

Operational Environmental Management Roadmap for Treatment and Network Activities

July 2017

Contents

1	Introduction	5
1.1	OEM Roadmap context.....	5
1.1.1	Context of legacy site specific OEMPs.....	6
1.2	Objectives of the OEM Roadmap	7
1.3	Environmental policy	7
1.4	Revision and updating.....	7
2	Activity Description	8
2.1	Specific Sydney Water Treatment and Network activities.....	8
3	Statutory Requirements.....	9
3.1	Legislative requirements	9
3.2	Conditions of Approval	9
3.3	Environment Protection Licence.....	11
3.4	Community and regulatory interface management	11
4	Environmental Management.....	12
4.1	Environmental risks.....	12
4.1.1	Site specific risks.....	12
5	Implementation	14
5.1	Roles and responsibilities.....	14
5.2	Training and environmental awareness.....	14
5.3	Emergency preparedness and response.....	15
5.4	Complaints handling.....	16
5.5	Reporting	16
6	Checking and Corrective Action	18
6.1	Operations Environmental Monitoring	18
6.2	Environmental inspection and audit.....	18
6.3	Non-conformance and corrective and preventive action.....	19
6.4	Records and document control.....	19
7	Environmental Management Review	21
8	References.....	22

Appendices	23
Appendix 1	EMP content check
Appendix 2	OEM Roadmap checklist
Appendix 3	CoA List

Abbreviations

BMIS	Business Management Information System
CAR	Compliance Accountability Register
P&SIMS	Integrated Management System for Delivery of Products and Services to Customers
CMS	Customer Management System
CoA	Conditions of Approval
DP&E	Department of Planning and Environment
EKAMS	Effluent Knowledge & Management System
EMS	Environmental Management System
EMP	Environmental Management Plan
EP&A Act	Environmental Planning and Assessment Act
EPA	Environmental Protection Authority
EPL	Environmental Protection Licence
ESD	Ecological Sustainable Development
iConnect	Internal Sydney Water intranet
KnowRisk	Sydney Water's corporate-wide risk management IT system
Maximo	Sydney Water's current enterprise asset management system
OEM	Operational Environmental Management
OEMP	Operational Environmental Management Plan
PIRMP	Pollution Incident Response Management Plan
PEMP	Property Environmental Management Plan
POEO	Protection of the Environment Operations Act 1997
SCADA	Supervisory Control and Data Acquisition (system)
SIP	Standard Incident Procedure
SOP	Standard Operating Procedure
SWEMS	Sydney Water Environmental Management System
SWIM	Sydney Water Information Management
SWIRL	Sydney Water Incident Recording and Learnings

1 Introduction

Sydney Water delivers essential and sustainable water services for the benefit of the community. Sydney Water provides drinking water, recycled water, wastewater services and some stormwater services to more than four million people in Sydney, Illawarra and the Blue Mountains. Drinking water is sourced from a network of dams managed by Water NSW, then treated and delivered to customers' homes and businesses by Sydney Water.

To deliver these services, Sydney Water currently operates a number of assets including water filtration, wastewater treatment and water recycling plants, and associated networks, located throughout greater Sydney. Many of these asset sites and associated networks have an Operational Environmental Management Plan (OEMP). Historically Sydney Water has been required to have OEMP's that meet project specific Conditions of Approval (CoA) requirements, made as part of the project approval process for major projects set either by the Minister for Planning or Sydney Water (see **Appendix 3 – CoA List**).

As part of Sydney Waters' commitment to continuous improvement in environmental performance, this Operational Environmental Management (OEM) Roadmap has been prepared to remove duplication of OEMP requirements with other procedures and processes used by Sydney Water, and to create efficiency in managing environmental risk during the operation of Treatment and Network activities.

The intent of this roadmap is to demonstrate how Sydney Water's management systems and processes address the requirements of project specific OEMP's. Sydney Water will implement these in place of project specific or site OEMP's.

1.1 OEM Roadmap context

This OEM Roadmap has been prepared:

- to satisfy the general CoA operational requirements for Sydney Waters' Treatment and Network activities (refer to **Section 3.2**)
- in accordance with the Department of Planning and Environment (DP&E) Guidelines for the Preparation of Environmental Management Plans (DPIP NR 2004) (refer to **Appendix 1**)
- to detail the key components of Sydney Waters' management systems that are used to manage and monitor environmental performance during operation of Treatment and Network activities (refer to **Appendix 2**).

Sydney Water has an Environment Management System (EMS) that is certified to AS/NZS ISO14001:2015. Certification mandates continual improvement in Sydney Waters' environmental performance. Sydney Water is also developing a Quality Management System that is consistent with the Australian Standard AS/NZS ISO 9001:2015: Quality Management Systems – Requirements. This is a new requirement under the Sydney Water Corporation Operating Licence 2015-2020.

The Sydney Water Environmental Management System (SWEMS) provides the framework for managing environmental risk and ensuring continual improvement in environmental performance. The process of continual improvement allows Sydney Water to identify, manage and monitor their environmental risks. This process includes regular auditing and review of the performance of the SWEMS and Customer Delivery group systems for operational control in relation to environmental management. The SWEMS operates across Sydney Water including activities performed as part of Treatment and Network activities.

The SWEMS also serves to provide a context for and links between existing operational management systems and the processes and procedures defined by other Sydney Water management systems, such as the Quality Management System (QMS) and Integrated Management System for Delivery of Products and Services to Customers (P&SIMS).

Figure 1 shows the relationship between SWEMS and P&SIMS, in relation to the OEM Roadmap for Treatment and Network activities.

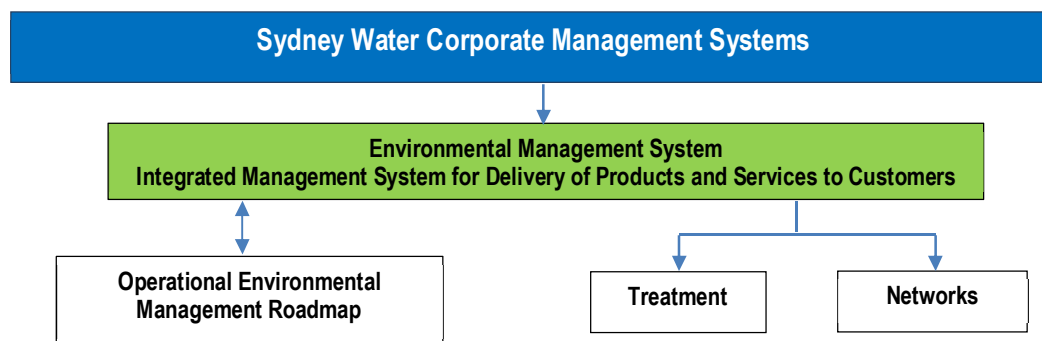


Figure 1 Sydney Water management systems relation with the OEM Roadmap

Sydney Waters' Treatment and Network activities operate under the P&SIMS. The SWEMS is used to inform the procedures and plans documented as part of the P&SIMS, to ensure adequate management of the environment during operation of Treatment and Network activities. This OEM Roadmap applies to all Sydney Water managed Treatment and Network activities that require an OEMP or an alternative OEM framework as part of a CoA. The OEM Roadmap has been prepared following the *Sydney Water Preparation of an EMP procedure* (SWEMSMS0026), will be used by Treatment and Network management and staff, and will be located within the P&SIMS.

The OEM Roadmap should be read in conjunction with *The Sydney Water Environmental Management System (EMS) Manual* (SWEMS0001) and *Integrated Management System for Delivering Products and Services Manual* (SDIMS0002).

The following chapters describe the procedures and other documents used by Treatment and Network activities to manage environmental risks during operation. **Appendix 2** provides a snap shot of the procedures and other documents outlined in the OEM Roadmap. In general, where procedures and other documents are included in the P&SIMS they have been used to inform the OEM Roadmap. If a procedure does not exist within the P&SIMS, the relevant SWEMS procedure has been used as the procedure to meet the OEM requirements. The P&SIMS procedures have been developed and are updated with consideration to the SWEMS requirements.

The OEM Roadmap will be made available to the public upon request.

1.1.1 Context of legacy site specific OEMPs

The approval documents, including all environmental studies, CoA and any stakeholder consultation undertaken during the preparation of the initial project specific OEMPs are stored in the *Business Management Information System* (BMIS) and/ or *Sydney Water Information Management* (SWIM) system which are both accessed via *iConnect* (internal Sydney Water intranet).

1.2 Objectives of the OEM Roadmap

The OEM Roadmap's objectives are to:

- provide a framework that meets the general CoA operational requirements, DP&E *Guidelines for the Preparation of Environmental Management Plans* (DIPNR 2004) and relevant legislative requirements
- broadly outline how Sydney Water manages its environmental requirements during the operation of Treatment and Network activities.

1.3 Environmental policy

The *Sydney Water Environmental Policy* (SWEMS0044) guides Sydney Water to achieve the following outcomes:

- identify, assess and manage environmental risks
- fulfil relevant environmental compliance obligations
- protect the environment by delivering our services in compliance with the principles of ecologically sustainable development, as required by the Sydney Water Act, 1994
- continual improvement in our environmental performance
- resilience to future environmental challenges.

The *Sydney Water Environment Plan* (SWEMS0004.02) is prepared to outline proposed outcomes and planned actions to work towards meeting broad environmental objectives and to support the Sydney Water Environmental Policy.

The policy is readily available and communicated to all staff and relevant contractors through printed (eg. Work site displays/documentation) or electronic media (including BMIS and *iConnect*).

The policy can also be viewed via the Sydney Water website at www.sydneywater.com.au and internally via *iConnect*.

1.4 Revision and updating

The OEM Roadmap will be managed via the *EMS Document Management Procedure* (SWEMS0008). The OEM Roadmap will be reviewed at regular intervals and updated as required to include relevant Sydney Water management system procedures and other documents. Once approved, a copy of the OEM Roadmap will be placed in the BMIS for all staff to access. Hard copies of the OEM Roadmap are considered uncontrolled documents.

2 Activity Description

This OEM Roadmap has been prepared to ensure Sydney Water manages environmental risks during the operation of Treatment and Network activities. Treatment and Network activities are part of the Sydney Water Customer Delivery group, which have the role to deliver water, wastewater, recycled water and stormwater products and services to customers, through the operation and maintenance of Sydney Water treatment processes and network systems. The OEM Roadmap, therefore, applies to the following activities:

- **Treatment:** Activities and infrastructure used for the operation and maintenance of treatment plants including dosing units in the network.
- **Networks:** Activities and infrastructure that distribute quality water and recycled water to customers, and collect wastewater and stormwater and distribute to treatment activities.

The Property Environmental Management Plans (PEMPs) and Pollution Incident Response Management Plans (PIRMPs) for Treatment and Network activities describe the existing operations, sensitive environments, and surrounds for sites and associated network activities. The PEMP's include a description of the existing vegetation, surrounding waterways and predominant land use types where relevant (refer to **Section 4.1.1**). Whilst the PIRMPs also include details of potential environmental incidents for sites and associated network activities (refer to **Section 4**).

As detailed in **Section 1.1**, this OEM Roadmap applies to Sydney Water managed Treatment and Network activities that require an OEMP as part of a CoA.

2.1 Specific Sydney Water Treatment and Network activities

Sydney Water's overarching approach to management of wastewater, drinking water and recycled water is described in the *Wastewater Management Manual* (BMIS0267), *Drinking Water Management Manual* (BMIS0213) and the *Recycled Water Management Manual* (BMIS0260) respectively.

Sydney Water has also prepared the below risk assessments, which are reviewed at regular intervals and are stored on SWIM:

- Bath-to-Beach Waste Water Risk Assessment (Prepared in accordance with BMIS0266)
- Catchment to Customer Risk Assessment (Prepared in accordance with BMIS0249)
- Treatment Plant specific and Network system specific risk assessments stored on KnowRisk (Sydney Water's corporate-wide risk management IT system)

In addition, each project environmental assessment (eg Review of Environmental Factors, REF) and site PEMP, if applicable, have detailed descriptions of the activities that would be undertaken at sites.

3 Statutory Requirements

3.1 Legislative requirements

The primary legislative requirements considered by this OEM Roadmap are those determined under the *Environmental Planning & Assessment Act 1979* (EP&A Act). These requirements are delivered primarily through project approvals as a CoA and safeguards and management measures provided for operations as detailed in relevant project environmental impact assessments. The OEM Roadmap also includes reference to the Environment Protection Licence (EPL) requirements applicable to Treatment and Network activities (refer to **Section 3.3**).

The *EMS Legal and Other Requirements Procedure* (SWEMS0003) requires Sydney Water to identify all relevant legal, regulatory and other requirements in relation to the management of environmental risks and performance. Identified environmental legal requirements are captured in the *Compliance Accountability Register* (CAR) (available on *iConnect*). The generation of the CAR is guided by the *Compliance Accountability Register Procedure* (CCP0002). This register is used to inform Sydney Water group legal requirements.

Sydney Water groups also identify, manage and monitor compliance with environmental legal requirements specific to their group activities and accountabilities. The *Manage Legal & other requirements procedure* (SDIMS0003) documents the systematic approach that Treatment and Network activities use to identify legal and other statutory requirements.

Legal requirements are formalised through Sydney Waters' CAR. In this CAR, Acts with high significance for Sydney Water are identified as well as the group(s) accountable for compliance with the legal requirements of the Act. General Managers agree to these accountabilities annually by signing an accountability agreement. Fortnightly legislative update notifications are sent via email from the Corporate Compliance team across the Sydney Water business.

The operation of Sydney Waters' Treatment and Network activities will be undertaken to ensure compliance with relevant environmental planning approvals and regulatory requirements, and to adhere to the objectives outlined in the Sydney Water Environmental Policy.

3.2 Conditions of Approval

Sydney Waters' Treatment and Network activities have a number CoAs (see Appendix 3) requiring an OEMP, this can be a certified EMS. General OEMP CoA requirements are provided in **Table 1**, and are based on the current OEMP CoAs that Sydney Water has in relation to Treatment and Network activities. This table indicates where the CoA requirements have been addressed in this OEM Roadmap to demonstrate how these requirements are met through the EMS.

Table 1 General CoA requirements for preparation of an OEMP

General CoA requirements	Where addressed in this document
An Operation Environmental Management Plan (OEMP) must be prepared in accordance with the Conditions of Approval, all relevant Acts and Regulations and accepted best practice management procedures. The Proponent must obtain the approval for the OEMP before Operation commences or within any time agreed to by the approver.	
The OEMP must:	
Identify the operation activities.	Section 1.1 and Section 2
The Operation EMP shall be made publicly available on request	Section 1.1
<ul style="list-style-type: none"> • identification of the statutory and other obligations which the Proponent is required to fulfil including all licences/approvals and consultations/ agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent's operation of the project; 	Section 3
<ul style="list-style-type: none"> • requirements of and compliance with relevant EPA guidelines; 	Section 3.1
<ul style="list-style-type: none"> • include environment management structure indicating the responsibility, authority and accountability for personnel relevant to the OEMP. 	Section 5.1
<ul style="list-style-type: none"> • sampling strategies and protocols to ensure the quality of the monitoring program including specific requirements of the EPA; 	Section 6.1
<ul style="list-style-type: none"> • monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the project during its operation including description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols (eg frequency and location) and procedures to follow; 	Section 5.5.1
<ul style="list-style-type: none"> • steps the proponent intends to take to ensure that all plans and procedures are being complied with: 	Section 5.5, 6 and 7
<ul style="list-style-type: none"> • consultation requirements including consultation with relevant government agencies, the local community, Local council and the customer complaint procedures; and 	Section 3.4 and Section 5.4
<ul style="list-style-type: none"> • management strategies employed for noise; access and traffic; water quality (including erosion and sedimentation controls); groundwater, air quality (including dust and odours); health and public safety; landscaping and maintenance and issues relating to flora and fauna; security; waste/resource minimisation, management, removal and disposal; hydrology and flooding; a contingency plan covering discharges of effluent or partially treated effluent, chemical spills, power shortages, failure of SPSs, bushfires; monitoring of the reticulation system particularly in terms of identifying system leaks; chemical handling; hazards and risks and emergency response plans; energy use and measures for minimisation. 	Section 4
<ul style="list-style-type: none"> • detailed contingency procedures. 	Section 5.3
<ul style="list-style-type: none"> • all sampling strategies and protocols undertaken as part of the EMP shall include sampling and analytical strategies in accordance with EPA approved analytical methods to ensure the effectiveness and quality of the monitoring program. Only accredited laboratories can be used for laboratory analysis. 	Section 6.1

3.3 Environment Protection Licence

Sydney Water holds EPLs for the operation of wastewater Treatment and Network activities. EPLs are maintained through the *Legal & other requirements procedure* (SDIMS0003). Refer to **Section 5.5** for the annual EPL reporting requirements undertaken by Sydney Water.

3.4 Community and regulatory interface management

Consultation with government authorities, the community and other stakeholders is essential for continual project regulatory compliance. Sydney Water undertakes consultation as required with government authorities, the community and other key stakeholders to ensure all relevant environmental approvals and licence requirements are being met.

Consultation is managed through the Sydney Water Customer Management System (CMS) to ensure that stakeholder management, whether initiated by Sydney Water or a stakeholder is in a manner consistent with Sydney Water policies. The CMS is supported by the *Customer, Stakeholder/Regulator Management Procedure* (SDIMS0006), which outlines how all communication for Treatment and Network activities are to be managed. The Regulatory relationship page is on *iConnect*, which provides communication protocols and procedures and details of regulatory relationships.

Historically Sydney Water has been required to prepare OEMP's that meet project specific CoA requirements before commencing operations, as part of the project approval process for major projects. The intent of this roadmap is to demonstrate how Sydney Water's management systems and processes address the requirements of project specific OEMPs. Sydney Water will implement these in place of project specific or site OEMPs.

4 Environmental Management

Sydney Water manages the environment using a risk based approach to ensure appropriate management measures are identified and implemented, with continuous improvement being an integral part of operations. This risk based approach includes consideration of potential environmental risks identified for Treatment and Network activities, management and monitoring measures implemented to ensure compliance with EPLs and CoAs, sensitive environments identified in Property Environmental Management Plans (PEMPs), and potential environmental incidents as outlined in Pollution Incident Response Management Plans (PIRMPs). The following sections outline how Sydney Water manages environmental risks during the operation of Treatment and Network activities.

4.1 Environmental risks

The SWEMS and P&SIMS are aligned with the Corporate Risk Management Framework (QMAF0080) to ensure alignment and consistency with corporate risk processes. The process of continuous improvement, as outlined in the Environmental Policy, ensures that Sydney Waters' environmental risks are identified, managed and monitored by the Customer Delivery group and the Environmental Governance team who manage the EMS. This includes regular auditing and review of the performance of the SWEMS and Customer Delivery group environmental management requirements.

Treatment and Network business areas identify environmental aspects, impacts and risks using *Guideline A - Risk Management Process* (QMAF0081), in conjunction with consideration of the project specific CoA, EPL, CAR, operational environmental impact assessment safeguards and mitigation measures, incident history (recorded in SWIRL), findings from audits/monitoring activities and PEMP requirements for sensitive environments. Environmental risks, management measures and actions (as required) are documented in *KnowRisk* reports. *KnowRisk* reports can be accessed via Business Intelligence.

The intent of the *KnowRisk* reports is to capture environmental aspects, risks, management measures and actions relevant to the Customer Delivery group to ensure compliance and continual environmental performance improvement.

The project environmental approval documents stored in BMIS and SWIM, which can be accessed via *iConnect*, also contain each project's environmental risks as identified during the initial environment assessment. The method for the product supply chain level risk assessment is documented in *Bath-to-Beach Risk Assessment Report* and *Catchment to Customer Risk Assessment Report*. While Recycled Water Quality Management Plans (available in BMIS) for treatment activities address environmental and health risks.

4.1.1 Site specific risks

Where a sensitive environment on a Sydney Water property has been identified, within a Treatment or Network area, a PEMP is prepared. PEMP's are developed in accordance with the *Preparation of Property Environmental Management Plans for Sydney Water Properties Procedure* (SWEMS0169). PEMP's describe the existing operations, environment and surrounds for site and associated network activities. They also include a description of the existing vegetation, surrounding waterways, predominant land use types where relevant and any safeguards specific to the sensitive environment.

Treatment sites operate on a 'Permit to Work' system where a risk assessment is undertaken daily prior to any work on site. This system is documented in the *Permit to Work Procedure* (BMIS0114). While for Network activities, the risk assessment is carried out by the person doing the work and outcomes are recorded on the job card or through a Field Resource Management (FRM) system for the activity being carried out.

5 Implementation

5.1 Roles and responsibilities

Effective operational environmental management requires action by Sydney Waters' management team, senior managers, environmental representatives, staff and contractors alike.

The General Manager – Customer Delivery has overall responsibility for environmental management during the operation of Treatment and Network activities.

Sydney Water recognises that the clear definition and documentation of responsibilities, authorities and duties of individuals within the organisation is essential to the effective implementation of its OEM. These responsibilities, authorities and duties are documented in the position descriptions of all Sydney Water personnel and, where applicable, in site documentation, procedures and practices.

Further details on responsibilities are described in the *Integrated Management System for Delivering Products and Services Manual* (SDIMS002).

5.2 Training and environmental awareness

Effective implementation of the OEM Roadmap requires all staff and contractors to be aware of the operational environmental requirements and to receive appropriate training. Sydney Waters' corporate induction process includes a session on environmental awareness and details an overview of the SWEMS and how it relates to staff in their workplace. Sydney Water has a staff capability program, that details environmental training requirements and/or procedures that staff are required to attend/follow, as provided by their Manager, relevant to their work. It is mandatory for all Sydney Water staff to complete an online Environmental Accountabilities eLearning course. The *EMS Environmental Training Procedure* (SWEMS0006) details:

- general environmental accountabilities
- how training needs are identified
- training programs
- how training data and records are managed.

Site and role specific training is provided to staff, with the following documents used to guide training requirements for Treatment and Network activities including:

- site specific induction
- network safety induction package
- treatment induction standard administrative procedure
- treatment operations competency program.

As a minimum, all staff working on Treatment and Network activities must be familiar with and understand the OEM Roadmap requirements. Training used to achieve this will include:

- a site induction
- emergency response training
- familiarisation with sensitive environments requiring protection and controls via the PEMP.

Training records are kept by the Customer Delivery group and include details on the training needs, and training completed including dates, names of persons trained, trainer details, a general description of the training content, and refresher training requirements. Training records are recorded in the Compass online system, or on site specific hard drives.

5.3 Emergency preparedness and response

Sydney Water has developed an integrated and comprehensive Business Resilience Framework to manage business disruption and the continuity of services. The framework has been designed chronologically across the four phases of Prevention, Preparedness, Response and Recovery. The framework includes a well-developed set of procedures, plans, tools and guides. In the event of an incident that has caused actual or potential material harm to the environment, Sydney Water will activate the relevant PIRMPs and any other relevant incident management and contingency plans. Each Treatment and Network activity with an EPL has a PIRMP. All PIRMPs have been prepared in accordance with the *Incident Preparedness and Prevention Procedure* (SDIMS0013) to meet the *Protection of the Environment Operations Act 1997* and the *Protection of the Environment Operations (General) Regulation 2009* requirements.

A critical part of the PIRMP is the notification process to relevant authorities. Relevant authorities may include the EPA, local council, Ministry of Health, SafeWork NSW and NSW Fire and Rescue.

Each Treatment and Network activity has a reporting flowchart (available in BMIS) as part of an incident management work instruction. Treatment and Networks business area personnel are responsible for maintaining and testing their reporting flowcharts.

Other documents that support this process include:

- DC -TOHQ0015 Treatment notification & reporting procedure
- DOC0158 Notification and Reporting of Material Harm to Regulators
- HSP-0030 H&S Incident Investigation Procedure
- Standard Incident Procedures (SIPs)
- Asset Contingency Plans.

Where a PIRMP or procedure does not exist in the P&SIMS for emergency preparedness and response in relation to environmental incidents, the *Management of Incidents with an Environmental Impact Procedure* (SWEMS0009) will be used.

The online Sydney Water Incident Recording and Learnings (SWIRL) system is used for recording, reviewing and reporting Sydney Water incidents including environmental incidents.

Networks initially log all incidents, work order requests, issues and non-standard events in Maximo (Sydney Water's current enterprise asset management system). If the entry into Maximo meets the incident criteria, then Maximo uploads the information into SWIRL. If the event doesn't meet the criteria the record will be maintained and managed on Maximo. The 'Managing Incidents' web page on iConnect has direct links to Sydney Waters incident management process, reporting, response and recovery activities and other incident management tools and guidelines.

5.4 Complaints handling

Sydney Water has an established process for managing and investigating external complaints (including environmental complaints). Complaints received from the community are addressed in accordance with the Sydney Water CMS. Any substantial complaints are addressed as a non-conformance (refer to **Section 6.3**).

The CMS records the details of customer complaints. Complaints received due to noise, odour and overflows are reported according to EPL requirements and as part of Sydney Waters' annual EPL reporting to the EPA (refer to **Section 6.3**).

Complaints received in relation to Treatment and Network activities are managed in accordance with the *Customer, Stakeholder/Regulator Management Procedure* (SDIMS0006).

Other documents that support this process include:

- Complaints procedure
- TOHQ0015 Treatment notification & reporting procedure
- WWNO0019 Management of odour complaints
- WOQ5162 Taste and odour complaints
- WWTP004 Multiple Customer Complaints SIP.

5.5 Reporting

Sydney Water undertakes internal and external environmental reporting.

Internal reporting is undertaken immediately in the eve of an environmental incident that has or has the potential to cause material environmental harm (refer to **Section 5.3**) or on a periodic basis, in accordance with *Manage Internal Reporting Procedure* (SDIMS0016). Periodic reporting will include information on the following:

- environmental incidents with actual or potential to cause environmental harm
- non-compliance and corrective actions
- complaints
- audits / inspections
- training.

External reporting includes legislative and compliance reporting. This reporting is undertaken in accordance with *Compilation of Regulatory Reports for Customer Delivery Procedure* (SDIMS0015) and *Treatment Notification and Reporting Procedure* (TOHQ0015) and PIRMPs (refer to **Section 5.3**).

Sydney Water reports environmental performance on an annual basis via an annual return for the EPL it holds. Annual returns are prepared in accordance with *Wastewater Specification for completing EPL Annual Returns* (PAMAM0003) and submitted to the EPA. The returns are available on the EPA website.

(SWEMS0010) *Monitoring and Measurement Procedure* also outlines the methodology for conducting:

- monthly monitoring of information relating to the SWEMS in the BMIS
- quarterly measurement of incidents via collation of data in the SWIRL system and contractor compliance with environmental legislation requirements
- six monthly analysis of monitoring and annual performance information relevant to the Environment Plan
- annual performance report to the Independent Pricing and Regulatory Tribunal (IPART)

This complements the *EMS Management Review Procedure* (SWEMS0014) which defines the management review process for the EMS to ensure its continuing suitability, adequacy and effectiveness to the International Standard ISO 14001 Environmental Management Systems.

6 Checking and Corrective Action

6.1 Operations Environmental Monitoring

The CoA and/ or the EPLs for Treatment and Network activities outline the environmental monitoring requirements to fulfil approval and/or licencing requirements.

Environmental monitoring requirements are captured as management measures and actions relevant to environmental aspects and risks, by the Treatment and Network business areas within *KnowRisk* reports.

In addition the environmental monitoring, measurement and reporting requirements are captured in the following procedures, plans and audits:

- *Assurance and monitoring (Audits and Inspections)* (SDIMS0010)
- *Non-conformance and Corrective and Preventive Action Procedure* (SDIMS0011)
- *Process Management Procedure* (TOHQ0011),
- Sydney Water site specific standard operating procedures,
- Sewage treatment system impact monitoring program (STSIMP)
- site monitoring plans and work instructions.
- Water quality audits (Australian Drinking Water Guidelines)
- safety and environmental inspection checklists (business level)
- water, wastewater and recycled water specifications.

6.2 Environmental inspection and audit

Sydney Water undertakes internal audits of OEM as part of our management system requirements. Environmental audits are a systematic and documented method of confirming environmental performance and compliance. Audit results are fed back into the annual planning process and contribute to the continual improvement of Sydney Waters' environmental performance.

The *EMS Audit and Site Inspection Procedure* (SWEMS0013) defines the unique audit and inspection requirements under the EMS and is to be read in conjunction with the corporate procedure, *Management System Audits* (QMAF0013). SWEMS0013 defines the process for:

- establishing a schedule for EMS audits
- planning audits/inspections
- conducting audits/inspections
- documenting findings

The *Sydney Water EMS Internal Audit Schedule* (SWEMS0013.09) is prepared annually and outlines the frequency and scope for the EMS audits. This is also supported by the *Customer Delivery Environmental Audit Plan* (SWEMS0188.01).

Treatment and Networks system audits and inspections are undertaken in line with *Assurance and Monitoring (Audits and Inspections) Procedure* (SDIM0010). This procedure outlines the process for an effective audit and inspection program, for process performance monitoring and risk management, to ensure the P&SIMS requirements are met.

To inform audits and inspections, and identify any gaps the following documents are reviewed as required:

- CoA
- project environmental impact assessment operational requirements
- EPLs
- CAR
- SWIRL records
- *KnowRisk* reports
- previous audit reports and findings
- relevant SWEMS and P&SIMS procedures applicable to OEM
- Other identified documents.

Other documents that support the auditing and inspection process include:

- *Safety and Environmental Inspection of Unmanned Facilities SOP* (BMIS0099).

The table in **Appendix 2** provides a snap shot of the procedures and other documents that Treatment and Network activities are required to implement during operation, to ensure appropriate environmental management. This table has been made into a checklist to assist Treatment and Network business areas in ensuring compliance with OEM requirements.

6.3 Non-conformance and corrective and preventive action

The corporate *Action Request Procedure* (QMAF0011) outlines the process and requirements to:

- Identify non-conformances and improvement opportunities
- Initiate and manage corrective actions
- Monitor progress and appropriate closure of action requests

QMAF0011 assists in establishing consistency in the identification and management of non-conformances and improvement opportunities. Identifying root causes and taking actions to correct/prevent or improve, ensures corrective actions are effectively implemented and risks appropriately managed to drive continual improvement across Sydney Water. *Non-Conformance and Corrective Actions Procedure* (SDIMS0011) and Appendix 1 of QMAF0011, provide more specific details on the management of non-conformance and corrective and preventive actions within the Customer Delivery group, including the recording requirements for different types of non-conformances.

6.4 Records and document control

Taking, filing and maintaining records is crucial for proving compliance and due diligence in environmental matters. Records must be kept for all monitoring, investigation,

communication, agreements, incidents, reports and any other matter that has the potential to be referred to in the future.

As a minimum, the following records will be kept to demonstrate environmental due diligence and compliance with the OEM Roadmap:

Record type	Location
historical versions of the OEM Roadmap	BMIS
CoA	BMIS currently – also check DP&E Major Projects Assessment website http://majorprojects.planning.nsw.gov.au/
EPLs	iConnect and POEO Act Public Register http://www.epa.nsw.gov.au/prpoeoapp/
regulatory authority inspection reports	BMIS
correspondence with regulatory authorities	SWIM - Refer to business specific processes
audit and inspection reports	BMIS
employee training records	Compass
environmental monitoring records	SCADA, EKAMS - Refer to business specific processes
incident investigation reports	SWIRL
non-conformances and corrective and preventative actions	BMIS
complaints register	CMS
waste disposal records.	SWIM, Contract/project files - Refer to business specific processes
permit to work.	SWIM - Refer to business specific processes

Management of the OEM Roadmap will be in accordance with the *EMS Document Management Procedure* (SWEMS0008). This procedure outlines how documentation that forms part of the EMS is managed consistent with and in conjunction with the QMS and P&SIMS.

Records associated with the OEM Roadmap will be managed in accordance with the *Records Management Procedure* (SDIMS0017). This procedure documents how records are created, registered, stored and disposed of.

Records will be maintained in either BMIS, SWIM, SWIRL, Maximo, CMS, on site specific hard drives and/or with Hard copy folders on site. Other information such as collected lab results and monitoring data would be held within databases such as SCADA and EKAMS.

7 Environmental Management Review

The OEM Roadmap will be implemented as a dynamic document, with the Environmental Planning & Management Services team (within Customer Deliver – Projects and Services) responsible for conducting reviews. Reviews will be undertaken at planned intervals.

Reviews will also be undertaken in response to changes in environmental policies or legislative requirements to ensure the OEM Roadmap is suitable, adequate and effective. Reviews will include assessing opportunities for improvement and the need for changes to the OEM Roadmap and associated documentation.

Several different sources of input may be considered at the review including a review of:

- compliance with CoA and EPL requirements
- results of internal audits and inspections
- evaluations of compliance with legal requirements
- environmental risks as recorded in *KnowRisk*
- environmental monitoring data including annual returns
- number and nature of environmental incidents
- status of corrective and preventative actions
- communication(s) from external interested parties, including complaints
- changing circumstances, including developments in legal and other requirements
- training undertaken and training needs
- follow-up actions from previous reviews
- recommendations for improvement.

Records of OEM Roadmap reviews will be retained within BMIS.

8 References

ISO14001:2015 International Standard: Environmental Management Systems - Requirements with Guidance for Use.

DIPNR 2004, Department of Infrastructure, Planning and Natural Resources, 2004. *Guideline for the Preparation of Environmental Management Plans*.

Sydney Water, 2017. The Sydney Water Environmental Management System (EMS) Manual. SWEMS0001.

Sydney Water 2017. Integrated Management System for Delivering Products and Services Manual. SDIMS0002.

Appendix 1: EMP content check

Source: Department of Infrastructure, Planning and Natural Resources, 2004. *Guideline for the Preparation of Environmental Management Plans.*

Does your EMP contain	Where addressed in the Sydney Water standardised OEMP
Background (EMP Guideline section 4.3.1)	
Project Description	Section 1
EMP Context	Section 1.1
EMP Objectives	Section 1.2
Environmental Policy	Section 1.3
Environmental Management (EMP Guideline 4.3.2)	
Environmental management Structure and Responsibility	Section 5.1
Approval and licensing requirements	Section 3
Reporting	Section 5.5
Environmental Training	Section 5.1 and Section 5.2
Emergency Contacts and Response	Section 5.3
Implementation (EMP Guideline 4.3.3)	
Risk assessment	Section 4.1
Environmental Management Activities and Controls	Section 4
Environmental Controls Plans or Maps	Section 2 and Section 4
Environmental Schedules	Section 4
Monitoring and Review (EMP Guideline 4.3.4)	
Environmental Monitoring	Section 6.1
Environmental Auditing	Section 6.2
Corrective Action	Section 6.3
EMP Review	Section 1.4 and Section 7

Appendix 2: OEM Roadmap checklist

Sydney Water OEM Checklist

Applicable site or project:

Activity name:

Date of review:

Reviewer name:

OEMP headings	Management procedure	P&SIMS key documentation/systems (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Support process (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Requirement met (Y/N/NA)	Evidence	Action required	By whom/when
1.0 Introduction	-	-	-				
1.1 OEMP Context	-	-	-				
1.2 Objectives of the OEMP	-	-	• OEM Roadmap Appendix 1 and 2				
1.3 Sydney Waters' Environmental Policy	• Sydney Water Environmental Policy (SWEMS0044) • Sydney Water Environment Plan (SWEMS0004.02)	-	-				
1.4 Revision and Updating	• Documentation & Document Control (QMAF0008_ • EMS Document Management Procedure (SWEMS0008)	• Document Management Procedure (SDIMS0008)	-				
2.0 Activity Description	-	-					
-	-	-	• Pollution Incident Response Management Plan • Water and wastewater services PIRMP for Networks • Property Environmental Management Plan • Wastewater Management Manual (BMIS0267) • Drinking Water Management Manual (BMIS0213) • Recycled Water Management Manual (BMIS0260) • Bath-to-Beach Waste Water Risk Assessment • Catchment to Customer Risk Assessment • KnowRisk reports • site-specific EIAs				
3.0 Statutory Requirements	-	-	-				

Sydney Water OEM Checklist

Applicable site or project:

Activity name:

Date of review:

Reviewer name:

OEMP headings	Management procedure	P&SIMS key documentation/systems (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Support process (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Requirement met (Y/N/NA)	Evidence	Action required	By whom/when
3.1 Legislative requirements	<ul style="list-style-type: none"> EMS Legal and Other Requirements Procedure (SWEMS0003) Compliance Accountability Register Procedure (CCP0002) 	<ul style="list-style-type: none"> Legal and Other Requirements Procedure (SDIMS0003) 	<ul style="list-style-type: none"> Sydney Water's Compliance Accountability Register 				
3.2 Conditions of Approval	<ul style="list-style-type: none"> SWEMS0019 Environmental Impact Assessment and Approvals Pathway Procedure 	<ul style="list-style-type: none"> Legal and Other Requirements Procedure (SDIMS0003) 	<ul style="list-style-type: none"> Conditions of approval (BMIS) Appendix 3 				
3.3. Environment Protection Licences	-	<ul style="list-style-type: none"> SDIMS002 Integrated Management System for Delivering Products and Services Manual (incl. relevant EPL management procedures) 	<ul style="list-style-type: none"> Environmental Protection Licence (iConnect and POEO Act Public Register) 				
3.4. Community and regulatory interface management	<ul style="list-style-type: none"> Sydney Water Customer Management System 	<ul style="list-style-type: none"> Customer, Stakeholder/Regulator Management Procedure (SDIMS0006) 	<ul style="list-style-type: none"> CMS records 				
4.0 Environmental Management		-	-				
4.1 Environmental risks	<ul style="list-style-type: none"> Corporate Risk Management Framework and associated documents including Guideline A - Risk Management Process (QMAF0081) 	<ul style="list-style-type: none"> KnowRisk reports Activity/site register location 	<ul style="list-style-type: none"> Bath-to-Beach Risk Assessment Report Catchment to Customer Risk Assessment Report Recycled Water Quality Management Plans (BMIS) 				
4.2 Property Environmental Management Plan (PEMP)	<ul style="list-style-type: none"> Preparation of Property Environmental Management Plans for Sydney Water Properties Procedure (SWEMS0169) 	<ul style="list-style-type: none"> SWEMS0169.01 Register of Properties with a PEMP 	<ul style="list-style-type: none"> Property Environmental Management Plan (Details of site specific PEMP incl. location) Permit to Work Procedure (BMIS0114) Field Resource Management (FRM) system 				
5.0 Implementation	-	-	-				
5.1 Roles and responsibilities	<ul style="list-style-type: none"> Sydney Water Environmental Accountabilities mandatory eLearning 	<ul style="list-style-type: none"> Integrated Management System for Delivering Products and Services Manual (SDIMS002) roles & responsibilities 	<ul style="list-style-type: none"> Relevant Position Descriptions Site specific roles and responsibilities work instructions 				
5.2 Training and environmental awareness	<ul style="list-style-type: none"> EMS Environmental Training Procedure (SWEMS0006) 	<ul style="list-style-type: none"> Corporate and Business Area Induction processes 	<ul style="list-style-type: none"> Unmanned sites hazard identification training Site specific inductions 				
		<ul style="list-style-type: none"> Compass - Corporate Training database 					

Sydney Water OEM Checklist

Applicable site or project:

Activity name:

Date of review:

Reviewer name:

OEMP headings	Management procedure	P&SIMS key documentation/systems (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Support process (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Requirement met (Y/N/NA)	Evidence	Action required	By whom/when
5.3. Emergency preparedness and response	<ul style="list-style-type: none"> Business Resilience Framework Management of Incidents with an Environmental Impact Procedure (SWEMS0009) 	<ul style="list-style-type: none"> Incident Preparedness and Prevention Procedure (SDIMS0013) 	<ul style="list-style-type: none"> Pollution Incident Response Management Plans Site specific incident management work instructions – eg. DC - TOHQ0015 Treatment notification & reporting procedure, SIPs, Asset Contingency Plans 				
			<ul style="list-style-type: none"> DOC0158 notification and reporting of Material Harm to Regulators 				
			<ul style="list-style-type: none"> SWIRL (SW incident reporting and learnings) Maximo 				
5.4 Complaints handling	<ul style="list-style-type: none"> Sydney Water Customer Management System (CMS) 	<ul style="list-style-type: none"> Customer, Stakeholder/Regulator Management Procedure (SDIMS0006) 	<ul style="list-style-type: none"> TOHQ0015 Treatment notification & reporting procedure WWNO0019 Management of odour complaints WOQ5162 Taste and odour complaints WWTP004 Multiple Customer Complaints SIP 				
5.3. Reporting	<ul style="list-style-type: none"> Operating Licence Reporting (external) EMS Management Review Procedure (SWEMS0014) Monitoring and Measurement Procedure (SWEMS0010) 	<ul style="list-style-type: none"> Manage Internal Reporting Procedure (SDIMS0016) Management Review Procedure (SDIMS0012) Compilation of Regulatory Reports for Customer Delivery Procedure (SDIMS0015) 	<ul style="list-style-type: none"> Specification for completing EPL Annual Returns (PAMAM0003) Treatment Notification and Reporting Procedure (TOHQ0015) PIRMPs 				
6. Checking and Corrective Action	-	-	-				
6.1. Operations environmental monitoring	<ul style="list-style-type: none"> EMS Audit and Site Inspection Procedure and schedule (SWEMS0013 & SWEMS0013.09) 	<ul style="list-style-type: none"> Assurance and monitoring (Audits and Inspections) (SDIMS0010) Audit Schedule Non-conformance and Corrective and Preventive Action Procedure (SDIMS0011) Customer Delivery Environmental Audit Plan (SWEMS0188.01). 	<ul style="list-style-type: none"> Sydney Water site specific standard operating procedures Site monitoring plans and work instructions Safety and Environmental Inspection Checklists (business level) Sewage treatment system impact monitoring plan (STSIMP) Water, Wastewater and Recycled Water Specifications Process Management Procedure (TOHQ0011) Water quality audits (Australian Drinking Water Guidelines) 				

Sydney Water OEM Checklist

Applicable site or project:

Activity name:

Date of review:

Reviewer name:

OEMP headings	Management procedure	P&SIMS key documentation/systems (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Support process (identify location of document eg. BMIS, share drive, SWIM, etc. and hyperlink documents wherever possible)	Requirement met (Y/N/NA)	Evidence	Action required	By whom/when
6.2. Environmental inspection and audit	<ul style="list-style-type: none">• EMS Audit and Site Inspection Procedure and internal audit schedule (SWEMS0013 & SWEMS0013.09)• Management System Audits (QMAF0013)	<ul style="list-style-type: none">• Assurance and monitoring (Audits and Inspections) Procedure (SDIMS0010)• Customer Delivery Audit Schedules including SWEMS0188.01	<ul style="list-style-type: none">• Safety and Environmental Inspection of Unmanned Facilities SOP (BMIS0099)• Safety and Environmental Inspection Checklists (business level)				
6.3. Non-conformance and corrective and preventive action	<ul style="list-style-type: none">• Action Request Procedure (QMAF0011)• EMS Action Request Procedure (SWEMS0012)	<ul style="list-style-type: none">• Non-Conformance and Corrective Actions Procedure (SDIMS0011)					
6.4.Records and document control	<ul style="list-style-type: none">• Documentation & Document Control (QMAF0008_• EMS Document Management Procedure (SWEMS0008)	<ul style="list-style-type: none">• Document Management Procedure (SDIMS0008)• Records Management Procedure (SDIMS0017)	SWIM – (storage of records) Relevant share drives BMIS SWIRL Maximo CMS SCADA EKAMS				
7. Environmental Management Review							
7. Environmental Management Review	<ul style="list-style-type: none">• Operating Licence Reporting (external)• EMS Management Review Procedure (SWEMS0014)• Monitoring and Measurement Procedure (SWEMS0010)	<ul style="list-style-type: none">• Manage Strategic and Business Planning Procedure (SDIMS0005)• Management Review Procedure (SDIMS0012)	BMIS, SWIM, SWIRL, KnowRisk, SCADA, EKAMS, Compass				

Appendix 3: CoA List

ID No	Title	Approval Details	Networks West	Networks North	Networks South	Treatment West	Treatment North	Treatment South	Operations Contracts
1	Agnes Banks and Londonderry Sewerage Scheme	SW Approved - REF & Decisions Report	✓						
2	Appin Sewerage Scheme	SW Approved - REF & Decisions Report	✓						
3	Brooklyn and Dangar Island Sewerage Scheme	DP&E Approved – MCoA		✓			Brooklyn WWTP		
4	Cronulla STP	DP&E Approved – MCoA						Cronulla WWTP	
5	Gerringong Gerroa Sewerage Scheme *	DP&E Approved – MCoA			✓			Gerroa WRP	Gerroa WRP - Veolia & Gerringong Farm
6	Glossodia Freemans Reach & Wilberforce Sewerage Scheme	SW Approved - REF & Decisions Report	✓			Richmond WRP			
7	Hawkesbury Heights and Yellow Rock Sewerage Scheme	SW Approved - REF & Decisions Report	✓			Winmalee WWTP			
8	Holsworthy Sewerage Scheme	DP&E Approved – MCoA	✓		□	Liverpool WRP			
9	Illawarra Wastewater Strategy	DP&E Approved – MCoA						Wollongong WRP Bellambi WWTP Port Kembla WWTP	
10	Mulgoa, Wallacia & Silverdale Priority Sewerage Program	DP&E Approved – MCoA	✓			Wallacia WWTP			
11	Northern Town Sewerage Scheme (Coalcliff, Stanwell Park, Stanwell Tops & Otford) Priority Sewerage Program	DP&E Approved – MCoA			✓			Cronulla WWTP	
12	Northside Storage Tunnel	DP&E Approved – MCoA		✓			North Head WWTP		
13	North West Growth Centre	DP&E Approved – MCoA		✓			Riverstone WWTP Rouse Hill WRP		
14	The Oaks, Oakdale & Belimbla Park Sewerage Scheme	DP&E Approved – MCoA	✓			West Camden WRP			
15	Penrith STP & Glenbrook WWTP	DP&E Approved – MCoA	✓			Penrith WRP			
16	Picton Sewerage Scheme *	DP&E Approved – MCoA	✓			Picton WRP			Picton Farm - GHD
17	Rouse Hill STP & Recycled water plant amplification	SW Approved – Determining Authorities Report, REF & Decisions Report		✓			Rouse Hill WRP		
18	Upper Blue Mountains Sewerage Scheme	SW Approved – Determining Authorities Report, REF & Decisions Report	✓			Winmalee WWTP			
19	West Camden STP Upgrade (inc West Camden recycled water pipeline)	DP&E Approved – MCoA	✓			West Camden WRP			
20	West Hornsby & Hornsby Heights STP Upgrades	DP&E Approved – Director Generals Report					West Hornsby WWTP Hornsby Heights WWTP		

OEM Roadmap for Treatment and Network Activities

ID No	Title	Approval Details	Networks West	Networks North	Networks South	Treatment West	Treatment North	Treatment South	Operations Contracts
21	Western Sydney Recycled Water initiative - replacement flows *	DP&E Approved – MCoA	✓	✓		Penrith WRP St Marys WRP	Quakers Hill WRP		AWTP - DWF
22	Jamberoo Sewerage Scheme	DP&E Approved – MCoA	✓					Bombo WRP	

* This OEM Roadmap does not apply to parts of these schemes that are contracted out and have OEMP requirements.