduce	1. Operating protocols include contingency plans for unplanned asset failures.	Likely	Moderate	High (12)	Grid Service Providers	Jun-10			
									2. Protocols to ensure new infrastructure is communicated to planning and operational staff and included in operating protocols of impacted stakeholders at earliest possible stages of project.	Likely	Moderate	High (12)	Grid Service Providers	Sep-10			
									3. Analysis of criticality of assets to be understood and documented.	Likely	Moderate	High (12)	Grid Service Providers	Sep-10			
									4 Water Grid Performance Standard to include system reliability risk assessments (ie requirements for operating protocols and critical asset spares etc).	Likely	Minor	Medium (8)	WGM	Oct-10			
									5. Water Grid Manager to utilise above Grid Participant criticality assessments to undertake Grid modelling redundancies.	Likely	Minor	Medium (8)	WGM	Dec-10			
8	PRW water quality.	PRW water quality not fit for purpose.	1. AWTP operational control plans. 2. Water quality monitoring of specifications. 3. Grid contract specifications for current PRW customers (power stations and industrial customers).	Reputation	Unlikely	Moderate	Medium (6)	Maintain	1. Recycled Water Management Plan Team to liaise with Water Regulator.	Unlikely	Moderate	Medium (6)	WaterSecure	Ongoing			
									2. Recycled Water Management Plan and risk assessment approved and in place.	Unlikely	Moderate	Medium (6)	WaterSecure	Dec-10			

Tab 7

SEQ Water Grid

SEQ Water Grid

Coordinated communications implementation plan



Document administration

Document version and modification control

Date	Author	Modification and/or action	Version
07.06.10	S. Middleditch	First draft as circulated	
12.06.10	S. Middleditch	Incorporated comments received from Peter Borrows, Chief Executive Officer, Seqwater	
15.06.10	B. Dennien	Incorporated comments received from Peter McManamon, Chief Executive Officer, LinkWater and Keith Davies, Chief Executive Officer, WaterSecure.	

Consultation

The following stakeholders were consulted in preparation of this document.

Name	Position	Unit/organisation
Peter Borrows	Chief Executive Officer	Seqwater
Peter McManamon	Chief Executive Officer	LinkWater
Keith Davies	Chief Executive Officer	WaterSecure
Barry Dennien	Chief Executive Officer	SEQ Water Grid Manager
Mike Foster	Communications Manager	Seqwater
Stacey Renouf	Communications Manager	LinkWater
Paul Rees	Communications Manager	WaterSecure
Joanne Fettke	Communications Manager	SEQ Water Grid Manager

Document approval

Date	Name	Signature	Comments
	Gary Humphrys, Chair, SEQ Water Grid Manager		
	Phil Hennessy, Chair, Seqwater		
	Steve Roberts, Chair, LinkWater		
	David Gray, Chair, WaterSecure		

Contents

Attachments

Backgroun

Mandate

On 22 April 2010, the M nd Energy and Minister for Trade, Minister Stephe four Queensland Government bulk water entities. Th ordinate the development of a governance framework s for the SEQ Water Grid.

The aim of the framew o one group, the coordination of the various operation tions and media activities, currently undertaken s s.

The Minister has reque Minister on or before 18 June 2010, outlining vernance and resourcing arrangements.

This report outlines, for

- the governance fra perational communications
- the scope and repo
- resourcing and bud
- draft SEQ Water G
- draft SEQ Water Gr

Objective

The objective of the SE o establish a 'single voice' for all SEQ Water Grid ope

In establishing this 'sin ave agreed on a new positioning statement f

'The SEQ Water Grid is c cure and sustainable water for South East Queensland future'.

This plan addresses the the SEQ Water Grid Communications Unit. e SEQ Water Grid Communications Unit w ment through:

- scope – what the SE and is not, responsible for
- branding as the SEQ
- roles and responsibil
- delivery model
- interim arrangement

- linkages with the Queensland Water Commission
- stakeholder engagement
- processes
- governance arrangements
- resourcing and budget
- consolidation of information.

Scope

Through the establishment phase of this function (22 April 2010 to 30 June 2010) the scope of the SEQ Water Grid Communications Unit has been negotiated and agreed between the Chairs of the bulk water entities, the Department of Environment and Resource Management and staff from the Minister's Office. The influences of the councils and SEQ Distributor-Retailer entities, as a major stakeholder group, have also been considered.

The SEQ Water Grid Communications Unit will be responsible for communications regarding SEQ Water Grid operational activities only. Communications activities regarding water policy and regulation will continue to be delivered by the Queensland Water Commission. In instances where a communication activity refers to both water policy and the operation of the SEQ Water Grid, the two teams will collaborate to prepare an optimal response. This arrangement is outlined further below.

Included

The SEQ Water Grid Communications Unit will undertake the operational communications activities listed below.

Media

- Act as a single point of contact for all media enquiries pertaining to the SEQ Water Grid.
- Coordinate and respond to media enquiries on behalf of the SEQ Water Grid.
- Plan and prepare proactive media engagements on behalf of the SEQ Water Grid.
- Provide a spokesperson for any SEQ Water Grid communications activities.

Ministerial

- Provide a single point of contact for the Minister's Office for information relating to the operations of the SEQ Water Grid.
- Coordinate responses, briefings, letters and other Ministerial correspondence regarding the operation of the SEQ Water Grid.

Communications

- Establish the SEQ Water Grid as a recognised brand.
- Act as a single point of contact for all SEQ Water Grid general enquiries through Smart Service Queensland.
- Coordinate the development of a SEQ Water Grid communications strategy.

- Coordinate proactive communications activities regarding the SEQ Water Grid.
- Alignment of the Water Grid communication and education activities with the entity specific communication and education activities.
- Coordinate and collaborate with the Queensland Water Commission for any activities that cover both water policy and SEQ Water Grid operational issues.
- Coordinate and collaborate with councils and the SEQ Distributor-Retailer entities for communications activities relating to SEQ Water Grid operational issues.
- Coordinate in collaboration with the bulk water entities, the SEQ Water Grid operational communications with government and industry.

Attachment 1 SEQ Water Grid communications roles and responsibility matrix - provides further details on the communication subjects and activities to be undertaken by the different entities.

Excluded

The SEQ Water Grid Communications Unit is not responsible for:

- communications regarding bulk water policy, pricing, restrictions, reform or regulation
- communications regarding the three new SEQ Distributor-Retailer entities and retail pricing
- communications regarding new water infrastructure which is the responsibility of the Department of Infrastructure and its responsible Minister
- local community engagement and communication for assets under construction
- consistent with the overall Water Grid communication strategy, development, approval and implementation of individual entity communications and stakeholder engagement plans and activities
- individual entity governance requirements, including strategic and operational plans and annual reporting
- delivery of individual entity education programs, including site tours
- individual entity websites and publications
- individual entity internal communications activities.

Implementation plan

Current activities

The SEQ Water Grid Communications Unit is being established in three phases:

Phase 1 — (completed) the introduction of a single point of contact for all SEQ Water Grid media enquiries. This function commenced on 4 May 2010. Actions completed include:

- The interim SEQ Water Grid Communications Unit was established and located in the SEQ Water Grid Manager's offices with the capability to deliver coordinated media responses.
- A single, central contact telephone number (operational 24 hours per day, seven days per week) and an email address have been established. This information has been provided to media representatives including the communications protocol changes with the implementation of the SEQ Water Grid Communications Unit.

The operations of this function are supported by agreed written processes and protocols, and a library of information and standard messaging approved by the content owners in the four bulk water entities.

Since establishment, the SEQ Water Grid Communications Unit has responded to 12 media enquiries, with an average turnaround time of less than one day. This has included hosting a journalist from the New York Times for a full day, providing information and site visits across the SEQ Water Grid.

Phase 2 — (completed) the introduction of coordinated SEQ Water Grid communications with the Minister's Office. These activities commenced on 31 May 2010 with the SEQ Water Grid Communications Unit establishing the capability to deliver coordinated SEQ Water Grid communications to, and on behalf, of the Minister's Office. This includes the preparation of briefing notes, possible parliamentary questions, questions on notice, estimates briefs and ministerials.

In the interim period this unit has been located in the offices of the SEQ Water Grid Manager, and is staffed by one temporary, full-time staff member. The operations of this function are supported by newly developed processes and protocols, developed in conjunction with the four bulk water entities, the Department of Environment and Resource Management and the Minister's Office staff.

Since establishment, the SEQ Water Grid Communications Unit has handled 18 items of relevant Ministerial correspondence.

Phase 3 — full implementation is planned for 1 July 2010. The delivery, structure and implementation plan for full implementation is outlined below.

Delivery model

The delivery model proposed is a central coordination model. The SEQ Water Grid Manager will staff and accommodate the SEQ Water Grid Communications Unit and, within agreed processes and protocols, coordinate SEQ Water Grid communications activities with the three other bulk water entities. Communications activities undertaken by the SEQ Water Grid Communications Unit will be delivered through the SEQ Water Grid brand. The three main delivery areas are media, Ministerial and proactive communications as detailed below.

- **Media** – the SEQ Water Grid Communications Unit will receive the enquiry, prepare a response, coordinate with the other bulk water entities as required, coordinate approvals with the Minister's Office and deliver the response. (Please refer to the agreed process document at **Attachment 2** SEQ Water Grid media protocols).
- **Ministerial** – the SEQ Water Grid Communications Unit will coordinate necessary SEQ Water Grid communications with the Minister's Office, ensure briefing papers are prepared by the entities, review and edit briefing papers for consistency, and coordinate approvals as appropriate. (Please refer to the agreed process document at **Attachment 3** Ministerial process for communications).
- **Proactive communications** – the SEQ Water Grid Communications Unit will implement a SEQ Water Grid proactive communications strategy. This proactive communications strategy is currently being finalised by the four bulk entities collectively. The individual bulk water entities will be responsible for preparing their own communications activities in line with their own responsibilities. The SEQ Water Grid Communications Unit will coordinate key whole of Grid messages and overseeing the SEQ Water Grid communications activities.

Attachment 4 SEQ Water Grid communications protocols - diagrammatically summarises the roles and responsibilities for these three areas.

Branding

The brand of the SEQ Water Grid will be established and provide:

- the SEQ Water Grid brand as the 'single voice' for the SEQ Water Grid, with the support of the entities
- a clearly articulated and agreed structure to communicate key whole-of-Grid messages with key audiences.

The branding strategy will provide guidelines as to when and how to use the SEQ Water Grid brand and individual entity brands collectively.

Attachment 5 SEQ Water Grid key messages and benefits – provides further details on the agreed key messages that support the SEQ Water Grid brand.

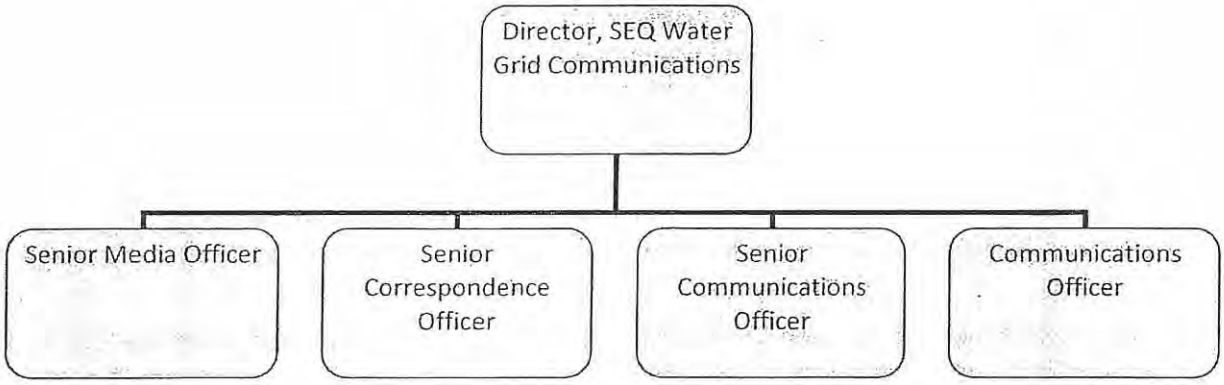
Attachment 6 Branding requirements - provides further details on the branding options to be undertaken by the different entities.

Organisational structure

There are currently 18.4 full-time-equivalent positions established in the four bulk water entities' communications teams (Seqwater 5.6; LinkWater 3; WaterSecure 8; SEQ Water Grid Manager 1.8). Approximately 7.8 full-time equivalent staff are currently involved in SEQ Water Grid communications activities.

The structure for the SEQ Water Grid Communications Unit consists of 5 full-time-equivalent positions as per the organisational structure below. Associated with this structure remains capability in each of the bulk water entities to provide support to the SEQ Water Grid Communications Unit, and also remain responsible for delivering those activities that are not within the scope of the project.

Figure 1: Proposed structure of the SEQ Water Grid Communications Unit



Resourcing and budget

The budget for the SEQ Water Grid Communications Unit has been established on a 'nil additional cost' basis. All four bulk water entities have reduced their current staffing and communications budgets to allow for an increased budget in the SEQ Water Grid Manager.

Functions now include a more comprehensive approach to media, correspondence and communications activities; some of these functions were previously performed by the Department of Environment and Resource Management on behalf of the four bulk water entities.

In summary, this has been achieved through:

- WaterSecure reducing its staffing numbers by 1 full-time-equivalent and reducing its budget by $280,000
- LinkWater reducing its budget by $150,000
- Seqwater reducing its staffing numbers by 0.5 full-time-equivalent and reducing its budget by $290,000
- the SEQ Water Grid Manager transferring 1.8 full-time-equivalent employees and $370,000 to the SEQ Water Grid Communications Unit and adding 3 full-time-equivalent employees and $720,000 (equivalent to the decreases in the other bulk water entities' budgets).

Overall, staffing numbers before the establishment of the SEQ Water Grid Communications Unit was 18.4 staff – after the establishment, staffing numbers will be 18.9.

Overall, total budget for communications activities before the establishment of the SEQ Water Grid Communications Unit was $4.81 million – after the establishment, total budget will be $4.75 million.

In addition, the education programs that are currently run separately by Seqwater (2 full-time-equivalent employees and $210,000 in budget), and WaterSecure (2.5-full-time-equivalent employees and $1,065,000 in budget) will be further aligned with an overarching SEQ Water Grid Education Program. Delivery of the education programs will continued to be undertaken by Seqwater and WaterSecure.

Process

The following outlines the processes that will be implemented and adapted to deliver the coordinated SEQ Water Grid communications capability.

- internal and external processes for managing communications within, and external to, the SEQ Water Grid
- a consolidated customer call centre service desk capability to address general enquiries relating to the SEQ Water Grid
- a 24/7 contact for all media enquiries pertaining to the SEQ Water Grid
- business continuity arrangements for whole-of-Grid communications
- updating the SEQ Water Grid Emergency Response Plan to reflect the SEQ Water Grid communications processes
- a proactive whole-of-Grid communications strategy.

Technology

The following outlines the technology outcomes developed to support the SEQ Water Grid communications capability.

- The SEQ Water Grid Communications Unit facilities and location will be provided by the SEQ Water Grid Manager in its current location.
- Information sharing will be facilitated through a collaboration tool with controlled access to all stakeholders. The SEQ Water Grid Technology Strategy is currently trialling a solution for SEQ Water Grid collaboration and it is intended to build upon this.
- Documentation will be stored separately within the SEQ Water Grid Manager's document management system and will comply with records management protocols prescribed by Queensland State Archives. This documentation will be made available to the four bulk entities through the collaboration tool mentioned above.
- The Ministerial and Executive Correspondence System (MECS) will be used to support Ministerial correspondence activities.
- Central contact details have been developed to provide general and media support. This will be integrated with a Blackberry service to ensure 24 hour responses for priority SEQ Water Grid communications.
- General SEQ Water Grid communications enquiries will be managed using the services of the Smart Service Queensland service desk capability with the integration of the current four service level agreements.
- A SEQ Water Grid website will be developed to provide general SEQ Water Grid communications to the public. This will be linked with current website facilities.

Information

The following points below outlines information that will be developed and managed by the SEQ Water Grid Communications Unit.

- SEQ Water Grid operational information will be collated from all entities involved and standardised and re-branded as SEQ Water Grid collateral.
- A standardised set of common SEQ Water Grid messaging responses will be developed for media, Ministerial and general responses.
- Fact sheets will be developed for all major SEQ Water Grid topics.
- A library of responses and a dossier of facts will be developed specifically to support the SEQ Water Grid Communications Unit.
- Content will be developed to support the SEQ Water Grid website and this will integrate with information available from the bulk water entities.
- A schedule of planned activities will be developed for all regular SEQ Water Grid communications.
- Information will be maintained by the SEQ Water Grid Communications Unit who will also consult and coordinate activities with all Grid Service Providers, the Department of Environment and Resource Management, the SEQ Distributor-Retailer entities and other stakeholders.
- A style guide and templates will be developed to ensure consistent visual identity and formatting of information aligned with the branding strategy.
- A centralised media monitoring service will be established to ensure proactive monitoring and management of SEQ Water Grid media related requests. This media monitoring service will be on behalf of the four bulk water entities.
- A roster will be developed in the SEQ Water Grid Communications Unit to ensure staffing to support 24 hour communications requirements and responses for priority communications.
- A SEQ Water Grid e-newsletter will be regularly published and disseminated to Grid Service Providers, the Department of Environment and Resource Management, the SEQ Distributor-Retailer entities and other stakeholders as relevant.

Summary

The SEQ Water Grid bulk water entities have worked collaboratively to establish a SEQ Water Grid Communications function. The SEQ Water Grid Communications Unit has been resourced with staff on secondment from the bulk water entities and the SEQ Water Grid Manager since 4 May 2010. Processes for SEQ Water Grid media management and Ministerial correspondence have been developed and implemented.

The SEQ Water Grid Communications Unit will be permanently established from 1 July 2010 with 5 full-time-equivalent employees. Its total budget will be $1,060,000 (including salaries) and will be funded by reductions in the four bulk water entities' current budgets, assuring no increase in the total whole-of-Grid communications cost.

Attachment 1 — SEQ Water Grid communications roles and responsibility matrix

SEQ Water Grid communications roles and responsibility matrix

The following table outlines the subject of possible communications activities, the brand to be used, and defines the organisation responsible for delivering the communication.

Note: All media and ministerial advice will be co-ordinated and delivered by the SEQ Water Grid Communications Unit for SEQ Water Grid operational issues.

Subject of communication Brand Audience	Examples	Delivery of communication
SEQ water policy Primary – Queensland Water Commission brand *Wider general public* *Ministers*	• Long term water security position • SEQ water strategy • Water policy and planning issues for South East Queensland • New desalination sites • Other planned asset construction • Water restrictions • Water consumption • Bulk water pricing • Supply of water to SEQ communities that face shortages • Coal seam gas water • Policy advice to the Minister (briefs, Questions on Notice, Possible Parliamentary Questions)	Queensland Water Commission
SEQ Water Grid operations Primary – SEQ Water Grid brand Secondary – Entity brand issue relates to *Wider general public* *SEQ Water Grid Manager's bulk water customers* *Ministers*	• Proactive communication such as SEQ Water Grid benefits campaign • Current / medium term water security position - includes dam levels, supply capacity • Operational aspects of water policy (eg *South East Queensland System Operating Plan*) – ie how do we operate the SEQ Water Grid within the Queensland Water Commission policy • Bulk water quality reports • Bulk water quality changes • Emergency community announcements caused at SEQ Water Grid wide level (Boil-water notice for multiple cities) • Fluoride / other issues • Water Industry communications • Operational changes – reverse flow of pipelines or reduced production of desalination supply	SEQ Water Grid Manager

Subject of communication Brand Audience	Examples	Delivery of communication
	• 12 month operating strategy – running plants • New / existing SEQ Water Grid Customers • Minor SEQ Water Grid augmentations – new connections, treatment plant upgrades • Public campaign on dam safety • Community and school education programs • Drowning at Hinze Dam • Operational advice to the Minister/s or politicians (briefs, Questions on Notice, Possible Parliamentary Questions, emergency events) • Project advice to the Minister (briefs, Questions on Notice, Possible Parliamentary Questions)	
Asset specific communication [1] **Primary - Entity brand** Secondary - Water Grid brand ***Local residents*** ***Technical interest groups*** ***Environmental groups*** ***Community groups*** ***Ministers***	• Somerset camping conditions • Stakeholder engagement - construction activity to local affected residents, community groups, local councillors • Dam safety signage at Wivenhoe Dam • Community support programs • Annual reports/strategic and operational plans • Internal entity communications – intranet, website, publications • Incident management (as per the Emergency Response Plan) • Communications regarding assets under construction that is the responsibility of the Department of Infrastructure and Minister Hinchliffe's office	Asset owner
Water and wastewater services **Primary – QUU, Allconnex, Unity Water** ***Retail customers***	• Local burst pipes loss of supply • Sewerage overflows • Water quality complaints • Boiled water notice for a single town • Retail pricing and billing	QUU Allconnex Unity Water

[1] After consultation with the SEQ Water Grid Communications Unit

Attachment 2 — SEQ Water Grid media protocols

TRIM reference: D/10/2894

SEQ Water Grid media protocols

Purpose

This process details the whole-of-Grid approach for:

- responding to a media enquiry for SEQ Water Grid operational activities
- approving and distributing media responses.

This process does not provide detail on the internal process for the SEQ Water Grid Communications Unit. Please refer to the process document: 'Internal process – Reactive media response development, approvals and distribution' for this information.

Responsibilities

Role	Actions and involvement in the procedure
Bulk water statutory bodies' communications (Seqwater, LinkWater, WaterSecure and the SEQ Water Grid Manager)	The bulk water statutory bodies' are responsible for: • providing factual information on an issue where pre-approved material is not available • managing the internal approval process within the bulk water authority, if necessary • providing the approved response to the Water Grid Communications Unit.
SEQ Water Grid Manager Chief Executive Officer	The SEQ Water Grid Manager Chief Executive Officer is responsible for approving the final content of the media response and/or speaking notes.
Spokesperson	The SEQ Water Grid Manager Chief Executive Officer is the interim SEQ Water Grid spokesperson for any media responses/media interviews of significant community interest. For all other general interviews, there will be an authorised spokesperson delegated.
Subject matter expert	The subject matter expert is responsible for ensuring the content of the media response and/or talking points, is factually correct. The subject matter expert will need to provide written approval for the final media response and talking points.
SEQ Water Grid Communications Unit	The SEQ Water Grid Communications Unit is responsible for: • receiving the media enquiry from the media outlet, Minister's Office or other Grid Participant • preparing the media response and/or talking points, taking into account the policy/business factors and ensuring the tone/angle of the document is written in plain English and is appropriate for the media genre • managing the approval process and ensuring any changes are accurate and consistent with previous responses • preparing the spokesperson, if required, for an interview • issuing the response to media directly or via the Minister's Office • managing the 'media cycle' for the story including monitoring and evaluating subsequent media coverage associated with the enquiry.

Definitions

Term	Definition
Bulk water authority communications unit	Bulk water authority communications unit refers to the communications function within the bulk water authorities of LinkWater, Seqwater and WaterSecure.
Media enquiry priority rating	A priority rating is assigned to a media enquiry to provide participants (including approvers) with guidance on response timeframes.
Media response	A media response is provided to reply to a media enquiry from a media outlet. The response can take the form of: • a written response to questions • face-to-face interview with the journalist • pre-recorded interview with the journalist.
Minister	There are two Ministerial offices that have responsibility for SEQ Water Grid assets. The responsibility is separated into two areas: • The Minister for Natural Resources, Mines and Energy and Minister for Trade is responsible for the SEQ Water Grid assets that have been 'handed-over' to the Queensland Government to operate. • The Minister for Infrastructure is responsible for the projects that are still in planning and/or construction phase that have not reached 'hand-over' stage.
Service level agreement	The service level agreement refers to the agreed timeframes and quality standards associated with the delivery of the activities associated with providing a whole-of-Grid media service.
Spokesperson	This is the person who is authorised by the Minister's Office to speak on behalf of the SEQ Water Grid operational activities. The SEQ Water Grid Manager Chief Executive Officer is currently the interim spokesperson, with this position to be undertaken by the Director, SEQ Water Grid Communications once the position is filled.
Subject matter expert	A subject matter expert is an individual or unit that is an expert in a particular area. A subject matter expert can be from any bulk water authority. Entity Chief Executive Officer approval is still required for information provided by a subject matter expert from their organisation.
SEQ Water Grid Communications Unit	SEQ Water Grid Communications Unit refers to the coordinated communications function within the SEQ Water Grid Manager.
SEQ Water Grid operational activities (refer to Communications Matrix)	SEQ Water Grid operational activities cover all SEQ Water Grid operations, including: • dam levels • water transfers across the SEQ Water Grid • bulk water quality • operational changes and modifications • desalination plant operations • Western Corridor Recycled Water Scheme production and water use • delivery of new assets on the ground • environmental performance of the SEQ Water Grid (e.g. lungfish, energy use, catchment sustainability etc.) • specific rural water operations • recreational use of storages and surrounding land • community education.

Process

Process

Step 1 – receiving a reactive media enquiry

- Identify the nature of the media request specifically:
  - the print/broadcast deadline
  - questions that need answering
  - if possible the story angle
  - who else the journalist has spoken to
  - knowledge of the topic.
- If the enquiry is received through a bulk water authority, take the enquiry (including the details above), inform journalist of the new SEQ Water Grid Communications Unit; and advise the SEQ Water Grid Communications Group of the enquiry via email on media@seqwgm.qld.gov.au and phone them on 3247 3000.
- SEQ Water Grid Communications Unit will need to:
  - advise the Minister's Office of the media enquiry
  - identify the media enquiry priority rating.

Step 2 – preparing a media response

- SEQ Water Grid Communications Unit:
  - Review the Q&A dossiers to identify if existing, pre-approved material can be used in the response.
  - If new information is needed, source this information from the relevant subject matter expert. For information from the bulk water authority, contact the relevant media contact in the bulk water authority.
  - Where necessary, coordinate the response from various entities.
  - Using the information gathered, draft a response for these questions.
- Bulk water authority communications (new information):
  - Draft factual information and obtain approvals following the internal process, including obtaining Chief Executive Officer approval if required.
  - Email approved response to SEQ Water Grid Communications Unit and a courtesy copy to other stakeholders (if relevant).

Step 3 – obtaining approvals

- SEQ Water Grid Communication Unit to coordinate approvals from:
  - subject matter expert (note this can be an individual in the SEQ Water Grid Manager or a bulk water authority. If it is from a bulk water authority, the bulk water authority communications will manage this approval.)
  - Director, SEQ Water Grid Communications Unit
  - SEQ Water Grid Manager Chief Executive Officer
  - Minister's Office.

Step 4 – distributing the media response

- SEQ Water Grid Communications Unit to distribute the response to the journalist or via the Minister's Office. For issues that relate to a bulk water authority, bcc the bulk water authority communications contact.

Responsibility

- SEQ Water Grid Communications Unit

Liaison points

- Media outlet
- Subject matter expert
- Bulk water authority communications unit
- Responsible Minister's office
- Queensland Water Commission
- SEQ Water Grid Communications Unit
- SEQ Water Grid spokesperson

Timeframe

- Ensure you determine the deadline for all media responses when they first come in.
- Responding to media enquiries is a top priority and all effort must be made to get back to the journalist as soon as possible.
- Refer to the whole-of-Grid media services process for detail on agreed timeframes under the service level agreement.

Knowledge management

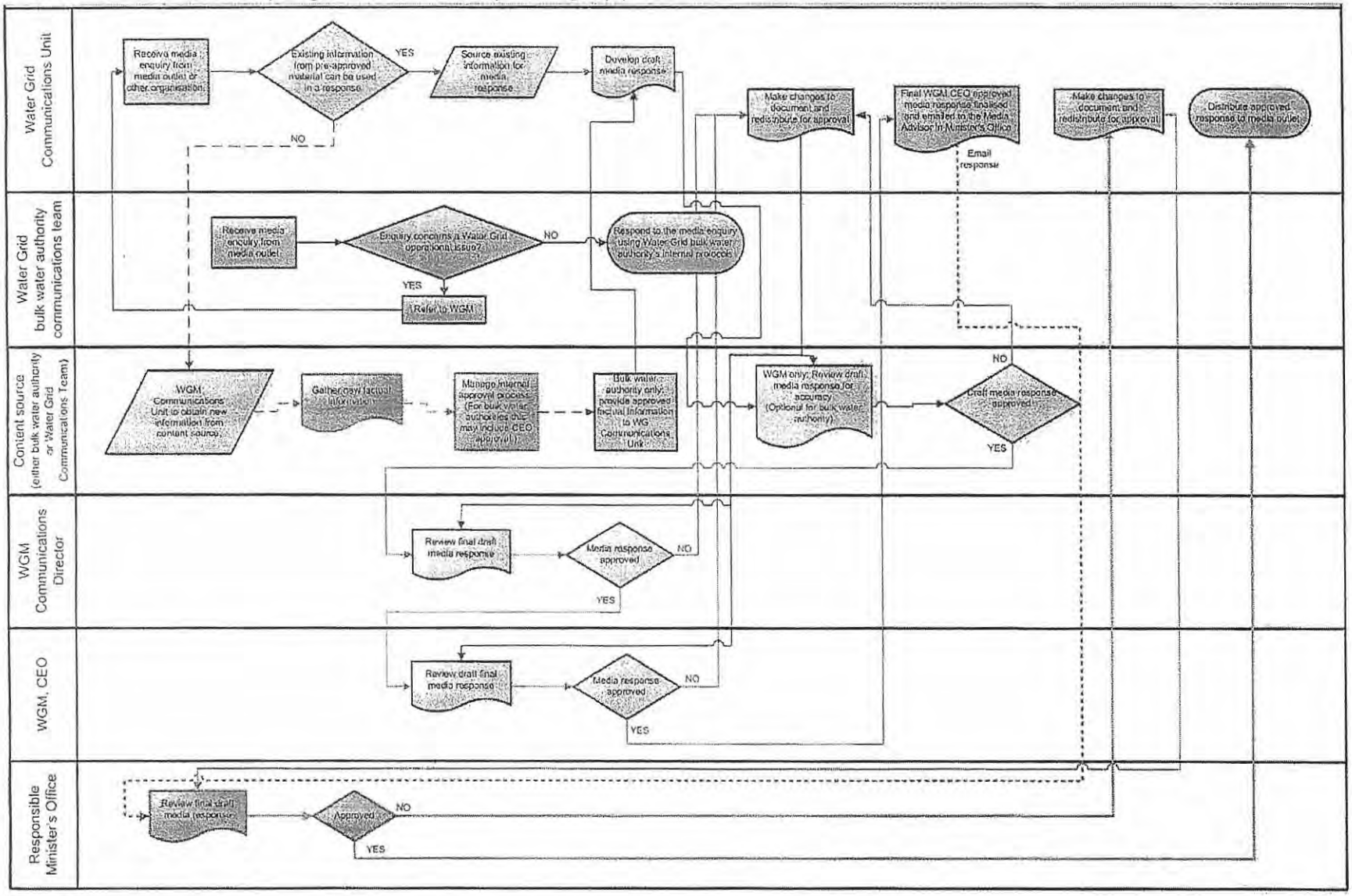
- Final versions of the media response must be sent to the Queensland Water Commission's Media Manager.

Media priority rating

The media enquiry priority rating assigns a recommended timeframe for the completion of a media response. The table below provides guidance on how to identify the media priority rating.

Media enquiry priority rating	Media variables	Business variables
Priority 1: response 1 to 5 hours	• The information is required for the hourly or nightly broadcast (radio or TV) news bulletin. • The information is required for a daily newspaper/online news for the next day's publication. • The information required is about an issue that has not been accurately reported in the media and this is our opportunity to rectify the situation.	• Media enquiry timeframe has been determined by the Minister's Office and or media outlet. • Media enquiry relates to an environmental/safety incident such as the safety of drinking water. • Media enquiry could result in negative publicity and harm the SEQ Water Grid's reputation. • Media enquiry relates to an incident that has significant customer impact.
Priority 2: response 5 to 72 hours	• The information required is for regional media, suburban weekly print media and/or weekend feature for print or broadcast media.	• Media enquiry timeframe has been determined by the Minister's Office and or media outlet. • Media enquiry is for a feature story that requires in-depth information about the SEQ Water Grid activities, business and/or customer details.
Priority 3: response 3 to 5 days	• Information is for a newspaper feature article or trade media. • Information is for a TV feature (e.g. children's show segment) or documentary.	• Media enquiry timeframe has been determined by the Minister's Office and or media outlet. • The media enquiry is not urgent and is being used for background information.

Workflow for developing content and gaining approvals



Legend

- Water Grid Communications Unit
- Bulk water authority communications team
- Either Water Grid Communications Unit or Bulk Water communications team
- Responsible Minister's office

Attachment 3 — Ministerial process for communications

Ministerial process for communication

Acronym List

Acronym	Name
CTS	Correspondence Tracking System
DG	Director-General
DDG	Deputy Director-General
MECS	Ministerial and Executive Correspondence System
DERM	Department of Environment and Resource Management
ECT	Executive Correspondence Team
UWPM	Urban Water Policy and Management
DLO	Department Liaison Officer

Purpose of the document

This document details the whole-of-Grid process for:

- responding to a ministerial request by the SEQ Water Grid
- developing self-generated ministerial collateral on behalf of the SEQ Water Grid.

Ministerial collateral

There are various types of collateral likely to be prepared for the Minister:

Ministerial collateral includes:

- ministerial briefing notes
- ministerial correspondence
- ministerial statements
- topics and précis list
- parliamentary briefing notes
- questions on notice
- estimates briefs.

A full glossary of ministerial and parliamentary collateral, including content, use and timeframes is included in the following table.

Glossary of ministerial collateral

Collateral	Use	Timeframes	Content
Ministerial Brief Template located at D/10/3031	Ministerial briefs are used to: • respond to requests • provide information • invite • provide advice • support a ministerial response • seek approval from the Minister.	A ministerial brief can be produced at any stage.	A ministerial brief should be no more than two pages long. If additional information is considered necessary, attachments may be included and referred to in the 'Background' section. Template specifies style and format.
Parliamentary Brief (PPQ) Template located at D/10/3117	PPQ's are used to provide the Minister with relevant and up-to-date information on any issue relevant to the SEQ Water Grid, in anticipation of a question without notice being asked in Parliament.	A PPQ is produced one to two weeks before Parliament sitting.	A PPQ covers the key points, response and any background information. A PPQ only contains information that can be released publicly, and must be consistent with other statements made by the Minister. Template specifies style and format.
Ministerial Statement Template located at D/09/7690	A ministerial statement is a speech made by the Minister, in Parliament, (before question time) on a subject from within the particular Minister's portfolio.	A ministerial statement is produced based from a Topic and Précis already sent to the Ministers office.	A ministerial statement is a three minute speech of a maximum of 350 words (between 12 - 15 paragraphs). Template specifies style and format
Topic and Précis List Template located at D/10/3086	A Topic and Précis list is a series of short paragraphs provided to the Minister before Parliament. These topics form a comprehensive Department of Environment and Resource Management wide list, which the Minister may choose from to make a ministerial statement in Parliament. Should this occur, the Minister may require a comprehensive statement on the selected topic within a very short timeframe (i.e. six hours)	The list is produced one to two weeks before parliament sitting.	Usually one to two paragraphs for each précis is provided. The topics and précis list is a formed from either: • emergent/controversial issues on which the Minister wishes to make a formal statement • major events/achievements relating to the portfolio • major reports relating to the portfolio following endorsement/approval from Cabinet.
Ministerial Correspondence	Often referred to as 'ministerials', this is all incoming or outgoing correspondence (letters, emails, faxes) addressed to, or signed by, the Minister. A request may be received to either: • prepare a response • take direct action • note that the correspondence has been received.	A ministerial correspondence may be received at any time. Timeframes would usually be given as a deadline provided on MECS, though generally five days are given for a reply to be returned to the Premier and 10 days are given for a reply to be returned to other Ministers and Members of Parliament.	There are standard opening and closing paragraphs, formats and writing conventions for Ministerial Correspondence, which differ for each signatory (Premier, Minister, Executive Member of government or Policy Advisor). Please refer to *Ministerial and executive correspondence handbook* and *A quick guide to ministerial and executive correspondence* for further information on formulating ministerial correspondence.
Question on Notice	Members of Parliament can lodge questions prior to Parliament sitting.	A Question on Notice would be produced at any stage within a month with varied response times allocated.	

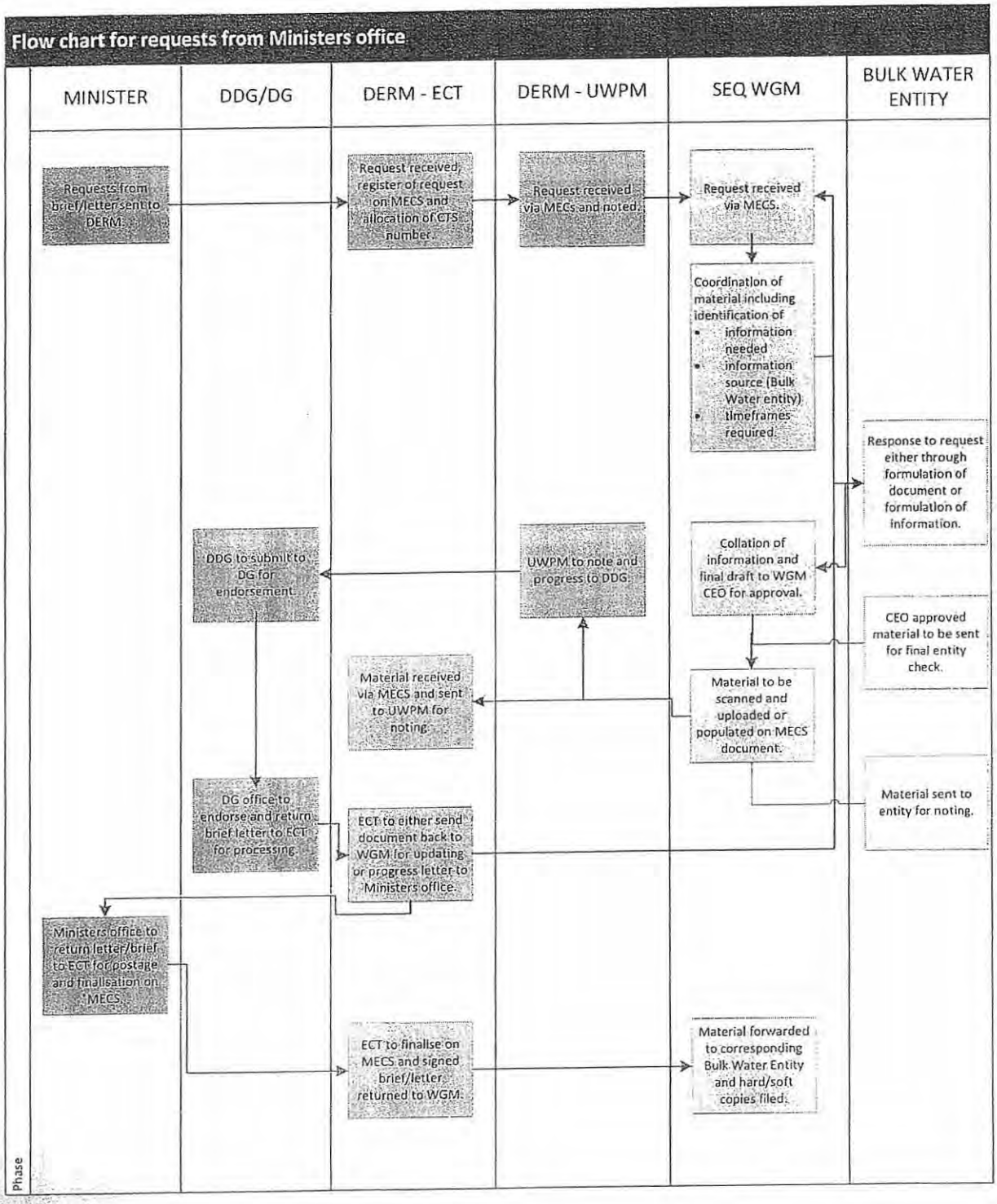
Ministerial collateral

The following table depicts the process for requests for all ministerial collateral.

Stakeholder	Communication Flow
Minister	Request sent from Minister's office to Executive Correspondence Team to register on MECS to allocate a CTS Number.
Department of Environment and Resource Management, Executive Correspondence Team	Request received from Ministers Office, registered on MECS, with allocation of CTS Number and emailed to Urban Water Policy Management (UWPM) and SEQ Water Grid Manager.
SEQ Water Grid Manager	Request received to SEQ Water Grid Manager via MECS. SEQ Water Grid Manager Communications Unit to coordinate preparation of material including: • identification of information required and timeframe to complete request • identification of corresponding entity to liaise for information Request sent to corresponding entity with explanation of timeframe and information required.
Bulk Water Entity	Information request received with explanation of timeframe, for response and return to SEQ Water Grid Manager Communications Unit.
SEQ Water Grid Manager	Collation of information, review by Director of Communications and presentation of final draft for endorsement by SEQ Water Grid Manager CEO. Final Draft scanned and 'checked in' on MECS with telephone call to Executive Correspondence Team if document is marked as urgent. Marked on MECS for Executive Correspondence Team approval, noting and forwarding to Urban Water Policy Management, Department of Environment and Resource Management.
Department of Environment and Resource Management, Executive Correspondence Team	Executive Correspondence Team to attach documents as necessary, update MECS and send to Urban Water Policy Management for review, noting and to submit to Deputy Director General.
Department of Environment and Resource Management, Urban Water Policy Management	Urban Water Policy Management to review, note and submit to Deputy Director General.
Deputy Director General	Deputy Director General's office to submit to Director General for endorsement.
Director General	Director General's office to return brief/ letter to Executive Correspondence Team for processing to the Minister's office.
Department of Environment and Resource Management, Executive Correspondence Team	Executive Correspondence Team to process letter to Minister's office.
Minister	Minister's office to return signed brief/letter to Executive Correspondence Team for postage and finalisation on MECS.
Department of Environment and Resource Management, Executive Correspondence Team	Signed brief returned via post to SEQ Water Grid Manager.
SEQ Water Grid Manager	SEQ Water Grid Manager Communications Unit to inform corresponding Bulk Water Entity and to note changes to individual process in correspondence management file.

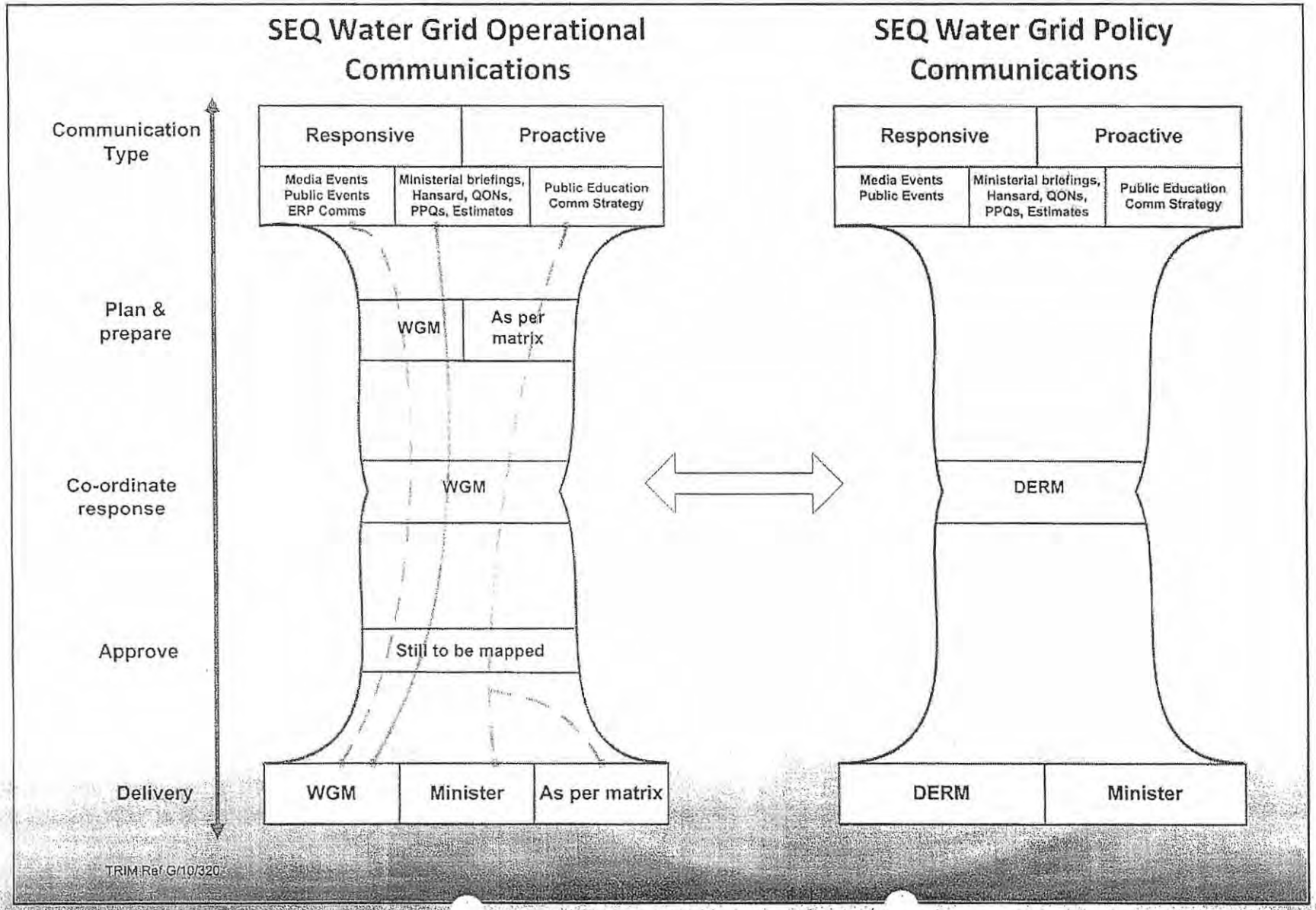
Flow chart for requests from Ministers Office

The following flow chart depicts the current process for requests for ministerial collateral.



Attachment 4: Communication protocols

Communication protocols



Attachment 5 — SEQ Water Grid key messages and benefits

SEQ Water Grid key messages and benefits

What is the SEQ Water Grid?

Positioning statement / main message *(What do we think?)*	Because... *(Why do we think it?)*	Supporting facts / examples *(How do we know that we're right?)*
The SEQ Water Grid is an industry leader in delivering safe, secure and sustainable water for South East Queensland – a sound investment for now and the future.	The SEQ Water Grid sustainably manages South East Queensland's drinking water through an infrastructure network of treatment facilities, new two-way pipes and existing pipelines. It moves water from selected sources across the region to where it is needed most.	The SEQ Water Grid is a collaboration of a number of organisations with unique functions that complement each other in providing the SEQ Water Grid. See below for facts and examples.

Grid benefits:

Positioning statement / main message *(What do we think?)*	Because... *(Why do we think it?)*	Supporting facts / examples *(How do we know that we're right?)*
The SEQ Water Grid provides South East Queensland with climate dependent and climate resilient water sources, managed efficiently with a strong conservation focus.	Safety (quality) The community can be confident in the quality of our water supply.	• A 50 per cent increase in drinking water quality monitoring. • Every month more than 17,000 laboratory tests are taken across the Water Grid, to make sure our drinking water supplies are safe. In addition, we also conduct daily online water quality tests across the whole region. This comprehensive testing program makes sure that your water is safe from catchment to tap. • The Queensland Government introduced legislation to regulate water quality, mandating that the industry must adopt a best practice framework for water quality

Positioning statement / main message *(What do we think?)*	Because... *(Why do we think it?)*	Supporting facts / examples *(How do we know that we're right?)*
		management.
	Security By protecting and sustainably managing existing water sources and creating new supplies, the SEQ Water Grid is vital in maintaining and developing the region's economic prosperity and lifestyle.	• The SEQ Water Grid has established a 50 year plan to ensure that water supply is guaranteed to the South East Queensland community. This plan builds on the infrastructure backbone already established by identifying future locations for desalination, recycling and surface water supplies. • The SEQ Water Grid's combination of climate dependent (dams/rainfall) and climate resilient (desalination and purified recycled water) water sources means that regardless of the weather patterns, South East Queenslanders can be guaranteed: – water supply – agreed quality of water supply – less severe water restrictions, and restrictions less often. • The SEQ Water Grid has a current supply capacity of 480,000 megalitres a year, up from 350,000 megalitres. Of this supply, 25 per cent is now climate resilient (alternative water sources including purified recycled water and desalinated water) where only five per cent was climate resilient in the past. • The SEQ Water Grid provides supply security to the South East Queensland region to meet the demands of future population growth and climate change. • Greater interconnection reduces outage times for customers - for example in the past twelve months water was transferred into the Caboolture region to alleviate the disruptions of plant outages.
	Sustainability By managing South East Queensland's drinking water sustainably from source to supply, the SEQ Water Grid will maximise water quality and quantity now and into the future.	• Eco systems continue to indicate high levels of health demonstrated through a report-card system. • The community understands and accepts the way in which the SEQ Water Grid is operated and enjoys recreational facilities associated with the SEQ Water Grid's natural and built assets. • The SEQ Water Grid is using drinking water catchment know-how, world-leading technology, and robust research programs to sustainably manage the region's water

Positioning statement / main message *(What do we think?)*	Because... *(Why do we think it?)*	Supporting facts / examples *(How do we know that we're right?)*
		supply. • The SEQ Water Grid works to minimise the impact of associated infrastructure on the surrounding environment, to ensure a sustainable approach to water management in South East Queensland.
	Flexibility By moving water to where it's needed most, the SEQ Water Grid delivers a continuous supply to the region.	An example of the SEQ Water Grid's flexibility is the measures put in place while work takes place on the upgrade of the Hinze Dam. The SEQ Water Grid has allowed the transfer of up to 140 megalitres per day of water from this catchment to other parts of the region, keeping the dam at the required level without wasting water.
	Reliability By integrating the region's water resources into one delivery system the SEQ Water Grid provides a dependable water system for South East Queensland.	• Over 65,000 megalitres per annum of new bulk transfer capacity has been commissioned into the SEQ Water Grid. Over 50,000 megalitres per annum can now be transferred between the Gold Coast and Brisbane regions. • A regional approach to asset maintenance has seen detailed inspections performed on all trunk mains to determine performance capacity. • To make decisions about how to maintain water security in the region, the SEQ Water Grid uses, WHATNET, the biggest urban resource management model of its kind in Australia. • New pipelines in the Water Grid are connected to a computer network that enables the entire region to be monitored and water supply to be controlled from one area. • The SEQ Water Grid is a strategic and operational leader in treated bulk-water supply.
	Efficiency By reducing the number of entities in the South East Queensland bulk and retail water value chain, new opportunities for maximising efficiencies can be captured.	• The new SEQ Water Grid management arrangements condensed South East Queensland's water industry from 22 separate organisations to just seven – four bulk water State Government owned Statutory Authorities and three new retail/distribution entities that will be fully operational by 1 July 2010. • Large specialist organisations facilitate sustainable water sector skills development. • When dams are full, desalination production and regional transfers of water will be minimised.

Positioning statement / main message *(What do we think?)*	Because... *(Why do we think it?)*	Supporting facts / examples *(How do we know that we're right?)*
	Transparency By providing the community with regular water quality information and more detailed billing, the Water Grid provides customers with a greater understanding of their water.	• The public now has unprecedented access to regional bulk water quality data through the internet, providing greater confidence than ever before in the quality of the water supply and also ensuring the SEQ Water Grid is publicly accountable for this quality.
	Equity By connecting water supplies across the entire South East Queensland region, access and security of water has become more equitable for urban, rural and environmental customers.	• The SEQ Water Grid endeavours to ensure o all residents in South East Queensland will experience the same level of water security o access to available bulk water for urban, rural and environmental customers.

Attachment 6 — Branding requirements

Branding requirements

The table below outlines suggested examples of where branding options may be used:

Entity / Water Grid brand	Single brand only	Water Grid brand (dominant) combined with entity brand (less prominent)	Entity brand (dominant) combined with Water Grid brand (less prominent)	Entity brand combined with Water Grid brand and key messages
SEQ Water Grid	All SEQ Water Grid Communication materials including: • QA dossiers • Fact sheets • Minister briefings • Hot issue briefs • Whole-of-grid strategic plans • Activity reports • Stakeholder presentations (about the SEQ Water Grid) All media relations including : • Media responses • Media releases • Talking points • Holding statements	• SEQ Water Grid corporate DVD • SEQ Water Grid corporate website and media portal • Visual displays at events – Grid display, half pipe, pull up banners	N/A	N/A
SEQ Water Grid manager	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Water quality information sheets	N/A	N/A	N/A
seqwater WATER FOR LIFE	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles	N/A	• Corporate website • Corporate DVD • Business cards • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)

Entity / Water Grid brand	Single brand only	Water Grid brand (dominant) combined with entity brand (less prominent)	Entity brand (dominant) combined with Water Grid brand (less prominent)	Entity brand combined with Water Grid brand and key messages
	• Uniforms • Merchandise • Conference papers • Entity only sponsorships			
WaterSecure	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles • Uniforms • Merchandise • Conference papers • Entity only sponsorships	N/A	• Corporate website • Corporate DVD • Business cards • Community grants collateral • Presentations/posters for conferences, events etc • Community education collateral – will contain key messages where appropriate • Award nominations – will contain key messages • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)
LinkWater	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles • Uniforms • Merchandise • Conference papers • Entity only sponsorships	N/A	• Corporate website • Corporate DVD • Business cards • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)

The content in this table needs further consideration and input from all entities in relation to scope. Once a decision is made on exactly where the above materials will sit in terms of branding, then costs around the design and development of a full brand guideline can be considered.

Attachment 6 — Branding requirements

Branding requirements

The table below outlines the brands that will be used for different communication activities:

Entity / Water Grid brand	Single brand only	Water Grid brand (dominant) combined with entity brand (less prominent)	Entity brand (dominant) combined with Water Grid brand (less prominent)	Entity brand combined with Water Grid brand and key messages
SEQ Water Grid	All SEQ Water Grid Communication materials including: • QA dossiers • Fact sheets • Minister briefings • Hot issue briefs • Whole-of-grid strategic plans • Activity reports • Stakeholder presentations (about the SEQ Water Grid) All media relations including : • Media responses • Media releases • Talking points • Holding statements	• SEQ Water Grid corporate DVD • SEQ Water Grid corporate website and media portal • Visual displays at events – Grid display, half pipe, pull up banners	N/A	N/A
SEQ Water Grid manager	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Water quality information sheets	N/A	N/A	N/A
seqwater	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles	N/A	• Corporate website • Corporate DVD • Business cards • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)

Branding requirements

Entity / Water Grid brand	Single brand only	Water Grid brand (dominant) combined with entity brand (less prominent)	Entity brand (dominant) combined with Water Grid brand (less prominent)	Entity brand combined with Water Grid brand and key messages
	• Uniforms • Merchandise • Conference papers • Entity only sponsorships			
WaterSecure	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles • Uniforms • Merchandise • Conference papers • Entity only sponsorships	N/A	• Corporate website • Corporate DVD • Business cards • Community grants collateral • Presentations/posters for conferences, events etc • Community education collateral – will contain key messages where appropriate • Award nominations – will contain key messages • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)
LinkWater	• Annual report • Strategic and operational plans • Internal stationary including memos, letter heads, envelopes • Internal newsletter • Vehicles • Uniforms • Merchandise • Conference papers • Entity only sponsorships	N/A	• Corporate website • Corporate DVD • Business cards • Physical assets	• Fact sheets • Media releases (out of the scope of the SEQ Water Grid Communications Team)

Tab 8

[+] Lodge a complaint

[+] Do I need a licence?

[-] **Business names**

- Who needs to register?
- Choose a name
- Your obligations
- Register a name
- Buy an extract
- Change a name
- **Change details**
- Renew a name
- Replacement certificates
- Cancel a name
- Fees
- Forms

[+] Business rights and responsibilities

[+] Specific businesses and industries

[+] Finances

[+] Scams targeting business

Change business name details

Printable view A A

You must notify us of any changes to the details recorded for your business name. This includes changes in:

- postal address
- business addresses
- email adress
- ownership, such as when the owner leaves or dies or new owner joins
- nature of the business
- owners' names, such as via marriage or legal change of name
- owners' residential address (individuals)
- owners' registered office address (for corporations not registered under the Corporations Act only).

Changing details

To update your business name details:

- complete Business Names Act Form 4 - Statement of change in certain particulars form (PDF 454 KB)
- pay late lodgement fees if necessary (see below)
- lodge your application (see the application form for lodgement details).

Fees

This service is free, if notification of the change is received within one month of it occuring.

Late fees

We charge late fees if you delay notifying us about changes to business addresses, owners or owners´ names.

If the form is lodged:

- between 1 and 2 months after change occurred, the fee is $15.95
- more than 2 months after change occurred, the fee is $47.35.

In some circumstances, we can waive the late fee if you have a reasonable excuse, but you must write us a letter explaining your reasons. We will process your letter within two weeks and contact you with our decision.

Signatories for possible circumstances

If an owner dies

Fill out the ´Ceasing to carry on business´ section of the form. Include the word ´deceased´, and the date he or she died. Show any remaining owners in the ´Continuing to carry on business´ section. The executor of the deceased´s estate and any continuing owners must sign the form.

If an owner (individual or corporation) cannot sign the form

A person who holds the power of attorney, or has written authority to sign the form on behalf of a person, can sign but they need to explicitly state this.

If an owner cannot be found

We can accept a statutory declaration stating why an owner cannot sign the form (as they cannot be found). This applies to an individual and a corporation.

If an individual holds power of attorney for a corporation, they can sign the form on the corporation´s behalf.

If an owner´s name has changed

If the owner has changed their name, they must include proof of identity documentation with the form (certified by a Justice of the Peace, Commissioner for Declarations or lawyer). Acceptable identification documents include passport, drivers licence, tertiary student card (with photo and signature), public service identity card, pension concession card, 18+ card, birth certificate or extract from a birth entry. If the proof of identity document is not in the correct name of the applicant, due to the applicant's marriage or legal change of name, it must be accompanied by a copy of the marriage certificate or, where relevant, a copy of the official document evidencing the change of name.

Correcting errors in your application details

Depending on the mistake you´ve made, you must send us a letter, fill out another form and/or provide a statutory declaration.

A spelling error in your business name

See change a business name.

The wrong date of change

If you wrote the wrong date on your Statement of change in certain particulars form, you must:

- lodge another signed Statement of change in certain particulars form with the correct dates and clearly mark the form as 'Amended'
- lodge a statutory declaration stating that the date of change entered on the form was incorrect and specify the correct date.

See change business name details.

Other mistakes on your original application

If you´ve made other mistakes on the application form, such as leaving out an owner´s name or using the wrong address, you must follow the same process as registering a business name:

- fill out the application form again and clearly write 'Amended' above the form title
- complete a statutory declaration stating the errors and changes (see below)
- lodge your amended application (see the application form for lodgement details).

The statutory declaration must:

- state that the original application was completed incorrectly
- specify which details were incorrect in the original application
- specify what the correct details are
- declare and identify missing business owners´ names. If an owner´s name was accidentally left off the original application to register a business name, and this person began business under this name from the date of commencement, you must state this in the statutory declaration. You must also provide certified proof of identity.

Other mistakes on your Statement of change

If you´ve made other mistakes on the statement of change form, such as leaving out an owner´s name or using a wrong address, you must follow the same process as registering a business name:

- fill out the statement of change form again and clearly write 'Amended' above the form title
- complete a statutory declaration stating the errors and changes (see below)
- lodge your amended statement of change (see the application form for lodgement details).

The statutory declaration must:

- state that the original form was completed incorrectly
- specify which details were incorrect in the original form
- specify what the correct details are declare and identify missing business owners' names. If an owner's name was accidentally left off the original statement of change and this person began business under this name from the same date of change, you must state this in the statutory declaration. You must also provide certified proof of identity.

Processing time

The processing time for your application depends how you lodge the forms:

- Up to 2 hours - in person at a Fair Trading counter
- Approximately 4 hours - in person at *Smart*Licence or call 1300 363 711 for regional locations
- 5-10 working days - by mail or fax to Registration Services
- Up to 5 working days - mail to *Smart*Licence
- At least 10 working days - in person at a Magistrates Court or QGAP office.

How useful did you find this information?

- select -

Type your comments here. If you would like a response, please include your name and email address.

Please only use this box if you wish to give us feedback about the website and the information available on this page. There are alternate methods if you wish to make a general enquiry or lodge a complaint.

Submit

Last reviewed 01/07/2010

A A

Tab 9

SEQ Water Grid

SEQ Water Grid Communications Strategy

~~FINAL: 2010-11~~ Working plan 2010-11

Last reviewed: 23 November 2010

About this document

This SEQ Water Grid Communications Strategy 2010-11 is divided into four parts, as detailed below:

Part one: Communications Strategy

Part two: Branding

Part three: Action plans

Part four: Evaluation, reporting and budget

Attachments

The following attachments are companion documents to this strategy:

- Attachment 4.1 — SEQ Water Grid key messages and benefits
- Attachment 4.2 — Branding requirements
- Attachment 4.3 — Marketing materials

Part one: Communications Strategy

Purpose

The importance of branding in the utility sector is fundamental to ensuring trust and support from both policy makers and the community.

The four brands that comprise the SEQ Water Grid have their own area of responsibility, with a low level of brand coordination that exists as members of the SEQ Water Grid. In order to build the profile and understanding of the SEQ Water Grid, a whole-of-Grid brand – the SEQ Water Grid – is established. To support this brand, the SEQ Water Grid Communications Unit will lead whole-of-Grid communications activity.

The SEQ Water Grid Communications Strategy 2010-2011 (working plan) (Communications Strategy), and all associated materials, will be implemented by the SEQ Water Grid Communications Unit, with the support of the bulk entities (SEQ Water Grid Manager, Seqwater, LinkWater, WaterSecure). The activities outlined will be conducted through a coordinated approach, where all entities work together to achieve the whole-of-Grid communications objectives. In addition, each entity will continue to interact with stakeholders essential to their individual business needs outside of this strategy.

The strategic approach for this Communications Strategy avoids a mass-media communications method and instead focuses on a targeted below-the-line communications approach, to deliver the best possible return on investment. While a mass-media approach reaches a vast audience promptly, a below-the-line targeted campaign creates long-term trust and sustainability, where audiences are encouraged to engage with the SEQ Water Grid brand, rather than simply witness it. This long-term engagement is a driving force behind this Communications Strategy.

All activity will work to ensure an accurate and consistent representation of the SEQ Water Grid as an industry leader in offering a safe, secure and sustainable water supply for South East Queensland.

Guiding principles and objectives

Guiding principles	Objectives
1. To position the SEQ Water Grid brand as an industry leader in offering safe, secure and sustainable water to South East Queensland.	1. To demonstrate aspects of, and raise awareness surrounding, the three key characteristics associated with the delivery of the SEQ Water Grid – safety (quality), security and sustainability. 2. To educate stakeholders on the roles and responsibilities of the entities that contribute to the SEQ Water Grid.
2. 'Single point of truth' – be a credible and trusted source of information on the SEQ Water	3. To introduce the SEQ Water Grid brand as the 'single voice' for the SEQ Water Grid. 4. To develop and distribute consistent, accurate and timely information to

Guiding principles	Objectives
Grid.	media and government departments as requested, to position the SEQ Water Grid as a trusted and credible source of information.
3. Minimise reputation risk and enhance the reputation of the SEQ Water Grid.	5. To build and maintain a strong, positive reputation where stakeholders trust the SEQ Water Grid as capable and reliable. 6. To gain balanced and positive media coverage for the SEQ Water Grid. 7. To understand community awareness and attitudes regarding the SEQ Water Grid.
4. Progressively build understanding around, and support for, the SEQ Water Grid.	8. To proactively develop interest in, and broad awareness of, what the SEQ Water Grid is, what it does, and why it benefits all South East Queenslanders.
5. Align and leverage the collective resources, networks and centres-of-expertise across the SEQ Water Grid.	9. To communicate consistent key messaging and SEQ Water Grid benefits as we engage with common stakeholders.
6. Increase understanding and appreciation of water science, management and conservation issues in South East Queensland.	10. To develop a coordinated SEQ Water Grid Education Program, to be delivered in addition to existing entity-specific education programs.

Audiences

The strategic approach driving this Communications Strategy targets four key audience groups:

- the South East Queensland community
- government and industry
- media
- SEQ Water Grid employees

Situation analysis

A situation analysis has been compiled for each of the four defined audience groups. The analysis looks at current perceptions towards the SEQ Water Grid for each of the audience groups, as based on research and anecdotal feedback. It is essential to understand current audience perceptions, in order to map out supporting, strategic activity to build the SEQ Water Grid brand. The situation analysis looks at where we are now and where we need to be in terms of having a strong brand presence in the market place, and finally our approach to get there. Our approach is then defined in supporting action plans (as listed in Part three: Action plan):

- SEQ Water Grid Community Plan
- SEQ Water Grid Education Plan
- SEQ Water Grid Government and Industry Plan
- SEQ Water Grid Media Relations Plan
- SEQ Water Grid Media Calendar 2010–11
- SEQ Water Grid Employee Plan

Situation analysis - South East Queensland community

(Supported by Part three: Action plans - SEQ Water Grid Community Plan)

A. Where are we now?	B. Where do we need to be?	C. What do we need to do to move from a to b?
• Now that the drought is over the relevance of the SEQ Water Grid is questioned. • Concerns exist about the rise in the cost of water – what are we paying for now the dams are full? • There is a lack of understanding around what the SEQ Water Grid does and how it works. What are the benefits? • Perceptions that the SEQ Water Grid is too complex for general public understanding. • Confusion exists over the different types of water (desalinated, purified water and treated dam water) – what does it all mean for me? • Resistance exists surrounding purified recycled water. • Exposure to negative media coverage works to shape public opinion. • Perception that the SEQ Water Grid is not being used as intended. • Perception that the Western Corridor Recycled Water Scheme and the Gold Coast Desalination Plant have been, or should be, mothballed. • Strong and well organised resistance exists to new desalination plants, from community and environment groups.	• The SEQ Water Grid is trusted by community stakeholders and widely regarded as a sound and valued investment in long-term water security for all South East Queenslanders. • The community understands the benefits of the SEQ Water Grid and the basic design – a diversified drinking water network moving water to where it is needed most. • The community understands the difference between water sources (including desalinated water, purified water and treated dam water) and recognises that they are all safe drinking options. • The SEQ Water Grid is viewed as an industry leader in delivering safe, secure and sustainable water for South East Queensland – a sound investment for now and the future. • Key community opinion leaders and relevant niche groups drive positive messages surrounding the SEQ Water Grid. • Community acceptance for recycled water usages. • Community acceptance of alternative, climate-resilient water sources. • The SEQ Water Grid is a whole-of-catchment urban water cycle.	• Undertake regular benchmark community research including focus groups and surveys, to best understand the views of the community (outside of media coverage). • Illustrate leadership in the industry. • Develop an integrated marketing and communications program that includes: – a comprehensive community education program that can be used for whole-of-Grid education, for both school groups and general public interest – whole-of-Grid career information packs for distribution at Universities, to encourage engagement with the water industry – a targeted communications approach that engages with key community opinion leaders and niche groups to enhance understanding around whole-of-Grid activities – a dedicated SEQ Water Grid website, which includes messages on the benefits of the SEQ Water Grid and interactive features to engage members of the public in the SEQ Water Grid process – a suite of additional marketing collateral to support all activity (detailed further in Attachment 4.3: Marketing materials TRIM D/10/3044). • Active rebuttal of inaccurate and negative reporting, responding with accurate, positive editorial. • Consistent, positive terminology.

Situation analysis - Government and industry

(Supported by Part three: Action plans - SEQ Water Grid Government and Industry Plan)

A. Where are we now?	B. Where do we need to be?	C. What do we need to do to move from a to b?
• Our stakeholders would like a more unified approach. • Unsure of how the bulk entities fit together in one coordinated approach. • There is limited awareness surrounding the key benefits of the SEQ Water Grid. • Individual entities conduct successful stakeholder engagement programs and there is an opportunity to enhance this function through additional whole-of-Grid engagement activities. • SEQ Distributor-Retailers are experiencing significant organisational change. • Substantial retail water price increases are planned over coming years (partly due to bulk water price increases).	• The SEQ Water Grid is trusted and well regarded by its key government and industry stakeholders ~~as a reliable, bulk treated water utility.~~ • There is broad awareness of the key benefits of the SEQ Water Grid among industry and government leaders. • The SEQ Water Grid is acclaimed as an Australian first and the success and learning's associated with the SEQ Water Grid are recognised by the government and industry. • The SEQ Water Grid demonstrates leadership in the Australian water industry. • All SEQ Water Grid bulk entities and SEQ Distributor-Retailers coordinate effectively in engaging key stakeholders, delivering key messages and building the reputation and trust of the SEQ Water Grid. • Sound awareness and understanding of SEQ Water Grid features and benefits exists among all SEQ Water Grid staff (bulk entities and SEQ Distributor-Retailers). • SEQ Distributor-Retailers acknowledge bulk water price increases reflect a sound investment in future water security. • Strong demand from industry for purified recycled water. • Government and industry stakeholders understand the benefits of the SEQ Water Grid.	• Conduct SEQ Water Grid educational sessions, including asset tours, with new and existing staff who work with the: – responsible Ministers' Offices – SEQ Water Grid Participants – SEQ Water Grid Customers • Deliver regular communication about the SEQ Water Grid's performance and/or operational issues using the following tools and channels: – regular face-to-face meetings with key stakeholders – whole-of-Grid information sessions – lunch-time boardroom briefings, after-work networking drinks, and half-day strategic workshops on key issues – comprehensive briefings to high-profile government and semi-government water policy advocates and opinion leaders – a monthly whole-of-Grid external e-newsletter – provide content for use on industry websites, to ensure the trickle-down effect for all information • Implement a targeted campaign to reach industry opinion leaders and influencers through information sessions, speaking opportunities and sponsorship arrangements. • Develop a network of advocates resourced with suitable information materials. • Identify and build relationships with leading water research and management bodies. • Provide clear and consistent key messages regarding bulk water price increases. • Identify and coordinate industry whole-of-Grid sponsorship opportunities. • Understand and engage with national water industry initiatives.

Situation analysis - Media

(Supported by Part three: Action plans - SEQ Water Grid Media Relations Plan and SEQ Water Grid Media Calendar 2010–11)

A. Where are we now?	B. Where do we need to be?	C. What do we need to do to move from a to b?
• Not sure if the SEQ Water Grid is operational or whether everything has been built yet. • Now the drought is over, the relevance of the SEQ Water Grid is questioned. • Don't know how the SEQ Water Grid works for example questions such as "Why can't water be moved from one dam to another?" • Several points of contact exist including State Government and council-owned organisations – confusion exists over who does what? • Perceptions that there are too many organisations and too complex – the media aren't aware of how the water industry in South East Queensland was operated before the SEQ Water Grid was introduced so now it seems even more complex. • There is low confidence in the SEQ Water Grid as a sound investment in long-term water security. • Not aware of what 'business as usual' means for the water industry (mains breaks, water quality issues etc). • Perception of Western Corridor Recycled Water Scheme and Gold Coast Desalination plant being mothballed. • Perception that the SEQ Water Grid isn't being used	• We are trusted, capable and respected operators of the SEQ Water Grid, delivering safe, secure and sustainable bulk treated water. • The media understands the benefits of the SEQ Water Grid, including the benefits of the institutional reform as well as the benefit of the interconnected infrastructure. • Business-as-usual activities are understood and accepted by the media and the community, including maintenance and water quality monitoring programs. • The SEQ Water Grid is recognised as a sound investment. • Strong rapport between SEQ Water Grid Communications Unit, Ministerial media officers and journalists.	• Since Tuesday 4 May 2010, we have adopted a 'single media voice' for SEQ Water Grid operational issues, to ensure information is consistent, accurate and timely. • To implement a 'single media voice' we have: – developed a spokesperson strategy to meet the needs of the media, with three levels of spokespeople. – developed the tools we need to deliver consistent information to the media. • To enhance journalists' knowledge of the SEQ Water Grid, a proactive media relations strategy will include: – technical briefings for journalists who actively report on the SEQ Water Grid – joint site tours of assets to show the linkages between Grid Participants – building relationships with key journalists and building trust in our water products (desalinated, purified and dam water). • Develop a whole-of-Grid media issues management plan and preparedness plan. • Consistent whole-of-Grid messages for all Grid Participants to use (Attachment 4.1: SEQ Water Grid key messages and benefits TRIM D/10/373). • Actively rebut inaccurate reporting with positive SEQ Water Grid messages.

Situation analysis - SEQ Water Grid Employees

(Supported by Part three: Action plans - SEQ Water Grid Employee Plan)

A. Where are we now?	B. Where do we need to be?	C. What do we need to do to move from a to b?
• SEQ Water Grid member organisations (bulk entities and SEQ Distributor-Retailers) have, and are, experiencing significant organisational change including recruitment of new employees and changed working arrangements. • The South East Queensland water industry reform process may not be well understood by some employees leading to: – low awareness of the rationale for, and benefits of, the SEQ Water Grid – poor understanding of how the overall SEQ Water Grid operates as a supply chain – confusion about the role of each member organisation within the SEQ Water Grid – low relevance of the broader SEQ Water Grid to the job role and activities of many employees – low sense of 'belonging' to the SEQ Water Grid • There are limited opportunities to interact and build relationships with employees of other SEQ Water Grid member organisations for many employees. • Currently low profile of leaders and senior management of SEQ Water Grid member organisations among many employees (other than within their own discrete organisations).	• All employees of SEQ Water Grid member organisations have an aligned, sound and accurate understanding of: – how the SEQ Water Grid is organised and the role of each member organisation within it – the benefits of the SEQ Water Grid in terms of being an industry leader providing a safe, secure and sustainable water supply for South East Queensland • All employees have a sense of membership of the SEQ Water Grid as well as their own respective organisations. • All employees consider their job performance, and the performance of their organisations, is relevant to, and has an influence on, the overall performance and reputation of the SEQ Water Grid. • The leaders and senior management of SEQ Water Grid member organisations actively advocate the role, features and benefits of the SEQ Water Grid to their employees. • Employees have trusting, effective and collaborative relationships throughout the SEQ Water Grid member organisations. • Employees are our best ambassadors for careers in the water industry.	• All employees have access to concise, accurate and timely information about the SEQ Water Grid including; – how and why the SEQ Water Grid was created – an overview of how the SEQ Water Grid operates and the roles of member organisations – key asset components of the SEQ Water Grid – broad performance outcomes and benefits for the SEQ Water Grid • All employees are aware of contemporary operational activities and achievements of the SEQ Water Grid. • Raise the profile of the leaders and senior management of SEQ Water Grid member organisations among employees, including the opportunity for employees to periodically hear and see the leaders of the SEQ Water Grid advocating its benefits and achievements. • Create opportunities for SEQ Water Grid employees to meet and develop an understanding of how each member organisation contributes to the success of the SEQ Water Grid. • Foster greater collaboration and relationships between employees across the SEQ Water Grid by creating opportunities for employees to interact socially. • The Employee Plan is implemented in conjunction with existing internal communication activities.

Positioning statement and key messages

Positioning statement

The SEQ Water Grid is an industry leader in delivering safe, secure and sustainable water for South East Queensland – a sound investment for now and the future.

The positioning statement helps to clearly communicate the benefits the SEQ Water Grid delivers and its product attributes to its stakeholders. It covers the three primary aspects of the SEQ Water Grid – safety (quality), security and sustainability. This positioning statement is underpinned by key messages.

Key messages

Key messages for the SEQ Water Grid were developed by the bulk entities and the Department of Environment and Resource Management and were approved in March 2010.

These messages cover seven key characteristics of the SEQ Water Grid, including the three key aspects that support the positioning statement:

Characteristic	Key message
Safety (quality)	The community can be confident in the quality of our water supply.
Security	By protecting and sustainably managing existing water sources and creating new supplies, the SEQ Water Grid is vital in maintaining and developing the region's economic prosperity and lifestyle.
Sustainability	The natural and built environment that comprises the SEQ Water Grid is sustainably managed.
Reliability	By integrating the region's water resources into one delivery system the SEQ Water Grid provides a dependable water system for South East Queensland.
Flexibility	By moving water to where it's needed most, the SEQ Water Grid delivers a continuous supply to the region.
Efficiency	By reducing the number of entities in the South East Queensland bulk and retail water value chain, new opportunities for maximising efficiencies can be captured.
Transparency	By providing the community with regular water quality information and more detailed billing, the SEQ Water Grid provides customers with a

Characteristic	Key message
	greater understanding of their water.
Equity	By connecting water supplies across the entire South East Queensland region, access and security of water has become more equitable for urban, rural and environmental customers.

A copy of the whole-of-Grid key messages is included in Attachment 4.1: SEQ Water Grid key messages and benefits.

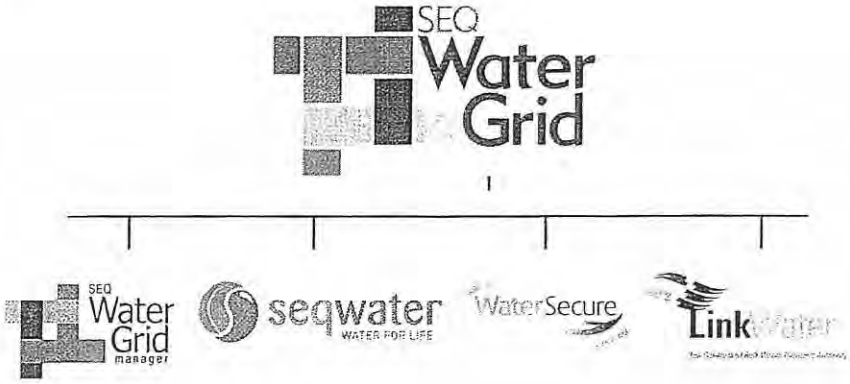
Part two: Branding

Corporate identity

The introduction of the SEQ Water Grid brand aims to provide a 'single voice' for the SEQ Water Grid, to ensure accurate and clear whole-of-Grid messaging for operational matters. An SEQ Water Grid corporate identity will support the suggested positioning statement and existing key messages to provide a voice for the SEQ Water Grid. The corporate identity for the SEQ Water Grid will include:

- a logo
- a tag line
- a colour palette
- and identity guidelines. [%1]

The diagram below illustrates the visual structure of the SEQ Water Grid and the positioning of the four supporting entities.



Branding will follow a marquee brand structure, where the marquee brand (SEQ Water Grid) will lead all whole-of-Grid activity, with the support of the entity brands where appropriate. Selected brand combinations include:

- the SEQ Water Grid brand only
- prominent SEQ Water Grid brand combined with less-prominent entity brand (part of the SEQ Water Grid).
- prominent entity brand combined with less-prominent SEQ Water Grid brand (on behalf of the SEQ Water Grid)
- entity brand only (i.e. SEQ Water Grid Manager, WaterSecure, Seqwater, LinkWater)

Attachment 4.2: Branding requirements, outlines the guidelines for the use of these branding considerations.

Marketing materials

Sound marketing materials are essential in establishing the SEQ Water Grid brand. The following will be added to existing materials:

- a SEQ Water Grid website
- a SEQ Water Grid DVD~~, including an ad-length version for potential use on TV, if required~~
- a stakeholder newsletter
- pull up banners and posters
- whole-of-Grid fact sheets
- ~~a mascot (to be considered further)~~
- ~~branded water products for use at events (desalinated water, purified water, treated dam water), with education labels to get members of the public comfortable with the different water sources – in keeping with the requirements of the regulator.~~

Marketing materials will be coordinated with what already exists across the SEQ Water Grid, to further leverage and develop the SEQ Water Grid brand. Marketing materials are detailed further in Attachment 4.3: Marketing materials.

Part three – Action plans

The Communications Strategy targets four key audience groups. Supporting action plans then outline all high-level activity that will drive brand awareness for each particular audience. Supporting action plans include the:

- SEQ Water Grid South East Queensland Community Plan
- SEQ Water Grid Education Plan
- SEQ Water Grid Government and Industry Plan
- SEQ Water Grid Media Relations Plan
- SEQ Water Grid Media Calendar 2010–11
- SEQ Water Grid Employee Plan

South East Queensland community

A coordinated approach to fostering whole-of-Grid brand awareness amongst members of the South East Queensland community is essential. The strategic approach to achieve this coordination will focus on two key areas and supporting activity plans, including the:

- **SEQ Water Grid Community Plan:** To raise awareness among the wider South East Queensland community through below-the-line communications activity, to ensure the SEQ Water Grid (including roles, features and benefits) is well understood. The actions supporting this plan aim to achieve short-term results~~, to be completed by June 2010.~~
- **SEQ Water Grid Education Plan:** To implement a SEQ Water Grid Community Education Program that specifically targets subset community audiences through tailored education. The actions supporting this plan are long term, where continuous in-school activity will, over time, shift public understanding, and acceptance of, the urban water cycle.

Currently, individual bulk entities engage with communities through in-school and asset-based education programs. Entities also attend local community events where relevant. Given this existing activity, there is an opportunity to enhance this work through whole-of-Grid messaging and additional whole-of-Grid initiatives. The strategic direction targeting the South East Queensland community will focus on linking all existing activity across the SEQ Water Grid, to ensure accurate and consistent whole-of-Grid messaging.

Rather than a mass-media approach, existing below-the-line activity will be further leveraged to target the South East Queensland community and create long-term relationships.

The desired outcome will see the SEQ Water Grid widely regarded by the community as a sound and valued investment in long-term water security. Community stakeholders will come to understand the different facets of the SEQ Water Grid and how everything connects to provide a safe, secure and sustainable water supply for South East Queensland.

Government and Industry

Over the last two years the individual bulk entities have built awareness around entity-specific roles and responsibilities among government and industry stakeholders. There is now an opportunity to enhance understanding of the SEQ Water Grid through whole-of-Grid initiatives directed at Government and industry stakeholders.

The strategic communications approach targeting government and industry stakeholders will therefore seek to create a credible and trusted source of information on the SEQ Water Grid.

Strategic initiatives will work to identify and educate influential government and industry representatives, to ensure a broad understanding of the SEQ Water Grid and foster a strong brand reputation. To achieve this reputation, collective resources, networks and centres-of-expertise across the SEQ Water Grid will be aligned and then leveraged to produce consistent messaging.

The desired outcome will see government and industry stakeholders understanding the SEQ Water Grid as a key asset in delivering safe, secure and sustainable water for South East Queensland.

Media

The communications strategy for targeting media will focus predominantly on creating a single-point-of-truth for SEQ Water Grid information to ensure the SEQ Water Grid becomes known as producing credible and trusted information.

Creating a single-point-of-truth for SEQ Water Grid information will be achieved through providing the media with consistent, accurate and timely information about the SEQ Water Grid, disseminated through the SEQ Water Grid Communications Unit.

The SEQ Water Grid Communications Unit will engage in regular communications with key media to ensure the SEQ Water Grid brand remains top of mind and to further educate media and enhance accurate reporting. This will be achieved through management of reactive media, regular mass media communication, targeted proactive media and targeted communication to journalists who actively report on the SEQ Water Grid. The SEQ Water Grid Communications Unit will provide advice on inaccurate and negative reporting, and if appropriate will accurately refute inaccurate reporting.

The desired outcome is to see an increase in balanced and positive media coverage for the SEQ Water Grid.

Employees

The communications strategy for targeting employees will focus on progressively building understanding around, and support for, the SEQ Water Grid among employees by aligning and leveraging the collective resources of the member organisations of the SEQ Water Grid.

This strategy in no way seeks to address or engage with non-operational operations, internal organisational change, culture or development issues for each SEQ Water Grid member organisation.

This strategy does however seek to foster the understanding and relevance of the SEQ Water Grid brand with employees of the member organisations by building the collective understanding of, and support for, the role, features, benefits and achievements of the SEQ Water Grid among this audience. This is particularly important given the considerable organisational change some member organisation have already been through, and some are currently going through, which may contribute to residual confusion about the role and benefits of the SEQ Water Grid among some employees.

The SEQ Water Grid Communications Unit will coordinate and leverage a range of targeted activities detailed in the Action Plan aimed at achieving the goals and objectives of the strategy.

Action plan – SEQ Water Grid Media Calendar 2010–11

The SEQ Water Grid Media Calendar 2010–11 provides an outline of proposed proactive media stories. It includes timings, proposed story angle/key messages and media outlet targets for each story. The Media Calendar will be supported by a media opportunities forward planning brief that details proposed media opportunities, announcements and hot issues; provided to the Office of the Minister for Natural Resources and Mines and Minister for Trade every week.

Timing	Story angle/key messages	Media target
July 2010	**Lead story: SEQ Water Grid 2nd anniversary** • General media release: launch of the SEQ Water Grid education program/community engagement – Up a Dry Gully competition.	Regional media Quest newspapers
	Background media relations: The SEQ Water Grid is operational • One-on-one face-to-face with Craig Johnstone (joint with QWC). Link to the release of the South East Queensland Water Strategy. • A weekly email on the SEQ Water Grid's operations to all South East Queensland media and a monthly email to AWA e-news.	Courier Mail, Craig Johnstone All SEQ media AWA e-news
August 2010 Two 'national weeks' in August – Australian Engineering Week (2–6 August 2010) and National Science Week (14–22 August 2010). The proactive stories this month will focus on highlighting the engineering and scientific work across the SEQ Water Grid.	**Lead story: Water quality** • Launch of the results for the second Western Corridor Recycled Water Scheme water quality report.	All media
	Supporting story: Innovation • Media release: highlighting the SEQ Water Grid and specific assets as an engineering 'feats'. • Pitch: human interest story to Q Weekend's 'ordinary people' on an engineer and/or scientist with a quirky/interesting background.	Courier Mail Q Weekend Australian Engineering Week 2010 official website
	Background media relations: The SEQ Water Grid is operational • One-on-one face-to-face with the journalist responsible for the Courier Mail's Weather Watch. • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	Courier Mail All SEQ media AWA e-news
September 2010	**Lead story: Water quality** • Media release: Customer Confidence Report – six months of results. Link story to World Water Monitoring Day (18 September 2010), including information on our regional water quality monitoring program. • Pitch: Kelly Higgins Devine – ABC Drive.	All media ABC Drive
	Supporting story: Maintaining our network • Media release: what we're doing to maintain our network in your area – localised media releases. (every three months)	Regional media and Quest newspapers
	Background media relations: Water quality • A weekly email on the SEQ Water Grid's operations to all South East Queensland media and a monthly email to AWA e-news.	All SEQ media AWA e-news
October 2010 National Water Week will be held on 17–23 October 2010 and the lead story for this month will link to the theme for this week.	**Lead story: Water security** • Media release: Gold Coast Desalination relaunch – link to National Water Week's theme.	All SEQ media
	Supporting story: SEQ Water Grid education program • General media release: announcement of the winners of the Up a Dry Gully competition.	All SEQ media.
	Background media relations: The SEQ Water Grid is operational • Asset tour for selected media. • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	Target active media. All SEQ media AWA e-news
November 2010	**Lead story: Safety** • Media release: launch of the weir safety campaign ahead of the wet season.	All media
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ media AWA e-news
December 2010	**Lead story: Safety and maintaining our network** • Media release: launch of the dam safety summer campaign. • Pitch: Creek to Coast on boating safety in our dam catchments during the summer holidays. • Media release: what we're doing to maintain our network in your area – localised media releases. (every six months)	All SEQ media Creek to Coast Regional and Quest media
	Supporting story: Water quality • Summer storm season is starting, which may result in residents experiencing a different taste in their water.	All SEQ media.
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ media AWA e-news
January 2011	**Lead story: Water security** • Media release: Australia Day re-opening of the Hinze Dam recreational facilities and new Visitor Centre/Interpretive Centre. Completion of Hinze Dam provides greater water security. • Pitch: John Schluter weekend 'Flashback' on where we've come from with Hinze Dam.	All SEQ media Channel 7
	Supporting story: Maintaining our network • Media release: what we're doing to maintain our network in your area – localised media releases. (every three months)	Regional media and Quest newspapers
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ media AWA e-news
February 2011	**Lead story: Water quality** • Media release: Customer Confidence Report anniversary – 12 months of water quality reporting • Pitch: improvements to our marine environment due to the Western Corridor Recycled Water Scheme and the artificial reef created by the Gold Coast Desalination Plant's marine structures.	All SEQ Media Creek to Coast or similar program.
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ Media AWA e-news
March 2011	**Lead story: The SEQ Water Grid is operational** • Media release: SEQ Water Grid's achievements to deliver water security to SEQ – link to World Water Day (22 March). • Media release: energy consumption at the Gold Coast Desalination Plant – lower than expected and fully off-set by renewable energy certificates (Queensland based). Release to coincide with Earth Hour held on 27 March 2011. • Pitch: human interest story on female professionals in the water industry – link to International Women's Day (8 March).	All SEQ Media Courier Mail Q Weekend or management trade media
	Supporting story: Maintaining our network • Media release: what we're doing to maintain our network in your area – localised media releases. (every three months)	Regional media and Quest newspapers
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ media AWA e-news
April 2011 National Youth Week is held in April each year. April stories will focus on highlighting youth and/or educational initiatives.	**Lead story: SEQ Water Grid educational program** • Media release: school media campaign (based on the school program) • Pitch: Day in the life of a water worker (youth orientated)	Children's TV CM educational supplement
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all South East Queensland media and a monthly email to AWA e-news.	All SEQ media AWA e-news
May 2011 National Career Development week is held in May each year. May stories will focus on highlighting the SEQ water industry as a career path.	**Lead story: Careers in water** • Media release: traineeships and career opportunities in the SEQ Water Grid. • Pitch: human interest story on trainees and/or graduates – link to asset tour for selected regional/local media, e.g. careers at the Gold Coast Desalination Plant.	All SEQ media Courier Mail Careers and regional media.
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all South East Queensland media and a monthly email to AWA e-news.	All SEQ media AWA e-news
June 2011	**Lead story: Maintaining our network** • Media release: what we're doing to maintain our network in your area – localised media releases. (every three months)	Regional media and Quest newspapers
	Supporting story: SEQ Water Grid education program • Pitch: how does water get to my tap – children's TV	Children's TV
	Background media relations: The SEQ Water Grid is operational • A weekly email on the SEQ Water Grid's operations to all SEQ media and a monthly email to AWA e-news.	All SEQ media AWA e-news

Action Plan – SEQ Water Grid Employee Plan

Goal What do we want to achieve?	All staff working for SEQ Water Grid participant organisations understand the role, key features and benefits of the SEQ Water Grid and are capable of advocating these to the broader community and other stakeholders.		
Guiding principles What are the principles that will guide our strategy?	**Guiding principle 2:** 'Single point of truth' – be a credible and trusted source of information on the SEQ Water Grid.	**Guiding principle 3:** Progressively build understanding around, and support for, the SEQ Water Grid.	**Guiding principle 5:** Align and leverage the collective resources, networks and centres-of-excellence across the Grid.
Strategic approach How will we communicate with and engage the target audience?	**Open, accurate and timely information to staff:** Proactively provide staff with timely, accurate and consistent information about the SEQ Water Grid - its role, operations, features and benefits	**Build and maintain 'SEQ Water Grid' cultural identity:** Foster and facilitate, among all staff working within SEQ Water Grid participant organisations, a strong sense of identity with, membership of, and trust and confidence in, the SEQ Water Grid.	

Implementation	Objectives	Activities	Timing	Budget	Outcomes
What are the objectives, activities, timing that will be used to deliver the strategy and what outcome we will achieve.	• **Objective 3** - To introduce the SEQ Water Grid brand as the 'single voice' for the SEQ Water Grid. • **Objective 5** - To build and maintain a strong, positive reputation where stakeholders trust the SEQ Water Grid as reliable, safe, and capable • **Objective 7** – Proactively develop interest in, and broad awareness of, what the SEQ Water Grid is, what it does and why it benefits all South East Queenslanders	Conduct regular SEQ Water Grid educational and induction sessions with existing and newly recruited staff from all SEQ Water Grid participant organisations Prepare a 'SEQ Water Grid Induction Pack' containing relevant information and collateral about the SEQ Water Grid including: • welcome to the SEQ Water Grid • overview of the SEQ Water Grid and the participating organisations, their role, operational activities and key assets • glossary of SEQ Water Grid terms • key contacts and sources of further information and help about the SEQ Water Grid	Bi-monthly from July 2010 (resourced partly from Skills Formation Strategy – SEQ Water Grid capability framework)	$2,000	**Sound awareness and understanding of the SEQ Water Grid** • Staff members understand the role, features and operations of the SEQ Water Grid and its benefits. • We have consistent positioning that is clearly articulated to all staff. • We have the capability and resources to provide simple, consisten relevant and timely communications to staff. • We have sustainable relationships with our staff – all staff have a sense of membership of the SEQ Water Grid. • Staff members understand, support and advocate the benefits of the SEQ Water Grid.
		Develop a whole-of-Grid ~~Distribute to all staff a copy of the SEQ Water Grid~~ e-newsletter ~~targeting staff from SEQ Water Grid~~ including features such as - what's new in the SEQ Water Grid, snapshot of overall SEQ Water Grid performance, staff profiles, whole-of-Grid innovations etc.	~~Monthly from September 2010~~First edition to be launched January 2011	NA	
		~~Coordinate with SEQ Water Grid participant organisations currently publishing internal staff newsletters to include a dedicated ongoing segment on the SEQ Water Grid~~	~~Ongoing from July 2010~~	NA	
	• **Objective 3** - To introduce the SEQ Water Grid brand as the 'single voice' for the SEQ Water Grid, and reduce confusion around the four separate brands that currently exist • **Objective 5** - To build and maintain a strong, positive reputation where stakeholders trust the SEQ Water Grid as reliable, safe, and capable • **Objective 4** - To develop and distribute consistent, accurate and timely information to the media and government departments as requested, to position the SEQ Water Grid as a trusted and credible source of information • **Objective 7** – Proactively develop interest in, and broad awareness of, what the SEQ Water Grid is, what it does and why it benefits all South East Queenslanders • **Objective 8** - Foster proactive collaboration between SEQ Water Grid participant service providers, enabling an overall coordinated and consistent approach to engaging with and managing common stakeholders	Conduct SEQ Water Grid CEOs Forum meetings at different locations among participant organisations, including at major SEQ Water Grid facilities.	Once a quarter from July 2010	NA	**Sound awareness and understanding of the SEQ Water Grid** • SEQ Water Grid leaders actively model and advocate 'whole-of-Grid' perspectives. • Staff members from SEQ Water Grid organisations are increasingly exposed to other SEQ Water Grid staff and thereby gain greater insights into 'whole-of-Grid' operations and perspectives. • We have consistent positioning that is clearly articulated to all staff. • We have the capability and resources to provide simple, consistent, relevant and timely communications to staff. • We have sustainable relationships with our staff – all staff have a sense of membership of the SEQ Water Grid. • Staff support and advocate the benefits of the SEQ Water Grid. • Open, accurate, timely communication.
		Coinciding with CEOs Forum meetings at various SEQ Water Grid facilities, conduct staff briefing sessions showcasing and involving all attending SEQ Water Grid CEOs thereby demonstrating a united 'whole-of-Grid' perspective among senior management of participating SEQ Water Grid organisations.	Once a quarter from July 2010	NA	
		Where feasible and appropriate, whole-of-Grid governance groups conduct meetings at different SEQ Water Grid participant organisations and facilities.	Ongoing from July 2010	NA	
		Establish 'SEQ Water Grid Innovation Awards' to be awarded to staff from participating SEQ Water Grid organisations for new work methodologies, assets, innovations, achievements which have a clear 'whole-of-Grid' focus, purpose and benefit.	Annual, to be launched as part of the e-newsletter ~~from 1 July 2011~~	NA	
		Identify and encourage appropriate team-based social and sporting activities involving staff from all participating water organisations. Appropriate and relevant SEQ Water Grid branded clothing and material may be considered as part of approved activities. These activities and events may include: • corporate fun run and similar events • Dragon boat team • family fun days at appropriate South-East Queensland venues (including SEQ Water Grid facilities) • SEQ Water Grid trivia nights	Ongoing from August 2010	$10,000	

Part four – Evaluation and reporting

Evaluation is essential in ensuring objectives are achieved and future implementation activities are enhanced. The following evaluation activities should be undertaken to determine the success of this Communications Strategy.

Objective	Performance and evaluation measure
1. To demonstrate aspects of, and raise awareness surrounding, the three key characteristics associated with the delivery of the SEQ Water Grid – safety (quality), security and sustainability.	• Site tour feedback is collected and demonstrates a high level of understanding and approval. • The SEQ Water Grid Community Education Program is developed and implemented to target the South East Queensland community through education over the next 12 months (1 July 2010 – 30 June 2011)
2. To educate stakeholders on the roles and responsibilities of the entities that contributes to the SEQ Water Grid.	• Attend and speak at relevant industry events, where at least 24 (2 per month) speaking/event attendance opportunities are secured and completed by 30 June 2011. • Conduct regular surveys with government and industry stakeholders to determine the effectiveness of the Communications Strategy in achieving its stated objectives.
3. To introduce the SEQ Water Grid brand as the 'single voice' for operational mattersthe ~~SEQ Water Grid~~, and reduce the confusion that currently exists around the four separate brands.	• The SEQ Water Grid Communications Unit is established, with clear roles and responsibilities that are accurately carried out to produce a SEQ Water Grid 'single voice'.
4. To develop and distribute consistent, accurate and timely information to media and government departments as requested, to position the SEQ Water Grid as a trusted and credible source of information.	• Internal audit shows timely dissemination of media and ministerial enquiries, through the SEQ Water Grid Communications Team. • Reactive media is responded to within agreed service level standards (as per protocols).
5. To build and maintain a strong, positive reputation where stakeholders trust the SEQ Water Grid as capable and reliable.	• Attend and speak at relevant industry events, where at least 24 (2 per month) speaking/event attendance opportunities are secured by 30 June 2011.
6. Gain balanced and positive media coverage for the SEQ Water Grid.	• Proactive media materials are developed and provided to relevant media outlets within agreed timeframes (as per Media Plan). At least 24 (2 per month) proactive media opportunities are offered to media by 30 June 2011. • Media coverage is balanced and fair.
7. To understand community awareness and attitudes regarding the Water Grid.	• Market research is collected (utilising existing market research where possible) and surveys and focus groups are coordinated to gain a clear understanding of community awareness and attitudes towards the SEQ

Objective	Performance and evaluation measure
	Water Grid.
8. To proactively develop interest in, and broad awareness of, what the SEQ Water Grid is, what it does, and why it benefits all South East Queenslanders.	• Proactive media materials are developed and provided to relevant media outlets within agreed timeframes (as per Media Plan). At least 24 (2 per month) proactive media opportunities are offered to media by 30 June 2011.
9. To foster proactive collaboration between SEQ Water Grid participant service providers, enabling an overall coordinated and consistent approach to engaging with, and managing, common stakeholders. Note: individual Grid participants will continue to conduct their own stakeholder engagement as and when needed.	• Stakeholder survey to determine whether perceptions around the SEQ Water Grid match the characteristics of a reliable, safe, capable and trusted utility.
10. To develop a coordinated SEQ Water Grid Community Education Program, further building on education activity that currently exists in the South East Queensland water industry.	• Market research is conducted to gauge current industry activity, to further leverage all SEQ Water Grid related community education. • An SEQ Water Grid Community Education Program is implemented and reviewed in terms of education impacts in South East Queensland.

Budget

A budget for the Communications Strategy and associated activity will be provided as part of the SEQ Water Grid Manager's 2011 Operational Plan.

Attachments

The following attachments are companion documents to this strategy:

- Attachment 4.1 — SEQ Water Grid key messages and benefits
- Attachment 4.2 — Branding requirements
- Attachment 4.3 — Marketing materials

Tab 10

(1)

Queensland Government

Ref CTS 19311/10

25 OCT 2010

Mr Gary Humphrys
Chair
SEQ Water Grid Manager
PO Box 16205
CITY EAST QLD 4002

Office of the
Minister for Natural Resources,
Mines and Energy and
Minister for Trade

Dear Mr Humphrys

I write in relation to seeking advice regarding options to and benefits of releasing water from key storages in anticipation of major inflows over the coming summer.

I understand that the key Water Grid storages are at 100 per cent of storage capacity going into the traditional wet season, with forecasts of higher than median rainfall and the prospect of multiple flood events.

I am also advised that our water supply is more secure than ever before, due to storages being full, key Water Grid projects completed and ongoing water efficiency.

I seek your urgent advice about whether this water security provides an opportunity to reduce the volume stored in key dams as a means of reducing the severity, frequency and duration of flooding in downstream areas.

In doing so, I note that recent releases from Wivenhoe Dam have resulted in significant inconvenience and isolation for residents in some downstream areas. With the catchments saturated, I understand that even quite minor rainfall events will result in further water releases and further inconvenience for these residents.

By end November 2010, I would appreciate your advice as to the available options and the likely benefits. At a minimum, you should review the operation of Wivenhoe, North Pine and Leslie Harrison dams. At least for Leslie Harrison Dam, this would be a return to standard operating procedures prior to the drought, when the dam was routinely drawn down to 95 per cent of capacity to minimise the impacts of storms on downstream residents.

I also seek your confirmation that these options would not significantly impact upon our current water security, measured as the probability of needing to reintroduce Medium Level Restrictions over the next five to ten years.

Level 17
61 Mary Street Brisbane 4000
PO Box 15216 City East
Queensland 4002 Australia
Telephone +61 7 3225 1861
Facsimile +61 7 3225 1828
Email nrmet@ministerial.qld.gov.au
ABN 65 959 415 158

Queensland Government

Office of the
Minister for Natural Resources, Mines and Energy and Minister for Trade

I emphasise that this is only a temporary measure, reflecting that dams are full prior to the commencement of the traditional wet season. I expect that your advice will include a clear date or trigger beyond which dams will be allowed to fill to their full supply level.

Thank you in advance for your assistance.

Should you have any further enquiries, please feel welcome to contact Mr John Bradley, Director General, Department of Environment and Resource Management on [redacted]

Yours sincerely

STEPHEN ROBERTSON MP

Level 17
61 Mary Street Brisbane 4000
PO Box 15216 City East
Queensland 4002 Australia
Telephone +61 7 3225 1861
Facsimile +61 7 3225 1828
Email nrmet@ministerial.qld.gov.au
ABN 65 959 415 158

Protocol for the Communication of Flooding Information for the Brisbane River Catchment - including Floodwater Releases from Wivenhoe and Somerset Dams

OBJECTIVE

The purpose of this protocol is to outline the arrangements for the Brisbane, Ipswich and Somerset Councils, relevant Queensland Government agencies and the Bureau of Meteorology, which will ensure the provision of consistent and robust information to the community, concerning potential flooding impacts for the Brisbane River catchment, including release of floodwater from Wivenhoe and Somerset Dams.

The intent is to ensure that consistent, harmonised information, based on an agreed single technical report, is communicated to the public in a way that contributes to resilient communities.

BACKGROUND

Queensland's disaster management arrangements, based on disaster management groups at local, district and state level, ensure the collaborative and effective coordination of information for all hazards.

Existing local, district and state disaster management and hazard-specific plans outline arrangements and structures for disaster management, or the hazard, and amongst other things, identify the need for coordination of public communications.

This protocol adds to such plans by outlining specific arrangements necessary when advice to the community needs to be based on technical assessments from hazard-specific primary agencies and other complementary stakeholders across federal, state and local governments.

Factors such as storm surges, tides, creek flooding, flooding from the lower Brisbane River, including Lockyer Creek and the Bremer River, will influence inundation levels in Brisbane.

Wivenhoe Dam controls approximately half of the Brisbane River catchment above Brisbane City. The operational strategy for water release from Wivenhoe and Somerset Dams is governed by the *Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam*, henceforth referred to as the Flood Mitigation Manual.

This protocol also covers the possibility that, during an above-average wet season, the water supply level of the dams may be marginally reduced, on a temporary basis, by small water releases. The water supply level would be returned to normal prior to the conclusion of the wet season, to avoid affecting water supply security. These changes, if they proceed, will ultimately be incorporated into the Flood Mitigation Manual.

GENERAL DECISION MAKING - GUIDING PRINCIPLES

- Protection of public safety is paramount throughout both this Protocol and the Flood Mitigation Manual;

- Impact on the community upstream or downstream is a legitimate consideration of any risk assessment;
- Regular and consistent communications within government and to the public, in relation to flooding impacts, are essential;
- Decision-making chains regarding the communications strategy and disaster management should remain flexible and highly responsive;
- The Flood Mitigation Manual is used to determine how Wivenhoe and Somerset Dams will be operated during flood events.
- This Protocol does not infringe the right of any party to issue information in line with their responsibilities.

PROCESS OF COMMUNICATION

There are three stages in the process of communication:

- Monitoring and Assessment
- Briefing and Activation
- Public Communications

Monitoring and Assessment

Communications with the public on flooding information, including floodwater releases, are based on a continuous process of monitoring and technical assessment. The process is dynamic and evolves according to the event, but will normally contain the following steps:

- Routine monitoring of weather events and dam levels by relevant agencies via established systems and procedures;

- The Bureau of Meteorology (BoM) provides weather forecasts and warnings (e.g. Tropical Cyclone, Severe Weather, Severe Thunderstorm, Flood). In the event of heavy rain and runoff in the Wivenhoe and/or Somerset Dam catchments, BoM and the Queensland Bulk Water Supply Authority (Seqwater) discuss modelled inflows to Wivenhoe and/or Somerset Dam, and downstream flood levels.

- Councils monitor, to the extent that they are able, creek levels, local runoff and flash flooding, consult with BoM and Seqwater on other potential events upstream that may contribute to and aggravate the situation.

- Seqwater discusses and models implications of the inflows on the necessary floodwater release from Wivenhoe Dam and/or Somerset Dam. The floodwater release strategy is a balance between releasing the water quickly enough so that the flood storage capacity is available if another major rain event occurs, versus minimising downstream flooding impacts (human safety and property damage) from the releases.

- Seqwater calculates the floodwater releases according to dam levels and predicted weather events in accordance with the Flood Mitigation Manual. A fundamental principle is that all floodwater should be released from the dams within seven days of the flood event peaking in Wivenhoe or Somerset Dam. This ensures the dams can cope with closely spaced major rain events.

- Seqwater shares predicted floodwater releases with BoM and with the Councils.

- Councils with the ability to monitor flooding share information on the status of

the Brisbane River catchment and its river systems with each other, BoM, Seqwater.

- BoM undertakes modelling of the Brisbane River catchment and its river systems using Seqwater advice of actual and projected Wivenhoe Dam and/or Somerset Dam releases when these are occurring, or are expected to occur.

- BoM participates in technical discussions with Seqwater, Brisbane City Council, Ipswich City Council and Somerset Regional Council as necessary, to share modelling results. The discussions aim to establish a technical agreement on the flood situation, on which public communications should be based.

- Councils with the necessary resources and expertise undertake modelling, form predictions, identify flood inundation areas and assess impacts for their communities, and regularly share this information with all relevant parties. Councils without the necessary resources and expertise will rely on information from other agencies to complete the impact assessment for their communities.

During this continuous process, it may become apparent to either BoM, local governments or Seqwater that the situation is likely to result in public safety issues.

These public safety issues may arise from a decision to release floodwater, a significant change in the severity and scope of the event, or a pre-agreed trigger-point being reached.

Any of the agencies may initiate the public communications process and engage with the disaster management arrangements as appropriate.

The trigger points for commencing public communication of flooding information are defined according to an agency's responsibilities.

The initiating agency will instigate a technical staff teleconference. Decisions from the teleconference will be distributed to senior management and media representatives of each agency.

In these circumstances all agencies agree that technical advice will form the basis of public communications messages.

- In every case of floodwater release from Wivenhoe or Somerset Dam, Seqwater coordinates the completion of the Technical Situation Report - TSR (Appendix C) and provides the Report to the SEQ Water Grid Manager (according to their Emergency Response Plan), and to relevant local governments.

- In other circumstances where a formal technical statement would enhance clarity, the local or state agency initiating the public communication of flooding information will pull together relevant information from other agencies in the form of a TSR. If initiated, the TSR should be circulated to all parties.

Briefing and Activation

If public safety is considered to be at risk, consideration will be given to the activation of the disaster management arrangements, if not already activated.

1. Councils will consider activating their Local Disaster Management Groups (LDMGs);

2. LDMGs will inform the relevant District Disaster Coordinators (DDCs);

3. The Queensland Police Service (QPS) will consider initiating disaster management actions as provided for under the *Disaster Management Act 2003*;

4. In the case of floodwater release:

   (a) the SEQ Water Grid Manager will alert the Director-General (DG) of the Department of Community Safety (DCS), DG Department of Environment and Resource Management (DERM), and the local governments

   (b) DG DCS will inform the DG of the Department of Premier and Cabinet (DPC) - the Chair of the State Disaster Management Group (SDMG) and will activate the State Disaster Coordination Centre (SDCC). DG DCS will also inform the Minister for Police, Corrective Services and Emergency Services

   (c) DG DERM will inform the Minister for Natural Resources, Mines and Energy

   (d) DG DPC will inform the Premier;

5. In the case of an extreme event, the Crisis Communications Network, chaired by DPC, may be activated at the direction of the SDMG Chair to coordinate public messaging from BoM, Seqwater, SEQ Water Grid Manager, QPS, relevant Councils and DCS as per this protocol;

6. In the case of a non-disaster, public communications will be in accordance with existing arrangements, supported, where appropriate, by this protocol.

Public Communications Issues

Each agency has its own responsibilities to issue information commensurate with their role without prior approvals. The obligation under this protocol is to share that information with other agencies and operate in a fully consultative process to ensure consistent public information.

The BoM, Local Governments and relevant State Government agencies agree to maintain continual discussions, to ensure that conflicting information is not released to the public at any time. Genuine efforts should be made to ensure consistency by basing public communications on technical reports. Inter-agency consultation should not cause delays in the issuance of public warnings. All agencies agree to exchange public communications at time of release. No power of veto to any organisation is implied under this protocol.

Harmonised public communications messages will be released from the following agencies:

- **Bureau of Meteorology** - concentrating on Flood Warnings which are widely disseminated to the BoM website, agencies and the media. BoM also participates in media (radio, television, newspaper) interviews to provide factual information regarding observed and forecast weather conditions, rainfalls and water levels;

- **Local Governments / Local Disaster Management Groups** - concentrating on the effects of weather related events and safety for their local communities and residents, and the impacts on councils' assets. Local governments have primacy of public communications within their community. Community service

announcements from local governments will be shared with the relevant agencies, prior to public release if time allows;

- **SEQ Water Grid Manager** - if floodwater releases from Wivenhoe and Somerset dams are involved, the SEQ Water Grid Manager concentrates on the communication aspects of release timings and duration of effects as the State's lead communication agency on floodwater release. Seqwater operational staff are to ensure that technical information is communicated to the SEQ Water Grid Emergency Response Team (if activated), the SEQ Water Grid Communications Unit and relevant local governments.

If necessary these will be augmented by:

- **Queensland Police Service** - concentrating on specific community safety messaging during operations;

- **Department of Community Safety** - concentrating on general safety matters regarding flooding;

- **Department of Premier and Cabinet (extreme events only)** - concentrating on consistent messages to media and agencies concerned.

Event-specific information will be released to the public as frequently as required by the severity and scope of the event. Timings of media releases will be dependent on the event, guided by the frequency of technical reports and may range from once a day to once an hour.

In the case of floodwater release from Wivenhoe and/or Somerset Dam, SEQ Water Grid Communications Unit will centrally track all communications and ensure they are shared. The unit will liaise with the following or their representatives over pubic safety messages:

- BoM;
- Seqwater;
- Councils' Media Directors;
- QPS Media Director; and
- DCS Media Director.

Questions from the Public

All questions from the public should be directed to the relevant local government in the first instance. Questions expressly relating to the event should be directed to the hazard-specific primary agency. Any questions relating to the release of floodwater should be directed to the SEQ Water Grid Communications Unit. Any queries about disaster management should be addressed by the relevant local and district disaster management groups.

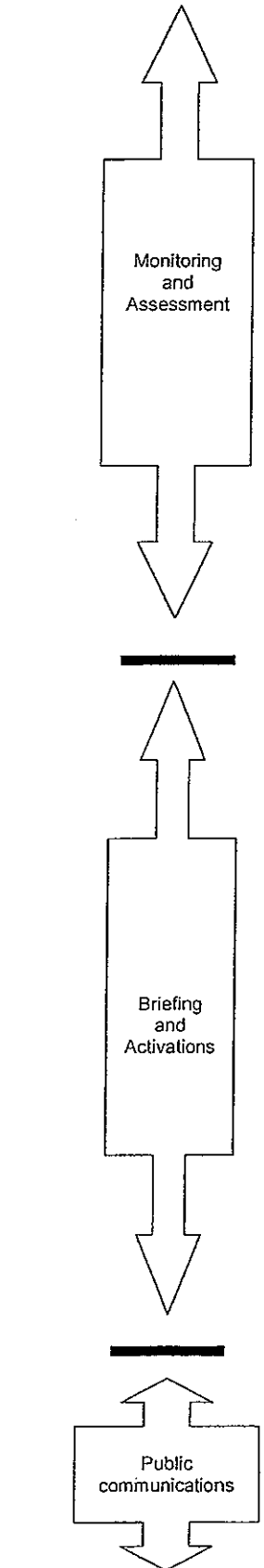
Protocol Maintenance

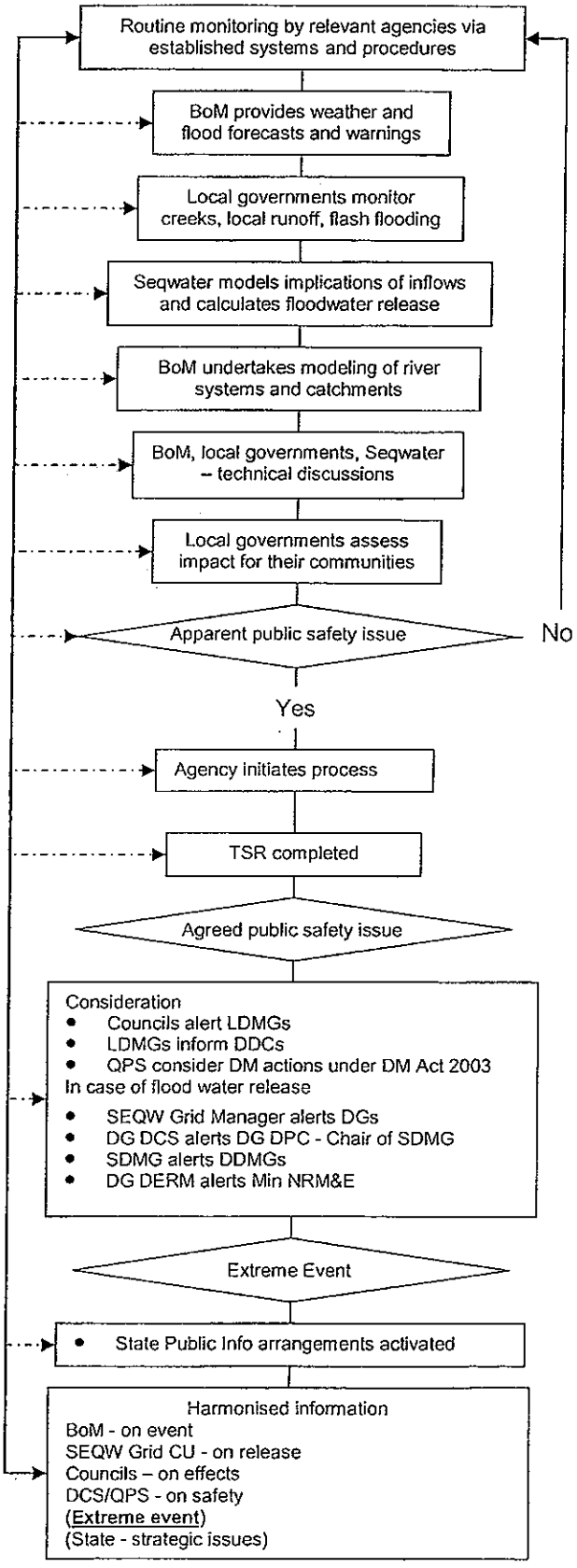
This protocol will be reviewed annually by agencies involved and exercised, during non-operational season, under DDMG arrangements.

The protocol should provide for a review after each event of what worked and could be improved for management of future events, to be led by DCS.

Appendix A

Communications process for the release of floodwater from Wivenhoe and Somerset Dams





Appendix B

ROLES AND RESPONSIBILITIES

- The Bureau of Meteorology (BoM) is the agency responsible for issuing flood warnings for the Brisbane River and its major tributaries. These, when required, include rainfall forecasts for the Brisbane catchment and predicted river heights for Brisbane City, Ipswich, Jindalee and Moggill according to established procedures.

  River height predictions are agreed in consultation with Seqwater, Brisbane City Council (BCC), Ipswich City Council (ICC) and Somerset Regional Council (SRC), as required.

- Queensland Bulk Water Supply Authority (Seqwater) operates Wivenhoe and Somerset Dams in accordance with the Flood Mitigation Manual. It provides dam outflow information to BoM, to allow the development of Flood Warnings and to local authorities, to assist them in quantifying likely impacts within their areas.

  It informs BoM and other agencies on the status of dams, and actual and projected releases from Wivenhoe and Somerset dams. It consults BoM regarding inflows to Wivenhoe and Somerset dams and expected flood heights along the Brisbane River downstream of Wivenhoe Dam.

  Seqwater initiates proposed reviews or updates to the Flood Mitigation Manual, undertaking consultation with Councils and other stakeholders. Seqwater coordinates the production of the TSRs relating to floodwater releases from the Wivenhoe and Somerset dams.

- Brisbane City Council (BCC), Ipswich City Council (ICC) and Somerset Regional Council (SRC) distribute consistent, detailed local flood level information, both to their respective operational units, their senior management and their broader communities. This should include the interpretation of BoM flood warnings and river height forecasts into expected areas and depths of inundation. Councils are responsible for activating their respective Local Disaster Management Groups (LDMGs), which then undertake the disaster management responsibility for response in the community.

- Department of Environment and Resource Management (DERM) consults with the stakeholders prior to the approval of any updates to the Flood Mitigation Manual. DERM also approves any necessary variations to the strategies in the manual if required during the course of a flood event.

- Queensland Police Service (QPS) assumes a legislative role, as per the disaster management system, to provide disaster management at a district level during an event, including provision of necessary community advice for public safety.

- Emergency Management Queensland (EMQ) provides support and general community safety advice on flooding issues, during non-operational times.

- SEQ Water Grid Manager in the case of floodwater release alerts the Director-General (DG) of the Department of Community Safety (DCS), DG Department of Environment and Resource Management (DERM), and the local governments.

- SEQ Water Grid Communications Unit tracks the general harmonisation, but not specific detail of public messaging relating to floodwater releases, with BoM, SEQ Water Grid, Councils and DCS, as required. It does this by ensuring that each agency understands the extent of the release and that there is a general consensus as to the level of potential impacts.

Appendix C

TECHNICAL SITUATION REPORT

TSR Number		Date of TSR release		Time of TSR release	

This report is as at the time of assessment, and may quickly become out of date, depending on the current events. It relies on timely information provided by Seqwater, BoM and Councils. A reply will be required by a specified time and if not received by that time no information will be included. If any information is not provided, the section will remain blank. There will be no follow up requests.

Each authority will provide an email and telephone contact for all communications. If an event escalates, there may be less time to respond or it may not be possible to respond to requests.

In floodwater releases Seqwater will email advices on releases to the organisations email address provided. Once a flood event is initiated, at any time a Council or agency can contact Seqwater to discuss if they have a serious concern regarding the information on releases provided. This would normally be by phone and followed by email. However, the ability to respond to any queries depends on the event. The frequency of advices will depend on the severity of the event and the needs of each agency.

Seqwater will also request at that time, a situation assessment from each agency as per details outlined in this document. Each agency will then email in return the requested information if possible or advice that it has not changed. If it is not received within the specified timeframe, it is assumed it is not being provided.

Seqwater status of inflows and dam operations

(to include information on the current and/or predicted levels of Somerset and Wivenhoe Dams and the probable or planned release strategy with assessment as governed under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam)

This is Seqwater's status report on the dam levels, probable inflows and planned releases.

.....

This has been supplied to
BCC on .....
ICC on .....
SRC on .....

Issues raised by Councils were .....

Actions taken were .....

Seqwater Technical Officer name	
Seqwater Technical Officer position title	
Seqwater Technical Officer contact details	

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM is to provide either a copy of, or links to, their current information and other updates or comments if needed. This will be their current set of warnings and may be updated or changed at any time.

BoM Technical Officer name	
BoM Technical Officer position title	
BoM Technical Officer contact details	

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

This is an assessment as provided by BCC. A request for this information will be sent to the email address provided by BCC.

BCC Technical Officer name	
BCC Technical Officer position title	
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

This is an assessment as provided by ICC. A request for this information will be sent to the email address provided by ICC.

ICC Technical Officer name	
ICC Technical Officer position title	
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

This is an assessment as provided by SRC. A request for this information will be sent to the email address provided by SRC.

SRC Technical Officer name	
SRC Technical Officer position title	
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	
Contact Officer position title	

Next TSR due	Date		Time		or Event	