Overview

1. Desired level of service (LOS) objectives for South East Queensland (SEQ) were prescribed in the Water Regulation 2002 on 4 July 2014. Desired LOS objectives have been put in place to provide for the long term water security of the region, ensuring adequate water supplies to support the prosperity of residents and businesses. Seqwater is required to have a water security program (WSP) for SEQ in place by 4 July 2015 (under the effect of sections 350 and 1227 of the Water Act 2000). The purpose of the WSP is to outline how the achievement of the LOS objectives will be facilitated through the arrangements, strategies and measures that Seqwater has in place.

2. These guidelines have been made in accordance with section 353(2) of the Water Act 2000 to provide information and guidance to Seqwater about the content of the WSP as well as details about various administrative matters relating to the WSP. Particular content that is required to be included in the WSP is specified under section 353 of the Water Act 2000 and section 87 of the Water Regulation 2002. These guidelines provide a greater level of detail of the content requirements in order to facilitate the development of a robust WSP that will meet its intended purpose.

3. Due to the extensive and detailed nature of the WSP, it is acknowledged that there may be limited capacity to document all the requirements within one year of the desired LOS being prescribed in regulation. As a result, these guidelines provide a staged approach to the delivery of the required elements of the WSP. The first stage of the WSP is required to be in place by 4 July 2015. A WSP that includes all of the required content, i.e. the second stage of the WSP, is required to be in place by 31 March 2017.
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Administration

Format

1. The WSP must provide information about Seqwater’s arrangements, strategies and measures for a number of matters relating to water security. Seqwater can prepare each section separately, for example, as a distinct plan or strategy. Seqwater may also use an existing document to deal with a particular matter(s). If the WSP is developed as several documents, a “core” document for the WSP must be developed that, at a minimum, must contain a list of these separate documents. The core WSP should also provide a broad overview of each of these documents. Any document that is mentioned in the WSP that provides information about the arrangements, strategies or measures for any of the matters specified in section 353(1) of the Water Act 2000, should be attached to the WSP as a distinct appendix or attachment. All of these documents are subject to the same requirements as the WSP.

2. If further detail is required to be specified for a particular matter for operational requirements (but the level of detail is not considered necessary for the WSP), these should be referred to as operational/technical documents and these will not be required to be attached to the WSP. Such documents, therefore, are considered separate to the WSP and will not be subject to the same requirements as the WSP.

Finalising

3. Seqwater is required to submit the draft WSP to the chief executive for review. Seqwater should engage with Department of Energy and Water Supply (DEWS) during the preparation of the draft WSP to facilitate DEWS’ review of the draft WSP. The draft WSP should be submitted to the Director-General of DEWS, and a copy provided to the Director, Water Strategy. Information about any consultation undertaken with Seqwater’s customers in developing the draft WSP should be provided to DEWS at this time.

4. Section 356-357 of the Water Act 2000 specifies the process to finalise the WSP, and this process is depicted in Figure 1 below. Following Seqwater providing the draft WSP, DEWS has 30 days in which to provide comment. Within 14 days of receiving comments from DEWS, Seqwater must decide whether it will make changes to the draft WSP in consideration of the comments made. If Seqwater decides to revise the draft WSP, it must make the relevant changes and submit the revised draft to DEWS for further consideration. If Seqwater decides not to revise the WSP, Seqwater must prepare a report detailing why changes were not made to the WSP to accommodate the comments and recommendations made by DEWS. This report must be provided to DEWS within 14 days of Seqwater deciding not to revise the draft WSP.

5. Seqwater must publish the WSP on its website following DEWS providing written notice to Seqwater that it does not recommend any changes be made to the draft WSP, or Seqwater providing notice to DEWS that it has decided not to revise the draft.
Review

6. Under the Water Act 2000 the WSP is required to be reviewed at least every five years. A review must also be undertaken if there is a significant change to a matter that will, or is likely to, affect the achievement of the desired LOS objectives for SEQ.

7. Any document that is part of the WSP, including an attachment or appendix to the WSP, must be included in any review process. If any of Seqwater’s arrangements, strategies or measures for any of the matters specified in section 353(1) of the Water Act 2000 have a significant change, the relevant documents must be updated and provided to the chief executive of DEWS for review (as specified above for finalising the WSP).
A. Projected regional average urban demand

1. Projected regional average urban demand underpins planning for the bulk water supply system and in particular, can affect management of infrastructure, future infrastructure requirements and drought response.

2. As specified in section 87 of the Water Regulation 2002, the WSP must detail the process that will be used to work out the projected regional average urban demand that will underpin planning for the bulk water supply system. The projections, or demand forecasts, should be provided for a minimum period of 30 years for both residential and non-residential water use.

3. The first stage of the WSP should detail the key assumptions and methodology used for working out the projected regional average urban demand. There are a number of components of the methodology that should be included in the WSP, such as:

   1. how the demand projections will be calculated, including:
      a. key assumptions that underpin the projections and how the assumptions were determined, particularly population forecasts and business growth
      b. a broad outline of the considerations that will be made when determining the demand projections, including the proportion of demand attributed to non-residential use
      c. any consultation that will be undertaken, for example with local water service providers
         i. it is recommended that the WSP outline how Seqwater will engage with local water service providers to obtain estimates for local demand projections. The WSP should outline a process where advice will be provided to DEWS for information if there is a significant discrepancy between the estimated projections for sub-regional demand provided by a local water service provider and Seqwater’s regional projections.
      d. the process for how the projected regional average urban demand is calculated, including the:
         i. projected regional annual urban demand, expressed in megalitres per year
         ii. projected regional average residential demand, expressed in litres per person per day
         iii. projected regional average non-residential demand, expressed in litres per person per day
         iv. for each year over the next 30 years
         v. it is expected that the actual projected regional average urban demand will be published externally to the WSP.
   2. overview of the annual assessment process that will be undertaken to determine whether the projected regional average urban demand is still current
3. Details of the review process, including
   a. The frequency of undertaking a review
      i. To ensure that the demand projections reflect the long-term demand profile rather than being reactive to short-term effects, a review should be undertaken not more often than once every two years.
   b. Under what circumstances the projected regional average urban demand will be altered.

4. The WSP should include information on where the projected regional average urban demand will be published and/or how water service providers and relevant government entities, specifically DEWS, will be advised of the projected regional average urban demand.
B. Infrastructure planning

1. As stated in section 353(1)(b) of the Water Act 2000, the WSP must outline how future infrastructure needs will be addressed. The second stage of the WSP should outline the process under which Seqwater has determined future bulk water supply infrastructure options (i.e. bulk water supply assessment) and what the future bulk water supply options are.

2. Future bulk water supply options can include a number of bulk water source augmentations that could be built in various combinations or be staged to meet the desired LOS objectives.

3. For clarity, the second stage of the WSP should outline a number of bulk water source augmentations from which an option, or combination of options, could be selected as the next (most likely) bulk water supply infrastructure augmentation required for the region.

4. The WSP should include consideration of the order of likely construction for future bulk water supply infrastructure options. The circumstances which could affect the order of construction should be identified. It is noted that the future bulk water supply infrastructure could include augmentation of existing infrastructure and/or the construction of a new water supply source. These bulk water supply infrastructure options may be incorporated into a portfolio, that incorporates both infrastructure and non-infrastructure measures to address growth in demand.

5. It is critical that the identification of future bulk water supply infrastructure options is the outcome of a detailed bulk water supply assessment. The WSP should specify how the bulk water assessment was undertaken (i.e. the steps involved), as well as a summary of the outcomes of such assessment. The detailed bulk water supply assessment would need to include analysis of matters including, but not limited to:
   1. potential risks to water security associated with each bulk water supply infrastructure option (e.g. the dependence on rainfall during droughts)
   2. the location of where additional bulk water supplies are likely to be required due to growth in demand
   3. costs associated with the construction and operation of bulk water supply infrastructure options to determine the most cost-effective
   4. scenario analysis, to ensure the best outcome under a range of conditions (e.g. economic, weather, operations)
   5. the possible effects of drought and how this could affect the construction of bulk water supply infrastructure
   6. the most appropriate mechanism to ensure that the bulk water supply infrastructure option can be constructed when required (e.g. preserving the site or resuming the land when required)
   7. the possible timeframes of when the bulk water supply infrastructure may be required.

6. It is critical that the WSP details how Seqwater will determine when the next bulk water supply infrastructure will be built and provide an estimate of the current likely timing.
7. A fundamental reason to plan and a key outcome of planning is to ensure preparedness for a range of possible future scenarios. The 2001–2009 drought illustrated that the region is susceptible to droughts worse than the historical record. It is for this reason the second stage of the WSP should detail how Seqwater intends to ensure such preparedness. This includes Seqwater’s assessment of changes to weather patterns and the effect of conditions that are worse than the historical record on the timing, and possibly the choice, of future bulk water supply infrastructure.

8. As outlined in the implementation section of these guidelines, Seqwater may use the period up to early–2017 to develop a WSP that covers the infrastructure planning requirements outlined above. The first stage of the WSP should include the following:
   1. an outline of the options that have been identified through the assessment that will enable the achievement of the LOS objectives
   2. an outline of the assessment process to identify potential bulk water supply infrastructure options
   3. a summary of the outcomes of the assessment
   4. for any town that is not directly connected to the bulk water supply system that is considered at significant risk of having a water supply shortfall within the next five years - the infrastructure planning arrangements should be specified.

9. The second stage of the WSP should include:
   1. future bulk water supply infrastructure options (which can include a number of bulk water source augmentations that could be built in various combinations or be staged to meet the desired LOS objectives)
   2. an outline of how the order of likely construction will be, or has been, determined
   3. the circumstances which may affect the order of construction
   4. an outline of the bulk water assessment process to determine future bulk water supply infrastructure options
   5. the infrastructure planning arrangements to ensure that the future bulk water supply infrastructure option can be built when required
      a. the infrastructure planning arrangements should include detail of how preparedness will be ensured for each of the future bulk water supply infrastructure options. This includes specifying site investigations to be carried out, the process for securing land (if required) and the timeframes to complete any detailed planning for the infrastructure.
   6. the likely timing of when the bulk water supply infrastructure may be required to be built
   7. the triggers for constructing the bulk water supply infrastructure (to ensure the infrastructure will be built by the time the additional supply is required)
   8. options assessment, identification of future bulk water supply infrastructure options, outline of triggers and likely timing of infrastructure for all towns not supplied directly from the interconnected part of the bulk water supply system.
10. If Seqwater develops portfolios (of supply and demand measures for example), Seqwater would need to outline the assessment process for developing portfolios (similar to the bulk water supply assessment above). The WSP should identify the particular trigger(s) for initiating each option within those portfolios, along with the trigger for each measure within the portfolio. If the optimum timing for each measure within a portfolio is dependent upon circumstance, the considerations for determining when to implement the measure should be clearly specified.

11. As relevant, a future version of the WSP (subsequent to the second stage) should include:

   1. the most likely bulk water supply option, or combination of options, to be constructed
   2. how the most likely bulk water supply option, or combination of options, was chosen
   3. the infrastructure planning arrangements should specify how the preparedness for an alternative bulk water supply infrastructure option will be ensured if there is a change to the mostly likely option based on identified circumstances.
C. Infrastructure planning

1. Sections 353(1)(a) and (c) of the Water Act 2000 require that the WSP must outline how Seqwater intends to operate its assets, and how it will manage the associated infrastructure relevant to providing water supply to the SEQ region.

2. When the first stage of the WSP is finalised by mid–2015, the WSP should broadly outline:
   1. how Seqwater intends to optimise the use of its assets, in particular the use of any manufactured water assets (i.e. how the most cost-effective mode of operation will be determined and what the rules of such operation are, including the relevant ‘triggers’ for changes to the operation of the assets)
      a. this stage should include an overview of the assessment undertaken to determine the level of utilisation of the assets. For example, how the use of the Gold Coast Desalination Plant was determined.
   2. how Seqwater will ensure readiness of any manufactured water asset, i.e. how Seqwater will ensure that the manufactured water assets will be able to be used as and when required, to facilitate the desired LOS objectives
   3. how the decision will be made to retire a particular asset
   4. any overarching rules regarding the transfer of water across the bulk water supply network (e.g. when the Northern Pipeline Interconnector will operate in a southerly direction and when it may operate in a northerly direction)
   5. strategies or measures in place for managing water supply security for the region, including strategies or measures in place for towns that are not directly connected to the bulk water supply system.

3. The second stage of the WSP should be expanded to include principles by which maintenance and renewal activities will be undertaken based on the chosen mode of operation (e.g. operational or ‘hot standby’). Appropriate measures and strategies for the management of infrastructure are required to ensure the bulk water supply infrastructure is able to be operated as required to meet the desired LOS objectives.
D. Demand management

1. The WSP must outline the process under which Seqwater will manage demand for bulk water in accordance with section 353(1)(d) of the Water Act 2000.

2. The first stage of the WSP should provide a broad outline of what demand management options may be considered, the type of considerations that Seqwater would undertake for determining appropriate demand management measures, and the potential triggers for when such measures would be undertaken/implemented. Associated with each trigger should be the target or expected reduction in bulk water use. For clarity, DEWS does not expect the WSP to outline particular demand management measures that may be implemented by Seqwater’s customers to facilitate the targeted reductions in bulk water use (e.g. water restriction schedule).

3. In the second stage of the WSP, the demand management section will be required to be complete, and the WSP should clearly specify Seqwater’s approach to demand management, including:
   1. the assessment approach used to determine appropriate demand management measures
   2. the demand management measures that may be implemented
   3. considerations that will be undertaken to determine when to implement a particular demand management measure
      1. potential drought response implications, i.e. how demand will be managed during non-drought circumstances to ensure that an appropriate restricted demand can be achieved should a drought situation arise. This may include cost benefit analysis of water restrictions in comparison to other drought response measures that may be implemented.

4. The success of any demand management measures that may be imposed by Seqwater will be reliant upon the support of Seqwater’s customers. For this reason, the WSP should outline how bulk water customers will be engaged in the development and implementation of any proposed demand management strategy.
E. Drought response

1. Section 353(1)(e) of the Water Act 2000 requires that the WSP must provide information about Seqwater’s strategies for responding to drought conditions.

2. Given the recent rainfall from Tropical Cyclone Marcia replenishing most of the SEQ regions dams, and the slightly higher than normal probability of exceeding median summer rainfall over November 2015 to March 2016, there is a low risk of drought response actions being required within the next two years. Due to this low risk, and the complexity in developing the drought response in total, the drought response strategies can be delivered in the WSP in a staged manner. It is expected however, that Seqwater will continue to closely monitor the bulk water supply situation and potential risk due to drought, including for towns that are not directly connected to the bulk water supply network.

3. The first stage of the WSP should include:
   1. the level of risk that a drought will occur within the next five, 10 or 20 years
   2. a broad overview of how the level of risk is calculated
   3. a summary of any strategies, actions or measures that Seqwater has determined it may implement to respond to drought conditions
   4. an outline of any activities that are being undertaken by Seqwater to ensure drought preparedness (e.g. activities being undertaken to ensure the drought response will be able to be incorporated into the second stage of the WSP).

4. The second stage of the WSP should include:
   1. detailed triggers for when particular significant drought response actions will be undertaken, including:
      a. as required under section 87(d) and (e) of the Water Regulation 2002, the triggers must include reference to:
         i. the ‘drought response level,’ which is the level in the bulk water supply system that is the trigger for taking action in response to drought. The drought response level is the initial trigger for when drought response actions commence. (Drought response actions may include imposing water restrictions and/or alternations to operations of infrastructure.)
         ii. the ‘safe minimum storage level,’ which is the level in the bulk water supply system that is the trigger for taking more severe action in response to drought to minimise the risk of storages reaching minimum operating levels. At this trigger, more severe drought response actions, including more severe water restrictions (i.e. more severe than medium level water restrictions), may need to be imposed to minimise the risk of storages reaching minimum operating levels and consequently supplying only the essential minimum supply volume.
      b. when Seqwater will undertake measures to reduce the volume of water supplied by the bulk water supply system to ‘drought supply’ to its customers. Instigating bulk water drought supply may result in medium level water restrictions being implemented.

1 April 2015, Department of Science, Information Technology and Innovation, Monthly Climate Statement
2 Medium level water restrictions are those restrictions that may be imposed in response to drought in accordance with the restrictions framework that is currently being developed.
c. when the construction of drought response infrastructure would commence
   i. the WSP should specify the particulars of the drought response infrastructure, or if there is more than one option being considered, what considerations will be made to determine the optimal drought response infrastructure, and when this determination will be made.
   ii. the WSP should also outline under what circumstance(s) the construction of drought response infrastructure may be stopped.

d. when the volume of water supplied is significantly reduced to the volume needed to meet the essential minimum supply volume
   i. the trigger for supplying only the essential minimum supply volume should be associated with a considerable risk of a significant supply shortfall for meeting restricted demands.

2. actions or measures that will be undertaken at particular triggers, including broad detail of why these measures are to be undertaken

3. a broad outline of how the triggers were determined, how they will be reviewed and under what circumstances (e.g. changes to demands, demand management measures and/or revised modelling) the triggers may need to be revised

4. an outline of how Seqwater will ensure that adequate bulk water will be available to meet the bulk water drought supply desired LOS objective.
   a. It is anticipated that the WSP will summarise the trigger for when Seqwater will seek to reduce the amount of bulk water supply, how this trigger was determined, the associated demand reduction target, the water sources that may be relied upon to supply this drought supply and the measures that Seqwater may implement to reduce the volume of water that is required to be supplied to its customers
   b. It is noted that Seqwater’s drought supply demand reduction target may be greater than a regional water use of 140 litres per person per day and may occur at a frequency less than once every 10 years (e.g. once every 15 years).
   c. The average time spent below the trigger for bulk water drought supply could be used to model whether Seqwater’s approach should meet the duration target of the bulk water drought supply LOS objective.

5. the planning for how it will be ensured that the bulk water supply system will be able to supply the essential minimum supply volume when triggered, including:
   a. how the essential minimum supply volume will be forecast
   b. how the bulk water supply system will supply an average of 100 litres for each person for the region for basic domestic needs and essential services, including

3 The essential minimum supply volume is the volume required to meet:
   - basic domestic needs.
   - This may include water use at caravan parks and hotels/motels.
   - water needs for essential services, such as power generation, health and safety needs.
   - This would include water use for hospitals and industry for which there is a public health and safety risk if production was ceased. Essential services may also include oil refineries and other heavy industry.
i. any assumptions for the supply of the essential minimum supply volume, in particular, any assumed climate resilient inflows into the system
  • The supply of essential minimum supply volume is considered an extreme circumstance which should occur not more often than once every 10,000 years on average. Due to the nature of such an adverse event, it is expected that the assumptions would be conservative.

ii. any additional bulk water supply infrastructure required and the plans in place to ensure that this infrastructure is operational to provide sufficient supplies when needed

6. overview of potential costs involved with the implementation of each drought response action

7. potential risks to the drought response strategy (e.g. if demand management is not as effective as anticipated, or delay in construction of drought response infrastructure) and associated mitigation measures

8. the risk profile upon which the drought response strategy is based.
   a. The WSP should provide a drought response strategy for responding to a drought with a severity of at least a one in 1,000 year occurrence.
   b. Consideration for drought response must also be given to a drought with a severity of a one in 10,000 year occurrence to ensure that the essential minimum supply volume can be met under such circumstances.

5. The WSP may outline options for drought response that may be dependent upon the nature of the drought and/or community feedback.
F. Water security reporting

1. The WSP should outline the process under which Seqwater will provide and publish an annual water security assessment.

2. As required under section 84(2)(b) of the Water Regulation 2002, each annual water security assessment must include information on the outcome of the annual assessment on whether the projected regional average urban demand is still current. Details of the annual assessment that should be included in the published annual water security assessment include:
   
   1. water use over the past year (and comparison with previous years)
   2. any changes to the projected regional average urban demand and a summary of the reason for the change (for example, changes to the population forecasts for the region or the estimated business growth.

3. Any annual water security assessment published subsequent to the second stage of the WSP should also provide an overview of the water supply security risk to the region including detailing:
   
   1. major changes to the bulk water supply system over the past year
   2. changes to risks to readiness of manufactured water assets in the past year
   3. assessment of the regional water balance
   4. relevant drawdown scenarios4.

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4 This information is not considered necessary prior to the second stage of the WSP being published due to the low risk to water supply security before 2017.
Implementation

4. Due to the extensive and detailed nature of the WSP, it is acknowledged that there may be limited capacity to document all the requirements within one year of the desired LOS being prescribed in regulation. Consequently, the guidelines enable the required content of the WSP to be delivered in a staged approach. The table below outlines what should be included in the WSP when it is initially finalised (i.e. the first stage of the WSP) and by the second stage of the WSP.

5. The Water Act 2000 requires that Seqwater must have a WSP (i.e. a WSP that has been reviewed, finalised and been published to be in effect) within one year of the LOS being prescribed, i.e. by the 4 July 2015. This version of the WSP would be the first stage of the WSP.

6. Seqwater is required to submit a revised version of the WSP, i.e. a second stage of the WSP, to complete the content requirements of the WSP. This second stage of the WSP is required to be reviewed, finalised and published by 31 March 2017.

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