

**Guidelines for
Implementing Total Management Planning**

Environmental Sustainability

IMPLEMENTATION GUIDE

Superseded – for information only

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LIST OF ACRONYMS

DLGP	Department of Local Government and Planning
EMS	environmental management system
EPA	Environmental Protection Agency
EP Act	<i>Environmental Protection Act 1994</i>
EPP (Water)	Environmental Protection (Water) Policy 1997
ERAs	environmentally relevant activities
IEMS	integrated environmental management system
I/I	infiltration and inflow
KPI	key performance indicator
NR&M	Department of Natural Resources and Mines
QMS	Quality Management System
SWOT	strengths, weaknesses, opportunities, threats
TMP	Total Management Plan
WSP	Water Service Provider

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1 PURPOSE

This guide is intended to provide guidance for water service provider (WSP) practitioners and their consultants on the processes involved in establishing and implementing effective environmental management strategies and procedures and developing associated documentation.

2 OUTCOMES

The outcomes from implementing an effective environmental sustainability strategy include:

- greater awareness by consumers of the environmental value of water;
- reduced run-off of pesticides and nutrients into rivers and streams;
- protection of the natural environment;
- achievement of environmental objectives at least cost;
- minimisation of environmental impacts from operational and maintenance practices, and from construction activities;
- compliance with regulatory requirements;
- minimisation of greenhouse gas emissions;
- minimisation of environmental degradation and risks; and
- minimisation of habitat destruction, air/water/soil contamination by Water Service Providers' (WSPs') activities, and contamination of WSPs' water sources.

3 OUTPUTS

Outputs from the environmental sustainability process include:

- Environmental Management Plan (TMP sub-plan);
- Trade Waste Management Plan (TMP sub-plan);
- Effluent Management Plan (TMP sub-plan);
- Sludge Management Plan (TMP sub-plan);
- environmental plan for sewage management;
- environmental plan for trade waste management;
- environmental plan for water conservation;
- waste minimisation and permit enforcement strategies;
- effluent reuse maximisation strategies;
- environmental impact monitoring strategies;
- biosolids product promotion and co-disposal strategies; and
- documented action plans and procedures.

4 STRATEGIC SCOPE AND CONTENT OF SUB-PLANS

Depending on the WSP's progress in environmental management to date, its environmental management plans can be expected to do some or all of the following:

- confirm the purpose of the plan;
- define the WSP's environmental management policy, including its primary environmental goals. This may be either:
 - a specific policy for water supply and sewerage activities; or
 - application of a wider environmental policy to those activities;
- define the external operating environment in terms of:
 - community interaction;
 - legislative requirements; and
 - other external environmental constraints and relevant initiatives;
- outline the current situation in terms of:

- the WSP's progress in achieving statutory compliance and otherwise meeting its environmental objectives, for example through works in progress or environmental management system (EMS) development according to the ISO 14000 Series (see 'References and further reading');
- any programmed works for addressing any non-compliance for otherwise meeting its environmental objectives; and
- any other ongoing environmental initiatives;
- identify key linkages to other TMP sub-plans and related strategies which will assist in meeting the WSP's environmental goals; and
- outline strategies, action plans and performance targets for meeting the WSP's environmental goals.

The following sub-plans are suggested under the Environmental Sustainability key result area:

- Environmental Management Plan (includes Environmental Plans under EPP (Water));
- Trade Waste Management Plan;
- Effluent Management Plan; and
- Sludge Management Plan.

These sub-plans together can be considered as a full Environmental Sustainability Plan. Individual guides for the content of each of the sub-plans and their development levels are included in Appendix A. These suggestions demonstrate one approach only, however. Each WSP will have to decide what is appropriate for its own service strategies relating to water supply and sewerage. The plans can exist in a range of formats.

5 APPLICABLE LEGISLATION

In considering the environmental management aspects, WSPs must be aware of the environmental requirements and implications of a wide range of applicable legislation. Some of the relevant Queensland legislation is as follows:

- Advisory Standard for Hazardous Substances 1998
- *Environmental Protection Act 1994*;
- Environmental Protection (Water) Policy 1997;
- Environmental Protection (Air) Policy 1997;
- Environmental Protection (Noise) Policy 1997;
- Environmental Protection (Waste Management) Policy 2000
- Environmental Protection (Waste Management) Regulation 2000;
- Environmental Protection Regulation 1998;
- *Health Act 1937*;
- *Integrated Planning Act 1997*;
- Interim Code of Practice for On-site Sewerage Facilities 1999 (see 'References and further reading');
- *Nature Conservation Act 1992*;
- *Sewerage and Water Supply Act 1949*;
- *Standard Sewerage Law 1998*;
- *Standard Water Supply Law 1998*;
- *Water Resources Act 1989*; and
- *Water Act 2000*.

6 ENVIRONMENTAL PLANS REQUIRED UNDER EPP (WATER)

For certain water supply and sewerage activities with potential to cause environmental harm, as defined in the *Environmental Protection Act 1994* (EP Act), local governments are required to prepare environmental plans under Part 7 of EPP (Water).

Sections 40–43 of the EPP(Water) set out specific requirements for local government environmental plans, covering the following functions:

- sewage management (s. 40);

- trade waste management (s. 41);
- urban stormwater management (s. 42); and
- water conservation (s. 43).

Sewage, trade waste management and water conservation (but not stormwater management) are functions that clearly belong within a TMP for water supply and sewerage.

Consequently, in order to avoid unnecessary duplication, section 38 of the EPP (Water) allows a local government to achieve compliance with sections 40–43 by implementing a plan that substantially complies with, but which was not originally prepared for, the EPP (Water).

Under section 39(2) of the EPP (Water), a local government does not necessarily have to report to the Chief Executive of the Environmental Protection Agency (EPA) about developing and implementing an environmental plan. It may report instead to the Chief Executive of the department in which the *Water Resources Act* 1989 is administered about the same matter(s) under another plan, such as a TMP, if it notifies the Chief Executive of the Environmental Protection Agency (EPA) that it intends to comply with the relevant requirements of the EPP (Water).

Thus local governments have the option of meeting their commitments under sections 40–43 of the EPP (Water) through total management planning. This is also acknowledged in the User's Guide to the EPP (Water) (see 'References and further reading')

To assist local governments in conceptualising and preparing satisfactory TMP sub-plans to meet the environmental planning requirements under the EPP (Water), illustrative environmental plans have been developed by the Department of Natural Resources and Mines (NR&M), in consultation with the EPA. These illustrative plans, under TMP sub-plans, and their counterparts under the EPP (Water), are as follows:

Illustrative TMP sub-plan	Counterpart Environmental Plan
Sewer Infiltration/Inflow Management Plan	Sewage management
Water Demand Management Plan	Water conservation
Trade Waste Management Plan	Trade waste management

The illustrative plans are referenced in full under 'References and further reading'.

Guidance on preparing a Sewer I/I Management Plan and a Demand Management Plan is also given in the relevant Implementation Guides within the Asset Management key result area of these Guidelines.

7 RISK ISSUES

Potential risks associated with environmental sustainability include:

- air/water/soil contamination and excessive noise by WSP activities;
- contamination of surface waters or ground waters;
- inadequate community education, awareness and consultation;
- non compliance with regulatory requirements;
- public health risks; and
- customer complaints.

REFERENCES AND FURTHER READING

References

Illustrative Sewer Infiltration/Inflow Management Plan and Guide for Preparation, Department of Natural Resources, Brisbane, June 2000.

Illustrative Water Demand Management Plan and Guide for Preparation, Department of Natural Resources, Brisbane, June 2000.

Interim Code of Practice for On-site Sewerage Facilities, Queensland Department of Natural Resources, Brisbane, 1999.

AS/NZS ISO 14000 Series: *Environmental Management Systems*, Standards Australia, Standards New Zealand, 1996 - 1999.

Model Trade Waste Policy, Section B and Section C Amendments, Queensland Department of Natural Resources, Brisbane, July 2000.

User's Guide to Queensland's Environmental Protection (Water) Policy 1997, Department of the Environment, Brisbane, January 1997.

Further reading: Environmental Management Plan

Managing the Environment: A Practical Guide for Local Government to Environmental Management Systems and ISO 14001, Australian Local Government Association, 1996.

AS/NZS ISO 14001:1996, *Environmental Management Systems — Specifications with Guidance for Use*, Standards Australia, Standards New Zealand, 1996.

Further reading: Trade Waste Management Plan

Model Trade Waste Policy, Queensland Department of Primary Industries, June 1993 (amended January 1995).

Further reading: Effluent Management Plan

Interim Guidelines for Reuse or Disposal of Reclaimed Wastewater, Queensland Department of Natural Resources, Brisbane, April 1996.

Queensland Water Recycling Strategy, Environmental Protection Agency (in preparation), Brisbane.

Further reading: Sludge Management Plan

Environmental Guidelines: Use and Disposal of Biosolids Products, Environmental Protection Authority NSW, Sydney, October 1997.

Water Treatment Plant Sludge — Treatment and Disposal, Scientific Brief Series BRF 5/1995, Queensland Department of Natural Resources, Brisbane, 1995.

APPENDIX A: Content and development levels of sub-plans

Environmental Management Plan

TABLE A1: Indicative sub-plan content

Sub-plan features	Environmental Management Plan content
Issues covered in sub-plan	<ul style="list-style-type: none"> ERA licence compliance. Coordination with other environmental initiatives. Public approval of organisations environmental management. Development of environmental management system (EMS) to ISO 14001.
Purpose of plan	<ul style="list-style-type: none"> To provide an overview of the WSP's current environmental initiatives. To outline the WSP's future objectives and initiatives for managing the environmental impacts of its activities.
Policies that may be required	<ul style="list-style-type: none"> Level of licence compliance. Scope of EMS (IEMS or full EMS global issues, etc.).
Other Total Management Plan elements that are intimately linked to this sub-plan	<ul style="list-style-type: none"> Effluent Management Plan: major focus for licence compliance and EMS. Sludge Management Plan: major focus for licence compliance and EMS. Trade Waste Management Plan: major focus for licence compliance and EMS. Sewer Infiltration/Inflow Management Plan: major focus for licence compliance and EMS. Performance Management Plan: need for compatibility between EMS and Quality Management System (QMS).
External issues contributing to the current operating environment that need to be considered	<ul style="list-style-type: none"> Requirements and obligations under the <i>Environmental Protection Act 1994</i>. Pressure on WSPs to demonstrate corporate environmental responsibility by implementing an accredited EMS. Requirements of EPP (Water) for preparation by local governments of environmental plans on sewage management, trade waste management and water conservation.
Issues that need to be considered in summarising the status of current operations	<ul style="list-style-type: none"> Scope of WSP activities with significant environmental implications. Extent of related environmental issues administered by other than the WSP (e.g. on-site treatment plants, catchment management). Extent of ERAs and licensing, including sewage overflows. Extent of site-based management plans required by licence(s). Progress on environmental plans required under EPP (Water). Status of IEMS/EMS initiatives. Broad SWOT analysis of relevant operations.
Strategic basis of the plan	<p>The strategic elements forming the basis of the plan should include:</p> <ul style="list-style-type: none"> goal for ecological sustainability; objective(s) for environmental management; adopted KPIs; and management strategies and performance targets. <p>The management strategies developed will be based on the identified key strategic issues and SWOT findings, including risk assessment, in respect of environmental management, and on the required TMP development level.</p> <p>Many WSPs are likely to require strategies for preparing/completing site-based management plans and local government environmental plans under EPP (Water), and for preparing and implementing an appropriate EMS.</p> <p>The strategies should be supported by detailed action plans covering a period of up to 3 years.</p>

Sub-plan features	Environmental Management Plan content
Suggested performance measures	<p>Outcome:</p> <ul style="list-style-type: none"> Number of environmental complaints against WSP. Number of environmental protection orders issued against WSP. Number of unfavourable environmental audits against WSP. Conforming EMS in place. Third party accreditation of EMS maintained. <p>Output:</p> <ul style="list-style-type: none"> Compliance with each environmental authority. Number of requirements for environmental evaluations imposed on WSP.
Supporting documentation	<p>This will depend on the WSP, but typically would include:</p> <ul style="list-style-type: none"> completed environmental management plans; environmental management program(s); environmental audit reports; environmental authorities issued by EPA; strategic environmental study reports; and EMS/IEMS documentation.

TABLE A2: Required sub-plan development level

Development level ¹	Target management mechanisms of Environmental Management Plan
3	<ul style="list-style-type: none"> Environmental policy ensuring commitment to prevent pollution, and to comply with relevant legislations and regulations. All environmental issues and priorities identified. Environmental activities comply with relevant legislations and regulations. Strategic/rational approach to environmental issues exists. Appropriate contingency plans developed. Appropriate training and awareness programs regularly undertaken. Appropriate environmental audit/review programs periodically conducted.
2	<ul style="list-style-type: none"> Environmental policy ensuring commitment to prevent pollution, and to comply with relevant legislations and regulations. All environmental issues and priorities identified. Environmental activities comply with relevant legislations and regulations. Strategic/rational approach to environmental issues exists.
1	<ul style="list-style-type: none"> Environmental policy ensuring commitment to prevent pollution, and to comply with relevant legislations and regulations. Environmental activities comply with relevant legislations and regulations.

¹Defined in Section 4.2 of TMP Development Guide.

Trade Waste Management Plan

TABLE A3: Indicative sub-plan content

Sub-plan features	Trade Waste Management Plan content
Issues covered in sub-plan	<ul style="list-style-type: none"> Trade waste policy enforcement and review. Education and assistance for generators/industry. Disposal and tracking of non-sewerable wastes.
Purpose of plan	<p>For WSPs operating sewerage systems:</p> <ul style="list-style-type: none"> to provide an overview of the WSP's current trade waste management and regulation practices; and to outline the WSP's future objectives and initiatives in trade waste management.
Policies that may be required	<ul style="list-style-type: none"> Trade waste policy (for which NR&M has issued a model policy).
Other Total Management Plan elements that are intimately linked to this sub-plan	<ul style="list-style-type: none"> Environmental Management Plan: coordinates environmental obligations and safeguards. Financial Management Plan: recognises trade waste charges as revenue source. Sludge Management Plan: considers potential impacts of heavy metals on sludge. Risk Management Plan: addresses associated risks to personnel, assets and environment. Information Management Plan: implementing, monitoring and recording of waste register.
External issues contributing to the current operating environment that need to be considered	<ul style="list-style-type: none"> Powers to regulate discharge of trade waste to sewerage under <i>Sewerage and Water Supply Act 1949/Water Act 2000</i>. Control provisions for local government WSPs under <i>Standard Sewerage Law 1998/Water Act 2000</i>. Requirements of EPP (Water) for preparation of local government environmental plan on trade waste management. (This sub-plan should be formulated so as also to meet these requirements.) Local government required to meet conditions of environmental authority for sewerage systems. Provisions of <i>EPP (Waste Management) 2000</i> and <i>EP (Waste Management) Regulation 2000</i> for collection, transport and tracking of regulated wastes. Activities of commercial liquid waste transporters. State Government subsidies for trade waste audits and waste minimisation programs.
Issues that need to be considered in summarising the status of current operations	<ul style="list-style-type: none"> Status of trade waste policy. Range and categorisation of generators. Sewer admission criteria. Cost and pricing strategies. Status of 'approval' surveillance and enforcement, including staff resources and roles maintaining pre treatment. Level of education or/assistance to generators. Options for disposal of non-sewerable trade waste. Arrangements for collection, transportation and tracking of non-sewerable trade waste. Progress on environmental plan on trade waste management under EPP (Water), for local government WSPs. Level of generator participation in waste minimisation/recycling/reuse/exchange programs. Broad SWOT analysis of relevant operations.

Sub-plan features	Trade Waste Management Plan content
Strategic basis of the plan	<p>The strategic elements forming the basis of the plan should include:</p> <ul style="list-style-type: none"> ▪ goal for environmental management; ▪ objective(s) for trade waste management; ▪ adopted KPIs; and ▪ management strategies and performance targets. <p>The management strategies developed will be based on the identified key strategic issues and SWOT findings, including risk assessment, in respect of trade waste management, and on the required TMP development level.</p> <p>Many WSPs are likely to require strategies for reviewing their trade waste policy and/or developing an environmental plan on trade waste management; developing/enhancing programs for ‘approval’ surveillance/enforcement; developing/updating generator education/information programs; and developing/enhancing tracking systems for regulated waste.</p> <p>The strategies should be supported by detailed action plans covering a period of up to 3 years.</p>
Suggested performance measures	<p>Outcome:</p> <ul style="list-style-type: none"> ▪ Number of trade waste incidents impacting on sewerage system operation. ▪ Percentage of generators fully complying with ‘approvals’. ▪ Number of generators with waste minimisation/recycling/reuse/exchange programs in place. <p>Output:</p> <ul style="list-style-type: none"> ▪ Number of trade waste generators by category. ▪ Trade waste contribution to sewerage (volume, strength & contaminants).
Supporting documentation	<p>This will depend on the WSP, but typically would include:</p> <ul style="list-style-type: none"> ▪ current trade waste policy and/or environmental plan on trade waste management; ▪ strategic trade waste study reports and other documentation; and ▪ pro forma waste tracking system (forms/electronic).

TABLE A4: Required sub-plan development level

Development level ¹	Target management mechanisms of Trade Waste Management Plan
3	<ul style="list-style-type: none"> Trade waste policy in place to comply with relevant legislation and regulations. Generator and Waste register in place. Sewer admission criteria and pricing strategies. Awareness programs on waste minimisation/recycling/reuse/exchange comply with legislative requirements regularly undertaken. Tracking system and response plan. Regular trade waste inspections conducted. Full time trade waste officer appointed.
2	<ul style="list-style-type: none"> Trade waste policy in place to comply with relevant legislations and regulations. Generator and Waste register in place. Sewer admission criteria and pricing strategies. Awareness programmes on waste minimisation/recycling/reuse/exchange comply with legislative requirements regularly undertaken. Tracking system and response plan. Regular Trade waste inspections conducted. Full time trade waste officer appointed.
1	<ul style="list-style-type: none"> Trade waste policy in place to comply with relevant legislations and regulations. Generator and Waste register in place. Sewer admission criteria. Officer appointed whose duties include trade waste management.

¹Defined in 'Section 4.2 of TMP Development Guide.

Effluent Management Plan

TABLE A5: Indicative sub-plan content

Sub-plan features	Effluent Management Plan content	
Issues covered in sub-plan	<ul style="list-style-type: none"> ▪ Licence effluent standards. ▪ Effluent quality and surveillance. ▪ Effluent disposal strategies. 	<ul style="list-style-type: none"> ▪ Effluent reuse. ▪ Water reclamation.
Purpose of plan	<p>For WSPs operating sewerage systems:</p> <ul style="list-style-type: none"> ▪ to provide an overview of the WSP's current effluent management practices; ▪ to outline the WSP's future objectives and initiatives in effluent management, in particular effluent reuse and recycling for agricultural, industrial, aquaculture, non potable residential community use 	
Policies that may be required	<ul style="list-style-type: none"> ▪ Effluent disposal (discharge to waters vs alternatives). ▪ Effluent reuse (degree, promotion, education, charging, etc.). 	
Other Total Management Plan elements that are intimately linked to this sub-plan	<ul style="list-style-type: none"> ▪ Environmental Management Plan: coordinates environmental obligations and safeguards. ▪ Infrastructure Plan: recognises need for effluent management works. ▪ Operations Management Plan: provides for reuse etc. protocols. ▪ Risk Management Plan: recognises environmental and health risks. ▪ Performance Management Plan: provides basis for assessing WSP's level of regulatory compliance. 	
External issues contributing to the current operating environment that need to be considered	<ul style="list-style-type: none"> ▪ Effluent standards and approved disposal practices are defined in EPA licences. ▪ The EPA and NR&M encourage effluent reuse, with DLGP providing 50% capital subsidies for qualifying schemes. ▪ EPA is coordinating a Queensland Water Recycling Strategy. ▪ Growing user demands for effluent in some regions. ▪ Community cautiousness on reuse. ▪ Obligations of effluent reusers under Environmental Protection Act. ▪ Social implications. 	
Issues that need to be considered in summarising the status of current operations	<ul style="list-style-type: none"> ▪ Design loadings, treatment processes and licensed effluent standards and disposal practices for each treatment plant. ▪ Findings of any strategic effluent management studies. ▪ Effluent quality and volume generated and reused for each plant. ▪ Reuse practices. ▪ Reuse market surveys; community attitude surveys. ▪ Potential reuse demands. ▪ Reuse agreements and charging arrangements. ▪ Effluent and reuse monitoring arrangements/responsibilities/accountabilities. ▪ Broad SWOT analysis of relevant operations. 	

Sub-plan features	Effluent Management Plan content
Strategic basis of the plan	<p>The strategic elements forming the basis of the plan should include:</p> <ul style="list-style-type: none"> ▪ goal for environmental management; ▪ objective(s) for effluent management; ▪ adopted KPIs; ▪ management strategies and performance targets; and ▪ community issues/acceptance. <p>The management strategies developed will be based on the identified key strategic issues and SWOT findings, including risk assessment, in respect of effluent management, and on the required TMP development level.</p> <p>Many WSPs operating wastewater treatment plants are likely to require strategies for:</p> <ul style="list-style-type: none"> ▪ implementing treatment plant augmentation programs based on strategic effluent disposal studies and/or upgraded licence requirements; ▪ developing an effluent reuse pricing policy; ▪ implementing effluent supply metering; and ▪ developing/completing reuse schemes based on market/community surveys. <p>The strategies should be supported by detailed action plans covering a period of up to 3 years.</p>
Suggested performance measures	<p>Outcome:</p> <ul style="list-style-type: none"> ▪ % change in effluent reuse level. ▪ Number of non-WSP reusers. <p>Output:</p> <ul style="list-style-type: none"> ▪ % effluent volume reused. ▪ % reused effluent metered. ▪ % reused effluent subject to charging.
Supporting documentation	<p>This will depend on the WSP, but typically would include:</p> <ul style="list-style-type: none"> ▪ environmental authorities issued by EPA; ▪ effluent reuse reports; ▪ market/community survey reports; ▪ strategic effluent management study reports; and ▪ pro-forma reuse agreement.

TABLE A6: Required sub-plan development level

Development level ¹	Target management mechanisms of Effluent Management Plan
3	<ul style="list-style-type: none">▪ Effluent reuse/disposal policy.▪ Appropriate effluent management strategies.▪ Appropriate effluent reuse strategies/practices implemented to comply with relevant legislations and regulations.▪ All potential environmental impacts identified.▪ Appropriate business opportunities identified on reuse of effluent.▪ Legal responsibilities of both the supplier and the user identified.▪ Contractual agreements and charging arrangements established.▪ Community awareness programmes regularly undertaken on health and environmental aspects of reuse.
2	<ul style="list-style-type: none">▪ Effluent reuse/disposal policy.▪ Appropriate effluent management strategies.▪ Appropriate effluent reuse strategies/practices implemented to comply with relevant legislations and regulations.▪ All potential environmental impacts identified.▪ Legal responsibilities of both the supplier and the user identified.▪ Contractual agreements and charging arrangements established.▪ Community awareness programs regularly undertaken on health and environmental aspects of reuse.
1	<ul style="list-style-type: none">▪ Effluent reuse/disposal policy.▪ Appropriate effluent reuse strategies/practices implemented to comply with relevant legislations and regulations.

¹Defined in Section 4.2 of TMP Development Guide..

Sludge Management Plan

TABLE A7: Indicative sub-plan content

Sub-plan features	Sludge Management Plan content
Issues covered in sub-plan	<ul style="list-style-type: none"> Sludge generation, reuse and disposal from water and wastewater treatment plants.
Purpose of plan	<p>For WSPs operating water and sewerage systems:</p> <ul style="list-style-type: none"> to provide an overview of the WSP's current sludge management processes and documentation; to outline issues to be addressed in sludge management; and to outline future sludge management initiatives.
Policies that may be required	<ul style="list-style-type: none"> Sludge reuse/disposal. Public access to sludge.
Other Total Management Plan elements that are linked intimately to this sub-plan	<ul style="list-style-type: none"> Environmental Management Plan: coordinates environmental obligations and safeguards. Trade Waste Management Plan: recognises influence of trade waste on sewage sludge quality. Risk Management Plan: recognises environmental and health risks.
External issues contributing to the current operating environment that need to be considered	<ul style="list-style-type: none"> A number of sludge management practices are classed as Level 1 Environmentally Relevant Activities (ERAs) under the <i>Environmental Protection Act 1994</i>. Potential environmental and public health risks associated with sludge disposal and reuse. <i>Contaminated Land Act 1991</i> is relevant to sludge management.
Issues that need to be considered in summarising the status of current operations	<ul style="list-style-type: none"> Regulatory approval. Sludge treatment. Volumes and mass of sludge generated from each treatment plant. Reuse of sludge — % use and application. Sludge disposal sites. Business opportunities/commercial uses (e.g. energy generation, vermiculture, composting, agricultural use). Agreements relating to sludge disposal and reuse. Monitoring procedures. Broad SWOT analysis of relevant operations.
Strategic basis of the plan	<p>The strategic elements forming the basis of the plan should include:</p> <ul style="list-style-type: none"> goal for environmental management; objective(s) for sludge management; adopted KPIs; and management strategies and performance targets. <p>The management strategies developed will be based on the identified key strategic issues and SWOT findings, including risk assessment, in respect of sludge management, and the required TMP development level.</p> <p>A number of WSPs will need to develop strategies in relation to sludge treatment/handling, sludge reuse, and achievement of environmental compliance.</p> <p>The strategies should be supported by detailed action plans covering a period of up to 3 years.</p>

Sub-plan features	Sludge Management Plan content
Suggested performance measures	<p>Outcome:</p> <ul style="list-style-type: none"> % change in sludge reuse level Number of non-WSP reusers <p>Output:</p> <ul style="list-style-type: none"> % sludge volume reused % reused sludge subject to charging
Supporting documentation	<p>This will depend on the WSP, but typically would include:</p> <ul style="list-style-type: none"> sludge management strategy report; and site based management plans for treatment plants.

TABLE A8: Required sub-plan development level

Development level ¹	Target management mechanisms of Sludge Management Plan
3	<ul style="list-style-type: none"> Sludge reuse/disposal policy. Appropriate sludge reuse strategies/practices implemented to comply with relevant legislations and regulations. All potential environmental impacts identified. Appropriate business opportunities identified on reuse of sludge. Legal responsibilities of both the supplier and the user identified in all contracts/agreements. Contractual agreements and charging arrangements established. Community awareness programmes regularly undertaken on health and environmental aspects of reuse.
2	<ul style="list-style-type: none"> Sludge reuse/disposal policy. Appropriate sludge reuse strategies/practices implemented to comply with relevant legislations and regulations. All potential environmental impacts identified. Legal responsibilities of both the supplier and the user identified in all contracts/agreements. Contractual agreements and charging arrangements established. Community awareness programmes regularly undertaken on health and environmental aspects of reuse.
1	<ul style="list-style-type: none"> Sludge reuse/disposal policy. Appropriate sludge reuse strategies/practices implemented to comply with relevant legislations and regulations.

¹Defined in Section 4.2 of TMP Development Guide.