

Integrated Water Cycle Management Strategy Check List

February 2019

The Integrated Water Cycle Management (**IWCM**) Strategy is a local water utility's (LWU's) resourcing¹ strategy for the provision of appropriate, affordable, cost-effective and sustainable urban water services that meet community needs and protect public health and the environment. A LWU's IWCM Strategy:

- Sets the objectives, performance standards and associated performance indicators for the water & sewer business;
- Identifies the needs and issues based on evidence and sound analysis;
- 'Right sizes' infrastructure;
- Determines the investment priority in consultation with the community and stakeholders; and
- Identifies the 'best value 30-year' IWCM scenario on a triple bottom line (TBL) basis.

The key outcomes of a LWU's IWCM Strategy are:

- 30-year total asset management plan (TAMP);
- 30-year financial plan (FP); and
- Drought and emergency response contingency plan (DERCP).

A LWU's IWCM Strategy addresses three elements of the Best-Practice Management of Water Supply and Sewerage Framework² [IWCM, Water Conservation and Drought Management Plan] and six of the nineteen requirements of the NSW Government's Best-Practice Management of Water Supply and Sewerage Guidelines, 2007.

The **IWCM Strategy** and the Strategic Business Plan (**SBP**) need to be prepared in accordance with this Check List and the SBP Check List respectively.

A local water utility's (LWU's) **peak planning documents** for its water supply and sewerage businesses are its current **IWCM Strategy** and its current **SBP**. The IWCM Strategy and SBP need to be prepared every 8 years on a rotation of every 4 years, as shown in Figure 1 on page 3. As noted in Figure 2 on page 4, the final IWCM Strategy needs to include a sound Financial Plan (item 17 on page 19) for the adopted 30-year IWCM Scenario. A SBP document would then need to be completed 4 years after completion of the LWU's IWCM Strategy as shown in Figure 1. The LWU's water and sewer Development Servicing Plan (DSP) need to be reviewed and updated following the completion of the IWCM Strategy.

This Check List is essentially a road map and has been prepared to assist a LWU and its community to identify the urban water services issues³, assess the options, develop and evaluate IWCM scenarios and adopt a sound IWCM Scenario, Strategy and Financial Plan in a transparent manner to address the identified

¹ Refer to page 20 of the Integrated Planning and Reporting Manual for local government in NSW, March 2013 (<https://www.olg.nsw.gov.au/sites/default/files/Intergrated-Planning-and-Reporting-Manual-March-2013.pdf>).

² The NSW Government's Best-Practice Management of Water Supply and Sewerage Framework was introduced in 2004 and updated in 2007, 2011, and 2014 (www.water.nsw.gov.au). The Framework through the 19 requirements addresses the key recommendations of the Productivity Commission's Report No. 55 on *Australia's Urban Water Sector, August 2011* (www.pc.gov.au) and the 9 National urban water requirements.

³ An issue is defined as an unacceptable risk of failure to meet statutory requirements or the adopted Levels of Service now or within the 30-year planning horizon and needs to be supported by evidence based data/analysis.

issues. This Check List and the IWCM Information Sheets are based on and supersedes Appendices A, C, D and F of the NSW Government's *Best-Practice Management of Water Supply and Sewerage Guidelines, 2007*, and has drawn on the *IWCM Guidelines for NSW Local Water Utilities, 2004* (www.water.nsw.gov.au).

A current IWCM Strategy is one which has been prepared every 8 years and reviewed⁴ every 4 years as part of a LWU's Strategic Business Plan⁵.

This Check List and the IWCM Information Sheets simplifies and clarifies the extent of the tasks that need to be undertaken for an IWCM Strategy, including the Issues that need to be addressed in regard to Levels of Service (LOS) and regulatory or contractual requirements (Item 1 of Figure 2 on page 4) and the use of 'approximate Typical Residential Bills (TRBs)', which are suitable for comparing IWCM scenarios, without the expense of undertaking detailed financial modelling for each IWCM scenario. Furthermore the planning process has been simplified as shown in Figure 2 on page 4 so that once the IWCM Issues Paper (item 8 on page 13) has been prepared by the LWU and reviewed by NSW Department of Industry, the LWU can proceed to prepare a new IWCM Strategy (item 15 on page 19). Such a strategy is required every 8 years as noted above. This Check List together with the SBP Check List is suitable for **defining the scope of work**⁶ for engaging a consultant to undertake preparation of a 30-year IWCM Strategy. References used in this Check List are shown on page 21.

As noted on page 1, a local water utility's peak planning documents are its current IWCM Strategy and its current SBP. The Tables below summarises the key difference between an IWCM Strategy and SBP.

IWCM Strategy:

- Based on evidence and sound analysis '**right sizes**' any **projects** and **identifies the best-value 30-year IWCM scenario and Strategy** on a triple bottom line (TBL) basis (items 13 and 15 on page 19).
- Identifies the lowest uniform level of stable typical residential bills (**TRBs**) to meet the levels of service negotiated with the community & price path for the next 4 years in current dollars (Item 17 on page 19).
- The adopted 30-year IWCM scenario includes an **update** of the existing 30-year renewals plan, with only proven evidence based renewals included for the first 5 years. The **renewals plan** takes account of any avoided, re-sized, abandoned and re-prioritised works (item 11 on page 18).
- An IWCM Strategy is prepared every 8 years (Figure 1 on page 3).

⁴ The 4-year mid-term review of the IWCM Strategy needs to cover the principal assumptions and risks underpinning the IWCM Strategy, outlined in Items 6.5B to 6.5J on page 9 of the Strategic Business Planning (SBP) Check List.

⁵ In accordance with page 19 of the Integrated Planning and Reporting Manual for local government in NSW 2013, water supply and sewerage strategic business plans or IWCM Strategies prepared by a county council must also give due regard to the Community Strategic Plans of the constituent councils and must be developed in consultation with the constituent councils. In addition, Clause 219 (2) of the Local Government (General) Regulation 2005 indicates:

'Following an ordinary election of councillors of the constituent councils of a county council, the county council must review the business activity strategic plan before 30 June following the election. The council may endorse the existing plan, endorse amendments to the existing plan or develop and endorse a new business activity strategic plan, as appropriate to ensure that the council has a business activity strategic plan covering at least the next 10 years.'

The water supply and/or sewerage county council's business activity strategic plan with respect to Clause 219 (2) are its current **IWCM Strategy** or current **SBP**, whichever is the more recent.

⁶ The LWU in consultation with the Department of Industry's regional Water Utilities representative needs to **review the applicability of each item in this Check List** to their LWU's context prior to requesting quotes from Consultants as the Check List items define the scope of the work. In addition, the LWU may elect to undertake specified items in the Check List in-house.

- NSW Department of Industry concurrence is needed to the IWCM Issues Paper (item 8 on page 13), final IWCM Strategy and scenario and the Financial Plan (items 15 and 17 on page 19) prior to LWU implementation of the scenario.
- The key outcomes of an IWCM Strategy are the 30-year total asset management plan (**TAMP**⁷), supporting financial plan (**FP**⁸) and drought and emergency response contingency plan (**DERCP**⁹) (Item 17 on page 19).

SBP:

- Reviews and updates** the LWU's existing 30-year **TAMP**, identifies any opportunities to downsize or defer significant projects and includes a **FP**.
- Analyses** the **renewals** component of the TAMP to **develop** a sound 30-year **renewals plan**, the first 5 years of which include only proven evidence based renewals that provide value for money.
- Identifies the lowest uniform level of stable **TRBs** to meet the levels of service negotiated with the community and the price path for the next 4 years in current dollars.
- A SBP is prepared every 8 years, ie 4 years after preparing the IWCM Strategy (Figure 1 below).
- Final SBP and FP is submitted to NSW Department of Industry for registration.

The IWCM Strategy and SBP need to be prepared every 8 years on a rotation of every 4 years, as shown below. This involves preparing a TAMP and FP every 4 years, updating these plans annually, and including any necessary corrective action in your annual **Action Plan** to Council.

⁷ The **total asset management plan** includes the new infrastructure required for growth and to meet service objectives, renewals infrastructure to meet service objectives, non-build solutions such as efficiency measures and resourcing requirements to meet service objectives.

⁸ The **financial plan** establishes the total revenue requirements, the borrowings that may be required and the lowest uniform level of stable price path to support the asset management plan.

⁹ The **drought and emergency response contingency plan** sets out the tactical response measures to ensure the continuity of the water and sewer services under all emergencies that may be encountered by the LWU.

¹⁰ The IWCM Strategy provides a transparent evidence based analysis in accordance with this Check List to ensure that the proposed works are fit for purpose, do not involve wasteful 'gold plating' and that the available options have been evaluated on the above TBL basis. This will ensure that any lower cost options are not unfairly dismissed and will thus avoid unwarranted increases in the Typical Residential Bill (TRB).

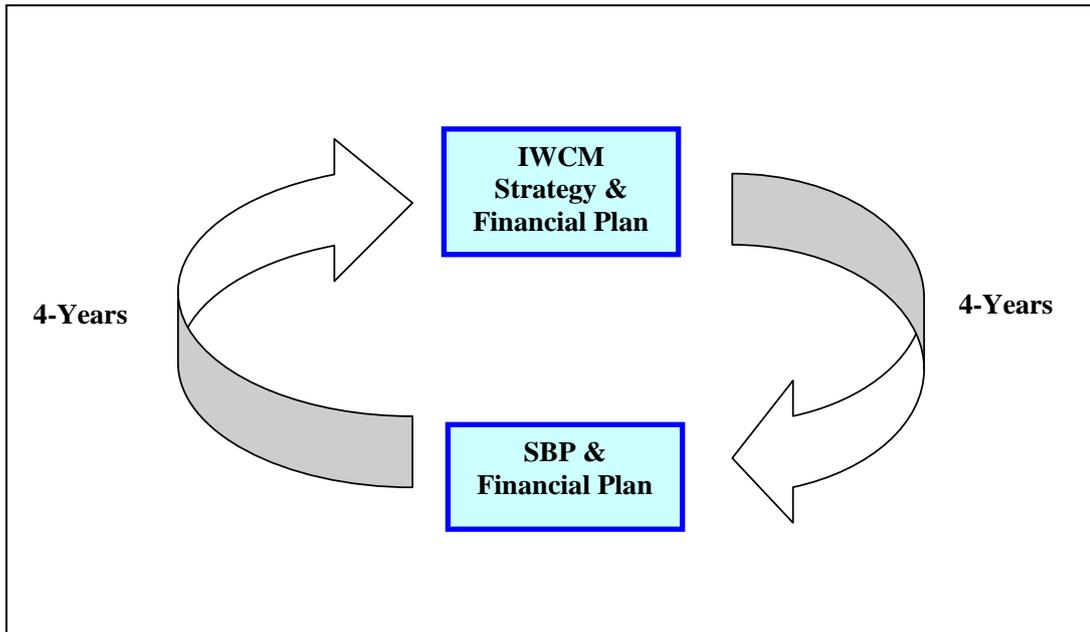


Figure 1: The IWCM Strategy and SBP

Figure 2: Streamlining Implementation of NSW Best-Practice Management of Water and Sewerage Framework¹
 IWCM Strategy Development & Assessment

Input Requirements

Analysis Tables:
 - Following Analysis Tables from Strategic Planning (SBP) Guidelines, Sections 5.2 & 5.3 on pages 20 to 25.
 # Operating Environment Compliance Analysis
 # Situation Analysis of levels of service (LOS)
 - Long-term Trends in NSW Benchmarking Report

1. Operating Environment & LOS Review
2. 30-year Population & Demographic Projection
3. 30-year Water Cycle Analysis & Projection
4. Secure Yield of Existing Water Supply Headworks System & Sustainable Yield of Groundwater
5. Sustainability of Water Recycling Systems
6. Annual Performance Monitoring Data

Reference Documents:
 - Existing SBP, including Total Asset Management Plan (TAMP)+
 - Drinking Water Management System+
 - Existing Development Servicing Plan+
 - Trade Waste Regulation Policy+ & Approvals and Sewerage and Trade Waste Pricing+
 - Drought Management Plan
 - Water Cycle Management & Conservation Plan
 - Water Pricing Signals+
 - Complaints Register & Reporting+
 - Asset Register+ & Valuation Report+
 - Pollution Incident Response Management Plan+
 - TBL Performance Reports & Action Plans+

IWCM Issues Paper²
 Covers urban water system issues relating to:
 - Regulatory & Contractual compliance
 - Levels of Service (LOS)
 - Capacity to meet current & future demands and loads
 - System Performance & Utilisation
 - Appropriateness & Effectiveness Review of Existing TAMP to Address All Issues

IWCM Strategy
 30-year IWCM Strategy with fit for purpose non-build & build measures to address the urban water system issues. Includes:
 - Description of water systems for each urban centre
 - Summary of projections for each urban centre
 - Summary of issues & new TAMP based on review of existing TAMP
 - Analysis & documentation of merits of all non-build & build options
 - Evaluation of all shortlisted feasible options
 - Develop 30-year IWCM Scenarios
 - Approximate typical residential bill (TRB) for each IWCM Scenario
 - Triple bottom-line (TBL) assessment and ranking of the 30-year IWCM Scenarios
 - Outcomes of community involvement and responses to community feedback
 - A recommended IWCM Scenario and implementation plan

Calculate **approximate** typical residential bill (TRB) for each IWCM Scenario by taking into account the requirements of the Customer Service, TAM & Work Force Plans.

Identify Best-Value IWCM Scenario (TBL basis)

Is TRB Affordable?

Review and Amend LOS of Best-Value IWCM Scenario until Affordable

Final IWCM Strategy², Adopted Scenario and Financial Plan

Outcomes

- Best-value IWCM scenario identified (social, environmental & economic - TBL basis).
- Sustainable water supply & sewerage implemented.
- Fair pricing of services, appropriate water, sewerage & trade waste tariffs, full cost recovery, strong pricing signals to encourage efficient use of services.
- Sound regulation of sewerage & trade waste.
- Exposure to drought & climate variability mitigated.
- Efficient water cycle management & use.
- Drinking water quality is fit for purpose.
- Emerging issues addressed & corrective actions implemented following annual TBL Performance review.

NOTES:

+ in accordance with the relevant NSW Guidelines and/or Legislation (www.water.nsw.gov.au)

1. The NSW Best-Practice Management of Water Supply and Sewerage Framework is the practical means of implementing the Goal of the NSW Government's Country Towns Water Supply and Sewerage (CTWSS - www.water.nsw.gov.au) Program by the regional NSW local water utilities (LWUs), which are expected to implement the Framework.

2. As noted at items 8 and 15 on pages 13 and 19 of the IWCM Check List, the Issues Paper and the Final IWCM Strategy, including the TAMP and Financial Plan for the adopted scenario, need to be provided to NOW for review and concurrence.

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|--|--|
| 1. Executive Summary | <ul style="list-style-type: none"> <input type="checkbox"/> A. Covers all major issues, the IWCM Strategy Scenarios including their cost estimates, approximate Typical Residential Bills (TRBs) in Year 2\$, aggregated Triple Bottom Line (TBL) scores and rank, and a plan and description of the adopted IWCM Scenario. <input type="checkbox"/> B. Includes a summary of the 30-year population and demographic projection (Item 2 of Figure 2 on page 4), the 30-year water cycle analysis and projection (Item 3 of Figure 2 on page 4), and a summary of the Financial Plan Report (Item 17A on page 19). |
| 2. Introduction | <ul style="list-style-type: none"> <input type="checkbox"/> A. Includes the study area context (e.g. map of the local government area (LGA) showing the cities, towns and villages, etc). <input type="checkbox"/> B. Includes a table of all the urban centres/areas (i.e. towns and villages) within the study area indicating the nature of the water supply and sewerage service provision. <input type="checkbox"/> C. Includes a summary table of current IWCM strategy measures and the status of outcomes. <input type="checkbox"/> D. Includes with evidence any changes to the assumptions underpinning the current IWCM strategy, the outstanding issues, the new and emerging issues, etc. with respect to the urban water services. |
| 3.1. Operating Environment Compliance* (Refer to Section 5.2 of Reference 1 on page 21) | <ul style="list-style-type: none"> <input type="checkbox"/> A. The regulatory and contractual compliance requirements are clearly defined and linked to objectives, performance standards and performance indicators. <input type="checkbox"/> B. Includes all issues from the operating environment compliance situation analysis (Item 1 of Figure 2 on page 4). |
| 3.2. Levels of Service (LOS) (Refer to Section 5.3 of Reference 1 on page 21) | <ul style="list-style-type: none"> <input type="checkbox"/> A. Target LOS are clearly defined and linked to objectives, performance standards and performance indicators, and have taken account of your existing SBP. <input type="checkbox"/> B. Includes all issues from the LOS situation analysis (Item 1 of Figure 2 on page 4). <input type="checkbox"/> C. Any warranted changes to the Target LOS are identified and explained. <input type="checkbox"/> D. Community consultation is essential on the proposed levels of service* (LOS) in order to negotiate an appropriate balance between LOS and the required Typical Residential Bill (section 12.4 on page 85 of Reference 1). <input type="checkbox"/> * As noted in section 7.2 on page 35 of Reference 1, LOS refer generally to operational levels of service such as aesthetic drinking water quality (e.g. colour – refer to section 12.1 on page 81 of Reference 1), water pressure, response times etc. Regulatory requirements such as complying with your utility's water extraction licence, sewerage system licence and dam safety and workplace health and safety requirements cannot be negotiated down by a water utility. Similarly, utilities must meet the health related aspects of the Australian Drinking Water Guidelines 2011 (ADWG) such as microbiological and chemical water quality compliance (refer to section 7.1.1 on page 31 of Reference 1). |

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4. Description of Existing Urban Water Services Systems
- For **all serviced and unserviced towns and villages** the existing water supply, sewerage and stormwater systems are described in detail including the following where practicable¹¹:
- A. A map or aerial image of each urban centre (i.e. city, town or village) clearly showing the water supply and sewer serviced area boundary.
 - B. A schematic plan of each **water supply system** showing the headworks, treatment and pumping facilities, service reservoirs, trunk mains and reticulation and their capacities.
 - C. A brief description of the catchment characteristics (e.g., average annual runoff volume, land use, annual usage by all users, significant industries, etc) from which water is drawn. Include as an appendix the relevant publicly available water catchment maps, score cards, etc.
 - D. A brief description of each of the water supply assets/facilities including their characteristics, capacities, purpose, standby/emergency arrangements, water extraction/operating licence conditions (include licence conditions as an appendix) and the overall scheme control philosophy and communication system used for control and monitoring.
 - E. A schematic and a brief description of each water treatment process including the sludge and wastewater management practices.
 - F. A summary outline of your Category 3 trade waste discharges and reports whether trade waste policy, approvals and pricing, and reporting in accordance with Reference 5 on page 21, are in place.
 - G. A schematic plan of each **sewerage system** showing the hierarchy of the sewer pumping facilities, gravity catchments, treatment facilities, water recycling systems and their capacities.
 - H. A brief description of each of the sewerage system assets/facilities including their characteristics, capacities, purpose, standby/emergency arrangements, overall scheme control philosophy and communication system used, discharge/operating licence conditions (include licence conditions as an appendix) and the receiving environment.
 - I. A schematic and a brief description of each sewage treatment process including the grit and biosolids management practices and capacity of key treatment process units.
 - J. A schematic and a brief description of each water recycling system and their capacities/area, the types of end use of water within the enterprises and the associated management practices and agreements.
 - K. A schematic plan of the urban area showing the **urban stormwater** sub-catchments including the urban stormwater harvesting and use systems, common detention/retention systems.
 - L. A brief description of the stormwater sub-catchments (i.e., land-use characteristics), the assets/facilities including their capacities, purpose, the overall scheme control philosophy, discharge/operating licence conditions and the receiving environment.
 - M. A summary outline of trend of key asset and financial performance indicators of the water and sewer assets and business respectively from the latest Valuation Report and Special Schedules 4 to 7 of your LWU's annual financial statements including commentary of its appropriateness.
 - N. A summary of the current price signals¹² such as typical residential bill (TRB), developer charges (DC), water usage charge per kL, the percentage of residential water supply revenue from usage charges, non-residential sewerage charge per kL, etc.
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Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|---|--|
| | <input type="checkbox"/> O. A summary of existing management systems used for assets, customer complaints/relationship, finance and its effectiveness in use by staff including status/completeness, level of integration, familiarity, etc. |
| 5. 30-Year Population and Demographic Projection ⁷ (Item 2 of Figure 2 on page 4) <i>(This item 5 and the following item 6 could be a stand-alone Paper or an Attachment depending on complexity)</i> | For each service reservoir zone in each of your potable and non-potable water supply systems provide the following where practicable: <ul style="list-style-type: none"> <input type="checkbox"/> A. The number of existing connected properties¹³ (residential and non-residential) and assessments¹³ (since 1996) obtained using your LWU's water customer billing database and reservoir zone layers (linked to Geographic Information Systems (GIS) where practicable). <input type="checkbox"/> B. An estimate of the existing unoccupied and seasonally occupied (e.g. holiday dwellings) connected residential properties obtained from sources such as the local real estate agent or Council staff or tourist information services or customer billing database or Australian Bureau of Statistics (ABS) C-data. <input type="checkbox"/> C. An estimate of the connected permanent residential population including household size using ABS C-data. <input type="checkbox"/> D. For the non-residential sector the number of existing commercial, industrial, rural, and institutional, hospital, school, hotel/motel, public swimming pools, council premises, and urban public parks and gardens connections. <input type="checkbox"/> E. Nature of major water using and/or discharging industries. <input type="checkbox"/> F. An estimate of the total number of existing and new beds in connected tourist premises (e.g. motels/hotels, cabins/caravans, etc) obtained from sources such as the local real estate agent or Council staff or customer billing database or premise operators or ABS data. <input type="checkbox"/> G. An estimate of the vacant lots, lot yield from larger lots that are likely to be subdivided within the existing zoned urban areas, lot yield from redevelopment areas, and lot yield from the new release area(s) that are to be serviced by each reservoir {establish using the reservoir zone, cadastre and Local Environment Plan (LEP) zone layers (linked to GIS where practicable) and their timing and take-up rate. Provide a map and table summarising the development type with details in an appendix. |

¹¹ Please note compilation of the detail data sets identified in this Check List will greatly simplify preparation of a new IWCM Strategy after 8 years. The use of Tables is strongly encouraged for the concise presentation and analysis of results. Refer also to footnote 9 below.

¹² These prices are available on pages 84 and 87 of Reference 3 on page 21.

¹³ Note that the key results for each LWU are reported in Tables 5 to 18 of the annual NSW Benchmarking Report (www.water.nsw.gov.au). From August 2014, a Water Supply and Sewerage Planning Data Set of the key results in these tables for each LWU since and including 2002/03 will be made available from the Department of Industry. This will provide the bulk of the required data on a 'whole LWU basis' and will need to be supplemented with about 2 to 5 years of data compiled by the utility on a 'scheme basis'. However, it should be noted that collecting and maintaining data/information on your system and its performance is mandatory, immaterial of the LWU size to comply with the State Records Act and for future planning and operational improvements. It is noted that a proposed Best-Practice Information Sheet will provide guidance on undertaking planning using the performance indicators reported in References 16 and 18 on page 21, rather than the traditional indicators such as 'tenement', 'occupied tenement' and 'lot'.

The IWCM Strategy and SBP need to be prepared every 8 years on a rotation of every 4 years, as shown in Figure 1 on page 3. This involves preparing a TAMP and FP every 4 years, updating these plans annually, and including any necessary corrective action in your annual Action Plan to Council (page 3).

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|-------|--|
| | <input type="checkbox"/> H. The number of existing (since 1996) and new connected residential ¹⁴ and non-residential ¹⁰ properties and assessments, and the permanent and peak population ¹⁵ to be served by each reservoir for the next 30 years. |
| | <input type="checkbox"/> I. The number of existing (since 1996) and new connected ^{17,19} residential ¹⁴ and non-residential ¹⁰ properties and assessments, and the permanent and peak population ^{15,17,19} to be served by each scheme's headworks for the next 30 years. |
| | For each sewer catchment (i.e. sewer pumping station and/or gravity) in each of your sewerage systems establish the following where practicable: |
| | <input type="checkbox"/> J. The number of existing connected properties ¹⁰ (residential and non-residential) and assessments ¹⁰ (since 1996) obtained using the LWU's sewer/water customer billing database, ABS C-data and sewer catchment layers. |
| | <input type="checkbox"/> K. An estimate of the existing unoccupied and seasonally occupied (e.g. holiday dwellings) connected residential properties obtained from sources such as the local real estate agent or Council staff or tourist information services or customer billing database or ABS C-data. |
| | <input type="checkbox"/> L. The number of existing dwellings that are serviced with town water supply but not with town sewer system (i.e. on-site systems). |
| | <input type="checkbox"/> M. For the non-residential sector the number of commercial, industrial, rural, institutional, hospital, school, hotel/motel, public swimming pools, council premises and public toilet connections and an estimate of the equivalent tenements (ETs) ¹⁶ involved. |
| | <input type="checkbox"/> N. The vacant lots, lot yield from larger lots that are likely to be subdivided within the existing zoned urban areas, lot yield from redevelopment areas, and lot yield from the new release area(s) that are to be serviced by individual sewer catchments and their timing and take-up rate. |
| | <input type="checkbox"/> O. The number of existing (since 1996) and new connected ¹⁷ residential ¹⁴ and non-residential ¹⁰ properties and assessments, and the permanent and peak equivalent population (EP) ¹⁵ and equivalent tenement (ET) ¹² to be served by each catchment for the next 30 years. |
| | <input type="checkbox"/> P. The number of existing (since 1996) and new connected residential ¹⁴ and non-residential ¹⁰ properties and assessments, and the permanent and peak equivalent population (EP) ^{15,17,19} and equivalent tenement (ET) ^{12,17,19} to be served by each scheme's sewage treatment works for the next 30 years. A reliable measurement of existing EP from measured sewer flows may be used. |
| | <input type="checkbox"/> Q. For each unserved urban centre/area provide existing and projected 30-year permanent and peak population and occupied properties. |

¹⁴ To maintain consistency with page 38 of Reference 18, a detached house, a unit or flat, a townhouse, a terrace house or a villa is defined as one connected residential property. Also refer to items 3A to 3C on page 50 of Reference 14.

¹⁵ Also graphically show the latest high, medium and low growth projections from NSW Planning and Infrastructure plus the projection adopted by your utility.

¹⁶ Refer to Example 4 of Reference 6 on page 21.

¹⁷ Undertake a 'sanity check' of the total population, assessments, service connections, residential connected properties and total connected properties serviced by the utility by comparing these totals with the values in Tables 9 and 14 of the annual NSW Benchmarking Report (Reference 16 on page 21).

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|--|---|
| 6. 30-Year Water Cycle Analysis and Projection ⁷ (Item 3 of Figure 2) | <p>For each scheme's potable and non-potable water supply headworks systems establish the following where practicable:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A. A time series graph showing the actual and corrected¹⁸ historical daily, monthly and annual production as well as annual consumption of potable and non-potable (if present) water. <input type="checkbox"/> B. The factors/trends¹⁸ (such as demographic, climatic, economic, lot size, water efficiency, restriction impacts, pricing, etc) that have affected historic water production and consumption. <input type="checkbox"/> C. The volume of non-revenue water¹⁹ (NRW) [represented as L/connection/d]. This comprises real losses (mostly leakage), apparent losses (under-registration of customers' meters and illegal use) and authorised unbilled water (e.g. mains flushing and fire fighting). <input type="checkbox"/> D. The climatic and other factors/trends corrected¹⁸ unrestricted annual dry year demand²⁰ per connected residential property. <input type="checkbox"/> E. The climatic and other factors/trends corrected¹⁸ unrestricted average annual residential water supplied per connected property. <input type="checkbox"/> F. The climatic and other factors/trends (e.g. reservoir effect, etc) corrected¹⁸ unrestricted peak day demand²⁰ per connected property. <input type="checkbox"/> G. The historical persistence of daily demand leading up to and after the peak day demand event. <input type="checkbox"/> H. The unrestricted annual¹³ and peak day water demands of each non-residential connection type with climatic and other factors/trend correction if possible. For the non-residential sector, the total water supplied²¹ should be recorded for each of commercial, industrial, rural, institutional, public parks and gardens and non-revenue water (NRW). <p>The following 30-year water demand projections²² taking account of the reservoir level analysis information, the impact of natural propagation of water efficiency, BASIX, water pricing and other current and planned LWU water efficiency measures:</p> <ul style="list-style-type: none"> <input type="checkbox"/> I. Total unrestricted annual dry year demand aggregated from the residential and non-residential connections for sizing of headworks infrastructure such as a dam, etc; <input type="checkbox"/> J. Total unrestricted annual average year demand aggregated from residential and non-residential connections for licensing and revenue requirements prediction; and |

¹⁸ The Department of Industry has withdrawn the requirement to use the IWCM Water Demand Trend Tracking and Climate Correction software and the IWCM Rainwater Tank Model software for this analysis. However, the analysis undertaken needs to be robust and fit for purpose and the outcomes need to demonstrate that the adopted demand figures are appropriate.

¹⁹ Cross-check these values with those reported in Tables 8A, 10 and 10A of Reference 16 on page 21. Refer also to pages 14 and 24 of Reference 16.

²⁰ Undertake a 'sanity check' by comparing these values with Indicator 33 (residential water supplied kL/annum/connected residential property) and Indicator 33a (peak day and peak week water supplied kL/day/connected property) of your LWU's annual TBL Performance Report (an example TBL Report is shown on page 75 of Reference 3).

²¹ This information for each LWU is reported in Table 8 of the annual NSW Benchmarking Report. From August 2014, such results for each LWU since and including 2002/03 will be made available from the Department of Industry. Refer to footnote 9 on page 7. Refer also to pages 12 and 110 of Reference 16.

²² The IWCM demand side management planning decision support system model may be used (www.water.nsw.gov.au).

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|-------|---|
| | <input type="checkbox"/> K. Total unrestricted peak day demand aggregated from residential and non-residential connections for sizing of water treatment works, pumping facility, etc. For each scheme's potable and non-potable service reservoir zones establish the following where practicable: |
| | <input type="checkbox"/> L. The unit demands of connected residential property and of each non-residential connection type and NRW using the bulk flow meter/pumping records and consumer meter records. |
| | <input type="checkbox"/> M. The total current peak and average day demands aggregated from the residential and non-residential connections for each reservoir zone. |
| | <input type="checkbox"/> N. The 30-year total unrestricted peak day demand aggregated from the residential and non-residential connections for each reservoir zone for sizing of reservoirs, distribution mains, booster pumping facility, etc. |
| | <input type="checkbox"/> O. Check that the water savings due to implementation of best-practice pricing (refer to Circular LWU11 of March 2011) and BASIX requirements have been accounted for in the annual and peak day demand projections. |
| | <input type="checkbox"/> P. Includes brief analysis of the impact of climate variability on the unrestricted annual and peak day demand projections. |
| | <input type="checkbox"/> Q. Lists all the unserviced urban centres/areas within the local government area or LWU's area of operation and includes for each unserviced urban centre/area the projected 30-year peak day and annual demands aggregated from the residential and non-residential occupied properties. |
| | For each sewer catchment establish the following where practicable: |
| | <input type="checkbox"/> R. The actual and designed average dry and peak wet weather flows per ET and per EP using the consumer water meter records, SPS telemetry data and the sewer design manual. Include the dates, daily rainfall and the estimated ARI the actual per ET and EP flows were based on. |
| | <input type="checkbox"/> S. The current actual and design ADWF, PDWF and PWWF for each catchment aggregated from the residential and non-residential connections. |
| | <input type="checkbox"/> T. The 30-year projection of actual and designed ADWF, PDWF and PWWF for each catchment taking into account the impact from natural propagation of water efficiency, BASIX, water pricing and other current Council water efficiency and sewer flow management measures. |
| | For each sewage treatment works system establish the following where practicable: |
| | <input type="checkbox"/> U. A time series graph showing the historical daily, monthly and annual sewage and effluent flows in conjunction with daily rainfall records. |
| | <input type="checkbox"/> V. The actual current per EP and ET average dry weather flow. A reliable measurement of existing EP from measured sewer flows may be used. |
| | <input type="checkbox"/> W. The actual ADWF, PDWF and PWWF over time (since 1996) using the historic flow analysis and data. |
| | <input type="checkbox"/> X. The 30-year projection of actual and design ADWF, PDWF, PWWF and annual effluent volume as a time series taking account of the catchment level analysis information, pumping capacities and the impact of natural propagation of water efficiency, BASIX, water pricing and other current and planned LWU water efficiency and sewer management measures. |
| | <input type="checkbox"/> Y. The actual current per EP biological and nutrient loads. |

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|--|--|
| | <ul style="list-style-type: none"> <input type="checkbox"/> Z. The 30-year projection of biological and nutrient loads as a time series. <input type="checkbox"/> AA. Include a brief analysis of the impact of climate variability on peak wet weather flows using the location-specific intensity, frequency and duration of rainfall analysis available on the Bureau of Meteorology (BOM) website. <input type="checkbox"/> AB. Lists all the unserved urban centres/areas within the local government area or LWU's area of operation and for each unserved urban centres/areas includes the projected 30-year ADWF. <p>For each Water/Effluent Recycling System establish the following where practicable:</p> <ul style="list-style-type: none"> <input type="checkbox"/> AC. A time series graph (since 1996) showing the historical daily, monthly and annual usage in conjunction with daily rainfall records for each of the discharge or reuse pathways (urban use, reclaimed water, industrial, agricultural or discharge). <input type="checkbox"/> AD. The average per connected property and peak daily per connected property usage when used as reclaimed water for urban customers. <input type="checkbox"/> AE. The estimated 30-year daily and annual projection for each of the discharge and/or reuse pathway as a time series. <p>For each Urban Stormwater System²³ establish the following where practicable:</p> <ul style="list-style-type: none"> <input type="checkbox"/> AF. The current and 30-year projection of annual stormwater volumes for each of the discharge and/or urban stormwater harvesting and use pathways as a time series. <input type="checkbox"/> AG. The current and 30-year projection of annual biological and nutrient loads as a time series. |
| 7. Existing Urban Water System Capacity and Performance Assessment | <p>For each Water Supply System the following outcomes are reported based on sound analysis:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A. Secure yield of existing headworks system undertaken in accordance with draft NSW Guidelines on Assuring Future Urban Water Security – Assessment and Adaption Guidelines for NSW Local Water Utilities (Reference 17 on page 21). <input type="checkbox"/> B. Sustainable yield of groundwater sources²⁴ that form part of the headworks system. <input type="checkbox"/> C. A time series graph showing the historical and projected annual unrestricted dry year demand super-imposed with the assessed secure yield or sustainable yield (if groundwater source) of the existing headworks system and licensed annual extraction volume. Includes commentary on the headworks ability to meet current and future demands and LOS. <input type="checkbox"/> D. A table summarising the historical raw water quality data of each supply source (and for each bore if more than one bore is used) including a discussion on the variables that has an influence on the effective performance of the water treatment process to meet the LOS. |

²³ This information may be summarised from your Council's Stormwater Management Plan with appropriate reference.

²⁴ Contact Department of Industry for this information.

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|-------|---|
| | <input type="checkbox"/> E. A table summarising the historical reticulated water quality data ²⁵ of each scheme including a comparison to the LOS target. Also include a brief discussion on the effectiveness of the treatment process, barriers and management systems in meeting the LOS target. |
| | <input type="checkbox"/> F. A time series graph showing the historical and projected peak day unrestricted demand super-imposed with the design/assessed capacity of the existing treatment works (including raw and treated water pumping facilities) and licensed daily extraction volume (if applicable). Includes commentary on the ability of the treatment works to meet current and future demands and LOS. |
| | <input type="checkbox"/> G. A summary showing the performance of the distribution system against the LOS targets under current and future demand scenarios. The details of the analysis may be included as an Attachment. |
| | <input type="checkbox"/> H. A summary of the asset condition for each key class of assets from the latest Valuation Report including commentary on how current conditions meet Council's and LWU's stated objectives. If asset conditions are not available establish preliminary ratings for key assets in each facility. |
| | <p>For each Sewerage System the following outcomes are reported based on sound analysis:</p> <input type="checkbox"/> I. A table showing the performance of each sewer catchment with respect to inflow/infiltration, pumping capacity, pump run time in dry and wet weather conditions, available storage at 4 hours of ADWF and odour/septicity potential assessed using the historical sewer pumping/bulk flow meter records obtained via Telemetry including a brief commentary on the potential performance with the future loads/flows and LOS targets. |
| | <input type="checkbox"/> J. A table summarising the historical effluent quality data of each scheme including a comparison to the LOS target and discharge limits for the licence. Also include a brief discussion on the effectiveness of the treatment process, barriers and management systems in meeting the LOS target and discharge limits for current and future scenario. |
| | <input type="checkbox"/> K. A time series graph showing the historical and projected biological and hydraulic loads super-imposed with the design/assessed capacity of the key process units of the existing treatment works and licensed daily discharge volume (if applicable) including commentary on the ability of the treatment works to meet current and future loads and LOS targets. |
| | <input type="checkbox"/> L. A summary of the asset condition for each key class of assets from the latest Valuation Report including commentary on how current conditions meet Council's and LWU's stated objectives. If asset conditions are not available establish preliminary ratings for key assets in each facility. |
| | <p>For each Water/Effluent Recycling System the following outcomes are reported based on sound analysis:</p> <input type="checkbox"/> M. A table summarising the historical data and showing the existing sustainability performance (e.g. nutrient, salt and hydraulic, etc) against the compliance and/or LOS targets and a commentary on the potential performance with the future loads and flows. |
| | <p>For each Urban Stormwater²³ Harvesting and Use System the following outcomes are reported based on sound analysis:</p> <input type="checkbox"/> O. A table showing its performance against the objectives and LOS targets. |

²⁵ This data is available from the NSW Health database (www.health.nsw.gov.au).

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|----------------------|---|
| | <p>For each <i>unserved town/village</i> include the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> P. Assessment of performance of the existing water supply relating to environmental sustainability, public health and availability of supply (estimated and actual observed) during extended dry periods and during average rainfall years. <input type="checkbox"/> Q. Assessment of performance of the existing on-site sewage management systems based on LGA clause 68 inspections relating to environmental sustainability and public health. <input type="checkbox"/> R. A review with respect to the requirements in the Environment and Health Protection Guidelines: On-Site Sewage Management for Single Households and any other relevant guidelines, standards or policies including local geology and topography. |
| 8. IWCM Issues Paper | <p>The IWCM Issues Paper is to include the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A. Summary of all the outcomes from items 2 to 7 on pages 5 to 12. <input type="checkbox"/> B. A summary table of the information and data gaps relating to regulatory compliance and LOS targets based on a review of all the reference documents and operational monitoring data. <input type="checkbox"/> C. A table capturing all (existing unresolved, new and emerging) issues in each water service system that have been identified through the analysis, site inspection and from community consultation, and clearly showing whether the issue is one of regulatory compliance, LOS or capacity. <input type="checkbox"/> D. Known recurrent and non-recurrent issues from a review of maintenance logs, incident reports, annual Action Plan and TBL Reports, customer complaints, EPA²⁶ Public register licence breaches and Department of Industry²⁷ system inspections (section 61 of <i>Local Government Act 1993</i>). <input type="checkbox"/> E. All items requiring a capital works resolution (refer to Item 1 of SBP Check List for your LWU's business compliance and LOS assessment). <input type="checkbox"/> F. Includes a brief review to identify issues to support your city, town or village water-sensitive urban design (WSUD) and the broader 'liveable towns and cities' objectives as per paragraph 92 of the National Water Initiative²⁸. <input type="checkbox"/> G. Includes a summary of the existing TAMP measures and their current status. Check whether any of the identified issues are being addressed through the measures in the TAMP that are at an advanced stage²⁹ of implementation. <input type="checkbox"/> H. Includes item 6.7 on page 10 of the SBP Check List relating to your Drinking Water Management System. <p>A 'value for money' review of the appropriateness and effectiveness of the existing TAMP of your LWU's existing SBP in addressing all of the outstanding issues, for example:</p> |

²⁶ EPA refers to NSW Environment Protection Authority (www.epa.nsw.gov.au).

²⁷ NSW Department of Industry's Water branch (www.water.nsw.gov.au).

²⁸ National Water Commission (www.nwc.gov.au).

²⁹ An advanced stage of implementation means resources have been allocated for the approved non-build measures in your current Operational Plan and for build measures the contract for construction has been awarded and/or construction is underway.

Integrated Water Cycle Management Strategy – Check List

| Topic | Outcome Achieved |
|--|---|
| | <ul style="list-style-type: none"> <input type="checkbox"/> I. The current program measures in the non-build water conservation and inflow/infiltration measures need to be reviewed based on current performance data, new knowledge and technology, regulation, community acceptance, possible new integration, etc. <input type="checkbox"/> J. The capital works program review to consider whether the issues (existing, new or emerging) could be more cost-effectively addressed using an alternative solution path. <input type="checkbox"/> K. Provide IWCM Issues Paper to NSW Department of Industry Water for review and concurrence. |
| 9. Feasibility Review of Options ³⁰ | <p>For All water supply and sewerage related issues the first step is to complete the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A. Check that the current and proposed future water pricing³¹ is best-practice. Also refer to Circular LWU 11 of March 2011 on how to update your water supply tariff to ensure best-practice pricing. Implement corrective action if this is not the case as this has been proven to provide great value for money to the community (refer to page 5 of Reference 3). <input type="checkbox"/> B. Includes an assessment to ascertain if previously dismissed non-build water conservation measures/options²⁷ are now attractive/effective based on current performance data, new knowledge and technology, new policy and regulation, community acceptance, availability of resources, etc. <input type="checkbox"/> C. Includes a review of current program and potential new non-build water conservation measures²² with respect to their cost effectiveness (e.g., system wide measures such as leakage reduction, pressure reduction, unmetered usage and metering error, replacement of worn customer meters (typically over 10 years old), communication, permanent water conservation measures, etc and site specific retro-fit and conservation measure to existing dwellings/premises). <input type="checkbox"/> D. Check to ensure the supplementary water source to comply with BASIX requirements for new dwellings is not double-counted. <input type="checkbox"/> E. Includes a priority and cost-effectiveness review (based on current performance data, new knowledge and technology, regulation, community acceptance, etc) of current program, previously dismissed and potential new measures to reduce sewer system inflow/infiltration at both the premises and network levels. <input type="checkbox"/> F. Check that all available options for the water services have been identified and reviewed at individual site level, urban centre/area level, existing scheme/system level and broader regional level. <p>For issues relating to water supply headworks system security of supply the following is demonstrated:</p> |

³⁰ A LWU could by-pass this phase and proceed to document the existing/improved TAMP in a new IWCM Strategy and have it adopted by the Council providing the existing/improved TAMP addresses **all** of the issues using minor/routine measures. Minor/routine measures include a chlorination plant or a water tank for a small community, replacement of a short length of water/sewer mains to maintain continuity of service including break-down/routine repairs. It does not include measures such as a water cycle or demand management program, a leakage reduction program, scheduled renewals, infrastructure upgrade/augmentation or new infrastructure to serve unserved areas.

³¹ A separate Water Conservation Plan with Department of Industry concurrence will not be needed in the future, provided all available water conservation and water cycle management measures and programs have been evaluated within the IWCM Strategy and a suitable water conservation and management program adopted as part of the adopted IWCM Scenario. The implementation of the program and its effectiveness should be monitored and reported within the SBP (refer to items 6.4D to 6.4L on pages 8 and 9 of the Strategic Business Planning Check List).

- G. Includes a suitability assessment of the previously dismissed options as a stand-alone and/or supplementary water source based on current information such as new knowledge, updated costs and yield estimates, legal context, technology changes resulting in lower cost and/or effective treatment, community feedback, higher affordability, etc.
- H. Available new supply sources (regional, local, site specific) together with any legislative/policy considerations is briefly described and its potential as a stand-alone and/or supplementary source has been reviewed with indicative yield and cost estimates.
- I. Includes the reasons for short-listing or not short-listing of each non-build and build option and an overview of the decision process. Options may only be excluded from the short-list where they are demonstrably less competitive than the short-listed options on a TBL basis (IWCM Information Sheet No. 2, 2019 (Reference 8 on page 21)).

For issues relating to **water quality and treatment** improvement the following is demonstrated:

- J. Includes a review of all available water quality improvement measures such as catchment protection, in-situ storage management, alternate water sources, improved operation of existing treatment facilities and distribution system management together with a brief description of their effectiveness as a stand-alone and/or supplementary measure to water filtration (if any) of the existing source. Include cost estimate for each measure.
- K. Includes a brief outline of the shortlisted water treatment process and process unit options to meet the LOS target and the option chosen for IWCM scenario analysis with reasons.
- L. Includes the reasons for short-listing or not short-listing of each non-build and build option and an overview of the decision process. Options may only be excluded from the short-list where they are demonstrably less competitive than the short-listed options on a TBL basis (IWCM Information Sheet No. 2, 2019 (Reference 8 on page 21)).

For issues relating to **water distribution** improvement the following is demonstrated:

- M. Includes a description of all options and their costs and the reasons for short-listing or not short-listing the options.

For issues relating to **sewage treatment and effluent quality** improvement including **recycled water systems** the following is demonstrated:

- N. Since the level of sewage treatment is dependent on the end use of the effluent and the receiving environment, all options (i.e., previously dismissed and potential new) such as urban open space watering, industrial recycling, non-potable reuse, indirect potable recycling (IPR), direct potable recycling (DPR), agricultural recycling, environmental substitution, waterways discharge, etc are to be identified and reviewed along with indicative cost estimates and urban water cycle benefits such as secure yield, potable water demand reduction, etc.
- O. Includes consideration of sewer mining (new and previously dismissed) with recycling within existing developed areas and new release areas.
- P. Includes the reasons for short-listing or not short-listing of each non-build and build option and an overview of the decision process. Options may only be excluded from the short-list where they are demonstrably less competitive than the short-listed options on a TBL basis (IWCM Information Sheet No. 2, 2019 (Reference 8 on page 21)).

- Q. Includes a brief outline of the shortlisted sewage treatment process and process unit options to meet the LOS target and the option chosen for IWCM scenario analysis with reasons.

For issues relating to **sewer network** improvement the following is demonstrated:

- R. Includes a description of all options and their costs and the reasons for short-listing or not short-listing the options.

For issues relating to **urban stormwater**³², the IWCM Strategy should only include cost of harvesting and use schemes or measures that would deliver a positive benefit to the urban water cycle by reducing potable water demand and/or inflow to sewer system to the water services budget. For each option:

- S. Include a brief outline of all the options reviewed with indicative yield (dry, wet and average year³²), cost estimates and urban water cycle benefits along with the reasons for short-listing or not short-listing the option.

For each **unserved town and village** the following is documented:

- T. A brief overview of all the options to improve the current practices as well as all available community-wide options.
- U. Process and factors used in the short-listing of the options and risk ranking of the unserved towns/villages.

For issues relating to your **water-sensitive urban design and 'liveable cities and towns'** objectives include where practicable:

- V. The non-build and build opportunities and/or options (e.g. watering of parks and gardens and playing fields and the use of water sensitive urban design principles to encourage the greening of urban areas and healthy urban creeks and waterways) to address the issues along with the appropriate financial contributions from each beneficiary of such 'broader solutions' (e.g. a large water user, or Council's Planning, Parks and Gardens, Stormwater and/or Roads, Waterways and/or Estuary functions) such that the implementation can be coordinated through your IWCM Strategy. Refer to page 22 of Reference 3.
- W. The potable water demand, sewer flow and stormwater flow reductions associated with each opportunity/option.

For issues relating to **water and sewer management systems** improvement the following is demonstrated:

- X. Includes a description of all options and their costs and the measures/option(s) chosen for IWCM scenario analysis with reasons.

10. Evaluation and Assessment of Feasible Options

(Note that the shortlisted options could be at urban centre/area level, existing scheme/system level and broader regional level and the assessment should be at the respective levels)

All shortlisted **water supply** feasible options should be evaluated and optimised and include the following minimum information:

- A. A brief description of each option.
- B. Include a description of the non-build measures with their costs, benefits, estimated take-up rates and subsidies, etc. Identify separately the cost and benefit to the community and the utility.
- C. For build measures a schematic layout showing the infrastructure measures in each option including their costs, benefits, size, location, route, staging proposed, etc.
- D. The secure yield of each option (the analysis to incorporate lot/prescient level solutions such as rainwater tanks, recycled water, urban stormwater use, etc) undertaken in accordance with draft NSW Guidelines on Assuring Future Urban Water Security – Assessment and Adaption Guidelines for NSW Local Water Utilities (Reference 17 on page 21).

³² Refer to the Bureau of Meteorology for definition relating to dry, wet and average years (www.bom.gov.au).

- E. Includes the sustainable yield of groundwater sources for options that incorporate groundwater.
- F. Includes for each option the environmental flow regime that has been agreed 'in principle' with the stakeholders.
- G. The capital, operation and maintenance cost estimates for each option including the assumptions, risk factors, etc with the estimates.
- H. At least a 30-year present value analysis of each option at annual real discount rates of 10%, 7% and 4% per annum including sensitivity analysis with risk factors that influence the life cycle cost.

All shortlisted feasible **sewage treatment and effluent quality** improvement and **recycled water system** options should be evaluated and optimised and include the following minimum information:

- I. A brief description of each option.
- J. Include a description of the non-build measures with their costs and benefits.
- K. For build measures a schematic layout showing the infrastructure measures in each option including their costs, benefits, size, location, route, staging proposed, etc.
- L. Includes a preliminary estimate of the sustainability measures (e.g., nutrient, salt and hydraulic, etc) for land based effluent reuse options.
- M. The capital, operation and maintenance costs estimate for each option including the assumptions, risk factors, etc with the estimates.
- N. At least a 30-year present value analysis of each option at annual real discount rates of 10%, 7% and 4% per annum including sensitivity analysis with risk factors that influence the life cycle cost.

For the short-listed **urban stormwater harvesting and use** options²³ include the following:

- P. A brief description and schematic of each option including the assessed benefits and risks.
- Q. The life cycle costs (capital, operation and maintenance) and a 30-year present value analysis.

For **unserviced towns and villages** the short-listed options to include:

- R. The capital, operating and maintenance costs estimate and a 30-year present value analysis for each option including the assumptions, risk factors, etc with the estimates.
- S. For each unserviced town/village a risk based priority ranking of the town/village for option implementation.

For the short-listed 'broader solutions' that satisfy the **water-sensitive urban design and 'liveable cities and towns' objectives** include:

- T. A brief description and schematic of each broader solution including the assessed benefits and risks.
- U. An order of estimate of the life cycle costs (capital, operation and maintenance).
- V. Identification of each beneficiary of such 'broader solutions' (e.g. a large water user, or Council's Planning, Parks and Gardens, Stormwater and/or Roads, Waterways and/or Estuary functions) including the appropriate financial contributions from each beneficiary.

For the short-listed measure/options relating to the improvement of the **water and sewer management systems** objectives include:

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- W. A brief description of the measures/options, their capital, on-going and 30-year present value costs including the assumptions, risk factors, etc with the estimates and the contributions from the other Council departments such that the implementation can be coordinated through your IWCM Strategy.
-

11. Development and Assessment of IWCM Scenarios

- Ensure the options have been bundled into IWCM Scenarios and cover **all** the towns/villages proposed to be serviced including management system improvement measures/options.
- Each scenario should be evaluated and optimised and include the following minimum information:**
- A. Description of the non-build measures²⁷ including program costs, estimated take-up rates, subsidies, etc. Identify separately the cost and benefit to the community and the utility.
- B. Description of the build measures including their size, staging proposed, etc. and schematic where possible.
- C. The projected peak day and annual potable and non-potable water demand of each scenario.
- D. The sewer flows (ADWF, PDWF, PWWF) and loads and the annual volumes reused/recycled and discharged to waterways.
- E. Check to ensure the water cycle benefits from non-build measures and from bundling have been incorporated in the demands and sewer volumes, and in the sizing, staging, etc of the build measures.
- F. The secure yield of each scenario (the analysis to incorporate lot/prescient level solutions such as rainwater tanks, recycled water, stormwater use, etc) undertaken in accordance with draft NSW Guidelines on Assuring Future Urban Water Security – Assessment and Adaption Guidelines for NSW Local Water Utilities.
- G. A summary table outlining for each scenario the risk factors, assumptions, benefits and the timeframe when LOS outcomes are achieved. Note each scenario **must achieve the same LOS target outcomes** at the end of the 30-year planning horizon.
- H. The capital, operation, maintenance and administration cost estimates for each scenario including the renewals associated with the new works and the water and sewer management system improvement measures.
- I. Includes a renewals plan³³ for each scenario that has been adapted from the TAMP in your LWU's latest SBP to suit the works/measures in each scenario. If you do not have a renewals plan covering all existing assets within your TAMP, prepare a 30-year renewals plan for the existing assets and adapt appropriate for each scenario.
- J. A present value analysis of each scenario at annual real discount rates of 10%, 7% and 4% per annum. Ensure the costs associated with the non-build options are included in the present value analysis.
- K. Check to ensure the avoided capital, operation, maintenance and administration costs associated with existing infrastructure for each scenario have been correctly calculated and applied.
-

³³ A LWU must develop a 30-year **renewals plan** for its existing assets, but only 'proven' renewals should be included in the first 5 years of the TAMP. These should be based on documented evidence and 'value for money' (TBL) analysis, which should be reported in an appendix to the IWCM Strategy. The evidence basis and 'value for money' analysis should be supported by information collected from preventative maintenance monitoring programs, performance monitoring data, your complaints register, site audits, etc., together with levels of service compliance data and business risks and costs.

While it is important to renew existing assets when they have demonstrably exceeded their economic service life, prematurely replacing assets such as water mains, simply because they are over 80 years old would be wasteful 'gold plating', which would unnecessarily increase your TRBs.

| | |
|--|--|
| | <ul style="list-style-type: none"> <input type="checkbox"/> L. The approximate annual Typical Residential Bill (TRB)³⁴. <input type="checkbox"/> M. Check to ensure the water cycle benefits and any associated avoided costs from the short-listed 'broader solutions' that satisfy the water-sensitive urban design and 'liveable cities and towns' objectives have been incorporated in the demands and sewer volumes, and in the sizing, staging, etc. of the build measures. These broader solutions may be bundled into a separate scenario with appropriate allocation of costs to the respective beneficiaries (e.g. a large water user, or Council's Planning, Parks and Gardens, Stormwater and/or Roads, Waterways and/or Estuary functions) such that the implementation can be coordinated through your IWCM Strategy. |
| 12. Evaluation and Ranking of IWCM Scenarios | <ul style="list-style-type: none"> <input type="checkbox"/> A. The scenarios have been evaluated and ranked using the Triple Bottom Line (TBL) basis following the process outlined in IWCM Information Sheet No. 2, 2019 (Reference 8 on page 21). <input type="checkbox"/> B. Includes as an Attachment to the report the methodology and process used in the scoring of the criteria together with any pertinent information and/or comments used in the scoring process. |
| 13. Draft IWCM Strategy | <ul style="list-style-type: none"> <input type="checkbox"/> A. Includes an executive summary of all the outcomes from items 2 to 12, a table showing the measures in each scenario, their present value cost, appropriate TRB, and TBL score and rank and a plan and description of the recommended IWCM scenario. <input type="checkbox"/> B. The body of the report to include the pertinent information with sufficient detail provision under the headings of introduction, description of existing systems, population and demographic projection, water cycle projection, LOS, issues, options assessed, IWCM scenario evaluation and ranking, consultation/feedback outcomes and recommendations. <input type="checkbox"/> C. Includes a recommended scenario. |
| 14. Broad Community Feedback | <ul style="list-style-type: none"> <input type="checkbox"/> Community involvement throughout the IWCM strategy development process has been undertaken in accordance with IWCM Information Sheet No. 1, 2019 (Reference 8 and Reference 11 on page 21). |
| 15. Final IWCM Strategy | <ul style="list-style-type: none"> <input type="checkbox"/> A. In addition to the contents outlined in the draft, the final report also includes a summary of the feedback received and how it has been addressed within the adopted IWCM Strategy. <input type="checkbox"/> B. Includes an implementation plan with timelines for the recommended IWCM Scenario. <input type="checkbox"/> C. Provide Final IWCM Strategy to Department of Industry for review and concurrence. Includes a 30-year TAMP and Financial Plan for the adopted IWCM Scenario (item 17 below) and the DERCP. (A sound IWCM Strategy is one that has been reviewed and concurred by Department of Industry). |
| 16. Council Adoption of IWCM Scenario | <ul style="list-style-type: none"> <input type="checkbox"/> It should be noted that the Councillors as the elected representatives of the local water utility will need to review the IWCM scenarios and community feedback, and select an adopted IWCM Scenario³⁵ for implementation. |

³⁴ The approximate TRB established using the normal financial planning process is expected to be within about 10% of the figure calculated in your Financial Plan and Report for the adopted IWCM Scenario (Item 17A on page 19).

³⁵ Such a scenario will provide the best-value for money on the basis of social, environmental and economic considerations. Provide to the Department of Industry your LWU's adopted 30-year IWCM Scenario including the meeting minutes, TAMP and Financial Plan.

Comment: Any LWU undertaking significant capital works projects needs a robust total asset management plan (TAMP) to ensure its projects are 'right sized' and its TAMP provides value for money on the basis of social, environmental and economic considerations. Refer also to item 1 on page 2.

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17. Financial Planning
- A. A sound Financial Plan and Report in accordance with items 10 to 20 on pages 13 to 15 of the SBP Check List for your LWU's adopted IWCM Scenario.
 - B. A 30-year Total Asset Management Plan (TAMP) for the Adopted IWCM Scenario in accordance with item 7F on page 11 of the SBP Check List is appended to the Financial Plan.
 - C. Provide water supply and sewerage inputs to your Council's Integrated Planning and Reporting (IPR) in accordance with item 9 on page 12 of the SBP Check List.
 - D. Include as appendix a Drought and Emergency Response Contingency Plan (DERCP) based on adopted IWCM Scenario to meet needs for next 5-10 years in accordance with item 6.6 on page 10 of the SBP Check List.
-
18. Implementation of Adopted IWCM Scenario
- A. The final typical residential bill (**TRB**) and developer charges are based on the TAMP in the above Financial Plan.
 - B. The **TRB is the principal indicator of the overall cost of a water supply or sewerage system**. It is misleading to attempt to use tariff components such as the water usage charge, water access charge or the non-residential sewer usage charge for comparing the overall cost of systems. Refer to page 7 of Reference 3 on page 21.
 - C. The implementation of your LWU's IWCM Strategy and Financial Plan is monitored through your LWU's Annual Action Plan to Council where it is mandatory to report the actual annual TRB against the projection in your Financial Plan, along with the reasons for variance and any warranted corrective actions (refer to Appendix G of Reference 1 on page 21). This action would effectively 'close the planning loop' with your IWCM Strategy and Financial Plan.
 - D. The adopted LOS is also monitored by your LWU through the Annual TBL Performance Report and Annual Action Plan to Council which needs to include your LWU's corrective actions to meet the LOS targets.
 - E. Note that the adopted IWCM Scenario will continue to undergo the normal refinement during the project implementation stages as concept and detailed designs are developed for key components in response to environmental assessment, local geology, land matters, design and constructability considerations. Experience suggests that such refinement rarely alters the relative ranking³⁶ of IWCM scenarios developed on the basis of sound planning principles. Furthermore, the 4-year mid-term review of the IWCM Strategy as part of your SBP preparation will provide a valuable cross-check of the validity/currency of the underpinning assumptions.
-
19. Publication of IWCM Strategy and FP
- LWU should publish the final IWCM Strategy, Financial Plan, TAMP and DERCP on its website, including the key projects in the TAMP.
-

Sound planning for urban water security requires analysis of climate variability in accordance with the draft guidelines (reference 17) and development of suitable adaption measures as part of the LWU's 30-year IWCM strategy.

³⁶ However, projects need to be considered on a case by case basis. For instance, if there is a large increase in the capital cost of a project (e.g., a 25% increase, it may be warranted to re-examine the next best IWCM Scenario in order to assess whether it may provide better value for money (on a TBL basis). However, an increase of approximately 10% would not warrant such a re-examination as it is covered by the contingency amount adopted for preliminary cost estimates, which need to be prepared prior to determining the detailed site conditions, project designs, the detailed survey and positioning of structures.

REFERENCES*

1. *NSW Water and Sewerage *Strategic Business Planning Guidelines*, NSW Office of Water, NSW, July 2011 (available on www.water.nsw.gov.au).
2. *FINMOD User Manual [Draft]*, NSW Office of Water, 2011.
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NOTES

1. For further information, assistance and copies of the reference documents, please contact Roshan Iyadurai, Principal Urban Water Planner on (02) 9842 8504 or Roshan.Iyadurai@dpi.nsw.gov.au.
2. LWUs should continue to email their completed IWCM Issues Paper, Final IWCM Strategy and adopted IWCM Scenario, including the meeting minutes and the Financial Plan to the department for concurrence (Roshan.Iyadurai@dpi.nsw.gov.au). If you also wish to provide a 'hard copy', please forward to:

Principal Urban Water Planner, NSW Department of Industry
Level 10, 10 Valentine Avenue, Parramatta NSW 2142

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* LWUs should use the latest edition of each reference.