



Independent Pricing and Regulatory Tribunal

# Reporting Manual for Sydney Water Corporation

Water — Reporting Manual  
July 2010

## Amendment Record

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RM-SWC original	16 July 2010	First release

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# 1 Introduction

Sydney Water is a State Owned Corporation, wholly owned by the NSW Government. Its primary role is to manage potable water supply and wastewater systems to protect public health and the environment for the benefit of Sydney and surrounding urban areas. Sydney Water now supplies recycled water in some areas, mainly Rouse Hill. These roles and responsibilities are derived from the *Sydney Water Act 1994* (the Sydney Water Act) and the Operating Licence issued to Sydney Water pursuant to Part 5 of the Sydney Water Act.

IPART is responsible for monitoring and reporting compliance with Sydney Water's Operating Licence and has produced a reporting manual for Sydney Water that:

- ▼ consolidates all licence obligations from the Operating Licence (in summary form)
- ▼ consolidates and details all reporting requirements imposed under the Operating Licence, including the format and timetable of reporting, and
- ▼ details required performance indicators.

The reporting manual does not reproduce the licence obligations for Sydney Water in full. It is still necessary for Sydney Water to refer to the Operating Licence or to any legislation, statutory instrument or document referred to in the licence obligation (eg, Codes of Conduct, etc).

## 1.1 Obligation to report in accordance with Reporting Manual

It is a condition of Sydney Water's Operating Licence that it must comply with its reporting obligations set out in the Reporting Manual and must report to IPART in accordance with the Reporting Manual.<sup>1</sup>

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<sup>1</sup> Clause 9(a) of the Operating Licence.

## 2 Annual licence compliance reporting requirements

### 2.1 Annual compliance and performance report

Sydney Water is required to submit an annual compliance report certifying that it has complied with its licence obligations other than those identified in that report. The annual compliance and performance report must be signed by:

- ▼ the Managing Director and
- ▼ the Chairman of the Board or a duly authorised Board member other than the Managing Director.

Where Sydney Water has breached a licence obligation it is required to provide an exception report which details the:

- ▼ date or period of non-compliance
- ▼ extent and nature of the non-compliance (including whether and how many customers and/or other licensees have been affected)
- ▼ results of any monitoring (where applicable)
- ▼ reasons for non-compliance
- ▼ actions taken to rectify the breach and to prevent it re-occurring
- ▼ actual/anticipated date of full compliance.

Sydney Water must report its performance against the majority of its indicators as part of the annual compliance and performance report.<sup>2</sup>

Appendix A sets out the format of the annual compliance and performance report. Schedule A of Appendix A provides a pro-forma of an exception report.

### 2.2 Annual reporting cycle

The annual compliance and performance report, covering the previous financial year (ie, ending 30 June each year), must be submitted to IPART by not later than 1 September in each year (or a later date agreed by IPART).

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<sup>2</sup> See section 2.4 of this Reporting Manual

Appendix B provides a timeline for reporting and auditing under Sydney Water's Operating Licence. While the majority of reports must be submitted to IPART by 1 September, the Environment Plan Annual Report and the Environmental Indicator Report must be submitted by 1 October.

### 2.3 How to lodge annual compliance and performance reports

Annual compliance and performance reports should be lodged electronically with a follow-up hard copy sent by mail. Name and contact details (phone, fax, email) of the primary contact with whom IPART can liaise when assessing compliance should also be provided. An alternative contact for those times when the primary contact is unavailable should also be nominated.

Email addressed to: [compliance@ipart.nsw.gov.au](mailto:compliance@ipart.nsw.gov.au)

Hard copy addressed to:

The Chief Executive Officer  
Independent Pricing and Regulatory Tribunal of NSW  
PO Box Q290  
QVB Post Office NSW 1230

### 2.4 Performance indicators

Sydney Water is required to submit to IPART by 1 September each year the majority of its performance indicators as part of the annual compliance and performance report. Performance against environmental indicators (Table E6 of Appendix E) is reported separately and must be submitted by 1 October each year, along with the Environment Plan Annual Report. Definitions for performance indicators are set out in Appendix F.

The majority of indicators have been developed by the National Water Commission (NWC) as part of the "National Benchmarking Framework for Rural and Urban Water Utilities". These indicators are notated as "NWI Indicators" in Appendix E. The remaining indicators are specific to Sydney Water's operations and are notated as "IPART Indicators".

## 3 Reporting to NSW Health on water quality

Sydney Water must report to NSW Health, and in some circumstances IPART, on both drinking water and recycled water quality resulting from its water quality monitoring programs. There are 3 types of water quality reporting – Quarterly, Annual and Incident and Emergency Reporting.

### 3.1 Drinking water quality reporting

#### 3.1.1 Quarterly data on the web

On a quarterly basis (quarters starting from 1 July) Sydney Water must provide a summary of drinking water quality monitoring on the web in a readily accessible location, including all the health and aesthetic water characteristics and raw water operational monitoring characteristics identified at Appendix G. The results must be reported on the web within 4 weeks of the end of the quarter and must include:

- ▼ The details of the delivery system.
- ▼ Number of samples in the period.
- ▼ Quarterly performance and rolling 12 month performance against the Health guideline values and Aesthetic guideline values as agreed with NSW Health for each characteristic. This does not apply to the raw water operational monitoring characteristics (which may be compared with operational targets or guidelines, eg, for cyanobacteria).

#### 3.1.2 Quarterly report

Sydney Water must provide to NSW Health within 6 weeks of the end of the quarter a drinking water quality monitoring report on an exception<sup>3</sup> basis for each quarter starting from 1 July. A copy of the report for the quarter ending 30 June each year must be also provided to IPART as part of the September 1 package.

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<sup>3</sup> An exception is a test result for a water characteristic that does not meet the relevant Health or Aesthetic Guideline Value for that water characteristic in the ADWG. A non-compliance occurs where the value for a water characteristic observed in testing does not satisfy the long term (12-month) performance requirements set out in the ADWG as determined by NSW Health.

Each quarterly report must include the following information for the exception reporting:

- ▼ Details of any exception from the Health guideline values and Aesthetic guideline values that have been agreed with NSW Health and have been outlined at Appendix G over the previous 12 months. Details should include test results and the date or period of exception from these guideline values.
- ▼ Appraisal of the exception including discussion of the extent and nature of the exception and an analysis of the risks posed by the exception.
- ▼ Explanation of the causes of the exception and any action taken to rectify the exception and prevent it re-occurring.

In addition to the exception reporting in the quarterly report, Sydney Water must provide a monthly report of fluoride monitoring to NSW Health in accordance with the Code of Practice for Fluoridation of Public Water Supplies.

### **3.1.3 Annual report on the implementation of the Five Year Drinking Water Quality Management Plan**

The annual report (to be provided to NSW Health and IPART on 1 October each year to cover the previous financial year) must report on the implementation of the 5-year Drinking Water Quality Management Plan, including details on:

- ▼ Activities and programs undertaken in the previous year and corresponding results, including both routine and non-routine monitoring.
- ▼ Any proposed amendments to management of water quality issues or risks, including any activities and programs proposed for monitoring, operation, maintenance or emergency and incident management.
- ▼ Additional water quality improvement actions for both routine and non-routine monitoring to be implemented in the coming year, including details on the expected outcomes, scope and timeframe of actions.

## **3.2 Recycled water quality reporting**

### **3.2.1 Quarterly report**

Sydney Water must provide to NSW Health within 6 weeks of the end of the quarter a recycled water quality monitoring report on an exception basis covering all schemes for each quarter starting from 1 July each year. A copy of the report for the quarter ending 30 June each year, must also be provided to IPART as part of the 1 September package.

The quarterly report must include:

- ▼ Details of any exception from any guideline values as agreed with NSW Health over the previous 12 months. Details should include test results and date or period of exception from these guideline values.
- ▼ Appraisal of the exception including discussion of the extent and nature of the exception and an analysis of the risks posed by the exception.
- ▼ Explanation of the causes of the exception and any action taken to rectify the exception and prevent it re-occurring.

### 3.2.2 Annual report on recycled water quality management

The annual report (to be provided to NSW Health and IPART on 1 October each year to cover the previous financial year) must cover all schemes and report on the management of recycled water quality under AGWR or to the satisfaction of NSW Health, including details on:

- ▼ Activities and programs undertaken in the previous year and corresponding results, including both routine and non-routine monitoring.
- ▼ Any proposed amendments to management of water quality issues or risks.
- ▼ Additional water quality improvement actions for both routine and non-routine monitoring to be implemented in the coming year, including details on the expected outcomes, scope and timeframe of actions.

### 3.3 Incident and emergency reporting – drinking water and recycled water

Sydney Water must immediately report to NSW Health any incident where there is an exception from a health-guideline value within its drinking water supply system, or its recycled water schemes or any event within either system which may adversely affect public health, as defined in Sydney Water's Standard Operating Procedure *Drinking Water Quality Event Management* developed in consultation with NSW Health.

The reporting of information by Sydney Water will include

- ▼ Maps depicting geographical locations and systems in addition to tables or text if required by NSW Health (not always required).
- ▼ Date and time of incident.
- ▼ Description of nature and extent of the incident (including location/affected area and, if the incident involves or appears to involve a non-compliance with a guideline value).
- ▼ Description of impact of incident (including the delivery system affected or how many customers have been or may be affected).

- ▼ Details of the threat or potential threat to water quality, public health or public safety.
- ▼ Persons notified by Sydney Water of the incident.
- ▼ Results of any monitoring.
- ▼ Status of the treatment system (where applicable).
- ▼ Reason(s) for the incident occurring / possible cause(s) of the incident.
- ▼ Actions taken or proposed to be taken to rectify the incident and its impacts, and prevent the incident from reoccurring.
- ▼ Actual or anticipated date by which incident ceased (eg, risk removed, impact contained/cleaned up, supply fully restored to customers/other licensees, operations restored to normal levels of performance).
- ▼ Any other information required by NSW Health for investigation.

Sampling or monitoring will be necessary where an incident is in relation to water quality. The primary data required for a first sample is to include

- ▼ Date and time of sample
- ▼ Water quality characteristic(s) and result(s)
- ▼ Relevant guideline(s)
- ▼ Guideline or compliance value
- ▼ Sample location(s)
- ▼ Water source
- ▼ Intended purpose of water (for recycled water)
- ▼ Water/recycled water treatment plant operation
- ▼ Reservoir zones/delivery systems
- ▼ Disinfection regime
- ▼ Chlorine residual or other disinfection residual
- ▼ Additional sampling arranged
- ▼ Date results are due.

## 4 Water conservation, environment and other reporting

In its annual compliance and performance report to IPART, Sydney Water must include reports on the following matters (with the exception of Environment plan annual report and the Environmental Performance Indicator Report which are provided separately):

### 4.1 Water Conservation Annual Report

The annual report on Sydney Water's water conservation activities must comprise the following elements:

#### 4.1.1 Water usage target

- ▼ Sydney Water's compliance with the water usage target in clause 7.1 of the Operating Licence.
- ▼ The quantity of potable water drawn from all sources, expressed in litres per person per day, both uncorrected for weather effects and corrected for weather effects.
- ▼ A list of projects that Sydney Water plans to undertake in the current financial year to achieve the water usage target including a description of each project, an estimate of the amount of water that will be saved as a result of each project and an estimate of the cost of each project. These projects should be consistent with the goals and objectives outlined in the Water Conservation Strategy Document<sup>4</sup>.
- ▼ An update on the projects that Sydney Water has undertaken in the previous financial year to achieve the water usage target (as provided to IPART as a forecast in the previous report) including:
  - a description of each project
  - the amount of water that was saved as a result of each project, and
  - the cost of each project.

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<sup>4</sup> As required by clause 7.5 of the Operating Licence.

#### 4.1.2 Water leakage

Sydney Water must report annually to IPART on:

- ▼ The amount of water leakage from its drinking water supply system during the preceding financial year, using the definition and methodology set out in the latest version of “National Performance Framework: Urban performance reporting, indicators and definitions Handbook” published by the National Water Commission and the Water Services Association of Australia. The web link for this document is at this [NWC Hyperlink](#).
- ▼ The methodology for calculating Water leakage should address the uncertainty in this quantity. Please note that IPART has determined specific uncertainty bands for determining this water leakage quantity<sup>5</sup>.
- ▼ The report on water leakage must include discussion of the major factors that have influenced the water leakage performance, including factors that are both within Sydney Water’s control and factors beyond Sydney Water’s control and reasons for any variation between performance in the preceding financial year and prior years. Relevant factors would likely include flow measurement, system water pressure management, the effectiveness of maintenance, any research into leakage from the water supply system and a discussion of issues covered in the dot points below.
- ▼ The number of bursts, breaks or leaks (in the trunk and reticulation component of Sydney Water’s drinking water system between water treatment plants and a property) which occurred in the immediately preceding financial year and the average time taken by it to repair those bursts, breaks or leaks.
- ▼ The number of kilometres of reticulation mains it inspected during the preceding financial year for water leakage.
- ▼ Sydney Water’s program during the preceding financial year for inspecting reservoir zones for water leakage and for rehabilitating reservoir zones to prevent or correct water leakage.
- ▼ How these leakage activities contributed to the objectives and targets outlined in the Metropolitan Water Plan.
- ▼ To provide context, the report should also include the economic level of water leakage for the preceding financial year and how that level of water leakage was calculated.

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<sup>5</sup> IPART has determined that measured leakage which does not exceed the range  $105 \pm 16$  ML/day constitutes compliance with the Water Leakage Level set out in clause 7.2 (a) of the Operating Licence. Clause 7.2 (c) of the Operating Licence requires Sydney Water to report the results of a review of the Economic Level of Leakage to IPART by 31 December 2011 (see Table B2 in Appendix B). Based on IPART’s recommendations on this review, the Minister may adjust the Water Leakage Level requirement in clause 7.2 (a).

### 4.1.3 Water recycling

Sydney Water must report annually to IPART on its water recycling program as referred to in clause 7.4 of the Operating Licence. The report must include details of:

- ▼ Sydney Water's efforts to promote and encourage water recycling
- ▼ Water recycling projects undertaken by Sydney Water, the end use of water used and the annual usage of recycled water in each scheme, and
- ▼ How these water recycling activities contributed to the objectives and targets outlined in the Metropolitan Water Plan.

### 4.1.4 Water efficiency

Sydney Water must report annually to IPART on its water efficiency program as referred to in clause 7.3 of the Operating Licence. The report must include details of:

- ▼ Water efficiency projects planned for the current financial year, together with an estimate of the cost and the expected water savings for each project.
- ▼ Water efficiency projects advised to IPART in the previous report that were undertaken in the previous financial year, together with the actual cost and the actual water savings achieved.
- ▼ How these water efficiency activities contributed to the objectives and targets outlined in the Metropolitan Water Plan.

## 4.2 Priority sewerage program annual report

Sydney Water must report annually to IPART on its assessment or progress towards the planning and delivery of projects listed in the Priority Sewerage Program (the Program) as referred to in clause 3.6 and Schedule 4 of the Operating Licence. The report is to include details of:

- ▼ Any planning and delivery of projects on the Program conducted during the financial year just ended.
- ▼ The current status of any outstanding work on the Program, including an estimate of when construction of sewerage infrastructure could commence in Program locations based on growth and financial assessments of the viability of this work.
- ▼ Details of any delays caused by consent authorities that impair Sydney Water's ability to deliver projects within the Program.
- ▼ Whether DECCW has provided advice that the absence of wastewater services in locations described in the Program is having a significant detrimental impact on the environment and what action Sydney Water has taken to address these concerns.
- ▼ Any direction by the Minister for Water to complete projects within the Program and what action has been taken by Sydney Water to do this work.

### 4.3 Environment plan annual report

Sydney Water must report by no later than 1 October each year to IPART on its actions to implement the Environment Plan, including:

- ▼ Any changes to the environmental improvement targets or timetables to achieve these targets.
- ▼ Its performance for the previous financial year in meeting the targets and timetables outlined in the Environment Plan for that financial year.
- ▼ Programs and timetables identified for the upcoming financial year to achieve the environmental improvement targets.
- ▼ Details on the programs, management actions proposed, and performance against these action proposals for:
  - Heritage and environmentally sensitive areas under Sydney Water's control, such as Botany Wetlands
  - waste management and energy management across its operations.

## 5 | Processes for Revision

Appropriate reporting and auditing requirements for each condition may vary over time to reflect Sydney Water's previous compliance performance and evolving regulatory and government policy objectives.

Changes to the Reporting Manual, including amendments to the classification of licence obligations may be necessary to:

- ▼ include new licence obligations
- ▼ delete redundant licence obligations
- ▼ reflect new government initiatives
- ▼ rectify problems identified through compliance monitoring and reporting.

Before making any significant revisions to the reporting requirements or operating statistics, IPART will undertake consultation with Sydney Water and other interested stakeholders as appropriate. IPART will then notify the stakeholders of the finalised revisions to the Reporting Manual and the commencement date of any new reporting arrangements. In determining the commencement date for new reporting arrangements, IPART will have regard to Sydney Water's need for a reasonable period of notice to implement new arrangements.



## Appendices



## A Annual compliance and performance report format

Annual Compliance and Performance Report *[Insert Year]*

For 20\_\_/\_\_/\_\_

Submitted by Sydney Water Corporation

ACN:

**To:** The Chief Executive Officer  
Independent Pricing and Regulatory Tribunal of NSW  
PO Box Q290  
QVB Post Office NSW 1230

[Name] reports as follows:

1. This report documents compliance during [financial year] with all obligations to which Sydney Water is subject by virtue of its Operating Licence, excluding obligations under clause 1.8 of the Operating Licence.
2. This report has been prepared by Sydney Water with all due care and skill in full knowledge of conditions to which it is subject and in compliance with IPART's current Sydney Water Reporting Manual.
3. Schedule A provides information on all obligations with which Sydney Water did not fully comply during [financial year].
4. Other than the information provided in Schedule A, Sydney Water has complied with all conditions to which it is subject.
5. Sydney Water's performance against the System Performance Standards in Appendix D is reported at Schedule B.
6. Performance Indicators reporting Sydney Water's operations (excluding environmental indicators in Table E6) are provided in Schedule C.
7. Sydney Water's Water Conservation Annual Report is provided at Schedule D.
8. Sydney Water's Priority Sewerage Program Annual Report is provided at Schedule E.
9. Sydney Water's Quarterly Drinking Water Quality Monitoring Report for period ending 30 June is provided at Schedule F.
10. Sydney Water's Quarterly Recycled Water Quality Report for period ending 30 June is provided at Schedule G.

11. The compliance and performance indicator reports have been approved by the Managing Director and the Chairman of the Board of Sydney Water or a duly authorised Board member other than the Managing Director.

DATE:

DATE:

Signed .....

Signed .....

Name: .....

Name: .....

Designation: .....

Designation: .....

## Schedule A Non Compliances<sup>6</sup>

Table # <sup>7</sup> List obligations breached, including a brief description of each obligation <sup>8</sup>	Describe:
	<ul style="list-style-type: none"> <li>i Date or period of non-compliance</li> <li>ii Nature and extent of non-compliance (including whether and how many customers have been affected)</li> <li>iii Results of any monitoring (where applicable)</li> <li>iv Reasons for non-compliance</li> <li>v Remedial action taken</li> <li>vi Actual/anticipated date of full compliance</li> </ul>

<sup>6</sup> Sydney Water should report only non-compliances that were identified during the reporting period and relate to operational clauses of the operating Licence, except clause 1.8.

<sup>7</sup> See Appendix C. Sydney Water should indicate the item number in Table C.1, for example, item # 9.

<sup>8</sup> See Appendix C. Sydney Water should include the brief description set out in Table C.1, for example: Clause 2.1(e) - Sydney Water must comply with the fluoridation plant operating targets set out in the Fluoridation Code.



## B Timeline for reporting

**Table B.1 Timing of regular reporting and auditing under the Sydney Water Operating Licence**

Date	Report to	Required Report
28 January	NSW Health	Summary of quarterly drinking water quality monitoring data posted on Sydney Water website for 1 October – 31 December (Sect 3.1.1)
11 February	NSW Health	<ul style="list-style-type: none"> <li>▼ Quarterly Drinking Water Quality Monitoring Report for 1 October – 31 December (Sect 3.1.2)</li> <li>▼ Quarterly Recycled Water Quality Monitoring Report for 1 October – 31 December (Sect 3.2.1)</li> </ul>
28 April	NSW Health	Summary of quarterly drinking water quality monitoring data posted on Sydney Water website for 1 January – 31 March (Sect 3.1.1)
12 May	NSW Health	<ul style="list-style-type: none"> <li>▼ Quarterly Drinking Water Quality Monitoring Report for 1 January – 31 March (Sect 3.1.2)</li> <li>▼ Quarterly Recycled Water Quality Monitoring Report for 1 January – 31 March (Sect 3.2.1)</li> </ul>
28 July	NSW Health	Summary of quarterly drinking water quality monitoring data posted on Sydney Water website for 1 April – 30 June (Sect 3.1.1)
11 August	NSW Health	<ul style="list-style-type: none"> <li>▼ Quarterly Drinking Water Quality Monitoring Report for 1 April – 30 June (Sect 3.1.2)</li> <li>▼ Quarterly Recycled Water Quality Monitoring Report for 1 April – 30 June (Sect 3.2.1)</li> </ul>
1 September	IPART	<ul style="list-style-type: none"> <li>▼ Annual Compliance and Performance Report to IPART (electronic copy with hard copy following in mail), comprising: <ul style="list-style-type: none"> <li>– Annual Compliance Report</li> <li>– System Performance Standards Report</li> <li>– Performance Indicators (with the exception of Environmental Indicators)</li> <li>– Water Conservation Annual Report</li> <li>– Priority Sewerage Program Annual Report</li> <li>– Quarterly Drinking Water Quality Monitoring Report for 1 April – 30 June (Section 3.1.2).</li> <li>– Quarterly Recycled Water Quality Monitoring Report for 1 April – 30 June (Section 3.2.1).</li> </ul> </li> </ul>

## B Timeline for reporting

Date	Report to	Required Report
September-October		Operational Audit
1 October	IPART NSW Health and IPART	<ul style="list-style-type: none"> <li>▼ Environment Plan Annual Report and Environmental Indicators</li> <li>▼ Annual report on implementation of the five-year Drinking Water Quality Management Plan (Section 3.1.3)</li> <li>▼ Annual report on management of recycled water quality (Section 3.2.2)</li> </ul>
28 October	NSW Health	Summary of quarterly drinking water quality monitoring data posted on Sydney Water website for 1 July – 30 September (Sect 3.1.1)
11 November	NSW Health	<ul style="list-style-type: none"> <li>▼ Quarterly Drinking Water Quality Monitoring Report for 1 July – 30 September (Sect 3.1.2)</li> <li>▼ Quarterly Recycled Water Quality Monitoring Report for 1 July – 30 September (Sect 3.2.1)</li> </ul>

IPART's Report to the Minister for Water on Sydney Water's performance under its Operating Licence scheduled for 30 November.

**Table B.2 Timing of submission of plans by Sydney Water**

Date	Plan submitted to	Event
30 September 2010	IPART	Five Year Environment Plan (2010- 2015)
1 October 2010	NSW Health	Draft Drinking Water Quality Management 5-Year Plan (2010-2015)
31 December 2010	NSW Health and IPART	Final Drinking Water Quality Management 5-Year Plan (2010-2015), together with confirmation from NSW Health that it is satisfied with the plan
31 December 2010	IPART	5-Year Water Conservation Strategy Document (2010-2015)
31 December 2011	IPART	Review to determine the Economic Water Leakage Level
31 December 2014	NSW Health	Draft Drinking Water Quality Management 5-Year Plan (2015-2020)
30 June 2015	NSW Health and IPART	Final Drinking Water Quality Management 5-year Plan (2015-2020), together with confirmation from NSW Health that it is satisfied with the plan.

**Note:** The requirements to submit these plans are provided by clauses 2.1, 6.1 and 7.5 of the Operating Licence. This timeline is included in this Reporting Manual for the sake of completeness and guidance.

## C | Compliance reporting obligations

Compliance reporting obligations are set out in Table C.1 on the following page.

Table C.1 Compliance Reporting Obligations

#	Licence Condition obligation	Brief description of obligation
1	Sydney Water OL cl 1.2(b)	Sydney Water must ensure that its systems and Services comply with the quality and performance standards required in the Licence and the Reporting Manual or required to be developed under the Licence and Reporting Manual.
2	Sydney Water OL cl 1.3	Sydney Water must provide, operate, manage and maintain a stormwater drainage system as described in the Act, except to the extent that the Minister is satisfied that satisfactory arrangements have been made for the service to be provided by another appropriate body, including a council.
3	Sydney Water OL cl 1.6(a)	Subject to Sydney Water continuing to comply with any applicable law, Sydney Water must ensure that Drinking Water and Wastewater services are available on request for connection to any Property situated in the Area of Operations.
4	Sydney Water OL cl 1.9	Sydney Water must set the level of fees, charges, and other amounts payable for its Services subject to the terms of the Licence, the Act and the maximum prices and methodologies for Services determined from time to time by IPART.
5	Sydney Water OL cl 2.1(a)	Sydney Water must manage Drinking Water quality to the satisfaction of NSW Health in accordance with the ADWG.
6	Sydney Water OL cl 2.1(b)	Sydney water must prepare, to the satisfaction of NSW Health, a Five Year Drinking Water Quality Management Plan covering the entire five year term of the Licence. The 5 year drinking water quality management plan must be in operation by 31 December 2010 and include strategies for the comprehensive management of the quality of Drinking Water in Sydney Water's water supply system in accordance with the ADWG.
7	Sydney Water OL cl 2.1(c)	The 5 year drinking water quality management plan is to be revised for the period 1 July 2015 to 30 June 2020. Sydney water must provide a draft revised plan to NSW Health by 31 December 2014.
8	Sydney Water OL cl 2.1(d)	Sydney Water must implement procedures and processes for the appropriate management of the Drinking Water supply system under its control in light of its knowledge of the entire Drinking Water supply system (from the source to the consumer). Sydney Water must have adequate systems and processes in place to manage Drinking Water quality taking into account planning and risk management and their implementation across the entire Drinking Water supply system.
9	Sydney Water OL cl 2.1(e)	Sydney Water must comply with the fluoridation plant operating targets set out in the Fluoridation Code.
10	Sydney Water OL cl 2.2(a) & (b)	Sydney Water must manage Recycled Water quality in accordance with the AGWR to the satisfaction of NSW Health and/or any other guidelines specified by NSW Health to the satisfaction of IPART.

#	Licence Condition obligation	Brief description of obligation
11	Sydney Water OL cl 2.3(a)	Sydney Water must notify NSW Health of any proposed changes to its processes for managing or reporting to NSW health in relation to Drinking Water quality under clause 2.1 or Recycled Water quality under clause 2.2 where such changes may have a material impact on public health.
12	Sydney Water OL cl 2.3(b)	Sydney Water must obtain NSW health's approval for any changes notified under clause 2.3(a) before implementing them.
13	Sydney Water OL cl 3.1.1	Sydney Water must ensure that its Assets are managed consistently with the asset management framework described in clause 3.1.2.
14	Sydney Water OL cl 3.1.2	Sydney Water's asset management framework must demonstrate certain things.
15	Sydney Water OL cl 3.2	Sydney Water must advise IPART of any significant changes to processes and methodologies established in accordance with clause 3.1.2 which may have a material impact on the asset management framework.
16	Sydney Water OL cl 3.3.1	Sydney Water must ensure that no more than 6,000 Properties experience a Water Pressure Failure in a financial year in its Drinking Water supply system.
17	Sydney Water OL cl 3.3.2	Sydney Water must ensure that: <ul style="list-style-type: none"> <li>a) no more than 40,000 Properties experience an Unplanned Water Interruption exceeding 5 hours in a financial year; and</li> <li>b) no more than 14,000 Properties experience 3 or more Unplanned Water Interruptions of more than 1 hour duration in a financial year.</li> </ul>
18	Sydney Water OL cl 3.3.3	Sydney Water must ensure that: <ul style="list-style-type: none"> <li>a) no more than 14,000 Properties (other than Public Properties) experience an Uncontrolled Sewage Overflow in dry weather in a financial year; and</li> <li>b) no more than 175 Properties (other than Public Properties) experience 3 or more Uncontrolled Sewage Overflows in dry weather in a financial year.</li> </ul>
19	Sydney Water OL cl 3.4	Sydney Water must maintain record systems that are sufficient to enable it to measure accurately its performance against the Service Quality and System Performance Indicators.

#	Licence Condition obligation	Brief description of obligation
20	Sydney Water OL cl 3.5	Sydney Water's response to water main breaks and leaks (in the trunk and reticulation components of Sydney Water's Drinking Water supply system between treatment plants and a Property), as measured from the time Sydney Water receives notification of a break or leak to the time Sydney Water stops the loss of water, will be as follows: <ol style="list-style-type: none"> <li>1. Priority 6 breaks/ leaks – 90% of jobs within 3 hrs</li> <li>2. Priority 5 breaks/ leaks – 90% of jobs within 6 hours</li> <li>3. Priority 4 breaks/ leaks – 90% of jobs within 5 days</li> </ol>
21	Sydney Water OL cl 3.6(a)	Sydney Water must continue with the planning and delivery of Stage 2 of the Priority Sewerage program such that Wastewater services are provided to the requisite number of lots in certain areas by certain dates.
22	Sydney Water OL cl 3.6(b)	If either Sydney Water or a licensee under the WIC Act provides Wastewater services to a significant development in and adjoining area to one of certain areas in Stage 2 of the Priority Sewerage Program, then Sydney Water must deliver Stage 2 of the Priority Sewerage Program in that area such that Wastewater services are made available to Customers within 24 months of Wastewater services being available to service the significant development.
23	Sydney Water OL cl 3.6(d)	Sydney Water must complete planning for, and begin construction on, the provision of Wastewater services to the requisite number of lots in the Cowan areas of Stage 2 of the Priority Sewerage Program by the end of the term of the Licence.
24	Sydney Water OL cl 3.6(e)	Should delays caused by consent authorities impair Sydney Water's ability to meet the timeframes set out in clause 3.6, Sydney Water must write to the Minister to advise of the reasons for the delay.
25	Sydney Water OL cl 4.1(c)	A copy of the Customer Contract and any variations to it must be posted on Sydney water's website for downloading by any person free of charge and provided to Customers free of charge upon request.
26	Sydney Water OL cl 4.2.1	Sydney Water must prepare a pamphlet that does and contains certain things.
27	Sydney Water OL cl 4.2.2	The pamphlet prepared under clause 4.2.1 must be updated when changes are made to the Customer Contract and must be disseminated by Sydney Water free of charge to customers, at least once annually with their quarterly or other bills and any other person on request.
28	Sydney Water OL cl 4.4(a)	Sydney Water must have in place and comply with procedures relating to customer hardship, debt, water flow restriction and disconnection. These procedures must include certain matters.
29	Sydney Water OL cl 4.4(b)	Sydney Water must set out the procedures relating to customer hardship, debt, water flow restriction and disconnection referred to in clause 4.4(a) in the Customer Contract.
30	Sydney Water OL cl 4.4(c)	Sydney Water must provide information on its procedures relating to customer hardship, debt, water flow restriction and disconnection free of charge to certain persons.

#	Licence Condition obligation	Brief description of obligation
31	Sydney Water OL cl 4.4(d)	Sydney water must publish its procedures relating to customer hardship, debt, water flow restriction and disconnection on its website.
32	Sydney Water OL cl 4.4(e)	Sydney Water must advise residential Customers of their rights, including any right to have a complaint or dispute referred to the Energy and Water Ombudsman NSW for resolution.
33	Sydney Water OL cl 4.5.1(a)	Sydney Water must have in place and regularly consult with a Customer Council to enable community involvement in issues relevant to the performance of Sydney Water's obligations under the Licence.
34	Sydney Water OL cl 4.5.1(b)	Sydney Water must consult with the Customer Council, in accordance with the terms of the relevant Customer Council Charter, on certain matters.
35	Sydney Water OL cl 4.5.1(c)	Sydney water must appoint the members of a Customer Council, consistent with the Licence.
36	Sydney Water OL cl 4.5.1(d)	At all times, the membership of a Customer Council must include a representative for the interests of at least certain groups.
37	Sydney Water OL cl 4.5.1(e)	Sydney Water must provide a Customer Council with information within its possession or under its control (other than information or documents over which Sydney Water or another person claims confidentiality or privilege) necessary to enable that Customer Council to discharge the tasks assigned to it.
38	Sydney Water OL cl 4.5.2(a)	In consultation with members of each Customer Council, Sydney Water must maintain a customer council charter that addresses certain matters.
39	Sydney Water OL cl 5.1(a)	Sydney Water must establish and maintain internal complaint handling procedures for receiving, responding to and resolving Complaints by Customers and Consumers against Sydney Water.
40	Sydney Water OL cl 5.1(b)	The internal complaints handling procedures must be based on the Australian Standard AS/ISO 10002: 2004 MOD Customer Satisfaction – Guidelines for Complaint Handling, as amended or replaced from time to time.
41	Sydney Water OL cl 5.1(c)	Sydney Water must make available to Customers and Consumers information concerning its internal complaints handling procedures which explains how to make a Complaint and how the complaint handling procedure works.
42	Sydney Water OL cl 5.1(d)	Sydney Water must provide information of the nature described in clause 5.1(c) to Customers through their quarterly, or other, bills at least annually.
43	Sydney Water OL cl 5.2(a)	Sydney Water must establish or be a member of an industry based dispute resolution scheme for the resolution by a dispute resolution body of disputes between Sydney Water and its Customers and between Sydney Water and Consumers.

#	Licence Condition obligation	Brief description of obligation
44	Sydney Water OL cl 5.2(c)	Sydney Water must prepare a pamphlet that explains how the dispute resolution scheme operates and how it can be accessed and provide that pamphlet to Customers through their quarterly or other bills, at least once annually.
45	Sydney Water OL cl 6.1(a)	Sydney Water must maintain an environmental management system certified to AS/NZS ISO 14001:2004 (as updated from time to time) to manage environmental risk of its business and service delivery.
46	Sydney Water OL cl 6.1(b)	Sydney Water must prepare a Five Year Environment plan in accordance with the environmental management system in clause 6.1(a). The Five Year Environment Plan must have certain features, be integrated into Sydney Water's business plans, be posted on Sydney Water's website and provided to any member of the public free of charge upon request.
47	Sydney Water OL cl 6.1(c)	Sydney Water must complete an annual progress report in accordance with the Reporting Manual, outlining details of Sydney Water's progress with the environmental objectives, targets and timetable.
48	Sydney Water OL cl 6.1(d)	Each year Sydney Water must review the Five Year Environment Plan by consulting with DECCW and peak environmental non-governmental organisations to determine whether any changes to the Five Year Environment Plan are required and the nature of those amendments.
49	Sydney Water OL cl 6.2	Sydney water must monitor, record and compile data on the Environmental Performance Indicators and report on these indicators in accordance with its obligations under the Reporting Manual.
50	Sydney Water OL cl 7.1(a)	Sydney Water must reduce the quantity of Drinking Water it draws from all sources to a level of water usage equal to, or less than, 329 litres per person per day by 30 June 2011.
51	Sydney Water OL cl 7.1(b)	Thereafter (subject to clause 7.1(f)) Sydney water must continue to maintain the Water Usage Level for the remainder of the term of the Licence, to be measured at 30 June each year.
52	Sydney Water OL cl 7.1(d)	If Sydney Water fails to meet the Water Usage Level in a particular year, Sydney Water must demonstrate, to the satisfaction of IPART, that it would not have been reasonable to meet the Water Usage Level in that year.
53	Sydney Water OL cl 7.2(a)	Sydney Water must ensure that the level of water leakage from its Drinking Water supply system does not exceed 105 megalitres per day.
54	Sydney Water OL cl 7.2(c)	Sydney Water must complete a review by 31 December 2011 to determine the economic Water Leakage Level and submit a report on this review to IPART. The review must be conducted in manner acceptable to IPART.
55	Sydney Water OL cl 7.3(a)	Sydney Water must undertake and promote water efficiency programs.
56	Sydney Water OL cl 7.3(b)	Sydney Water must give due consideration to water efficiency and other water conservation measures as the basis for planning the future provision of its Services, including addressing water leakage.

#	Licence Condition obligation	Brief description of obligation
57	Sydney Water OL cl 7.4(a)	Sydney Water must promote, foster and encourage the production and use of Recycled Water in the Area of Operations.
58	Sydney Water OL cl 7.4(b)	Sydney Water must meet any target relating to the production and/or use of Recycled Water set by the Minister from time to time consistent with the objectives of the Metropolitan Water Plan and implement any particular Recycled Water schemes indicated by the Minister so as to meet any target in clause 7.4(b)(1).
59	Sydney Water OL cl 7.5(a)	Sydney Water must prepare and submit to IPART and the Minister by 31 December 2010 a Five Year Water Conservation Strategy Document covering the term of the licence. The Five Year Water Conservation Strategy Document must include details of certain matters.
60	Sydney Water OL cl 7.5(b)	The Five Year Water Conservation Strategy Document must provide an analysis of current and future programs and projects being undertaken, and expected to be undertaken, by Sydney Water. In particular, the Five Year Water Conservation Strategy Document must outline Sydney Water's environmental objectives, targets and timetable for the entire term of the Licence.
61	Sydney Water OL cl 7.5(d)	Certain documents related to water conservation strategies must be placed on Sydney water's website.
62	Sydney Water OL cl 8.4 Also SWA section 33A(1)	Sydney Water must pay to the Treasurer the cost (as certified by IPART) involved in and in connection with carrying out each Annual Audit.
63	Sydney Water OL cl 8.5(a)	Sydney Water must provide IPART, and any person appointed or approved by IPART to conduct a Compliance Audit, with all information within its possession or under its control necessary to the conduct of the Compliance Audit, including whatever information is reasonably requested by IPART or the person appointed or approved by IPART.
64	Sydney Water OL cl 8.5(b)	The information sought under clause 8.5(a) must be made available within a reasonable time of it being requested.
65	Sydney Water OL cl 8.5(c)	For the purposes of any Compliance Audit, Sydney Water must, within a reasonable time of being required by IPART, or a person appointed or approved by IPART to conduct the Compliance Audit, permit IPART or that person to have access to or do certain things.
66	Sydney Water OL cl 8.5(d)	If Sydney Water contracts out any of its activities to third parties (including a Subsidiary) it must take all reasonable steps to ensure that, if required by IPART, any such third parties provide information and do the things specified in clause 8 that extend to Sydney Water as if that third party were Sydney Water.

#	Licence Condition obligation	Brief description of obligation
67	Sydney Water OL cl 8.5(e)	For the purpose of any Compliance Audit, information over which confidentiality or any form of privilege is claimed by Sydney Water or a Subsidiary or third party must be provided to IPART or the person appointed or approved by IPART to conduct the Compliance Audit, subject to IPART or that person entering into reasonable arrangements to ensure that the confidential or privileged information remains confidential or privileged.
68	Sydney Water OL cl 9(a)	Sydney Water must comply with its reporting obligations set out in the Reporting Manual and must report to IPART in accordance with the Reporting Manual.
69	Sydney Water OL cl 9(b)	Sydney Water must provide to NSW Health a copy of any report referred to in the Reporting Manual relating to water quality monitoring.
70	Sydney Water OL cl 9(c)	Sydney Water must maintain record systems that are sufficient to enable it to accurately report in accordance with clause 9(a).
71	Sydney Water OL cl 10.1(a)	Sydney Water must comply with any reasonable request by IPART for information relating to the performance by Sydney Water of its obligations under clause 9.
72	Sydney Water OL cl 10.1(c)	Sydney Water must provide IPART with such information as IPART reasonably requires to enable it to conduct any reviews of the Licence or obligations under the Licence as may be required by the Minister.
73	Sydney Water OL cl 10.2	Sydney Water must comply with any request by NSW Health for information relating to water quality. The information provided under this clause must be in the manner and form specified by NSW Health.
74	Sydney Water OL cl 11(a) Also SWA section 35(1)	Sydney Water must maintain a memorandum of Understanding with certain entities for the term of the Licence.
75	Sydney Water OL cl 12(b)	Sydney Water must, on the direction of the Minister, make available to the public on request and for downloading from its website, and free or charge, the report prepared by the Licence Reviewer at the conclusion of the review.
76	Sydney Water OL cl 13	Any notice or other communication given under the Licence must be made in writing addressed to the intended recipient at addresses outlined in the licence or the last address notified by the recipient.

## D System Performance Standards, Response Times and Water Conservation Requirements

**Table D1 on the following page sets out System Performance Standards, Response Times and Water Conservation outcomes that must be reported to IPART.**

**Important Note:** The data in the following table must be accompanied by an explanation of the performance against the requirements in the Operating Licence which details:

- ▼ Major factors (both positive and negative) that have influenced this performance, including factors that are both within Sydney Water's control and factors beyond Sydney Water's control.
- ▼ Reasons for any variation (both positive and negative) between performance in the preceding financial year and prior years.

**Table D.1 System Performance Standards, Response Times and Water Conservation Requirements**

Standard #	Standard	Outcome
SPS 1	Number of properties that experience a water pressure failure, as defined in clause 3.3.1 of the Operating Licence, in the preceding financial year	
SPS 2	Number of properties that experience an unplanned water interruption exceeding 5 hours, as defined in the Operating Licence, in the preceding financial year	
SPS 3	Number of properties that experience 3 or more unplanned water interruption exceeding 1 hour, as defined in the Operating Licence, in the preceding financial year	
SPS 4	Number of properties (other than public properties) that experience an uncontrolled sewage overflow in dry weather, as defined in the Operating Licence, in the preceding financial year	
SPS 5	Number of properties (other than public properties) that experience 3 or more uncontrolled sewage overflows in dry weather, as defined in the Operating Licence, in the preceding financial year	
RT 1	Percentage of Priority 6 breaks/leaks in drinking water mains (as defined in the Operating Licence) that Sydney Water attended within 3 hours	
RT 2	Percentage of Priority 5 breaks/leaks in drinking water mains (as defined in the Operating Licence) that Sydney Water attended within 6 hours	
RT 3	Percentage of Priority 4 breaks/leaks in drinking water mains (as defined in the Operating Licence) that Sydney Water attended within 5 days.	
WC 1	The quantity of potable water that Sydney Water has drawn from all sources in the preceding financial year (L/person/day)	
WC 2	The amount of water leakage from the Drinking Water Supply System, averaged for the preceding financial year (ML per day)	

## E Performance indicators

The tables in this appendix set out performance indicators required to be provided to IPART as follows:

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E1	NWI Water Resources and Asset Indicators
E2	IPART Service Quality and System Performance Indicators
E3	NWI Customer Service Indicators
E4	IPART Customer Service Indicators
E5	NWI Environmental Indicators
E6	IPART Environmental Indicators
E7	NWI Pricing Indicators
E8	NWI Finance Indicators
E9	NWI Health Indicators
E10	NWI Indicators that may require explanations

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The NWI performance indicators and their corresponding definitions are developed by the National Water Commission (NWC) as part of the “National Benchmarking Framework for Urban Water Utilities”.

IPART also has a number of indicators with corresponding definitions that relate to Sydney Water. These are shown as “IPART Indicators”. IPART has endeavoured to define the IPART Indicators in a manner consistent with definitions used for the NWI Indicators, and to build on existing NWI Indicators where possible.

Some NWI indicators may require additional explanation/commentary. This commentary may be provided in Table E10.

Table E.1 NWI Water Resources and Asset Indicators

Reference	Indicator	Response
<b>NWI Water Resources Indicators</b>		
<b>Sources of Water – Volume of water sourced:</b>		
NWI W1	- Surface Water (ML)	
NWI W2	- Groundwater (ML)	
NWI W3	- Desalination (ML)	
NWI W4	- Recycling (ML)	
NWI W5	- Bulk Supplier (ML)	
NWI W6	- Volume of bulk recycled water purchased (ML)	
NWI W7	Total volume of water sourced (ML)	
<b>Volume of water supplied (uses of supplied water)</b>		
NWI W8	- Residential (ML)	
NWI W9	- Commercial, municipal and industrial (ML)	
NWI W10	- Other (ML)	
NWI W11	Total urban water supplied (ML)	
NWI W12	Average annual residential water supplied (kL/property)	
NWI W13	- Environmental flows (ML)	
NWI W14	- Bulk water exports (ML)	
NWI W15	- Bulk recycled water exports (ML)	
<b>Sewage collected</b>		
NWI W16	Volume of sewage collected – residential sewage, non-residential sewage and trade waste (ML)	
NWI W17	Volume of sewage collected – Trade waste (ML)	
NWI W18	Total sewage collected (ML)	
NWI W 19	Sewage collected per property (kL per property)	

Reference	Indicator	Response
<b>Uses of recycled water</b>		
NWI W 20	– Residential (ML)	
NWI W 21	– Commercial, municipal and industrial (ML)	
NWI W 22	– Agricultural (ML)	
NWI W23	– Environmental (ML)	
NWI W24	– On-site (ML)	
NWI W25	– Other (ML)	
NWI W26	Total of recycled water supplied (ML)	
NWI W27	Recycled water (per cent of effluent recycled)	
<b>NWI Asset Indicators</b>		
<b>Water and Sewerage Assets</b>		
NWI A 1	Number of Water Treatment Plants providing full treatment	
NWI A 2	Length of water mains (km)	
NWI A 3	Properties served per km of water main	
NWI A 4	Number of sewage treatment plants	
NWI A 5	Length of sewerage mains and channels (km)	
NWI A 6	Properties served per km of sewer main	
NWI A 7	Number of recycled water treatment plants	
<b>Water and Sewer breaks and leakage</b>		
NWI A 8	Number of water main breaks (per 100km water main)	
NWI A 9	Infrastructure leakage index (ILI)	
NWI A 10	Real losses (L/service connection/d)	
NWI A 11	Real losses (kL/km water main/d)	
NWI A 12	Number of sewerage breaks and chokes (per 100km of sewer main)	
NWI A 13	Property connection breaks and chokes (per 100 km of sewer main)	

**Table E.2 IPART Service Quality and System Performance Indicators****Sewer Overflows, Stormwater and Water Quality**

IPART A 1.1	Number of sewage overflow events affecting public properties occurring in dry weather
IPART A 1.2	Number of sewage overflow events affecting other than public properties occurring in dry weather
IPART A 2.1	Number of sewage overflow events affecting public properties occurring in wet weather
IPART A 2.2	Number of sewage overflow events affecting other than public properties occurring in wet weather
IPART A 3.1	Number of Priority 6 sewage overflow events where response time was less than one hour
IPART A 3.2	Number of Priority 6 sewage overflow events where response time was more than one hour
IPART A 4.1	Number of Priority 5 sewage overflow events where response time was less than three hours
IPART A 4.2	Number of Priority 5 sewage overflow events where response time was more than three hours
IPART A 5	Length of stormwater drains and channels maintained (km)
IPART H 1	Number of drinking water quality incidents for which Sydney Water was required to notify NSW Health.

**Service Interruption**

IPART C 1	The total number of properties affected by Planned Interruptions
IPART C 2.1	The number of properties affected by unplanned Interruption duration less than or equal to 1 hour.
IPART C 2.2	The number of properties affected by unplanned Interruption duration more than 1 hour and less than or equal to 5 hours.
IPART C 3	The number of Properties which experience 2 Unplanned Water Interruptions
IPART C 4	Average time taken to respond to water main breaks
IPART C 5	Average frequency of unplanned interruption – sewerage
IPART C 6.1	The number of Properties experiencing a water pressure failure which is: occasional or recurrent, but not permanent
IPART C 6.2	The number of Properties experiencing a water pressure failure which is: permanent
IPART C 7.1	The number of Properties experiencing more than one water pressure failure
IPART C 7.2	The number of Properties experiencing more than one water pressure failure as % of all properties supplied with water.
IPART C 8	Average number of private properties experiencing sewage overflow
IPART C 9	Number of private properties experiencing 2 sewer overflows in dry weather in the year

**Table E.3 NWI Customer Indicators**


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<b>Connected properties and population</b>	
NWI C 1	Population receiving water supply services (000s)
NWI C 2	Connected residential properties – water supply (000s)
NWI C 3	Connected non-residential properties – water supply (000s)
NWI C 4	Total connected properties – water supply (000s)
NWI C 5	Population receiving sewerage services (000s)
NWI C 6	Connected residential properties – sewerage (000s)
NWI C 7	Connected non-residential properties – sewerage (000s)
NWI C 8	Total connected properties – sewerage (000s)
<b>Complaints</b>	
NWI C 9	Water quality complaints (per 1000 properties)
NWI C 10	Water service complaints (per 1000 properties)
NWI C 11	Sewerage service complaints (per 1000 properties)
NWI C 12	Billing and account complaints – water and sewerage (per 1000 properties)
NWI C 13	Total water and sewerage complaints (per 1000 properties)
NWI C 14	Per cent of calls answered by an operator within 30 seconds (%)
<b>Service Interruption</b>	
NWI C 15	Average duration of unplanned interruption – water (minutes)
NWI C 16	Average sewerage interruption (minutes)
NWI C 17	Average frequency of unplanned interruption – water
NWI C 18	Number of restrictions applied for non-payment of water bill (per 1000 properties)
NWI C 19	Number of legal actions applied for non-payment of water bill (per 1000 properties)

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**Table E.4 IPART Customer Service Indicators****Complaints and Rebates**

IPART C 10	Total number of customer complaints (all categories)
IPART C 11.1	Number of pressure complaints
IPART C 11.2	Number per 1000 properties of pressure complaints
IPART C 12.1	Total number of complaints received by Sydney Water relating to stormwater and drainage services.
IPART C 12.2	Number per 1000 properties of complaints received by Sydney Water relating to stormwater and drainage services.
IPART C 13	Number per 1000 properties of sewage odour complaints.
IPART C 14	Number per 1000 properties of noise complaints generated from Sydney Water's construction or operational activities.
IPART C 15.1	The percentage of complaints received by Sydney Water that are resolved within 2 business days
IPART C 15.2	The percentage of complaints received by Sydney Water that are resolved within 10 business days
IPART C 16.1	The number of rebates paid pursuant to a Customer Contract in the categories in clause 7.2 of the Customer Contract.
IPART C 16.2	The value of rebates paid pursuant to a Customer Contract in the categories in clause 7.2 of the Customer Contract.
IPART C 17	Total number of complaints relating to recycled water

**Metering**

IPART C 18.1	Percentage of metered accounts of Customers that receive a bill not based on an actual meter read during the year
IPART C 18.2	Percentage of metered accounts of Customers that receive a bill not based on a business meter read for two consecutive years

**Financial Hardship Assistance, Restrictions and Disconnections**

IPART C 19.1	Total number of requests for instalment or deferred payment plans.
IPART C 19.2	Number per 1000 properties of requests for instalment or deferred payment plans.
IPART C 19.3	The total number of residential customers with continuing instalment or deferred plans with durations greater than 3 months.
IPART C 19.4	The total number of non-residential customers with continuing instalment or deferred plans with durations greater than 3 months.
IPART C 20.1	Number of payment assistance vouchers utilised.
IPART C 20.2	Value of payment assistance vouchers utilised.
IPART C 21.1	The total number of residential customers disconnected for non payment of amounts owed to Sydney Water.

IPART C 21.2	The total number of non-residential customers disconnected for non payment of amounts owed to Sydney Water.
IPART C 22.1	Average number of days for which water flow restrictions are applied to customers where restrictions have been removed
IPART C 22.2	Average number of days for which water flow restrictions are applied to customers where restrictions are still in place
IPART C 23.1	Total number of residential customers on whom water flow restrictions have been imposed
IPART C 23.2	Total number of non-residential customers on whom water flow restrictions have been imposed

### Table E.5 NWI Environmental Indicators

NWI E 1	Per cent of sewage treated to a primary level
NWI E 2	Per cent of sewage treated to a secondary level
NWI E 3	Per cent of sewage treated to a tertiary or advanced level
NWI E 4	Percent of sewage volume treated that was compliant (%)
NWI E 5	Number of sewage treatment plants compliant at all times (eg, 5/6)
NWI E 6	Public disclosure of sewage treatment plant performance
NWI E 7	Compliance with environmental regulator – sewerage (yes/no)
NWI E 8	Percent of biosolids reused
NWI E 9	Greenhouse gas emissions (tonnes CO <sub>2</sub> equivalents) – water (per 1000 properties)
NWI E 10	Greenhouse gas emissions (tonnes CO <sub>2</sub> equivalents) – sewerage (per 1000 properties)
NWI E 11	Net Greenhouse gas emissions (net tonnes CO <sub>2</sub> equivalents) – Other (per 1000 properties)
NWI E 12	Total Net Greenhouse gas emissions (net tonnes CO <sub>2</sub> equivalents) (per 1000 properties)
NWI E 13	Sewer overflows reported to environmental regulator (per 100km of sewer main)

**Table E.6 IPART Environmental Performance Indicators**

IPART W 1	Total sewage effluent volume discharged to the environment from inland and ocean STPs.
IPART E 1.1	Total mass of phosphorus discharged to streams / rivers from inland STPs.
IPART E 1.2	Total mass of nitrogen discharged to streams / rivers from inland STPs.
IPART E 1.3	Suspended solids capture rate for inland STPs.
IPART E 1.4	Total mass of suspended solids discharged from ocean STPs.
IPART E 1.5	Total mass of grease discharged from ocean STPs.
IPART E 1.6	Suspended solids capture rate for ocean STPs.
IPART E 2.1	Total number of breaches of environmental impact conditions under sewage treatment systems licences issued by DECCW.
IPART E 2.2	Total number of breaches of environmental impact conditions under water treatment systems licences issued by DECCW.
IPART E 2.3	Total number of prosecutions and Notices (including Penalty Notices) under the Protection of the Environmental Operations Act 1997 issued to Sydney Water.
IPART E 2.4	Total number of prosecutions and Notices (including Penalty Notices) under the Protection of the Environmental Operations Act 1997 issued to contractors engaged by Sydney Water.
IPART E 3.1	Total volume of Controlled Sewage Overflows that occur in dry weather.
IPART E 3.2	Total number of Controlled Sewage Overflows that occur in dry weather.
IPART E 3.3	Total volume of Controlled Sewage Overflows that occur in wet weather.
IPART E 3.4	Total number of Controlled Sewage Overflows that occur in wet weather.
IPART E 3.5	Total volume of Controlled Sewage Overflows that occur in dry weather, expressed as a percentage of total sewage effluent discharged to the environment.
IPART E 3.6	Total volume of Controlled Sewage Overflows that occur in wet weather, expressed as a percentage of total sewage effluent discharged to the environment.
IPART E 3.7	Total number of breaches of conditions relating to environmental impacts under licences issued by DECCW for overflows to waterways.
IPART E 4	Percentage of beaches falling within the very good and good categories under the NHMRC Guidelines for managing risks in recreational waters.
IPART E 5	Total mass of biosolids produced by Sydney Water.
IPART E 6.1	Total mass of water treatment residuals produced by Sydney Water.

IPART E 6.2	Percent of water treatment residuals reused.
IPART E 7	Total mass of heavy metals received under trade waste agreements with Sydney Water.
IPART E 8.1	Solid waste generated by Sydney Water.
IPART E 8.2	Percent of solid waste recycled or reused.
IPART E 9.1	Total electricity consumed by Sydney Water.
IPART E 9.2	Total electricity consumption by water assets expressed as a function of water supplied (KWh/ML of water supplied).
IPART E 9.3	Total electricity consumption by sewer assets expressed as a function of sewage treated (KWh/ML of sewage treated).
IPART E 9.4	Electricity consumption from renewable sources or generated by Sydney Water expressed as a percentage of total electricity consumption.
IPART E 10	Number of sites under the control of Sydney Water which have been declared to be significantly contaminated under the <i>Contaminated Land Management Act 1997</i>
IPART E 11.1	Total area of clearing of native vegetation.
IPART E 11.2	Total area of native vegetation rehabilitated.
IPART E 11.3	Total area of native vegetation gain due to rehabilitation, replanting and protection by Sydney Water.

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**Table E.7 NWI Pricing Indicators**

NWI P 1	Water Tariff Structure (description)
NWI P 1.1	Free Water Allowance (kL/property)
NWI P 1.2	Fixed Water Charge (\$/property)
NWI P 1.3	Usage Water Charge (\$/kL)
NWI P 1.4	Usage Water Charge (\$/kL)
NWI P 1.12	Special Water Levies (\$)
NWI P 1.13	Income from Special Water Levies Retained by Utility? (Yes/No)
NWI P 2	Annual water bill based on 200kL/a
NWI P 2.1	Average Annual Residential Water Supplied
NWI P 3	Typical Residential Water Bill
NWI P 3.1	Number of Water Meter Readings per annum
NWI P 3.2	Number of Water Bills per annum
NWI P 4	Sewerage Tariff Structure
NWI P 4.1	Sewerage Fixed Charge
NWI P 4.2	Sewerage Usage Charge
NWI P 4.3	Special Sewerage Levies (\$)
NWI P 4.4	Income from Special Sewerage Levies Retained by Utility? (Yes/No)
NWI P 5	Annual sewerage bill based on 200kL/a
NWI P 6	Typical Residential Sewerage Bill
NWI P 6.1	Number of Sewerage Bills per annum
NWI P 7	Annual water and sewerage bill based on 200kL/a
NWI P 8	Typical Residential water and sewerage bill

**Table E.8 NWI Finance Indicators**


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NWI F 1	Total Revenue – water (\$000)
NWI F 2	Total Revenue – sewerage (\$000)
NWI F 3	Total Income for utility (\$000)
NWI F 4	Residential revenue from usage charges – water (%)
NWI F 5	Revenue per property for water supply services (\$/property)
NWI F 6	Revenue per property for sewerage services (\$/property)
NWI F 7	Income per property for utility (\$/property)
NWI F 8	Revenue from Community Service Obligations (%)
NWI F 9	Written down replacement cost of fixed water supply assets (\$000s).
NWI F 10	Written down replacement cost of fixed sewerage assets (\$000s).
NWI F 11	Operating cost – water (\$/property)
NWI F 12	Operating cost – sewerage (\$/property)
NWI F 13	Combined operating cost water and sewerage (\$/property)
NWI F 14	Total water supply capital expenditure (\$000s)
NWI F 15	Total sewerage capital expenditure (\$000s)
NWI F 16	Total capital expenditure for water and sewerage (\$000s)
NWI F 17	Economic real rate of return - water
NWI F 18	Economic real rate of return – sewerage
NWI F 19	Economic real rate of return – water and sewerage
NWI F 20	Dividend (\$000s)
NWI F 21	Dividend payout ratio (%)
NWI F 22	Net Debt to equity %
NWI F 23	Interest coverage ratio
NWI F 24	Net profit after tax (NPAT) (\$000's)
NWI F 25	Community Service Obligations (\$000s)
NWI F 26	Capital works grants – water (\$000s)
NWI F 27	Capital works grants – sewerage (\$000s)

NWI F 28	Water supply capital expenditure (\$/property)
NWI F 29	Sewerage capital expenditure (\$/property)
NWI F 30	NPAT Ratio (%)

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**Table E.9 NWI Health Indicators**

NWI H 1	Water quality guidelines
NWI H 2	Number of zones where microbiological compliance was achieved (eg, 23/24)
NWI H 3	Percent (%) of population where microbiological compliance was achieved
NWI H 4	Number of zones where chemical compliance was achieved (eg, 23/24)
NWI H 5	Risk-based drinking water quality management plan externally assessed
NWI H 6	Risk-based drinking water quality management plan (specify plan in place ISO9001, HACCP, ADWG Aquality assessment)
NWI H 7	Public disclosure of drinking water quality performance (yes/no)

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**Table E.10 NWI Indicators that may require explanation or commentary**

These fields are optional. They may be of use to provide context for a yes/no response for the relevant indicators in the above tables.

<b>Indicator</b>	<b>Explanation/ Commentary</b>
NWI E7	
NWI P1	
NWI P 1.13	
NWI P 4	
NWI P 4.4	
NWI H5	
NWI H6	
NWI H7	



## F Indicator Definitions

Definitions for the NWI Indicators are published by the National Water Commission and the Water Services Association of Australia (WSAA). The most recent indicators are available on the WSAA website which may be accessed through the following web-link [NWI Urban Definitions Handbook 2009-10](#).

Definition of specific terms for IPART indicators are set out in Table F.1 of this appendix

All indicators refer to the most recent financial year.

Table F.1 Definitions for IPART Indicators

Reference	Indicator detail	Definition and notes
IPART A 1.1	Number of uncontrolled sewage overflow events affecting public properties occurring in dry weather	<p><b>Property</b> means any real property to which either or both of the following conditions apply:</p> <ol style="list-style-type: none"> <li>the real property is connected to Sydney Water's Drinking water supply system, Sydney Water's sewerage system or Sydney Water's recycled water system and a charge for the services provided by one or more of those systems is levied on the owner of the real property;</li> <li>the real property is within a declared stormwater drainage area for which Sydney Water imposes a stormwater charge upon the owner of real property in that area.</li> </ol> <p><b>Public property</b> means real property vested in or under the control of a Minister of the Crown or public authority excluding so much of such real property as is leased, licensed or used for private purposes.</p> <p><b>Sewage</b> means untreated liquid waste received in the reticulation system. (includes the wastewater from homes, offices, shops, factories and other premises discharged to the sewer).</p> <p><b>Sewage Overflow</b> is the discharge of untreated, diluted or partially treated sewage from the sewerage system in dry weather or in wet weather (bypasses at STPs are included in the overflows).</p> <p><b>Controlled Sewage Overflow</b> is a Sewage Overflow that is directed by Sydney Water via a designed structure to a predetermined location such as a stormwater system or waterway in order to prevent overloaded or blocked sewers from discharging at sensitive locations, on private property or within buildings thus endangering public health or causing a public nuisance</p> <p><b>Uncontrolled Sewage Overflow</b> is a Sewage Overflow that is not a Controlled Sewage Overflow and will be taken to have commenced on the earliest to occur of the following:</p> <ol style="list-style-type: none"> <li>when a person notifies Sydney Water that a Property (which may include a Public property) has experienced a Sewage Overflow which Sydney Water confirms is an Uncontrolled Sewage Overflow; and</li> <li>when Sydney Water's systems (which may include modelling undertaken by Sydney Water) identify that a Property (which may include a Public property) has experienced an Uncontrolled Sewage Overflow.</li> </ol> <p><b>Dry weather overflow</b> means where a sewer overflow has been caused by an identified blockage in the utility's sewerage system (eg, tree root intrusion) or a system failure not related to capacity (eg pumping station failure). It is a sewage overflow occurring when there is dry weather flow in the sewer, as determined by the hydraulic sewer system model</p> <p><b>Wet weather overflow</b> means where a sewage overflow is NOT the result of an identified blockage in the utility's sewerage system or a system failure. In these instances the overflow event is the result of failure in system capacity. It is a sewage overflow caused by rainfall induced wet weather flow, as determined by the hydraulic sewer system model. Wet weather overflow volume and events will be measured by the hydraulic</p>
IPART A 1.2	Number of uncontrolled sewage overflow events affecting other than public properties occurring in dry weather	
IPART A 2.1	Number of uncontrolled sewage overflow events affecting public properties occurring in wet weather	
IPART A 2.2	Number of uncontrolled sewage overflow events affecting other than public properties occurring in wet weather	

Reference	Indicator detail	Definition and notes
		system models as specified in STS Licenses.
IPART A 3.1	Number of Priority 6 sewage overflow events where response time was less than one hour	<p><b>Time taken to respond</b> means the time taken from receipt of notice from customer to when the utility arrives on site to restore services.</p> <p><b>Priority 6 sewage overflow</b> is an event assessed by Sydney Water as:</p> <ul style="list-style-type: none"> <li>(a) a public health concern;</li> <li>(b) likely to amount to significant damage to property,</li> <li>(c) likely to have a significant environmental impact,</li> <li>(d) an interruption of the sewerage service.</li> </ul> <p><b>Priority 5 sewage overflow</b> is an event assessed by Sydney Water as likely to amount to:</p> <ul style="list-style-type: none"> <li>(a) minor property damage;</li> <li>(b) minor environmental impact (including unpleasant odours) not posing a significant health risk</li> </ul> <p>Sydney Water has defined problem codes of 'sewerage surcharge', 'plumber confirmed choke, or 'internal surcharge'. The number of events to be used is the number recorded under these codes determined to be priority 6 or 5 jobs.</p>
IPART A 3.2	Number of Priority 6 sewage overflow events where response time was more than one hour	
IPART A 4.1	Number of Priority 5 sewage overflow events where response time was less than three hours	
IPART A 4.2	Number of Priority 5 sewage overflow events where response time was more than three hours	
IPART A 5	Length of stormwater drainage system maintained (km)	<b>Stormwater drainage system</b> is the system of pipes, canals and other channels used to carry stormwater to receiving waters. For the purposes of this Indicator, the stormwater system is limited to that part of the system, which Sydney Water must provide, operate, manage and maintain.
IPART H 1	Number of drinking water quality incidents for which Sydney Water was required to notify NSW Health.	
IPART C 1	Total Planned Interruption (number of affected properties)	<p><b>Water Interruption</b> means any event causing a total loss of water supply due to any cause. Water interruption excludes those caused by bursts or leaks in the service connection to internal plumbing or planned meter replacements. All unnotified interruptions caused by third parties or a power failure should be included. Exclude instances of reduced service levels due to, for example, low pressure. If a property experiences more than one interruption then it should be counted for each event. A water supply interruption, which causes loss of supply to 100 customers, is counted as 100 customer interruptions.</p> <p><b>Property</b> is defined in IPART A 1</p> <p><b>Unplanned water interruption</b> occurs when 'Unplanned Water Interruption - means an interruption in which an occupier of a property has not received notification of the interruption or the interruption occurs prior to the expiry of notice provided in any notification of interruption'.</p>
IPART C 2.1	Unplanned Interruption duration less than or equal to 1 hour (number of affected properties)	
IPART C 2.2	Unplanned Interruption duration more than 1 hour and less than or equal to 5 hours (number of affected properties)	
IPART C 3	The number of Properties which	

Reference	Indicator detail	Definition and notes
	experience 2 Unplanned Water Interruptions	
IPART C 4	Average time taken to respond to water main breaks	<p><b>Time taken to respond</b> to water main breaks means the time taken from receipt of notice from customer to when the utility arrives on site to restore services.</p> <p><b>Water main</b> means all water carriers in the trunk and reticulation system between water treatment plants and individual water properties. This excludes property connection to internal plumbing.</p> <p><b>Water main breaks</b> include all breaks, bursts and leaks in all diameter mains, which result in the utility's water mains having to be shut down. Breaks exclude: those in the service connection to internal plumbing (ie, mains to meter connection) and weeps/seepages associated with above ground mains, which can be fixed without shutting down the main.</p>
IPART C.5	The average number of private properties experiencing an uncontrolled sewage overflow in dry weather.	<p><b>Private Property</b> means a property that is not a public property (definitions as per IPART A 1)</p> <p><b>Uncontrolled Sewage Overflow in dry weather</b> (definition as per IPART A 1)</p> <p><b>Total number of private properties</b> means the total number of private properties connected to Sydney Water's sewerage system</p> <p><b>Average number of private properties experiencing an uncontrolled sewage overflow in dry weather</b> is calculated as the total number of private properties experiencing an uncontrolled sewage overflow in dry weather divided by the total number of properties</p>
IPART C 6.1	The number of Properties experiencing a water pressure failure which is: occasional or recurrent, but not permanent	A property experiences a <b>water pressure failure</b> if a pressure of less than 15 metres is experienced for a continuous period of 15 minutes or more measured at the point of connection of the Property to Sydney Water's water supply system, usually at the point of connection known as the "main tap". For the purpose of this indicator:
IPART C 6.2	The number of Properties experiencing a water pressure failure which is: permanent	(a) each separately billed or separately occupied part of a multiple occupancy Property is a separate Property;
IPART C 7.1	The number of Properties experiencing more than one water pressure failure	(b) a Property is taken to have experienced a water pressure failure at each of the following times: <ul style="list-style-type: none"> <li>(i) when a person notifies Sydney Water that the Property has experienced a water pressure failure and that water pressure failure is confirmed by Sydney Water; or</li> <li>(ii) when Sydney Water's systems identifies that the Property has experienced a water pressure failure; and</li> </ul>
IPART C 7.2	The number of Properties experiencing more than one water pressure failure (% of all properties supplied with water)	(c) a Property will not be taken to have experienced a water pressure failure only because of a short term operational problem (such as a main break), which is remedied in accordance with the licence or from abnormal demand (such as demand during fire fighting). <b>Property</b> (definition as per IPART A 1)

Reference	Indicator detail	Definition and notes
		<p><b>Occasional or recurrent, but not permanent water pressure failure</b> includes one off failure sites.</p> <p>Properties with a <b>permanent low water pressure failure</b> refers to properties that record a failure for every day of the year and is calculated through Sydney Water's Water Pressure Reporting Proforma..</p> <p><b>Property</b> definition as per IPART A 1</p>
IPART C 8	Average number of Properties (other than Public properties) experiencing an Uncontrolled Sewage Overflow in dry weather	Average number of Properties (other than Public properties) experiencing an Uncontrolled Sewage Overflow in dry weather is calculated as the Total number of Properties (other than Public Properties) experiencing an Uncontrolled Sewage Overflow in dry weather divided by the total number of Properties
IPART C 9	Number of private properties experiencing 2 sewer overflows in dry weather in the year	<b>Private property</b> and <b>dry weather sewer overflow</b> definitions as per IPART A 1 and IPART A 2.
IPART C 10	Total number of customer complaints (all categories).	<p><b>Complaint</b> is defined in AS ISO 10002-2006 or the most recent up-date of that standard. This AS ISO defines a complaint as an expression of dissatisfaction made to an organisation, related to its products, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected.</p> <p>The following examples are intended to provide some clarity to this definition.</p> <ul style="list-style-type: none"> <li>- A contact requesting information is not a complaint</li> <li>- A contact reporting a service difficulty or fault is not a complaint and these contacts are recorded separately</li> <li>- A contact expressing dissatisfaction with repeat service difficulties and faults is a complaint</li> <li>- A contact where a credit adjustment on the account has been made due to a meter misread is a complaint</li> <li>- A contact that results in a water quality issue is a complaint (ie., due to particles, discolouration, smell, taste, or a health issue)</li> <li>- A contact that results from an internal sewage overflow is a complaint</li> <li>- Any Civil actions taken through a court for loss or damage arising from Sydney Water's performance under the Customer Contract is a complaint</li> <li>- Complaints regarding repeat service difficulties or faults where they are from separate customers arising from the same cause, are counted as separate complaints</li> <li>- More than one complaint from the same customer arising from the same cause are reported separately</li> <li>- A complaint that is registered with EWON is a corporation complaint</li> <li>- A contact regarding a matter that is not the responsibility of the Corporation is not recorded as a complaint.</li> </ul>
IPART C 11.1	The number of Customer complaints relating to low water pressure where Sydney Water does not confirm the low water pressure failure or Sydney Water's systems do not identify that the Property has experienced low water pressure below the minimum pressure standard.	
IPART C 11.2	Number of pressure complaints per 1000 properties	
IPART C 12.1	Total number of complaints received by Sydney Water relating to stormwater and drainage services.	
IPART C 12.2	Number per 1000 properties of complaints received by Sydney Water relating to stormwater and drainage services.	
IPART C 13	Number of sewage odour complaints per 1000 properties	

Reference	Indicator detail	Definition and notes
IPART C 14	Number of noise complaints generated from Sydney Water's construction or operational activities	<p>- A contact regarding flooding from Sydney Water's Stormwater are considered to be a complaint.</p> <p><b>Confirmed Low Water Pressure</b> customer complaint means a complaint where there is known gauged data for a customer's complaint property at the same time and day as the customer contact.</p> <p><b>Unconfirmed Low Water Pressure</b> customer complaint means all low water pressure customer complaints that are not confirmed customer complaints.</p> <p><b>Property</b> definition as per IPART A 2</p>
IPART C 15.1	The percentage of complaints received by Sydney Water that are resolved within 2 business days	<p><b>Resolution</b> of a complaint means that:</p> <ol style="list-style-type: none"> <li>the complaint is resolved to a customer's satisfaction; or</li> <li>the customer is provided with an explanation as to why no further action is proposed in relation to the complaint.</li> <li>the customer is provided with a date when the issue will be resolved if the complaint is relating to future planned operational or capital works</li> </ol> <p>Note: At the Commencement Date of the Licence the categories in clause 7.2 – 7.4 of the Customer Contract were:</p> <ul style="list-style-type: none"> <li>▼ Planned interruption;</li> <li>▼ Unplanned interruption;</li> <li>▼ Low water pressure;</li> <li>▼ Wastewater overflow;</li> <li>▼ Dirty water; and</li> <li>▼ Boil water alert.</li> </ul>
IPART C 15.2	The percentage of complaints received by Sydney Water that are resolved within 10 business days	
IPART C 16.1	The number of rebates paid pursuant to a Customer Contract in the categories in clauses 7.2 – 7.4 of the Customer Contract.	
IPART C 16.2	The value of rebates paid pursuant to a Customer Contract in the categories in clauses 7.2 – 7.4 of the Customer Contract.	
IPART C 17	Total number of complaints relating to recycled water	
IPART C 18.1	Percentage of metered accounts of Customers that receive a bill not based on an actual meter read during the year	<p>A <b>metered account</b> refers to water usage metered account , which is billed based on volume. If a property has multiple meters and each metered account receives a separate bill based on a meter read, these should be reported as separate metered accounts for the purposes of this indicator. If a property has multiple meters and a single account is issued due to common ownership, the meters will also be treated as separate metered accounts for the purposes of this indicator.</p> <p>A <b>customer meter read</b> is one, which is provided by the customer to Sydney Water.</p> <p>A <b>business meter read</b> is one taken by Sydney Water or its contractor.</p> <p>An <b>actual meter read</b> is one taken by Sydney Water or its contractor or the customer (i.e. includes both a customer meter read and a business meter read)</p>
IPART C 18.2	Percentage of metered accounts of Customers that receive a bill not based on a business meter read for two consecutive years	

Reference	Indicator detail	Definition and notes
IPART C 19.1	Total number of contacts received by Sydney Water that are requests for instalment or deferred payment plans.	<p><b>Instalment Plan</b> is a mutual agreement, which results in an outstanding debt being paid in full by a given date through a schedule of regular payments.</p> <p><b>Property</b> definition as per IPART A 2</p> <p><b>Residential customer</b> means a customer who: owns real property which is used as a principal place of residence.</p> <p><b>Non-Residential customer</b> means all properties not classified as a residential customer.</p>
IPART C 19.2	Number per 1000 properties of contacts received by Sydney Water that are requests for instalment or deferred payment plans.	
IPART C 19.3	The total number of residential customers with continuing instalment plans with durations greater than 3 months.	
IPART C 19.4	The total number of non-residential customers with continuing instalment plans with durations greater than 3 months.	
IPART C 20.1	Number of payment assistance vouchers utilised.	<p><b>Payment Assistance Vouchers</b> are accountable documents handled through designated charity organisation to provide assistance to hardship-affected customers.</p>
IPART C 20.2	Value of payment assistance vouchers utilised.	
IPART C 21.1	The total number of residential customers disconnected for non payment of amounts owed to Sydney Water.	<p><b>Property</b> definition as per IPART A 2</p> <p><b>Disconnection</b> means the stopping (either temporarily or permanently) of water supply to a customer's property.</p> <p><b>Residential customer</b> definition as per IPART C 19</p> <p><b>Non-Residential customer</b> definition as per IPART C 19.</p> <p>IPART C 22 is calculated as the total number of days restrictions were applied divided by the number of restrictions applied.</p> <p><b>Flow Restriction</b> means a direct intervention in the water supply system by Sydney Water in order to reduce flow to a customer's property.</p>
IPART C 21.2	The total number of non-residential customers disconnected for non payment of amounts owed to Sydney Water.	
IPART C 22.1	The average number of days for which water flow restrictions are applied to customers where restrictions have been removed	

Reference	Indicator detail	Definition and notes
IPART C 22.2	The average number of days for which water flow restrictions are applied to customers where restrictions are still in place	
IPART C 23.1	Total number of residential customers on whom water flow restrictions have been imposed	
IPART C 23.2	Total number of non-residential customers on whom water flow restrictions have been imposed	
IPART W 1	The volume of sewage effluent discharged to the environment from inland sewage treatment plants and ocean sewage treatment plants	For IPART W 1, the volume of reuse/recycling (off and on site) is not included in the discharge figure. <b>Sewage Treatment Plant (STP)</b> is a facility at which sewage is stored and treated following delivery from the reticulation system prior to discharge and includes discharge structures and STP bypass points. <b>Effluent</b> means sewage that has received all of the designed treatment processes at the sewage treatment plant.
IPART E 1.1	Total mass of phosphorus discharged to streams / rivers from inland STPs.	<b>Mass</b> means weight in kg or tonnes. <b>STP</b> definition as per IPART W 1 <b>Effluent</b> definition as per IPART W 1. <b>Suspended solids capture rate</b> means the percentage of suspended solids removed by inland and ocean STPs determined by the difference in annual influent and effluent suspended solids load as a percentage of the total influent load.
IPART E 1.2	Total mass of nitrogen discharged to streams / rivers from inland STPs	
IPART E 1.3	Suspended solids capture rate for inland STPs	
IPART E 1.4	Total mass of suspended solids discharged from ocean STPs.	
IPART E 1.5	Total mass of grease discharged from ocean STPs.	
IPART E 1.6	Suspended solids capture rate for ocean STPs	
IPART E 2.1	Total number of breaches of environmental impact conditions under sewage treatment systems	

Reference	Indicator detail	Definition and notes
	licences issued by DECCW.	<b>Penalty Notice Offence</b> is an offence against the POEO Act or the regulations.
IPART E 2.2	Total number of breaches of environmental impact conditions under water treatment systems licences issued by DECCW.	<b>Penalty Notice</b> is a notice to the effect that, if the person served with the notice does not wish to have a specified penalty offence dealt with by a court, the person may pay the penalty prescribed under section 227 for the offence :
IPART E 2.3	Total number of prosecutions and Notices (including Penalty Notices) issued to Sydney Water under the Protection of the Environment Operations Act 1997	<b>Note for IPART E 2.4</b> This indicator will report on breach notices which contractors inform Sydney Water were incurred whilst they were conducting works for the corporation. Each breach notice will be reported on the date that the contractor informed Sydney Water, not on the date the penalty was incurred.
IPART E 2.4	Total number of prosecutions and Notices (including Penalty Notices) under the Protection of the Environmental Operations Act 1997 issued to contractors engaged by Sydney Water.	
IPART E 3.1	Total volume of Controlled Sewage Overflows that occur in dry weather.	<b>Controlled Sewage Overflow</b> definition as per IPART A 1.
IPART E 3.2	Total number of Controlled Sewage Overflows that occur in dry weather.	<b>Sewage</b> definition as per IPART A 1.
IPART E 3.3	Total volume of Controlled Sewage Overflows that occur in wet weather.	<b>Effluent</b> definition as per IPART W 1.
IPART E 3.4	Total number of Controlled Sewage Overflows that occur in wet weather.	<b>Sewage overflow</b> definition as per IPART A 1.
IPART E 3.5	Total volume of Controlled Sewage Overflows that occur in dry weather, expressed as a percentage of total sewage effluent discharged to the environment.	<b>Sewerage system</b> means the network of pipes, pumping stations and treatment plants used to collect, transport, treat and discharge sewage.
IPART E 3.6	Total volume of Controlled Sewage Overflows that occur in wet weather, expressed as a percentage of total	<b>Dry weather Overflow</b> definition as per IPART A 1.
		<b>Wet weather overflow</b> definition as per IPART A 1.
		<b>Note, IPART E 3.5 and 3.6</b> are calculated as follows: Total Volume of all overflows from controlled structures as % = [Total Volume of all overflows from controlled structures ]/[Total volume (treated effluent + overflows from control structures networks)]

Reference	Indicator detail	Definition and notes
	sewage effluent discharged to the environment.	
IPART E 3.7	Total number of breaches of conditions relating to environmental impacts under licences issued by DECCW for overflows to waterways.	
IPART E 4	Percentage of beaches falling within the very good and good categories under the NHMRC Guidelines for managing risks in recreational waters.	<p><b>IPART E.4</b> will be reported in accordance with DECCW's Beachwatch and Harbourwatch program.</p> <p>Note: Need to consider new set of swimming guidelines to be released by NHMRC</p> <p><b>Recreational water</b> is a water body that is used for recreational purposes.</p>
IPART E 5	Total mass of biosolids produced by Sydney Water.	<p><b>Biosolids</b> means the primarily organic solids produced during the treatment of wastewater (excludes grit &amp; screenings).</p> <p><b>Total Mass</b> means the quantity of biosolids captured and removed from STPs in dry tonnes</p>
IPART E 6.1	Total mass of water treatment residuals produced by Sydney Water.	<b>Net environmental benefit</b> means the direct or indirect improvement of the environment as a net result of the re-use. For example, biosolids reuse in agriculture, horticulture, land rehabilitation or energy recovery. It does not include material disposed of in landfill.
IPART E 6.2	Water treatment residuals reused (where the reuse delivers a net environmental benefit) expressed as a percentage of total mass produced.	<p><b>Dry Tonnes</b> means total mass of material in wet tonnes adjusted for moisture content.</p> <p><b>Water treatment residuals</b> refer to the material removed from the water by water filtration processes, including organic matter &amp; particulate matter in raw water, and some chemicals used in treatment processes.</p> <p><b>Re-use</b> is the application of a diverted waste product to a subsequent use which may be the same or different from the original purpose, and which extends the life of the product, but without further manufacture. Beneficial re-use is generally taken to mean that the form of re-use delivers some benefit (economic, social or environmental).</p>
IPART E 7	Total mass of heavy metals received under trade waste agreements with Sydney Water.	<p><b>Trade Waste</b> is any waste water generated from or as a result of an industrial or commercial activity undertaken, other than at domestic or household premises.</p> <p><b>Trade Waste agreement</b> means a written contract authorising discharge of trade wastewater to the sewer and requiring compliance with trade waste acceptance standards.</p> <p><b>Heavy Metals</b> are elements with a specific gravity greater than 5. The current list of heavy metals managed by trade waste agreements includes: Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Silver, Tin, Uranium and Zinc.</p>

Reference	Indicator detail	Definition and notes
IPART E 8.1	Solid waste generated by Sydney Water.	<p><b>Waste</b> refers only to non-liquid (solid) materials that are generally disposed of as solid waste to landfill waste disposal sites. It does not include gas, energy, water, wastewater, biosolids diverted for beneficial re-use and re-use water.</p> <p>Re-use definition as per IPART E 6.</p> <p><b>Recycled</b> means the conversion of waste materials into a usable product or resource. The process of recycling includes the diversion or extraction of the material from the waste stream; the collection and sorting of recyclable materials; and the processing of those materials into products which can then be used (or sold for use). Materials are deemed to have been recycled when they are transferred to a facility for processing or manufacturing (eg a recycling centre). Energy recovery, (or waste-to-energy) is another form of recycling, which involves recovery of latent energy rather than a physical resource.</p>
IPART E 8.2	Percent of solid waste recycled or reused expressed as a percentage of solid waste generated	
IPART E 9.1	Total electricity consumed by Sydney Water.	<p><b>Renewable energy</b> is electricity sourced from non fossil fuel sources</p>
IPART E 9.2	Total electricity consumption by water assets expressed as a function of water supplied (KWh/ML of water supplied).	
IPART E 9.3	Total electricity consumption by sewer assets expressed as a function of sewage treated (KWh/ML of sewage treated).	
IPART E 9.4	Electricity consumption from renewable sources or generated by Sydney Water expressed as a percentage of total electricity consumption.	
IPART E 10	Number of sites under the control of Sydney Water which have been declared to be significantly contaminated under the <i>Contaminated Land Management Act 1997</i>	<p><b>Contaminated land</b> is described in accordance with the Contaminated Land Management Act 1997, to mean the presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality. The presence of this substance must also present a risk of harm to human health or any other aspect of the environment.</p>
IPART E 11.1	Total area of clearing of native	Native vegetation indicators will be an estimate based on the production of Sydney Water Environmental

Reference	Indicator detail	Definition and notes
	vegetation.	Management Plans and triggered by Flora and Fauna studies. It will only be reported above 0.01 Hectares.
IPART E 11.2	Total area of native vegetation rehabilitated.	The definition of Native Vegetation will be derived from the Native Vegetation Act 2003 (NV Act). The Objects of the NV Act provide guidance as to what needs to be considered when assessing whether an area will be included in the vegetation loss figures.
IPART E 11.3	Total area of native vegetation gain due to rehabilitation, replanting and protection by Sydney Water.	

## G Drinking water health and aesthetic water characteristics and raw water operational monitoring characteristics

Important note:

The following table outlines the characteristics to be monitored as required by NSW Health under ADWG 2004. The characteristics and/or the guideline values will only be changed between versions of the Reporting Manual with the written approval of NSW Health.

Table G.1 Drinking water health and aesthetic water characteristics and raw water operational monitoring characteristics

Drinking Water Quality –					
Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
<b>micro-organisms</b>					
E. coli (or thermotolerant coliforms)	supply to consumer/distribution system	at least weekly (number of samples based on population)	H	0 Orgs/100mL	Key parameter – monitored as per ADWG 2004. An indicator of faecal contamination from warm blooded animals.
<b>physical characteristics</b>					
dissolved oxygen	supply to consumer/distribution system	monthly	A	>85% sat.	Some treatment processes may reduce DO content.
hardness (as CaCO <sub>3</sub> )	supply to consumer/distribution system	monthly if water treated for hardness, otherwise quarterly	A	200	Hardness is caused by calcium and magnesium salts. All water supplied by Sydney Water is relatively soft.
pH	supply to consumer/distribution system	fortnightly	A	6.5-8.5	Key risks are buffering problems at WFPs and cement lined mains leaching lime and causing higher pH.
taste	supply to consumer/distribution system	annually -complaints	A	acceptable (3)	May indicate undesirable contaminants. Source of problem often difficult to identify. Can occur from problems such as algae, biofilm, chlorine, dissolved solids and metals such as iron, copper manganese and zinc.
odour	supply to consumer/distribution system	annually -complaints	A	acceptable (3)	May indicate undesirable contaminants. Source of problem often difficult to identify. Can occur

**Drinking Water Quality –**

**ADWG 2004 recommendation**

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
temperature	supply to consumer/ distribution system	weekly (normally measured when a microbiological sample is taken)	A	no value	from problems such as algae, biofilm, chlorine, dissolved solids and metals such as iron, copper manganese and zinc.  Carried out as standard procedure with Coliform analysis. Rapid changes may bring complaints.
total dissolved solids	supply to consumer/ distribution system	quarterly	A	500	This characteristic is unlikely to vary significantly throughout the system. A high TDS can be caused by high levels of salts which can have adverse affects on some industrial processes.
true colour	supply to consumer/ distribution system	monthly	A	15	Sources of colour in water can include iron, manganese, humic and fulvic acids and dissolved plant components. Colour removal occurs in the treatment process.
turbidity	supply to consumer/ distribution system	monthly	A	5 NTU	NSW Health require inclusion for compliance purposes. Higher turbidity may shield some micro-organisms from disinfection and create a chlorine demand. Caused by presence of suspended matter. Can be of health concern in that particulates may comprise toxic material or absorb them. Turbidity is removed through water treatment processes.

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**Drinking Water Quality –**
**ADWG 2004 recommendation**

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
<b>Inorganic chemicals</b>					
<b>Disinfection Agents and Inorganic By-products of Disinfection</b>					
bromate	supply to consumer/distribution system	weekly if ozonation used, otherwise not required	H	0.02	Ozonation not used as disinfectant. Monitoring not required.
chloramine – see monochloramine	supply to consumer/distribution system	weekly if used as a disinfectant			See monochloramine
chlorine (free)	supply to consumer/distribution system	weekly if used as a disinfectant	H	5	Key parameter. Used as a primary and secondary disinfectant. Unlikely to exceed health guideline value except in exceptional circumstances. Aesthetic guideline value is routinely exceeded to minimise microbiological risks.
			A	0.6	
monochloramine	supply to consumer/distribution system	weekly if used as a disinfectant	H A	3 0.5	Used as disinfectant in chloraminated systems. Aesthetic guideline value is routinely exceeded to minimise microbiological risks.
<b>other inorganic chemicals</b>					
aluminium (acid-soluble)	supply to consumer/distribution system	weekly if aluminium salts used in clarification	A	0.2	Usually associated in drinking water with use of Aluminium salts in flocculation, or from clay soils. Alum salts are no longer used by Sydney Water.
ammonia (as NH <sub>3</sub> )	supply to consumer/distribution system	monthly	A	0.5	Key characteristic – monitored in all delivery systems as of 2003/04. Ammonia is added at WFPs for

**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
antimony	supply to consumer/ distribution system	quarterly	H	0.003	disinfection purposes Apart from addition for disinfection purposes, may indicate presence of sewage contamination and/or microbiological activity. May result from use of antimony-tin solder – not used by Sydney Water on water mains or treatment processes.
arsenic	raw water	quarterly	H	0.007	Possibly from natural sources Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
asbestos	supply to consumer/ distribution system	annually if at all		none	Asbestos pipe accounts for less than 1% of pipe in Sydney Water's area. The LGAs with most existing asbestos pipe are the Blue Mountains, Hawkesbury and Fairfield. Not for routine compliance monitoring as there is no guideline value. Refer to Fact Sheet No. 39 in 2004 ADWG.
barium	raw water	quarterly	H	0.7	Barium can occur naturally from exposure to barium containing rocks. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
beryllium	raw water	annually if at all		none	Can occur from the weathering of rocks and burning of fossil fuels. Not for routine compliance monitoring as there is no guideline value.

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**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation				
	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
boron	raw water	Quarterly	H	4	<p>From natural leaching of minerals and contamination, possibly from seawater intrusion. Monitor for North Richmond only. Raw water monitoring is the responsibility of SCA for other systems.</p> <p>Boron has been identified as a risk in the seawater source water and through the desalination process. All new risks associated with supplying drinking water from a seawater source will need to be addressed.</p>
cadmium	supply to consumer/distribution system	quarterly/specific investigation	H	0.002	Can occur from industrial or agricultural contamination or from galvanised pipe or fitting corrosion. There are still significant quantities of galvanised pipe in use for main to meter water services, although no longer installed.
chloride	supply to consumer/distribution system	quarterly	A	250	Not considered to be a problem for Sydney's water supply, from natural mineral salts or effluent contamination.
chromium (as Cr(VI))	supply to consumer/distribution system	quarterly	H	0.05	From industrial/agricultural contamination of raw water or corrosion of plumbing materials. Classified as human carcinogen.
copper	supply to consumer/	monthly / specific	H	2	Potential for copper levels to occur due to corrosion of copper fittings by

**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
	distribution system	investigation			soft water. Sydney has soft water. A key WQ characteristic monitored each year.
cyanide	supply to consumer/distribution system	annually if at all	H	0.08	From industrial wastes and some plants and bacteria.
fluoride	supply to consumer/distribution system	weekly if fluoridated, otherwise quarterly	H	0.9 - 1.5	Fluoride is added to the water at all WFPs. Can also occur naturally in some waters from fluoride-containing rocks. Required by Fluoridation of Public Water Supplies Act that requires a minimum of 2 sites per system, in the reticulation system. This characteristic is unlikely to vary significantly throughout each WFP system.
hydrogen sulfide	supply to consumer/distribution system	monthly	A	0.05	Formed in water by sulfate-reducing micro-organisms or hydrolysis of soluble sulfide under anoxic conditions. Aesthetic guideline value only.
iodide	raw water	annually if at all	H	0.1	From mineral and salt deposits. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
iron	supply to consumer/distribution system	fortnightly, or weekly if used as coagulant	A	0.3	Key parameter. iron (ferric chloride) is added as a coagulant aid at WFPs. Occurs naturally in water. Can result from corrosion of iron pipes. Can stain laundry Iron bacteria can block pipework, cause taste/odour and

## Drinking Water Quality –

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
lead	supply to consumer/ distribution system	monthly/specific investigation	H	0.01	corrosion. Occurs in water from dissolution from natural sources or from pipes and fittings containing lead. There still exist old lead jointed mains in the Sydney area.
manganese	supply to consumer/ distribution system	fortnightly	H A	0.5 0.1	Key parameter. Occurs naturally in water, higher in oxygen depleted water. Can cause staining and taste. Less than 0.05 mg/L is desirable. Problems with manganese have been experienced in the past in several systems.
mercury	raw water	quarterly	H	0.001	Very low concentrations occur naturally. From industrial emissions/spills or possibly contaminant in chemicals. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
molybdenum	raw water	quarterly	H	0.05	From mining, agriculture or fly-ash deposits from coal fuelled power stations. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
nickel	supply to consumer/ distribution system	quarterly / specific investigation	H	0.02	From nickel plated fittings.

**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
nitrate	supply to consumer/ distribution system	monthly	H	50 as NO <sub>3</sub>	Key characteristic in chloraminated systems. Occurs naturally. From intensive farming and sewage effluent. Presence is more likely in chloraminated systems where ammonia is used in conjunction with chlorine, for disinfection purposes.
nitrite	supply to consumer/ distribution system	monthly	H	3 as NO <sub>2</sub>	Key characteristic in chloraminated systems. Presence is more likely in chloraminated systems where ammonia is used in conjunction with chlorine, for disinfection purposes.
selenium	raw water	quarterly	H	0.01	Generally low levels in natural water. Can occur from selenium concentrations in some soil. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
silver	raw water	annually if at all	H	0.1	May occur in very low concentrations in natural waters from natural sources and industrial wastes. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
sodium	supply to consumer/ distribution system	quarterly	A	180	Natural component of water. Drinking water is generally a minor contributor to the total dietary intake of sodium.

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**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
sulfate	treated water	quarterly	H	500	Natural component of water, and may be added via treatment chemicals. Aluminium sulfate is not used as a coagulant at WFPs. Copper sulfate is not used to control algae in storage dams. Not considered to warrant further monitoring at this time. Possible inclusion within next 3 years for background data.
tin	raw water	annually if at all		none	Concentrations in water is very low. One of least toxic metals. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond. Not for routine compliance monitoring as there is no guideline value.
zinc	supply to consumer/ distribution system	monthly / specific investigation	A	3	Key characteristic. Usually occurs from corrosion of galvanised pipes, fittings and brasses. Adverse health affects from zinc are believed to relate more from too low intake rather than too high.
<b>organic compounds</b>					
acrylamide	treated water	quarterly	H	0.0002	Acrylamide occurs as a minor impurity in polyacrylamide. It may be contained in some polymers used as filter aids at water filtration plants or as a coagulant before thickening on

**Drinking Water Quality –**

**ADWG 2004 recommendation**

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
benzene	raw water	annually if at all	H	0.001	recycle systems. From atmospheric deposition and chemical plant effluent. Human carcinogen. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
carbon tetrachloride	treated water	quarterly	H	0.003	Sometimes occurs as impurity in chlorine used for disinfection. Also used in manufacture of chlorofluoromethane, in fire extinguishers, solvents and cleaning agents.
chlorobenzene	raw water	annually if at all	H	0.3	From spills and discharges. Monitor in event of spill only. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond. No routine monitoring.
<b>dichlorobenzenes</b>	raw water	annually if at all			Could occur from spills, discharges or leaching from contaminated soils. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
1,2-dichlorobenzene (1,2-DCB)			H	1.5	
1,3-dichlorobenzene (1,3-DCB)			A	0.02	
1,4-dichlorobenzene (1,4-DCB)			H	0.04	
<b>dichloroethanes</b>	raw water	annually if at all			Possibly from industrial effluents, spills, discharges or atmospheric deposition. Monitor for 1,2-
1,1-dichloroethane			H	none	

## Drinking Water Quality –

## ADWG 2004 recommendation

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
1,2-dichloroethane				0.003	dichloroethane at North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
<b>dichloroethenes</b>	raw water	annually if at all			Rarely found in drinking water. Found occasionally in ground water from wells heavily contaminated by solvents. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
1,1-dichloroethene (1,1-DCE)			H	0.03	
1,2-dichloroethene (1,2-DCE)			H	0.06	
dichloromethane (methylene chloride)	raw water	annually if at all	H	0.004	Used in manufacture of paint removers, insecticides, solvents and cleaners. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
epichlorohydrin	treated water	annually if at all	H	0.0005	Used in manufacture of some resins used in water treatment and as raw material in the manufacture of flocculants. According to 2004 ADWG the health guideline value is below the limit of detection with current analytical procedures however previous testing in Australia has detected at levels as low as 0.0002 mg/L.
ethylbenzene	raw water	annually if at all	H	0.3	Component of petrol and petroleum products. Monitor for North Richmond

**Drinking Water Quality –**

**ADWG 2004 recommendation**

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
ethylenediamine tetraacetic acid (EDTA)	raw water	annually if at all	H	0.25	only. Raw water monitoring is responsibility of SCA for other systems. Metal complexing agent widely used in industry and agriculture. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems. Lab with NATA accredited method not identified.
hexachlorobutadiene	raw water	annually if at all	H	0.0007	Industrial solvent. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
nitrilotriacetic acid (NTA)	raw water	annually if at all	H	0.2	Chelating agent in laundry detergents. May enter water through sewage contamination. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems. Lab with NATA accredited method not identified.
dialkyltins tributyltin oxide	raw water	annually if at all	H	None 0.001	Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems. NATA accredited or equivalent method not identified.
plasticisers di(2-ethylhexyl) phthalate (DEHP)	supply to consumer/ distribution system	annually if at all	H	0.01 None	Used in all flexible PVC products and may leach from these over a long time. Could also occur from spills. PVC pipe accounts for less than 5 % of water

## Drinking Water Quality –

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
di(2-ethylhexyl) adipate (DEIqA)					mains and has only been used in limited amounts in the last 20 years. Usage is increasing. Monitor for di(2-ethylhexyl) phthalate (DEHP) only.
polycyclic aromatic hydrocarbons (PAHs) Benzo-(a)-pyrene	supply to consumer/ distribution system	annually if at all	H	0.00001	Contamination can occur through atmospheric deposition, or leaching from bituminous linings. Bituminous lining is not generally used in water mains but was used on steel reservoirs prior to 1990. Monitor for background data, for compliance purposes at customer's tap.
styrene (vinylbenzene)	raw water	annually if at all	H	0.003	Possibly from industrial contamination. Can be used in manufacture of plastics, synthetic rubbers, resins and insulators. Monitor for North Richmond only. Raw water monitoring is responsibility of SCA for other systems.
tetrachloroethene	raw water	annually if at all	H	0.005	Dry cleaning solvent and metal degreaser. Could occur in drinking water from spills. Routine monitoring not required. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
toluene	supply to consumer/ distribution system	annually if at all	H A	0.8 0.025	Occurs naturally in petrol and natural gas, forest fire emissions. Could occur in drinking water from atmospheric deposition, industrial contamination,

**Drinking Water Quality –**

**ADWG 2004 recommendation**

<b>Characteristics</b>	<b>Location</b>	<b>Frequency</b>	<b>Health/aesthetic characteristic</b>	<b>Guideline value (mg/L unless otherwise noted)</b>	<b>Key Risk Area / Comments</b>
trichlorobenzenes (total)	raw water	annually if at all	H	0.03	leaching from protective coatings in storage tanks. Industrial chemical used as a solvent, dielectric fluid and in polyester dyeing. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
1,1,1-trichloroethane	raw water	annually if at all		None	Industrial chemical. Could occur from spills. Routine monitoring not required. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
trichloroethylene (TCE)	raw water	annually if at all		None	Used as a solvent in dry cleaning, refrigerant and fumigant. Could occur from spills. Routine monitoring not required. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
vinyl chloride	raw water	annually if at all	H	0.0003	Used in production of PVC resins for building and construction. Used in manufacture of early PVC pipes – no longer used. Sydney Water does not have any quantities of PVC pipes made with this compound. Could occur from spills. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
xylene	supply to consumer/ distribution system	annually if at all	H	0.6	Could occur in drinking water as a pollutant, or from solvent used for

## Drinking Water Quality –

### ADWG 2004 recommendation

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
<p><b>disinfection by-products</b></p> <p>Distribution system: As a minimum monitoring should be carried out for trihalomethanes. If concentrations exceed the guideline value, then other by-products should be analysed specifically. Monthly samples should be taken from each distribution system, with more samples if:</p> <p>the chlorine disinfection dose is increased substantially;</p> <p>trihalomethane concentrations exceed the guideline value;</p> <p>the source of supply is changed</p>					
chlorinated furanones	supply to consumer/ distribution system			none	By-product of Chlorination. Not for routine compliance monitoring as there is no guideline value.
<b>chloroacetic acids</b>	supply to consumer/ distribution system				By-product of Chlorination
chloroacetic acid			H	0.15	
dichloroacetic acid			H	0.10	
trichloroacetic acid			H	0.10	
<b>chloroketones</b>	supply to consumer/ distribution system				By-product of Chlorination. Not for routine compliance monitoring as there is no guideline value.
1,1-dichloropropanone				none	
1,3- dichloropropanone				none	
1,1,1- trichloropropanone				none	
1,1,3- trichloropropanone				none	
<b>chlorophenols</b>	supply to consumer/ distribution system				By-product of Chlorination of water containing phenols

**Drinking Water Quality –**

**ADWG 2004 recommendation**

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
2-chlorophenol			H	0.3	
2,4-dichlorophenol			H	0.2	
2,4,6-trichlorophenol			H	0.02	
chloropicrin	supply to consumer/ distribution system			None	By-product of Chlorination. Not for routine compliance monitoring as there is no guideline value.
cyanogen chloride	supply to consumer/ distribution system		H	0.08	By-product of Chloramination
<b>haloacetonitriles</b>	supply to consumer/ distribution system				By-product of Chlorination. Not for routine compliance monitoring as there is no guideline value.
dichloroacetonitrile				None	
dichloroacetonitrile				None	
dichloroacetonitrile				None	
dichloroacetonitrile				None	
trichloroacetaldehyde (chloral Hydrate)	supply to consumer/ distribution system		H	0.02	By-product of Chlorination Lab with NATA accredited method not identified.
trihalomethanes	distribution system & outlet of WFPs		H	0.25	By-product of Chlorination and Chloramination
pesticides	raw water	one sample per month from storage reservoir inlet or intake to distribution should be analysed for those pesticides previously detected in the source water, or where their	H	various	The main risks for pesticides are agricultural and domestic use in catchment areas and spills. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.

## Drinking Water Quality –

## ADWG 2004 recommendation

Characteristics	Location	Frequency	Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
		likely use would indicate that they might be detected sampling for some pesticides is required 5 yearly, 3 yearly, or annually, based on agreement with NSW Health.			
<b>radiological characteristics</b>					
gross alpha	raw water	radiological quality should be assessed when a new supply is brought into service, and then every two years for ground water supplies, and every five years for surface water supplies.	H	0.5Bq/L	Primary risk is from natural sources in catchments. Raw water monitoring is responsibility of SCA for other systems, except for North Richmond.
gross beta			H	0.5Bq/L	
<b>micro-organisms not recommended for routine monitoring</b> (only to be monitored on a special research program as and if required).					
Campylobacter	N/A	N/A			Risks mainly associated with contamination in catchment areas from faecal or sewage pollution or pasture runoff, or naturally occurring organisms in fresh water.  Contamination is possible in the distribution system following main breaks or from backflow.
Klebsiella	N/A	N/A			

**Drinking Water Quality –**

Characteristics	ADWG 2004 recommendation		Health/aesthetic characteristic	Guideline value (mg/L unless otherwise noted)	Key Risk Area / Comments
	Location	Frequency			
Salmonella	N/A	N/A			
Shigella	N/A	N/A			
Vibrio	N/A	N/A			
Yersinia	N/A	N/A			
Naegleria fowleri	N/A	N/A			
Adenovirus	N/A	N/A			
Enterovirus	N/A	N/A			
Hepatitis viruses	N/A	N/A			
Norwalk virus	N/A	N/A			
Rotavirus	N/A	N/A			
Para-Rotaviruses and Reovirus					
Aeromonas	N/A	N/A			
Legionella	N/A	N/A			
Mycobacterium	N/A	N/A			
Pseudomonas aeruginosa	N/A	N/A			
Acthamoeba	N/A	N/A			
Cryptosporidium	N/A	N/A		N/A	
Giardia	N/A	N/A		N/A	
Cyanobacteria (potentially toxic)	N/A	N/A		2000 cells/mL	



## Glossary

<b>ADWG</b>	Australian Drinking Water Guidelines
<b>AGWR</b>	Australian Guidelines for Water Recycling
<b>Operating Licence</b>	Sydney Water Corporation Operating Licence 2010-2015
<b>SWA</b>	Sydney Water Act 1994