

DEPARTMENT OF NATURAL RESOURCES & MINES

Planning Guidelines for Water Supply and Sewerage

Chapter 3

THE PLANNING PROCESS

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The Planning Process

1.0 Purpose

The purpose of the planning process is to:

- Identify service needs in the short, medium and long term in order to deliver defined service standards, social, environmental and financial outcomes.
- Evaluate options for delivering the defined outcomes.
- Determine the optimal strategy that delivers the defined outcomes at the lowest financial, social and environmental (triple bottom line) cost.
- Communicate the outcomes of the planning process to decision makers through a planning report.

2.0 Key Principles

Planning should include a comprehensive and rigorous identification of all options to meet the defined service levels, including options based on non-asset solutions.

Planning should be an iterative process which attempts to balance service needs with infrastructure, operation and maintenance, financial and environmental options.

Key stakeholders should be identified and involved up-front in the planning stage.

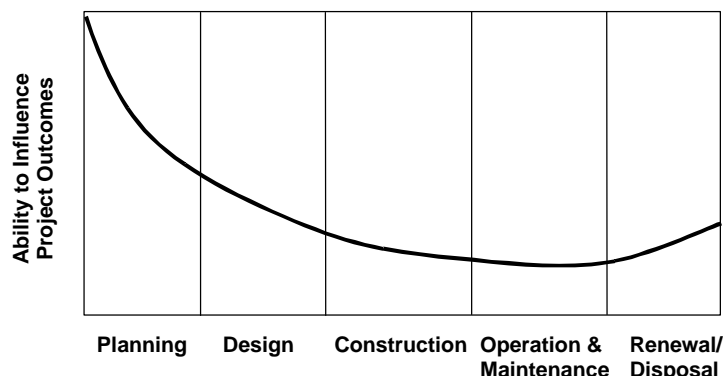
Non-asset solutions, full lifecycle costs, risk and maximising existing infrastructure capability should be considered before deciding to either construct new assets or replace assets.

Effective planning outcomes can only result from rigorous analysis, the application of strategic thinking skills and the adoption of an integrated approach to urban water planning which considers, where appropriate, water supply, sewerage and management of stormwater as a single system.

3.0 Why is Planning Important?

The greatest opportunity to influence project outcomes, minimise risk and reduce costs exists in the early stage of an initiative (ie during the planning stage) as illustrated in Figure 3.1. Investment in planning, while often incorrectly seen to be a significant cost, has the potential to result in substantial dividends (financial and non-financial). The cost of planning in comparison to the capital expenditure involved in infrastructure construction and on-going operation and maintenance is low.

FIGURE 3.1 – Ability to Influence Project Outcomes



It is also critical that service providers plan for optimal infrastructure maintenance and renewal to sustain or improve service standards.

Outcomes from effective planning include:

- a common understanding of the issues, options and outcomes by all stakeholders
- cost effective delivery of services
- a cost-effective infrastructure investment program
- achievement of an optimal financial, social and environmental result
- integration into regional infrastructure planning studies
- lower costs to the customer
- continued achievement of service standards
- protection of the natural and built environment
- the minimisation of risk
- appropriate solutions for available skill level.

4.0 When Should Planning be Undertaken?

For service providers, infrastructure planning should be a continuous process. Planning studies become out of date over time, particularly for schemes subject to high population increase.

Planning would be stimulated by issues such as:

- changes in unit demands for services
- variation in growth projections
- adverse trends in customer service levels
- changes in community attitudes
- changes in technology
- changes in regulatory requirements or guidelines
- timeframes for the provision of critical infrastructure to meet service demands (eg the lead time required for the construction of a dam would be at least 10-15 years)
- the service provider's Business Plan and the requirements of the TMP/SAMP.

For service providers with a static or declining customer base and limited regulatory requirements for infrastructure investment (eg stricter effluent licensing) the planning process may only involve a regular review of:

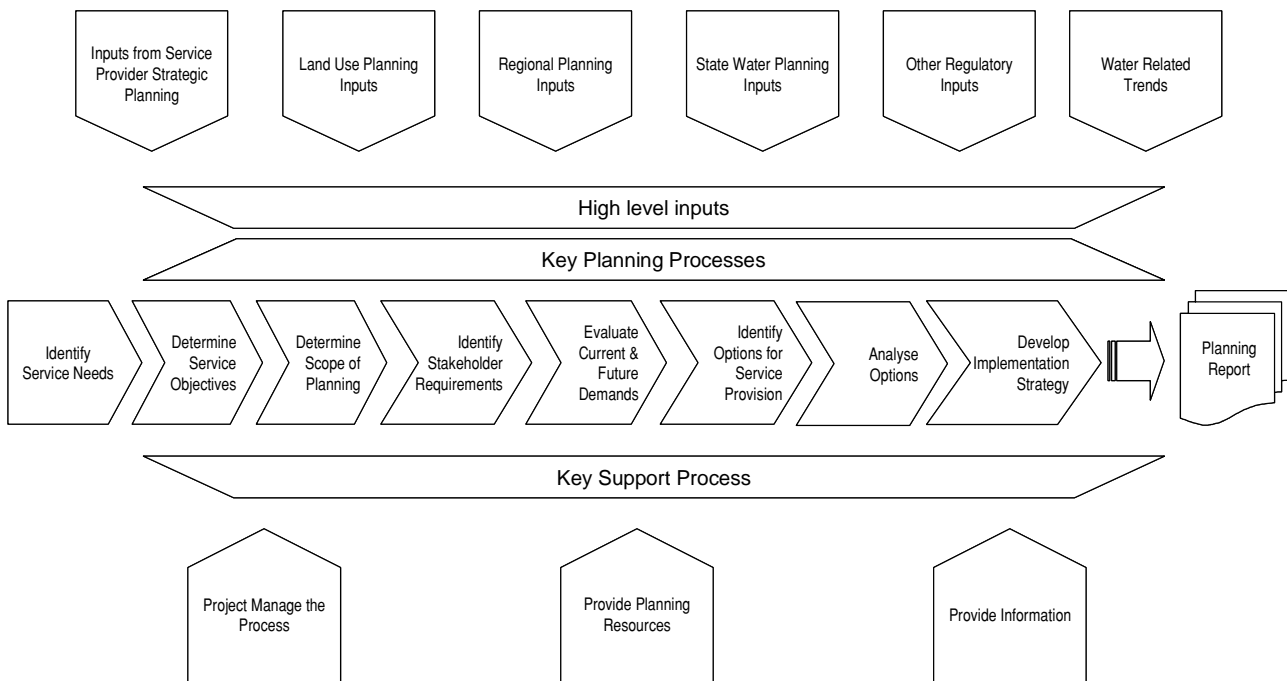
- current and future service needs
- system capacity and performance to meet the defined service needs

- asset maintenance and renewal strategies
- the revenue required to sustainably deliver the service.

5.0 Key Elements

The planning process is illustrated in Figure 5.1. For clarity, the process has been shown to be linear. In practice, it is more likely to be iterative.

FIGURE 5.1 – The Planning Process



High level inputs are summarised in Table 5.1.

TABLE 5.1 – Higher Level Inputs

High Level Input	Typical Source of Information
Service Provider Strategic Planning	<p>This information would provide the strategic direction for the delivery of water and sewerage services and stormwater management. It would address matters such as customer service standards and financial, social and environmental objectives.</p> <p>This information would typically be provided from, and be consistent with, documentation such as:</p> <ul style="list-style-type: none"> ▪ Corporate Plan ▪ Business Plan ▪ Operations Plan ▪ Total/Strategic Management Plans ▪ Strategic Asset Management Plans ▪ Customer Service Standards ▪ Environmental Management Plans <p>This will be an iterative process. Planning studies and TMP sub-plans would be key supporting documents in determining a strategic direction.</p>
Land Use Planning	<ul style="list-style-type: none"> ▪ Strategic Land Use Plan ▪ Priority Infrastructure Plan ▪ Integrated Catchment Management Plan <p><i>Note: In terms of long term or strategic water service planning it is necessary to consider timeframes well beyond those of current land use planning.</i></p>
Regional Planning	<ul style="list-style-type: none"> ▪ Regional & Sub Regional Planning Strategy Plans & Studies ▪ Regional & Sub Regional Infrastructure Planning Studies <p><i>Note: It is often necessary to give consideration to jurisdictions beyond those of the particular planning authority (eg adjacent local governments)</i></p>
State Water Planning	<ul style="list-style-type: none"> ▪ Water Resource Plan (WRP) ▪ Resource Operations Plan (ROP) ▪ Resources Operations Licence (ROL / IROL) ▪ Regional Water Supply Strategies
Other Regulatory Inputs	<ul style="list-style-type: none"> ▪ <i>Integrated Planning Act 1997</i> ▪ <i>Water Act 2000</i> ▪ <i>Environmental Protection Act 1994</i> and associated regulations ▪ <i>Environmental Protection (Water) Policy 1997</i> ▪ <i>Native Title Act 1993</i> ▪ <i>Aboriginal Cultural Heritage Act 2003</i> ▪ <i>Torres Strait Islander Cultural Heritage Act 2003</i> <p>Refer to Chapter 1 – Regulatory Framework for further information.</p>
Water Related Trends	<p>This would be assessed from a range of sources and would cover such issues as:</p> <ul style="list-style-type: none"> ▪ climate change ▪ status of the environment and future scenarios ▪ planning trends (eg integrated water management) ▪ trends in technology ▪ regulatory trends ▪ trends in community perception ▪ trends in customer needs.

5.1 Identify Service Need

The service need (short, medium and long term) can be identified through:

- monitoring of service standards, operational performance, service demand/capacity projections

- responding to proposals from developers
- community requests for service
- implementing the outcomes of high level inputs such as a service provider's corporate or Total Management Plan
- responding to regulatory changes
- identified opportunities for service improvements and efficiencies.

In identifying a need, consideration should be given to:

- What exactly is the need? If the need is to provide a service, the provision of new infrastructure may only be one option for providing the service.
- Whether the need is compatible with the service provider's strategic direction.
- What evidence exists to support the need and what is the level of confidence that this evidence is accurate.
- Potential solutions to address the need (ie new infrastructure or non-asset solutions).

5.2 Determine Service Objectives

It is critical before planning commences to define in measurable terms the objectives and critical success factors of an initiative that will deliver the identified service need. These objectives could relate to:

- service requirements and standards
- regulatory compliance
- operational performance objectives
- social objectives
- environmental objectives
- financial objectives
- workplace health and safety objectives.

These objectives and critical success factors should be stated clearly in the subsequent planning report.

5.3 Determine Scope of Planning

The scope of planning and the resources to be allocated to the activity should correspond to such matters as:

- the overall importance to the services to be provided
- the significance of the failure to deliver the service need
- the extent of the planning issues to be considered
- complexity of the issues to be addressed
- risks associated with meeting the service need
- costs of a project
- potential benefits arising from greater investment in planning.

The scope of a planning study and resources to be allocated should be carefully considered before commencing a planning study.

In a number of instances, the planning for an initiative could be undertaken iteratively. The feasibility of an initiative will then determine whether it is progressed into a more detailed planning phase.

Table 5.2 summarises the objectives of the various levels of infrastructure planning.

Every planning study should have a context. For instance strategic/master level planning should be undertaken within the context of regional planning. Detailed level planning should be within the context of strategic level planning.

Wherever possible, planning should be undertaken within an integrated urban water management context. Integrated water management involves considering urban water supply, wastewater and stormwater management within a full water cycle and includes recognising the interactions between these various components.

TABLE 5.2 – Planning Levels

Infrastructure Planning Level	Output	Objectives
Strategic/master planning	Strategic/Master Planning Report	<p>To confirm the service need to be satisfied and its priority.</p> <p>To identify key stakeholders and their requirements.</p> <p>To identify potential options.</p> <p>To determine short, medium and long term (50 year) strategies (infrastructure investment and non-asset solutions) in relation to major scheme components (eg sources, trunk mains, treatment plants).</p> <p>To assess the social, environmental and financial implications.</p> <p>To provide a linkage to regional planning.</p> <p>To provide outputs to an Infrastructure Charges Plan.</p> <p>To identify future land requirements.</p>
Concept/feasibility planning	Concept/Feasibility Report	<p>To confirm the service need to be satisfied and its priority.</p> <p>To identify key stakeholders and their requirements.</p> <p>To identify potential options.</p> <p>To assess the technical feasibility of a project.</p> <p>To provide indicative estimates of financial and non-financial returns from the project.</p> <p>To provide a broad overview of possible social, environmental and financial implications.</p> <p>To determine whether the service provider should invest in more detailed investigations.</p>
Detailed planning	Detailed Planning Report	<p>To provide detailed infrastructure investment and non-asset strategies (short, medium and long term) at zone/sub-catchment level and for facilities such as pump stations and treatment plants.</p> <p>To provide detailed cost estimates. Sufficient work needs to be undertaken to accurately identify lifecycle costs.</p> <p>To provide a precise identification of environmental and social impacts.</p> <p>To provide inputs to an Infrastructure Charges Plan.</p> <p>The detailed planning report will form the basis for a subsequent design report prepared at the commencement of the design phase.</p>

5.4 Identify Stakeholder Requirements

An initiative to address a service need can involve or impact on a range of stakeholders in a variety of ways. It is essential to identify the key stakeholders and their desired outcomes at the outset and determine the potential impacts (both positive and negative) and how these can be managed. Some initiatives may require significant consultation with a range of stakeholders. This is discussed in more detail in Chapter 4 – Stakeholders. For many routine initiatives, stakeholder identification is likely to be a straightforward process. For urban water supply and sewerage initiatives, stakeholders would include at least customers, relevant internal organisational staff and elected members. Stakeholders can assist in identifying key constraints and deficiencies early in the planning phase.

5.5 Evaluate Current & Future Demands

This would involve assessing the capacity of existing infrastructure and its capability to meeting current and future service demands. Demands and projections including demand management are discussed in Chapter 5 – Demand / Flow and Projections.

5.6 Identify Options for Service Provision

Identifying and evaluating feasible options (both asset and non-asset) is a critical planning process. These options may be categorised as:

- base case (do nothing)
- minimal approach
- existing asset options – this may involve asset rehabilitation, renewal or replacement options
- non-asset options (eg demand management, alternative means of service delivery, I/I reduction, optimising existing operation or improved utilisation of existing infrastructure)
- new asset options. A range of options may exist.

The optimal strategy could well be a combination of these categories. Details of potential asset and non-asset options are included in Chapter 7 – Options for Service Provision.

5.7 Undertake Options Analysis

Options analysis can be facilitated through having value management type workshops. Options can be creatively and economically addressed through challenging assumptions, generating alternative ideas and improving communication and establishing priorities.

Depending on the scope of the planning study, workshops could include internal planning, design, construction and operational staff, a range of key stakeholders or combinations of each.

The identification and management of risks should be embedded into the planning process and in particular the options analysis. Managing risk provides a basis for a more rigorous planning study as it allows strategies to be developed to:

- reduce the likelihood and consequence of risks
- avoid the risk by not proceeding with the option
- accept the risks (and highlighting this in the planning report).

At least the following categories of risk should be considered:

- Commercial/Financial
- Legal
- Social
- Environmental
- Political
- Cultural
- Site
- Contractual
- Design, construction & commissioning
- Operational
- Industrial relations
- Asset Ownership
- Organisational
- Technological
- Infrastructure
- Public health
- Workplace Health and Safety
- Regulatory
- Demand
- Security

A common problem in the planning process is “optimism bias” – a tendency for planners to be over-optimistic about key project parameters including demand projection assessments, capital costs, operating costs, works duration and benefits delivery.

The options should be evaluated against the following:

- achievement of the project objectives
- lifecycle revenues and costs
- environmental benefits and adverse impacts
- social benefits and adverse impacts and the distribution of these benefits/impacts
- key assumptions and risks
- risks of the project not proceeding.

Projects should be ranked based on an agreed weighted evaluation criteria using multi-criteria analysis that consider both financial and non-financial measures. Refer to Chapter 9 – Analysis of Options for further information.

5.8 Develop Implementation Strategy

Once the preferred option has been selected an implementation program should be formulated.

In formulating an implementation strategy consideration should be given to:

- staging of the project
- service provider implementation targets
- implementation targets set by regulators
- funding availability (both internal & external). This may require input into the service provider’s financial model.
- risks associated with deferring the project
- the service provider’s ability to deliver the capital works program within the nominated timeframe
- the proposed project delivery methodology (eg traditional, BOOT (Build, Own, Operate, Transfer) , PPP (Public Private Partnership))
- anticipated lead times for critical infrastructure (eg dams)
- potential constraints (eg approvals, land acquisition).

In some cases, it may be necessary to evaluate a number of options (in terms of implementation programs) in order to confirm the preferred option.

5.9 Outputs from the Planning Process

The output from the planning process will be a:

- Strategic/Master Planning Report
- Concept/Feasibility Report or
- Detailed Planning Report.

Typical content of a report is outlined in Chapter 11 – Planning Outputs.

5.10 Key Support Processes

5.10.1 Project Management

Project management of the planning process involves a number of activities including:

- programming and budgeting for planning studies. This will include programming planning (at a strategic, preliminary or detailed level) in response to:
 - timeframe since previous studies
 - outputs from other studies
 - regional planning requirements
 - business development opportunities
 - customer-related or operational problems
 - regulatory changes.
- determining the degree of infrastructure planning required
- briefing and monitoring (quality, timelines and value for money) of infrastructure planning work undertaken internally or by consultants
- coordinating the handover of infrastructure planning documentation including:
 - registering, storing and distributing planning reports
 - registering and storing supporting information such as CAD/GIS files and network models
 - summary documents that are understandable to non-technical persons
- ensuring the updating of:
 - infrastructure investment (capital works) programs
 - Infrastructure Charges Schedules.
- coordinating internal review and documentation approval by the service provider.

5.10.2 Planning Information

Effective information management is a critical foundation for quality infrastructure planning. Without this foundation, the resources allocated to planning studies become focussed on information capture and verification. This diverts the allocation of resources from the application of strategic thinking skills in developing and critically evaluating options to provide optimal solutions for stakeholders. Refer to Chapter 2 – Knowledge Management for further information.

5.10.3 Planning Resources

The ability and experience of the people to be involved in the planning process, whether internal or external, will have a major bearing on the outcomes and quality of the analysis. Desirable characteristics include:

- strategic and systems thinking skills
- a broad appreciation of technical, financial, social and environmental issues
- planning experience
- availability to use value management or similar approaches to explore a wide range of solutions

- ability to access appropriate information and to recognise unreliable data
- effective communication skills – the ability to translate findings into planning reports that can be readily understood by all stakeholders
- an understanding of risk management's importance in all planning activities
- an appreciation of 'optimism bias'
- the ability to work in a multi-disciplinary team.

In identifying resources required for a planning study which is outsourced the service provider should make adequate allowance for the input of internal staff. Active involvement of internal planning, design, construction and operation staff particularly in the identification of service needs and objectives, stakeholder requirements, options analysis and implementation strategy is essential.

6.0 Checklist

- What evidence exists to support the need? How confident are you of this evidence?
- Has the planning study adequately considered trends that may impact on water and sewerage provision?
- Have stakeholders and their desired outcomes been sufficiently identified and addressed?
- Is there adequate knowledge of the current service delivery performance or condition, performance or utilisation of existing infrastructure?
- How confident are you of the reliability of information provided for the planning study? What have you done to confirm the validity of this information?
- Have the resources/skills allocated to the planning been appropriate to the scope of the study?
- Is the level of strategic thinking sufficiently robust? How has this been facilitated?
- To what level can the planning be considered as “integrated”?
- Have a sufficiently wide range of options for service delivery been considered? How were the options identified?
- Has there been adequate analysis of lifecycle revenues and costs, social and environmental impacts?
- Have non-asset solutions been adequately identified and assessed?
- Have the risks been rigorously evaluated?
- Has the planning proceeded to the appropriate level to justify the recommended strategies?
- Do the recommended strategies identified in the planning study address the objectives and critical success factors that will deliver the identified service need?
- Are the implementation strategy and timeframes realistic? How have these been determined?
- Have responsibilities been clearly identified in the implementation strategy?
- To what extent does the recommended strategy align with the service provider’s strategic direction, land use planning, regional planning and regulatory requirements?
- Are you confident that the proposed strategy is the optimal strategy in terms of social, environmental and financial outcomes?
- Does the strategy meet stakeholder expectations?
- Would you invest in this strategy if you were personally responsible for its implementation?

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