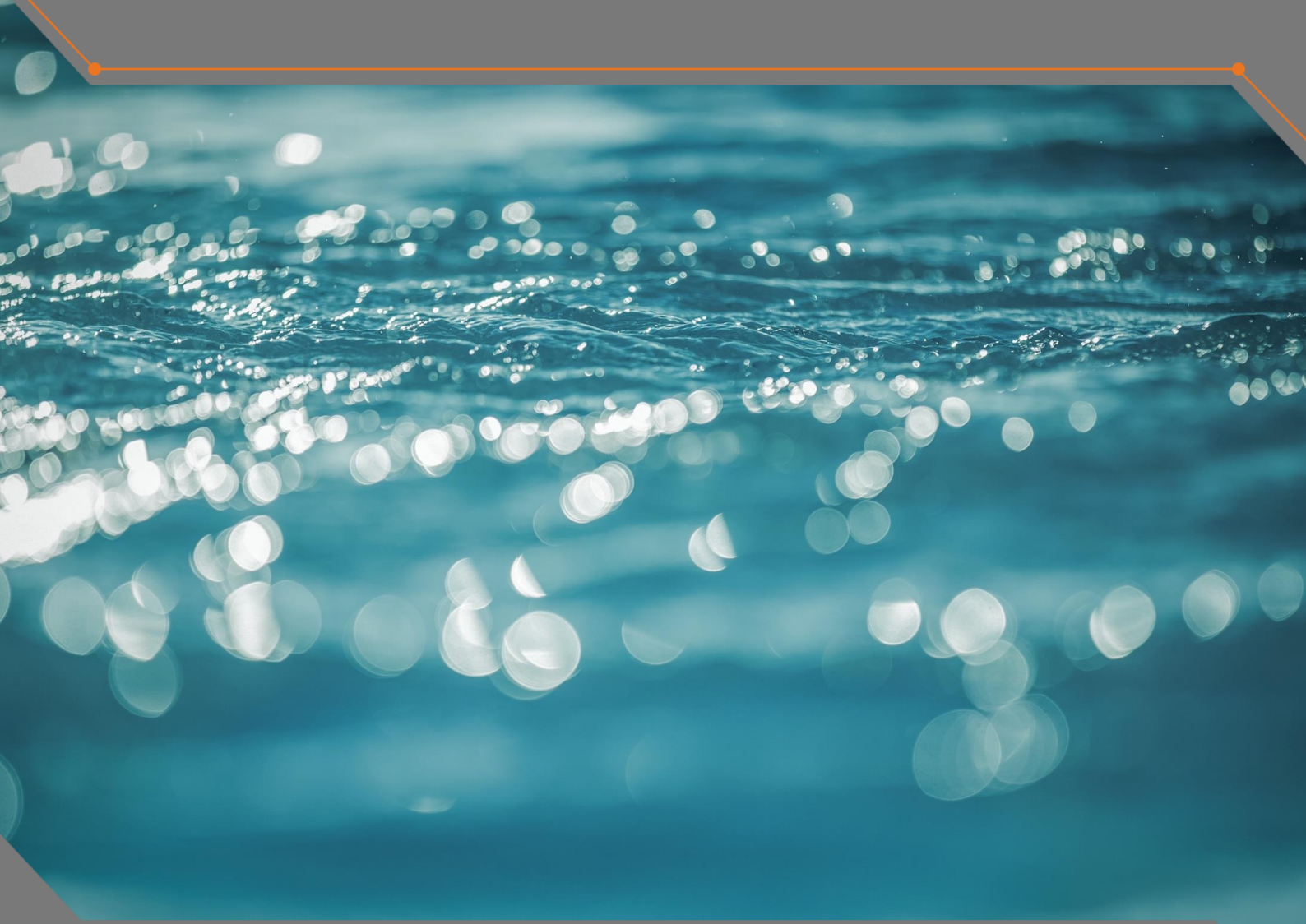


Water Security Program Guidelines

South East Queensland



UWS/2021/5778

Version 5.00

22/11/2021



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Version history

Version	Date	Comments
1.00	7 November 2014	Original guideline that incorporates a two-staged introduction to water security program requirements (4 July 2015 and 4 July 2016 for stage 1 and 2 respectively).
2.00	May 2015	Amended to extend the timeframe for making the second stage of the Water Security Program (required to be published by 4 July 2017).
3.00	November 2015	Amended to provide a greater level of detail on content requirements for maintenance and renewal activities, and annual reporting. The timeframe for publishing the second stage of the Water Security Program was amended to 31 March 2017.
4.00	November 2019	Amended to provide greater level of detail of content requirements for assessments, modelling, and reporting, and additional key terms defined. Reference to staged approach removed.
5.00	11 November 2021	Revised to redefine the modelling scenarios and provide greater clarification of expectations.

Approval

Position	Name	Date
Director, Urban Water Supply Planning	R. Priman	11/11/2021

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Figure 1. Process for finalising the WSP

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Definitions

Act – Water Act 2000

Bulk water supply authority—in South East Queensland, the bulk water supply authority is Seqwater.

Bulk water supply customers—includes all customers with a contract to take bulk water from Seqwater. This includes the SEQ Service Providers, and any entity defined as such under the Water Regulation 2016, which includes power stations and neighbouring communities (e.g. Toowoomba Regional Council). This water includes all sources available to Seqwater including treated, raw, or recycled.

Bulk water supply system (BWSS)—paraphrasing section 77 of the Water Regulation 2016, the BWSS is the infrastructure Seqwater uses to supply water to bulk water customers across the South East Queensland region. The infrastructure includes the SEQ Water Grid, main connecting pipelines, as well as other infrastructure that Seqwater owns and operates.

Current operations case—this case is based on current operation of the bulk water supply system, including all operational constraints (such as temporarily lowered dams) and operating rules. This case should consider the demands of neighbouring communities that have a contract arrangement in place. This case is to be used for drought response modelling. This case does not include the projected impacts of climate change.

Drought readiness level—the level in the bulk water supply system that is the trigger for taking drought response actions to increase readiness to respond to drought and to reduce the risk of reaching the drought response level. This level indicates the commencement of drought conditions, and that it is prudent and efficient to act to prepare assets and make appropriate operational changes to reduce the risk of reaching the drought response level, complete investigations to support further drought activities and to increase the readiness to respond to drought should the drought response trigger be reached. This level is determined by Seqwater and specified in the Water Security Program. The drought readiness level can be based on one, some, or all of the SEQ Water Grid storages, and can be specified as a range.

Drought response action—includes any measure, arrangement or strategy taken to prepare for, or respond to, drought that is triggered at or below the drought readiness level. Only key drought response actions that are considered to individually have a significant impact on water security, should be noted in the Water Security Program. Examples of additional activities that may be undertaken that might not be specified in the Water Security Program include studies, investigations and planning to support the delivery of drought response actions; and bringing forward actions that are prudent and efficient, including infrastructure, that are within the current planned capital works program. Examples of key drought response actions include increasing manufactured water production, increasing take from underutilised or banked supplies, conducting studies and investigations on potential measures to improve water security, and communications on water efficiency.

Drought response level—the level in the bulk water supply system that is the trigger for taking drought response action to respond to drought. Drought response actions include actions to prepare for further intensification of drought. Medium level water restrictions can only be applied after the drought response level is reached. This level is determined by Seqwater and specified in the Water Security Program. The drought readiness level can be based on one, some, or all of the SEQ Water Grid storages, and can be specified as a range.

Drought contingency infrastructure—infrastructure that is constructed in response to drought to ensure that essential water supplies can be maintained during an unlikely extreme drought. (Note: drought contingency infrastructure could have capacity to supply a greater volume than EMSV, for example, to maintain supply for less severe restricted demands).

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Enhanced system case—this case is based on current assets with the addition of Seqwater’s planned capital works program (i.e. planned infrastructure spend), and changes to operations. It incorporates the assumptions made for the existing system case (i.e. removal of temporary operational constraints). The enhanced system case is considered the base case against which planning future augmentations should be undertaken.

Essential minimum supply volume (EMSV)—as defined in the Water Regulation 2016, is the volume needed to supply a total average of 100 litres per person per day for residential and non-residential water use combined. It is the volume of water required to meet essential needs of drinking and basic hygiene, and essential services (e.g. hospitals and power generation), in critical circumstances (modelled to occur not more than once in every 10,000 years on average). It therefore includes residential and non-residential water use (including water use by power stations). The 100 litres per person per day does not include consideration of the volumes that would be required to source and distribute the EMSV volume (e.g. it does not include water treatment, transport or other system losses).

Existing system case—this case is based on the current assets of the bulk water supply system and does not include temporary operational constraints (such as temporarily lowered dams) that are only in effect for the short to medium term (i.e., approximately 10 years). The aim of this case is to illustrate how the current assets could perform against the LOS objectives. This case should consider the demands of neighbouring communities that have a contract arrangement in place. Neighbouring communities likely to establish a contract arrangement in future should be considered, at a minimum, as a sensitivity assessment for this case. For compliance purposes, this case must include a representation without the projected impacts of climate change, i.e. based on historical conditions for comparison purposes. Seqwater may provide an additional existing case which includes the projected impacts of climate change.

Future system case—this case includes the assumptions of the enhanced system case and any likely future augmentation to the BWSS infrastructure required to facilitate the achievement of the LOS objectives for the duration of the 30-year planning horizon. The future case should be updated following changes in long-term planning and the timing or nature of water supply augmentations. The future case is not required to be presented in the WSP if the enhanced system case provides sufficient yield for the next 30 years. This case should consider the demands of neighbouring communities that have an arrangement in place. Neighbouring communities that are considered likely to have an arrangement should be considered, at a minimum, as a sensitivity for this case.

Grid connected communities—those communities that are directly connected to the SEQ Water Grid.

LGA—Local Government Area.

Level of Service (LOS) objectives—describe the desired level of performance of the BWSS. Refer to sections 2-4 for more detail.

Medium level water restrictions (MLWR)—the restrictions triggered between the drought response level and the safe minimum storage level; these levels are defined by Seqwater.

Minimum operating level (MOL)—often also referred to as the dead storage level, is prescribed for a water storage in the appropriate water plan and resource operations licence under the Act. The infrastructure owner must not release or supply water from that storage below MOL, unless authorised due to exceptional circumstances.

Neighbouring communities—communities from Local Government Areas outside of the SEQ region (as defined in section 341 of the Act) that have an arrangement with Seqwater for the supply of water, or are considered likely to negotiate a commercial arrangement for urban water from Seqwater in the future.

Non-residential water use—potable water use, other than in the home. It includes water used by businesses, industry and power stations. Non-residential water use also includes system losses, unless otherwise specified.

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Off-grid communities—communities that are not directly connected to the SEQ Water Grid. Some have a separate supply source, and some are supplied from a SEQ Water Grid storage but have a separate water treatment plant which is not connected to the SEQ Water Grid. The specific communities are detailed in Seqwater’s Water Security Program.

Projected Regional Average Urban Demand (PRAUD)—the demand for residential and non-residential water use, estimated for the SEQ region for each financial year over the next 30 years. PRAUD is defined in section 79 of the Water Regulation 2016.

Regional Stochastic Model (RSM)—a water balance model of the SEQ bulk water supply system used to determine the statistics and other details of operation of system regarding, for example, security of supply, achievement of LOS objectives and drawdown times.

Regulation—is reference to the Water Regulation 2016.

Residential water use—potable water used for domestic purposes both inside and outside the home, like showering or watering a garden. Residential water use is usually expressed on a litres per person per day basis. It is calculated by dividing estimates of the volume of residential water used by the number of people with a connection to the reticulated water supply (i.e. connection to a piped water network as opposed to individual supply sources, such as household rainwater tanks).

Restricted supplies—means the water supplied when water restrictions are imposed on water users within SEQ.

Safe minimum storage level (SMSL)—the trigger for taking more severe action in response to drought, to minimise the risk of reaching minimum operating levels (e.g. restrictions more severe than Medium Level Water Restrictions). This level is determined by Seqwater and specified in the Water Security Program.

Seqwater—the statutory authority, owned by the State, charged with providing bulk water supplies in South East Queensland. It owns and operates the BWSS.

South East Queensland region—section 341 of the Act states the SEQ region comprises:

- (a) the local government areas of:
 - Brisbane City Council
 - City of Gold Coast
 - Ipswich City Council
 - Lockyer Valley Regional Council
 - Logan City Council
 - Moreton Bay Regional Council
 - Noosa Shire Council
 - Redland City Council
 - Scenic Rim Regional Council
 - Somerset Regional Council
 - Sunshine Coast Regional Council; and
- (b) any local government area, or part of a local government area, adjacent to the above local government areas and designated by gazette notice, and
- (c) Queensland waters adjacent to any of the local government areas mentioned above.

South East Queensland Service Providers (SEQ SPs)—the local government-owned entities that sell water directly to the community in South East Queensland (i.e. Urban Utilities, Unitywater, Logan City Council, Redland City Council, and City of Gold Coast). These providers are Seqwater bulk water customers.

SEQ Water Grid—is the inter-connected network of infrastructure that extends from Noosa to the Gold Coast and Toowoomba. The SEQ Water Grid enables treated drinking water to be moved around the SEQ region. The

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SEQ Water Grid is made up of the major dam storages (Water Grid storages), plus the main connecting pipelines (including the Northern Pipeline Interconnector, Southern Regional Water Pipeline, Eastern Pipeline Interconnector), the Western Corridor Recycled Water Scheme, and the Gold Coast Desalination Plant.

System losses—‘unaccounted-for’ water volumes that might have been used for firefighting, flushing systems, theft, or due to other unmetered water use such as leakage losses.

Water balance—the relationship between supply (i.e. estimated yield of the system while meeting the level of service objectives) and demand at any point in time. Supply upgrades or demand reductions need to occur prior to the projected demand exceeding the available supply while meeting the LOS objectives.

Water demand forecasts—estimates of how much water the community is likely to use over a given period in the future.

Water Grid storages—the major dam storages in South East Queensland (including Wivenhoe, Somerset, North Pine, Hinze, Baroon Pocket, Leslie Harrison, Ewen Maddock, Cooloolabin, Lake Kurwongbah, Lake Macdonald, Little Nerang and Wappa Dams) which contribute to the SEQ Water Grid.

Water Security Annual Report (WSAR)—the annual report that Seqwater must publish detailing the assessment of the PRAUD in accordance with the Regulation and provide an overview of the water supply security risk to the region.

Water Security Program (WSP)—the program that Seqwater must develop, publish, implement and report against, to facilitate the achievement of the LOS objectives in accordance with the Act.

Water Security Program Guidelines, South East Queensland, (WSP Guidelines)—guidelines for preparing the WSP published by the Department of Regional Development, Manufacturing and Water under the Act.

Introduction

1. The bulk water supply authority (Seqwater) is required to have a South East Queensland (SEQ) Water Security Program (WSP) under section 350 of the *Water Act 2000* (the Act). These guidelines have been made in accordance with section 353(2) of the Act. This section enables the relevant government department to make guidelines (SEQ WSP Guidelines) to provide information and guidance on the content of the WSP, but do not limit what may be included.
2. The legislated purpose of the WSP is to facilitate achievement of desired level of service objectives (LOS objectives) for water security for the SEQ region or each part of the SEQ region. The WSP establishes a 30-year adaptive strategic plan to meet the water security and drought needs of the SEQ community.
3. The LOS objectives are prescribed in the Water Regulation 2016 (the Regulation) sections 78-81 and are available on the [Queensland Legislation website](#).
4. The Department of Regional Development, Manufacturing and Water (DRDMW) has prepared these guidelines with a view to ensuring the SEQ WSP:
 - complies with section 353 of the Act relating to the content of the water security program
 - meets the LOS objectives
 - is developed with an appropriate interpretation of the individual LOS objectives.
5. These guidelines provide a greater level of detail to facilitate the preparation of a robust WSP that meets the intended purpose. It provides background information, details of what is expected in documents that support the WSP, what is expected to be included in the WSP and in the water security annual report (as outlined in Attachment 1).

Planning context

6. This section of the guideline describes a WSP, consultation requirements, linkages to other legislative requirements, and the appropriate interpretation of relevant sections of the Act and Regulation.
7. Seqwater is required to have and prepare, in consultation with SEQ Service Providers (SEQ SPs), a WSP including plans and strategies to facilitate the achievement of the LOS objectives for urban water supplies. The WSP demonstrates how the LOS objectives are able to be met, desirably, at any time going forward and subsequently that the Bulk Water Supply System (BWSS) is operated and augmented in a practical, timely and best value (to the community) way to achieve the objectives and appropriate regional water security.
8. The intent of the LOS objectives is to '*ensure the delivery of sustainable and secure water supply and demand management for the SEQ region*' (section 340 of the Act), thus ensuring adequate water supplies to support the prosperity of residents and businesses. Seqwater provides bulk treated water to the SEQ SPs responsible for distributing and retailing the treated water supply to residential and non-residential water users in their supply areas.

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9. If urban and rural demands are supplied from the same regulated source, the relevant Water Plan established under the Act addresses water sharing between the different uses of entitlements.
10. The WSP may consider the use of alternative water sources (e.g. stormwater, rainwater, desalination, and recycled water) for potable and non-potable purposes.
11. The WSP must cover the BWSS (i.e. Grid connected and off-grid communities) and should aim to meet the following LOS objectives paraphrased from the Regulation:
 - the projected demands, developed in consultation with the SEQ SPs, are able to be met for each year over the next 30 years
 - medium level restrictions imposed on the community will on average not exceed the frequency, severity and duration targets set through the LOS objectives
 - the three key storages in the SEQ Water Grid (Wivenhoe, Hinze and Baroon Pocket dams) have a very low probability of reaching MOLs
 - an EMSV of 100 litres per person per day on average across the region can be provided, if it is needed, and that the occurrence of the BWSS being reduced to EMSV is a very low probability event. The ability to supply the EMSV should consider water losses.
12. Some key considerations and interpretations for LOS objectives and the preparation of the WSP are summarised below:
 - **Desired** – LOS objectives are legislated as desired LOS objectives. This means the aim should always be to meet LOS, but decisions for expenditure should always have regard to the value-for-money (see below) of meeting such objectives. Furthermore, while the BWSS should be maintained to always have sufficient supply there might be times that the LOS objectives are not achieved due to operational constraints. This would be considered acceptable if the WSP outlines that such non-compliance is relatively short term, and the strategies and plans in place to facilitate meeting the LOS objectives over the long term and risks to supplying a sufficient and reliable water supply are being managed.
Sometimes it may be appropriate to adjust the LOS provided to a community, sub-region or supply zone where these are impractical or, comparatively with the remainder of the region or other areas of Queensland, too costly to achieve, and the disruption to the community is likely to be minimal.
 - **Application of LOS** – Compliance with LOS means that the objectives are, or can be met with planned upgrades and future operational strategies, over the 30-year planning horizon when assessed using the Regional Stochastic Model (RSM). The aim should be to ensure continuity of supply to all areas. Compliance with regional objectives applying to the BWSS means that projected demands and restricted supplies* can be delivered sub-regionally (by LGA or SEQ SP area if preferred) as well as regionally when using the RSM.
 - **EMSV** – is the absolute minimum supply that must be maintained in SEQ in any drought scenario. The figure prescribed in legislation is the minimum volume that must be available in an unlikely (very low probability) extreme drought. A volume higher than prescribed may be provided if a clear rationale is articulated and there is support from the SEQ SPs.
 - **Off-grid communities** – The LOS objectives apply to off-grid communities with the exception of the MOL objective which is specific to Wivenhoe, Hinze and Baroon Pocket dams and the SEQ Water Grid. Compliance with the LOS objectives for off-grid communities requires interpretation and achievement of the desired overall LOS statistical outcomes in a way that is appropriate to the situation (refer to

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‘desired’ above). It is noted that due to the variation in supply reliability of local supplies of the off-grid communities, water restrictions might need to be applied to off-grid communities when there are no SEQ-wide water restrictions. The drought response plan for the off-grid community must identify the trigger for imposing water restrictions and the associated expected frequency for reaching that trigger.

- **Neighbouring communities** – These communities are not part of SEQ and the LOS objectives do not apply to them. Demand impacts of neighbouring communities on the BWSS should be considered.
- **‘Value-for-money’** – requires consideration of matters beyond price and compliance (refer to [Queensland Government advice](#)). This consideration should include whole-of-life costs, fitness for purpose, social impacts, and customer and community support. Planning and operations will be adaptive to the circumstances and will include consideration of options to meet LOS objectives. Operational strategies, including optimisation of bulk water transfers and system improvement works to defer major works, must be considered as part of the solution in addition to future infrastructure options. Major new works should generally only be considered when failure to meet LOS objectives is likely or the region (or part of the region) is in preparation for drought.

In consideration of value-for-money, the timing of construction of the contingency water supplies should be modelled so that the supplies commence operation at no earlier than SMSL.

13. The regulatory requirements for the more severe action required below the SMSL relate to minimum operating levels (MOL) and essential minimum supply volume (EMSV). Seqwater is responsible for establishing how such objectives are to be met, including detailing actions in the WSP such as restrictions more severe than MLWR and drought contingency infrastructure.

Content of water security program

14. Under section 353 of the Act, a WSP must include information about strategies or measures for both grid-connected communities and off-grid communities:
 - (a) operating the designated water security entity’s assets for providing water services in the region or part of the region to which the water security program relates; and
 - (b) addressing future infrastructure needs, including building new infrastructure or augmenting existing infrastructure; and
 - (c) managing the infrastructure relevant to the designated water security entity’s operations; and
 - (d) managing demand for water; and
 - (e) responding to drought conditions; and
 - (f) any other matter prescribed under a regulation.
15. A WSP need not be limited to these matters and may comprise one or more documents (see ‘Format’ section under ‘Administration’ for more detail).
16. Other matters prescribed in Section 82 (f) of the Regulation above to be included in a WSP are:
 - (a) the process the bulk water supply authority will use to work out the Projected Regional Average Urban Demand (PRAUD) including, for example, the authority’s key assumptions and methodology

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- (b) deciding the level in the bulk water supply system that is the trigger for taking action in response to drought
- (c) deciding 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 reaching the minimum operating levels.

LOS objectives

17. Section 82 of the Regulation outlines as a minimum the triggers and measures needed for compliance with the LOS objectives relating to the PRAUD for the SEQ region and drought water supply, including restrictions, SMSL, MOL and EMSV. The general content that should be provided in relation to the LOS objectives is described under the next section titled 'Water balance assessments' with specific content outlined in the following sections titled 'Projected regional average urban demand' and 'Drought supply'.

Water balance assessments

18. To show that the BWSS is able to supply enough water to meet LOS objectives, Seqwater will need to:

- (a) undertake assessments which demonstrate that supply meets demand at least regionally and sub-regionally and for off-grid communities at the local level during normal times and at all levels of restrictions imposed during drought response. The water balance applies to the supply of water to meet the LOS objectives, including all levels of water restrictions. To support this the WSP should include:
 - o a high-level summary of the water balance assessments as they relate to the enhanced case and future case.
 - o note the supply (i.e. LOS yield) for the existing system case.

The supply (i.e. LOS yield) for the current operations case should be noted either in the WSP or in supporting documentation.

- (b) maintain, update and, from time-to-time, peer review models¹ used to assess water security of the SEQ Water Grid and off-grid communities to enable water supply and demand balance assessments
- (c) ensure that water balance modelling for the SEQ Water Grid and off-grid communities has appropriate assumptions for water supply, demands and water transfers at the regional, sub-regional and supply zone level (bulk water supply points to the SEQ SPs)
- (d) undertake water balance assessments for the grid-connected communities when the WSP is updated (generally at least every five years) for the existing system case, enhanced system case and, if appropriate, the future system case
- (e) undertake water balance assessment for off-grid communities when the WSP is updated (generally at least every five years) for the enhanced system case and, if appropriate, the future system case.

¹ This includes the Regional Stochastic Model used to assess the water security of the SEQ Water Grid, and locally relevant models for off-grid communities.

Projected regional average urban demand (PRAUD)

19. To show achievement of the LOS objective for the PRAUD under sections 79 and 82(a) of the Regulation, the WSP must:
- (a) work out the projected demand in collaboration with the SEQ service providers
 - (b) publish the projection and include information on the process used to determine projected demand
 - (c) show how the BWSS meets the projected demand under the existing system, enhanced system case and, if appropriate, the future system case
 - (d) assess the currency of the projected demand annually.
20. Under section 353 of the Act, a WSP must include information about strategies or measures for operating assets for providing water services in the region or part of the region to which the water security program relates. Therefore, for PRAUD the WSP should:
- (a) provide information on demand projections and consumption for the grid-connected communities and off-grid communities.
 - The PRAUD for SEQ, at a regional and sub-regional level, should be provided for the next 30 years, expressed in litres per person per day, and megalitres per annum for the combined residential and non-residential water use for at least 5-year intervals over the next 30 years. If Seqwater chooses to use different units, timeframes or separate projected demand by type when publishing in the WSP, this should be in addition to the required format. This does not prevent longer planning horizons from being used if necessary, for longer term planning considerations.
Note: the WSP and annual reporting should present PRAUD as one figure incorporating residential and non-residential water use and system losses with power station demand. However, it is also useful to separate these demands by type and area (e.g. sub-regions/SEQ SPs as appropriate) to improve transparency and put downward pressure on average per person consumption.
 - For off-grid communities, the PRAUD is required only for the current year, and the 30-year projection (expressed in litres per person per day, and megalitres per annum for the combined residential and non-residential water use)
 - (b) explain key assumptions that underpin the projections for the grid-connected and off-grid communities. Explain how the assumptions were determined, particularly population forecasts and business growth, and provide estimates of the population to be serviced
 - (c) give a broad overview of the process, including an outline of the considerations made when determining the demand projections, including the proportion of demand attributed to non-residential use
 - (d) outline how Seqwater collaborated with SEQ SPs to work out the grid-connected communities' and off-grid communities' demand projections. Demand projections should aim to be reflective of existing material developed by SEQ SPs (e.g. planning schemes, development projections and negotiated supply arrangements).
 - (e) outline the annual assessment process that will be undertaken to determine whether the PRAUD demand is still current. This could be a simple assessment with the projected demand compared with actual demands and could be done graphically.

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- (f) to show that the BWSS can supply sufficient volumes, present the water balance assessments incorporating PRAUD (L/p/d) and total water demand (ML/a) over the next 30 years undertaken at both a regional and sub-regional (or LGA, SEQ SP area or supply zone) level for grid-connected communities and for each off-grid community.

Bulk water drought supply

21. Section 353(1)(e) of the Act requires that the WSP must provide information about Seqwater's strategies for responding to drought conditions.
22. For the SEQ region (i.e. both grid-connected and off-grid communities), the WSP should provide:
 - (a) a summary of drought response actions that Seqwater has determined it may implement to respond to drought conditions
 - (b) for each key drought response action:
 - o the objective of the strategy, action or measure (including the targeted demand reduction for any demand management measure)
 - o the targeted outcome of the strategy, action or measure
 - o the trigger for implementing the strategy, action or measure and broad detail on the method used to develop or revise the trigger
 - (c) specifically state the drought response level and the SMSL, as well providing an overview of the methodology used to develop or revise these levels
 - (d) any additional water supply infrastructure required and the high-level plans and/or processes to enable this infrastructure to be available when needed. This includes identifying appropriate early actions (e.g. concept planning, land purchases), risks associated with the planning process, and indicative timeframes required to develop detailed plans and build infrastructure.
 - (e) overview of potential costs and benefits involved with the implementation of each key drought response action
 - (f) potential risks to the drought response strategy and associated mitigation measures
 - (g) appropriate analysis of climate change in SEQ and the possible ramifications for future droughts
 - (h) ability to implement drought actions when triggered under the drought response, i.e., appropriate plans are in place to ensure that the drought response actions can be undertaken when needed. The WSP demonstrates the readiness to enact the drought response based on current operations case and an appropriate risk profile.
23. In relation to providing EMSV, the WSP should provide:
 - (a) how the amount of water supply available under EMSV conditions has been calculated and compared to demand. For the region, make clear how many years the EMSV can be maintained for.
 - (b) a high-level strategy that shows how EMSV will be provided across the region noting the expected volume from each water source type during EMSV and consideration of drought severity that may be experienced in future drought events
 - (c) the trigger for a detailed strategy for how EMSV will be distributed and delivered to each of the sub-regions. This detailed strategy should include assumptions and calculations of the proportion of water

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required per sub-regional area, with consideration to potential levels of inflows, and availability of assets and their capability.

- (d) justification if a higher volume than the EMSV is desired. EMSV is the minimum amount of water that must be supplied in an unlikely extreme drought to meet the Regulation requirement, but a higher volume can be planned for. If a higher volume is chosen, analysis should be completed to demonstrate costs and benefits and the higher volume should be developed in consultation with SEQ SPs and the Government. A high-level summary of the principles and analysis for a higher volume should be included in the WSP.

24. For the drought response grid-connected communities the WSP should outline

- (a) the drought response actions and the specified trigger levels for key drought response activities including:

- Drought readiness level (taking action to prepare for drought and reduce the risk of reaching drought response level)
- Drought response level (taking action in response to drought)
- MLWR (trigger must be between the drought response level and the SMSL)
- SMSL (taking more severe action in response to drought to minimise the risk of storages reaching minimum operating levels)
- other restriction levels
- contingency infrastructure construction trigger
- EMSV trigger.

- (b) the risk profile (i.e. probabilities) for each of the trigger levels upon which the drought response strategy is based

- (c) evidence to show the ability to implement the drought response using the current operations case (i.e. using an appropriate risk profile and drawdown scenario, that there is adequate time to undertake the specified drought response actions)

- (d) modelling² for the WSP showing achievement of the LOS objectives for the enhanced system case and, if appropriate, the future case (i.e. the statistics from the modelling):

- Modelling should be based on:
 - the drought trigger levels
 - the assumed entry and exit triggers that allow for some separation between applications of restrictions to ensure that restrictions will not be re-entered again in the near future
 - ability to supply off-grid communities (e.g. either modelling to show that enough water exists locally or enough water can be supplied from the SEQ Water Grid (by carting for example) when needed).
- Particular information should be provided on:
 - the duration of water restrictions as prescribed in section 80 of the Regulation

² Regional Stochastic Modelling

- MLWR under section 80 of the Regulation for the frequency and severity of medium restrictions
 - EMSV prescribed in section 81 of the Regulation for the region
 - reaching MOLs prescribed in section 81 of the Regulation.
25. The drought response for each off-grid community in the WSP should (in addition to the requirements in section 22) provide:
- (a) key drought response actions, associated triggers, and expected outcomes
 - Key drought response actions include stand-pipe closure, key communications, water efficiency messaging, water restrictions, accessing drought contingency supplies.
 - (b) demonstration that each off-grid community meets the LOS objective for frequency, severity and duration of water restrictions and the frequency for triggering EMSV
 - (c) demonstration for off-grid communities where carting from the SEQ Water Grid is not feasible—how the water supply available under EMSV conditions has been calculated and will be delivered, ideally through modelling or the ability to connect an appropriate contingency supply.
 - For off-grid communities where it is assumed carting from SEQ Water Grid will provide the EMSV volume, no further information is required in the WSP.

Future infrastructure planning

26. Section 353(1)(b) of the Act states the WSP must include information about Seqwater's arrangements, strategies or measures for how future infrastructure needs will be addressed.
27. The WSP should outline:
- (a) The following scenarios, and their inherent key assumptions, in a clear format to allow ease of comparison:
 - current operations case
 - existing system case
 - enhanced system case, outlining the water security enhancements that are assumed to occur (compared to the existing system case) including infrastructure/works and the improvement/removal of operational limitations that are assumed to benefit water security. It is noted that other projects might occur that will not be specified in the WSP as they are not considered to have a significant water security impact.
 - if appropriate, future system case.
 - (b) a high-level prioritising of infrastructure and major upgrade projects, and likely order of implementation, to meet the water demand over the next 30 years, the LOS objectives, and any works required for statutory compliance (e.g. dam safety upgrades). The prioritising should be adaptive—able to respond to changing demands, technology, and other drivers. If the enhanced system case provides sufficient yield for the next 30 years, the WSP should specify a shortlist of potential options for future supply

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augmentation that may be included in a future system case.

- (c) projected impacts of climate change should be considered in both the enhanced system case and the future system case
 - (d) principles for providing access to water for non-urban customers
 - (e) consideration of potential demands by neighbouring communities that are considered likely to be supplied from the BWSS in future (which may be done through sensitivity analysis) including a high-level summary of how this could impact the LOS yield. The assumptions relating to modelling this impact should be clearly specified in supporting documentation (e.g., assumed demands, application of any water restrictions, if appropriate – the assumed reliability of neighbouring community's storages).
28. In addition to high level information in the WSP, supporting documents should provide detailed information on the bulk water supply assessments underpinning future water infrastructure planning. These assessments would need to include, but not be limited to:
- (a) robust demand assessments regionally, sub-regionally and by supply zone incorporated into the model of the SEQ bulk water supply system or other water balance models for off-grid communities
 - (b) identify water supply shortfalls and identify solutions to maintain supply when they may occur
 - (c) potential risks to water security associated with each bulk water supply infrastructure option (e.g. the dependence on rainfall during droughts)
 - (d) estimated costs associated with any identified bulk water supply infrastructure/works option(s) for the enhanced system and future system cases
 - (e) scenario analysis, to ensure the best outcome under a range of conditions (e.g. climate change, economic, weather, operations)
 - (f) measures taken to ensure that the preferred infrastructure/works can be constructed when required (e.g. preserving the site or resuming the land when required)
 - (g) Seqwater's preparedness to implement the desired future infrastructure options.

Such documents should be available on request for review.

Infrastructure management and operation

29. Sections 353(1)(a) and (c) of the Act require that the WSP includes information about Seqwater's arrangements, strategies or measures for operating its assets, and managing the infrastructure relevant to providing water supply to the SEQ region.
30. It is expected that the WSP contains details on infrastructure management such as:
- (a) the operational status, capacity and normal intended operation of critical assets
 - (b) principles for maintenance, readiness, and renewal or upgrade of critical assets
 - (c) operational principles, strategies or measures in place for managing water supply security for the region, including for off-grid communities (including operational changes)
 - (d) how Seqwater will ensure readiness of any manufactured water asset (i.e. how Seqwater plans to have manufactured water assets available when required)

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- (e) how operations are to be adaptive to the circumstances existing at the time including drought, floods, and asset outages for maintenance, renewal and upgrades.

31. Further operational detail can be made available through supporting documents, including:

- (a) information updated on an annual basis outside of the WSP cycle
- (b) back-up strategies for the potential operational failure of critical assets
- (c) conditions under which export/import stops or flow reverses for the major bulk water pipelines between the sub-regions
- (d) the implications of operational strategies on water supply security and the bringing forward or deferral of significant capital expenditure.

Demand management

32. Section 353(1)(d) of the Act requires that the WSP must include information about Seqwater's arrangements, strategies or measures for managing demand for water.

33. The success of any planned demand management measures will be reliant upon the support of Seqwater's customers. For this reason, the WSP should note any agreed plans with the SEQ SPs.

34. The WSP should outline:

- (a) the process under which Seqwater and the SEQ SPs collaborate to manage the demand for bulk water
- (b) the demand management measures that may be implemented (during and outside of drought)
- (c) the assessment approach used to determine appropriate demand management measures
- (d) considerations that will be undertaken to determine when to implement a particular demand management measure
- (e) the triggers for when such measures would be undertaken/implemented. Associated with each trigger should be the target or expected reduction in bulk water use.
- (f) 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 an appropriate economic analysis of water restrictions in comparison to other drought response measures that may be implemented.

35. In addition, demand management should be equally recognised in the WSP as one of the potential solutions for dealing with the pressures of an expanding population (e.g. alongside increasing supply or changed operations).

36. The success of any planned demand management measures will be reliant upon the support of Seqwater's customers. The SEQ SPs are required to include information outlining a strategy for demand management for water in the water netserv plans required under section 99BO of the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*. Where possible Seqwater and the SEQ SPs should work together to actively promote the efficient use of water and alignment should be sought between documents that mention demand management to ensure a consistent approach. The WSP should broadly outline how SEQ SPs will be engaged in the development and implementation of any proposed demand management strategy to facilitate the targeted reductions in bulk water use (e.g. water restriction schedule).

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Water Security Annual Report (WSAR)

37. As required under the Regulation, the projected demand must be assessed annually. The WSP should outline the process under which Seqwater will provide and publish this assessment (i.e. through the WSAR).
38. Each annual assessment must include information on the outcome of whether the PRAUD urban demand is still current. Details that should be included in the assessment include:
 - (a) water use over the past year and comparison with previous years (ML/a and L/p/d), including water use by area (e.g. sub-region, LGA, or SEQ SP area)
 - (b) any changes to the projected demand and a summary of the reason for the change (for example, population growth, rainfall, temperature or business growth). Note projected demand is total demand and is measured in L/p/d.
 - If other units are used, the conversion to L/p/d should be explained.
 - If projected demands are separated out into residential and non-residential in the WSP, WSAR should also note if either has changed.
 - (c) use exception reporting for off-grid communities (e.g. where demand exceeds supply, a demand or supply upgrade trigger is reached, or to report high-growth rates).
39. The WSAR should, as much as possible, have a consistent reporting format each year and focus on clarity of information. It should be based either on a calendar year or financial year period, and it should be endeavoured to be published within three months of the end of the reporting period.
40. The WSAR should also provide an overview of the water supply security risk to the region including/detailing:
 - (a) major changes to the bulk water supply system over the past year, including infrastructure and operational changes (specifically update on any changes to the enhanced system case)
 - (b) total volumes of water supplied to the region, sub-regions (or LGA or SEQ SP area if preferred), off-grid communities, and neighbouring communities
 - (c) the total volume of water for the year supplied from each major BWSS storage and manufactured water asset
 - (d) when manufactured water assets have operated and any changes to risks to readiness in the past year
 - (e) assessment of the regional water balance
 - (f) relevant drawdown scenarios including different risk thresholds.

Administration

Format

41. The specific format for the WSP is for Seqwater to decide, though the WSP must be published on Seqwater's website, address statutory obligations and address how Seqwater and the SEQ SPs will work together to address the SEQ supply and demand balance requirements to deliver value for money. The

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WSP may be a single document, or an overarching document with attachments.

- 42. Attachments to the WSP are considered part of the WSP and are subject to review and publishing requirements.
- 43. The WSP can refer to other documents. These references need to be accessible for review by DRDMW and should be clearly marked when intended for internal use by Seqwater (e.g. operational and detailed technical documents).

Preparing and finalising the WSP

- 44. The process for preparing and consulting on the WSP is outlined in sections 354 – 355 of the Act. Given the potentially significant ramifications for SEQ if a severe drought occurs, it would be desirable that an overarching senior level steering committee is established for the preparation and reviewing of a WSP.
- 45. Seqwater is required to submit the draft WSP to the chief executive (the Director-General) of DRDMW. Information about any consultation undertaken with Seqwater’s customers in developing the draft WSP should also be provided to DRDMW at this time if it is not included in the WSP. Where possible Seqwater should engage with DRDMW early during the preparation of the draft WSP to minimise the need for multiple revisions during the review of the draft WSP.
- 46. The process for finalising the WSP is outlined in sections 356 – 358 and is broadly summarised by Figure 1. Note this reflects the minimum legal requirements for finalising the WSP. Given the content and implications of the WSP it will also likely be required to be noted by Cabinet.

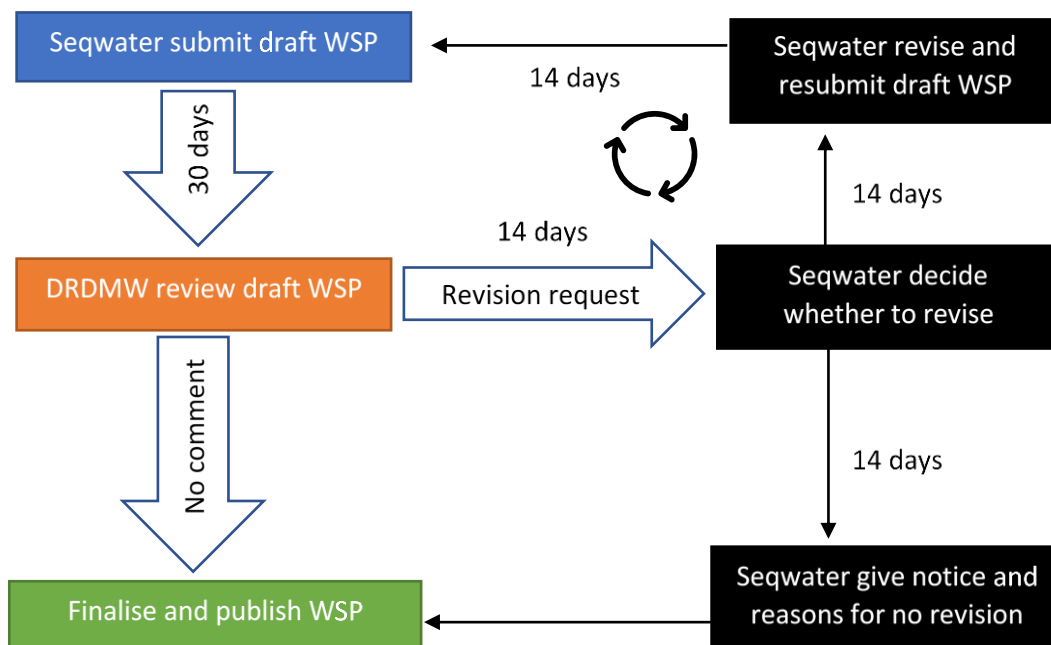


Figure 1. Process for finalising the WSP

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Review

47. The WSP is required under section 359 of the Act to be reviewed at least every five years. Such a review should be completed, and the WSP finalised and published within the five-year timeframe. 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.
48. Seqwater may also choose to review all or part of the Water Security Program at any time.
49. 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 Act have a significant change, the relevant documents must be updated and provided to the chief executive of DRDMW for review.
50. If the review determines that the WSP requires updating, Seqwater may choose to update only the relevant section/s of the WSP. Where only part of the WSP is updated, Seqwater should ensure that there is clear indication that the section has been updated and when.
51. If an administrative change is made to the WSP, Seqwater should advise DRDMW at least ten business days before publishing the updated WSP. An administrative change does not change the intent, or message of the Water Security Program and could include correcting typing or grammatical errors and changes to images.
52. If a change is to be made to the WSP that is a minor change, Seqwater will advise DRDMW at least 15 business days before the change is to be made and provide justification that the change is minor. Where DRDMW accept that this change is minor, Seqwater will amend the Program and update the chapter/s on the Seqwater website. If DRDMW do not accept the change is minor, Seqwater should progress a review of the chapter/s in accordance with items 49 and 50 of this guideline.

A minor change is considered to be a text change or update to information which does not materially impact on the facilitation of the desired level of service objectives, the operating strategies, future infrastructure needs, management of infrastructure, demand management or drought response approach.
53. Where the change is considered significant Seqwater will consult with the DRDMW and progress a review of the chapter/s in accordance with items 49 and 50 of this guideline. A significant change is considered to be a change which impacts on the facilitation of the desired level of service objectives or the drought response approach, or government policy.

Attachment 1. Compliance requirements of the guideline

Section	Topic	Background information	Supporting document	Suggested content in Water Security Program	Suggested content in water security annual report
1-5	Introduction	✓			
6-13	Planning context	✓			
14-17	Overview of content requirements	✓			
18(a)-(e)	Water balance assessments	✓			
18(a)	Summary of water balance assessment			✓	
18(a)	LOS yield for current operations case		✓		
19	Overview of PRAUD requirement	✓			
20(a)-(e)	Demand projections, assumptions and process			✓	
20(f)	Water balance assessment			✓	
21	Overview of drought response requirement	✓			
22(a)-(h)	Drought response triggers, triggers and risks			✓	
23(a)-(d)	Provision of the essential minimum supply volume			✓	
24(a)-(d)	Detail of grid-connected communities drought response			✓	
25(a)-(c)	Detail of off-grid communities drought response			✓	
26	Overview of infrastructure planning requirement	✓			
27(a)	Case scenario overview			✓	
27(b)-(c)	Future infrastructure requirements			✓	
27(d)	Principle for providing water to non-urban customer			✓	

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Section	Topic	Background information	Supporting document	Suggested content in Water Security Program	Suggested content in water security annual report
27(e)	Consideration of neighbouring communities			✓	
27(e)			✓		
28	Supporting documents for infrastructure planning		✓		
29	Overview of infrastructure operations and management requirement	✓			
30(a)-(e)	Details of infrastructure operations and management			✓	
31	Supporting documents for infrastructure operations and management		✓		
32	Overview of demand management requirement	✓			
33	Agreement with SEQ service providers	✓			
34(a)-(f)	Demand management considerations, measures and triggers			✓	
35	Demand management solution	✓			
36	Collaboration with SEQ service providers for demand management	✓			
36(a)	Development of demand management strategy			✓	
37	Details of publishing the water security annual report			✓	
38(a)-(c)	Demand annual assessment				✓
39	Format of water security annual report	✓			
40(a)-(f)	Assessment of water supply security risk				✓
41-43	Format of the WSP	✓			
45-46	Preparing and finalising the WSP	✓			
47-53	Review of the WSP	✓			

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