Implementing Water Reform

Strengthening Infrastructure Implementation Capability in Australia's Water Sector

A Practitioner's Perspective on the Productivity Commission's National Water Reform Review

---

Author

W.T. Nirmalarajan, BSc (Hons), MBA, CPEng, FIEAust, MAWA, PMP®

Sydney, Australia

July 2026

This paper responds to the Productivity Commission's National Water Reform Review Interim Update by proposing Infrastructure Implementation Capability as a strategic capability supporting the successful implementation of future water reform initiatives.

Executive Summary

Australia's water sector has earned an international reputation for delivering safe, reliable and sustainable water services through sound regulation, capable institutions and significant investment in water infrastructure. The Productivity Commission's National Water Reform Review presents an important opportunity to build on these strengths by considering how the sector can continue improving its performance in response to changing customer expectations, ageing infrastructure, population growth, climate variability and increasing service complexity.

Much of the current reform discussion appropriately focuses on policy settings, governance, regulation, pricing, operational performance and customer outcomes. These are all fundamental elements of successful water reform. However, comparatively little attention has been given to a capability that ultimately determines whether these policy objectives can be translated into practical outcomes: **Infrastructure Implementation Capability**.

This discussion paper argues that successful reform depends not only on identifying the right policies, but also on developing the capability required to implement those policies effectively. Infrastructure implementation should therefore be recognised as a strategic capability extending from the identification of community service needs through planning, investment, delivery, commissioning and reliable operation.

The paper proposes that Australia's next phase of water reform should explicitly recognise Infrastructure Implementation Capability as an essential enabler of successful reform and adopt a more deliberate approach to planning, developing and sustaining this capability across the sector.

Drawing upon over four decades of experience delivering major water infrastructure programs in Australia and internationally, the paper presents a practical implementation framework organised around **nine complementary Implementation Perspectives**.

The first three perspectives focus on developing Infrastructure Implementation Capability within organisations. They propose that implementation capability should be supported through:

- **Capability Architecture** that deliberately identifies and organises the capabilities required throughout the infrastructure lifecycle;
- **Capability Mapping** to understand existing strengths, capability gaps and opportunities for collaboration;
- **Capability Maturity Assessment** to evaluate organisational capability and prioritise improvement;
- **Capability Investment** as a long-term organisational investment rather than a short-term project overhead; and
- planning capability across the complete implementation lifecycle through **Investment Readiness**, **Delivery Readiness** and **Operational Readiness**.

The next three perspectives consider how implementation capability should be organised across the broader water sector.

The paper proposes that implementation capability should be viewed as a **shared implementation ecosystem**, bringing together Local Water Utilities, governments, regional organisations, industry and specialist delivery partners.

Within this ecosystem, collaborative delivery models become more than procurement arrangements. They become mechanisms for strengthening long-term sector capability through continuity, organisational learning and market development.

The paper also introduces several implementation concepts developed from practical experience delivering complex infrastructure programs, including:

- **Integrated Implementation Planning**, bringing together planning, governance, operational, commercial and delivery considerations from the earliest stages of program development;
- **Layered Governance**, whereby strategic program business cases establish overarching investment decisions while subsequent project approvals focus on project-specific needs, improving governance efficiency without compromising accountability; and
- **Balanced Implementation Systems**, recognising that strengthening one part of the implementation process simply transfers constraints elsewhere unless capability develops in a balanced manner across the entire implementation lifecycle.

The **final three perspectives** focus on sustaining implementation capability over the long term. They emphasise leadership as an implementation capability, organisational learning, knowledge transfer, continuous improvement and the important role of professional institutions, industry associations and academia in strengthening Australia's long-term implementation capability.

The paper concludes that Australia already possesses exceptional implementation capability across governments, Local Water Utilities, regional organisations, industry and academia. Australian practitioners continue to make significant contributions to major water infrastructure programs internationally, while Australia's own water sector has benefited greatly from professionals bringing international experience into Australian practice. The opportunity presented by the current reform process is therefore **not to create implementation capability from the beginning**, but to better organise, integrate and continuously strengthen Australia's collective capability so that it can deliver even greater value for communities.

Ultimately, infrastructure investment is not an end in itself. Its purpose is to enhance services to communities. Effective implementation capability transforms infrastructure investment into reliable infrastructure, resilient organisations and enduring public value.

For this reason, Infrastructure Implementation Capability should be recognised as a strategic enabler of Australia's next phase of water reform and embedded within the implementation framework that supports the successful delivery of future reform initiatives.

A conceptual overview of the proposed Infrastructure Implementation Capability Framework is presented on the following page, with each of its four components explained in detail throughout the paper.

Author's Note

This paper reflects the observations of a practitioner who has spent more than four decades involved in the planning, delivery and governance of major water infrastructure programs in Australia and internationally. It is offered in the spirit of contributing practical implementation experience to the Productivity Commission's National Water Reform Review.

Rather than revisiting policy matters already comprehensively addressed elsewhere, the paper seeks to complement the Commission's work by focusing on a single proposition:

The next phase of Australia's water reform will be judged not only by the quality of policy decisions, but by the sector's ability to implement them successfully.

Introduction

Australia's water sector is entering an important period of reform. The Productivity Commission's National Water Reform Review provides an opportunity to examine how governments, Local Water Utilities, regional organisations and the broader water sector can continue improving the delivery of safe, reliable, sustainable and affordable water services for communities across Australia.

The Commission's Interim Updates have appropriately focused on matters including governance, regulation, customer outcomes, pricing, First Nations participation, climate resilience, service performance and the long-term sustainability of urban and regional water services. These are fundamental components of successful water reform and provide an important foundation for future policy development.

This paper seeks to complement that work by examining one aspect that has received comparatively less attention, but which is equally fundamental to successful reform—**Infrastructure Implementation Capability**.

Throughout Australia's water sector, considerable effort is invested in identifying future service needs, developing policies and planning infrastructure investment. Equally significant effort is devoted to operating and maintaining existing infrastructure.

Between these two activities lies the complex process of transforming identified service needs into reliable infrastructure that consistently delivers services to communities.

This paper refers to that process as **Infrastructure Implementation**.

Definition

Infrastructure Implementation Capability

Infrastructure Implementation Capability is the **collective organisational capability required to transform identified service needs into reliable community services through the planning, investment, delivery, commissioning and operational integration of infrastructure.**

It encompasses the technical, commercial, governance, operational and leadership capabilities required across the complete implementation lifecycle—from **service need identification to reliable operation**.

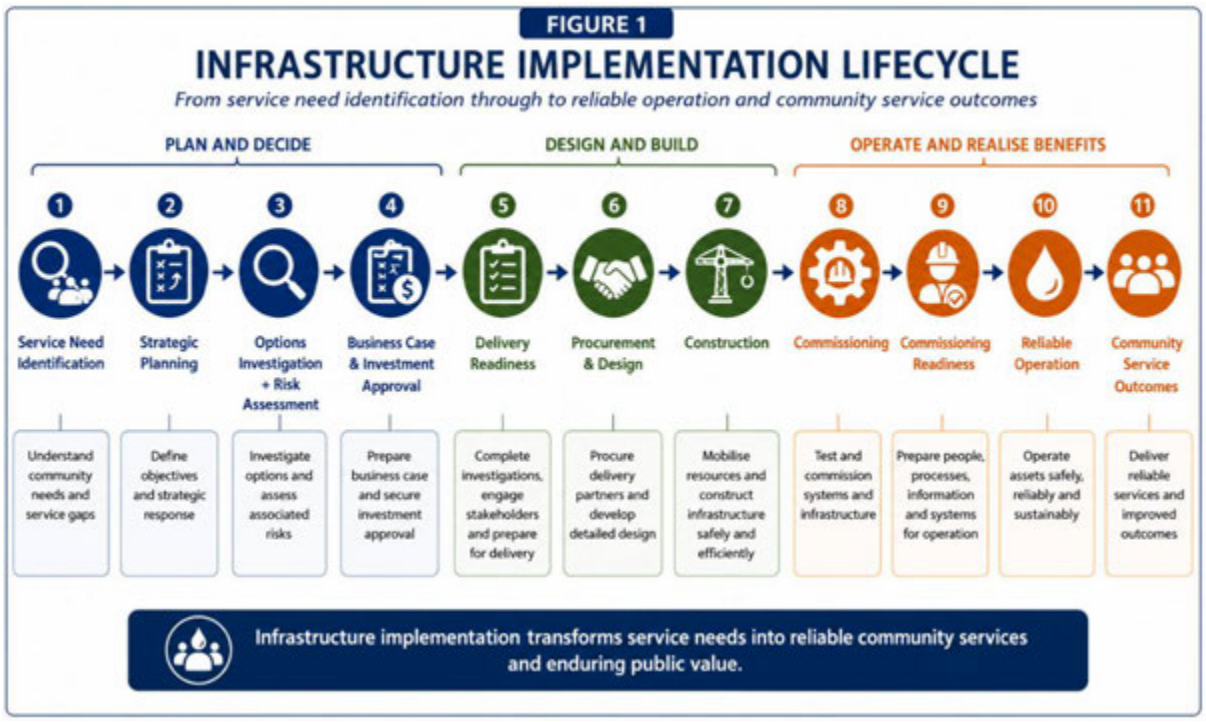

Figure 1. Infrastructure Implementation lifecycle. The lifecycle extends from service need identification through to reliable operation and community service outcomes.

Infrastructure implementation is therefore much more than project delivery.

It encompasses the integrated activities required to identify service needs, investigate options, assess associated risks, prepare business cases, obtain investment approvals, establish delivery readiness, procure delivery partners, manage design and construction, commission infrastructure and successfully transition assets into reliable operation.

Viewed in this way, implementation becomes the practical mechanism through which policy intentions, investment decisions and operational objectives are translated into community outcomes. Despite its importance, implementation capability is often assumed rather than deliberately planned.

Many organisations have developed excellent implementation capability through experience, committed leadership and dedicated practitioners. Others rely heavily on external providers or develop capability only in response to major investment programs.

As infrastructure systems become increasingly complex, collaborative and interconnected, this largely organic approach is becoming progressively more difficult to sustain.

The next phase of water reform therefore presents an opportunity not only to improve policy and governance, but also to consider whether Infrastructure Implementation Capability should itself be recognised as a strategic capability requiring deliberate planning, investment and continuous development.

This paper argues that the answer is yes.

Purpose

The purpose of this Practitioner Discussion Paper is to contribute practical implementation experience to the Productivity Commission's National Water Reform Review by proposing that **Infrastructure Implementation Capability** should be recognised as a strategic enabler of successful water sector reform.

The paper does not seek to revisit the Commission's detailed policy analysis or operational recommendations. Rather, it complements those discussions by focusing on the organisational, technical and governance capabilities required to successfully implement future infrastructure investment programs.

Its central proposition is straightforward.

The next phase of Australia's water reform will be judged not only by the quality of policy decisions, but by the sector's ability to implement them successfully.

Implementation capability should therefore be viewed as extending across the complete infrastructure lifecycle—from **service need identification to reliable operation**.

Recognising implementation in this way shifts attention from individual projects towards the broader organisational and sector capability required to consistently translate infrastructure investment into reliable services for communities.

The framework presented in this paper has been informed by practical experience gained over more than four decades working across Australia and internationally in the planning, governance, design, delivery, commissioning and operational integration of major water infrastructure programs.

While many observations have been shaped by that experience, the paper deliberately focuses on implementation principles rather than individual projects or organisations. The intention is not to advocate a particular organisational model, procurement strategy or delivery approach, but to identify practical implementation principles that are broadly applicable across governments, Local Water Utilities, regional organisations and industry irrespective of organisational size or jurisdiction.

Accordingly, the paper presents a practical framework comprising **nine complementary Implementation Perspectives**. Collectively, these perspectives provide a structured approach for considering how Australia's Infrastructure Implementation Capability may be deliberately planned, organised, strengthened and sustained to support the successful implementation of future water sector reforms.

PART I

The Infrastructure Implementation Challenge

Australia's water sector has earned a well-deserved reputation for delivering high-quality water services through sound engineering, capable institutions and sustained infrastructure investment. Over many decades, governments, water utilities, consultants, contractors, researchers and industry have collectively developed one of the world's most respected water sectors.

The Productivity Commission's National Water Reform Review builds upon this strong foundation by examining how the sector can continue improving governance, regulation, customer outcomes, resilience and long-term sustainability.

These reforms are both necessary and timely.

However, successful reform depends upon more than identifying the right policies.

It also depends upon the sector's ability to implement them successfully.

This paper argues that **Infrastructure Implementation Capability** deserves greater recognition as a strategic capability supporting Australia's next phase of water reform.

Infrastructure Implementation – The Missing Strategic Capability

Policy development identifies **what** should be achieved.

Infrastructure implementation determines **how** those objectives are translated into reliable services for communities.

Implementation therefore represents the practical bridge between policy intent and operational outcomes.

Despite this central role, implementation capability often receives comparatively little strategic attention.

Many organisations invest considerable effort in developing long-term strategies, infrastructure plans and business cases, yet give less attention to the organisational capability required to consistently deliver those investments successfully.

Similarly, operational excellence rightly receives significant attention because it directly influences customer service and regulatory performance.

Between strategic planning and successful operation, however, lies the implementation process itself.

Implementation capability is therefore neither solely a planning capability nor solely an operational capability.

It is the capability that connects them.

Recognising implementation as a strategic capability therefore complements, rather than competes with, the Commission's existing reform themes.

The Changing Nature of Infrastructure Implementation

Infrastructure implementation is becoming progressively more complex.

Population growth, ageing assets, urban expansion, climate variability, increasing environmental expectations, technological change and rising customer expectations are all increasing the complexity of infrastructure investment decisions.

At the same time, governments and water utilities are expected to deliver larger and more diverse infrastructure programs while maintaining affordability, transparency, resilience and sound governance.

Implementation is also becoming increasingly collaborative.

Major infrastructure programs now routinely involve multiple organisations including governments, Local Water Utilities, regional organisations, consultants, contractors, specialist suppliers, regulators and community stakeholders.

Successful implementation therefore depends less upon the performance of individual organisations and increasingly upon the capability of the implementation system as a whole.

This changing environment requires implementation capability to become more deliberate, better integrated and more strategically managed than in the past.

Implementation Extends Beyond Project Delivery

Infrastructure implementation is frequently viewed through the lens of project management.

Project management remains fundamental.

However, it represents only one component of a much broader implementation lifecycle.

Successful implementation begins long before design and construction.

It begins when service needs are first identified.

Likewise, implementation does not end when construction finishes.

Infrastructure delivers value only when it has been successfully commissioned, integrated into operations and consistently provides reliable services to the community.

Implementation should therefore be viewed as extending across the complete lifecycle:

- service need identification;
- strategic planning;
- options development;
- risk assessment and management;
- business case development;
- investment approval;
- delivery readiness;
- procurement;
- design;
- construction;
- commissioning;
- operational readiness; and
- reliable operation.

Viewing implementation through this broader lifecycle fundamentally changes the way capability should be planned.

Infrastructure Implementation as a System

One of the recurring observations from major infrastructure programs is that implementation behaves as an integrated system rather than a sequence of independent activities.

Planning, governance, commercial strategy, procurement, engineering, construction, commissioning and operations are highly interdependent.

Improving one component rarely improves overall implementation performance unless corresponding capability exists throughout the remainder of the system.

Water engineers readily understand this principle.

Increasing the capacity of one component within a hydraulic system does not necessarily increase overall system performance if constraints remain elsewhere.

Infrastructure implementation behaves in much the same way.

Strengthening strategic planning may produce a larger number of projects entering delivery.

Unless commercial capability, procurement, engineering, construction resources, commissioning and operational transition develop at a similar pace, the implementation constraint simply moves elsewhere within the system.

This systems perspective forms one of the central themes of this paper.

Why Capability Matters

Infrastructure implementation capability has traditionally developed through organisational experience, committed leadership and the efforts of capable practitioners.

These remain valuable foundations.

However, they are no longer sufficient by themselves.

The increasing complexity of infrastructure delivery requires capability to be developed more deliberately.

Capability should no longer be viewed simply as the availability of experienced project managers or technical specialists.

Rather, it should be regarded as a coordinated organisational capability encompassing governance, planning, engineering, commercial management, stakeholder engagement, delivery, operational integration and organisational learning.

Recognising implementation capability in this broader sense provides opportunities to improve consistency, resilience, organisational learning and long-term delivery performance.

The Opportunity

Australia's next phase of water reform provides a unique opportunity to explicitly recognise Infrastructure Implementation Capability as a strategic enabler of successful reform.

Doing so does not require fundamental changes to existing policy objectives.

Rather, it strengthens the sector's ability to successfully implement those objectives.

The opportunity is therefore not simply to improve infrastructure delivery.

It is to develop a national implementation capability that enables governments, Local Water Utilities, regional organisations and industry to consistently transform infrastructure investment into reliable community services.

This paper proposes a practical framework for achieving that objective.

The framework is presented through nine complementary Implementation Perspectives.

Collectively, they provide a structured approach for planning, organising, strengthening and sustaining Infrastructure Implementation Capability across Australia's water sector.

Part I – Key Message

The next phase of Australia's water reform will depend not only upon identifying the right policies, but upon developing the implementation capability required to successfully deliver them.

Infrastructure Implementation Capability should therefore be recognised as a strategic national capability extending from **service need identification to reliable operation**.

Strengthening this capability provides an opportunity to better translate infrastructure investment into reliable services, resilient organisations and enduring public value for Australian communities.

PART II

Building Infrastructure Implementation Capability

Part I argued that Infrastructure Implementation Capability should be recognised as a strategic enabler of Australia's next phase of water reform.

Recognising its importance, however, is only the first step.

The next question is how implementation capability should be deliberately developed.

Historically, implementation capability has often evolved organically through organisational experience, individual leadership and the successful delivery of projects. While this has produced many capable organisations and practitioners, it has also resulted in varying levels of organisational capability, inconsistent implementation maturity and increasing reliance on external resources to supplement critical implementation functions.

As infrastructure investment programs become larger, more collaborative and increasingly interconnected, implementation capability should no longer be regarded as something that simply evolves over time.

Rather, it should be deliberately planned, organised, assessed and continuously strengthened.

This Part proposes a practical framework for achieving that objective through three complementary Implementation Perspectives.

Implementation Perspective 1

Adopt a Deliberate Capability Architecture

Infrastructure implementation capability should be developed with the same strategic intent applied to other critical organisational capabilities such as finance, operations, information technology and asset management.

Rather than evolving through organisational history or individual projects, implementation capability should be consciously designed to reflect the services an organisation intends to deliver, the complexity of its infrastructure portfolio and the maturity of its delivery environment.

This requires the development of a **Capability Architecture**.

Capability Architecture provides a structured description of the implementation capabilities required throughout the infrastructure lifecycle, the relationships between those capabilities and the organisational arrangements through which they are delivered.

Importantly, Capability Architecture is not an organisational structure.

Nor is it simply a skills matrix.

Rather, it provides a strategic framework for understanding:

- what implementation capability is required;
- where that capability should reside;
- how different capabilities interact; and
- how capability should evolve over time.

An effective Capability Architecture should encompass the complete implementation lifecycle, beginning with the identification of service needs and extending through planning, investment, delivery, commissioning, operational transition and reliable operation.

Illustrative capability groups include:

- Strategic service planning
- Infrastructure planning
- Investment planning and business case development
- Options development and assessment
- Risk assessment and management
- Commercial and procurement management
- Program and project management
- Engineering and technical assurance
- Environmental and social assessment
- Stakeholder and community engagement
- Digital engineering and information management
- Contract administration
- Construction management
- Commissioning and operational readiness
- Benefits realisation
- Organisational learning and continuous improvement

Capability Architecture does not prescribe organisational structures.

Rather, it provides a common language through which implementation capability can be understood, planned and strengthened.

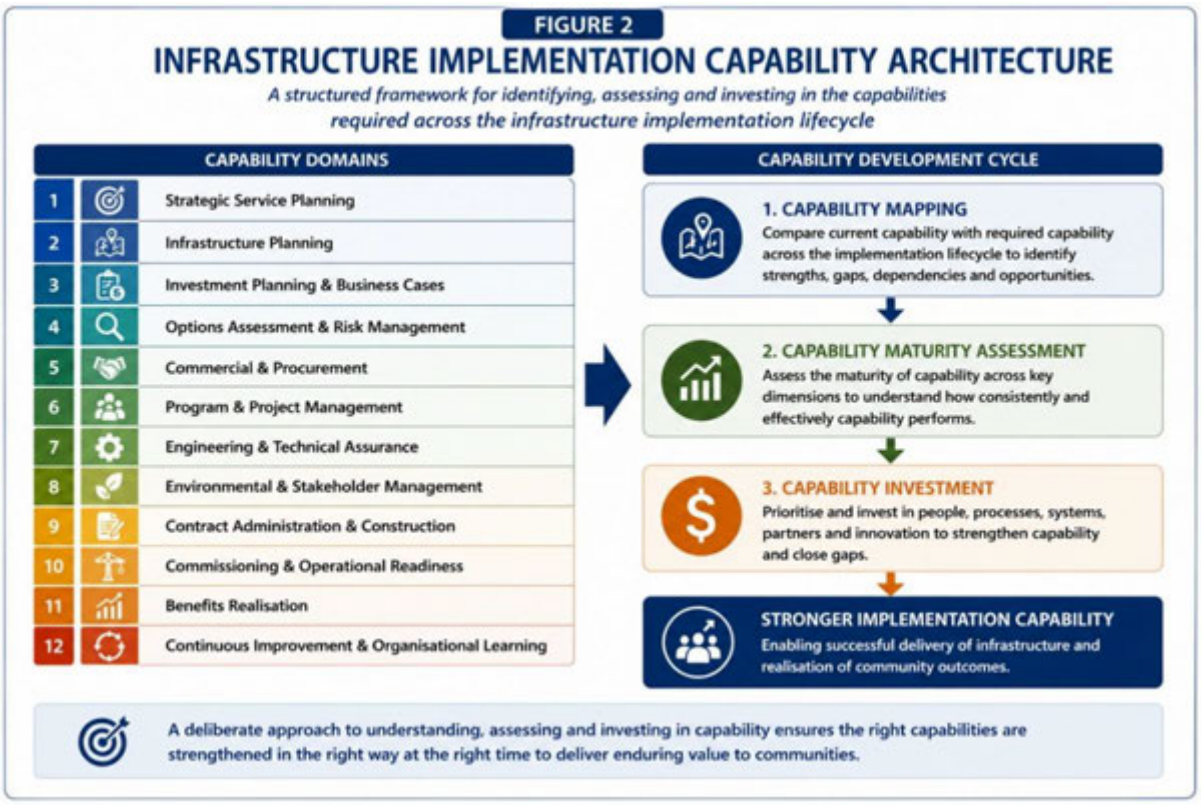

Figure 2. **Infrastructure Implementation Capability Architecture** – A structured framework for identifying, assessing and investing in the organisational capabilities required across the infrastructure implementation lifecycle.

Capability Mapping

Once Capability Architecture has been established, organisations should undertake **Capability Mapping**.

Capability Mapping compares existing capability with that required to support current and future infrastructure investment programs.

It identifies:

- strengths;
- capability gaps;
- duplication;
- dependencies;
- opportunities for collaboration; and
- priorities for capability investment.

Capability Mapping should consider capability at several levels:

- organisational capability;
- regional capability;
- sector capability; and
- strategic external capability.

The outcome is not simply a list of deficiencies.

It becomes the evidence base for capability planning.

Capability Maturity

Capability Mapping should be complemented by **Capability Maturity Assessment**.

Capability maturity evaluates not only whether capability exists, but how consistently and effectively it performs.

Indicative maturity dimensions include:

- governance;
- competency;
- processes;
- systems;
- collaboration;
- organisational learning;
- knowledge management; and
- continuous improvement.

Understanding maturity enables organisations to prioritise capability investment where it will produce the greatest implementation benefit.

Capability Investment

Capability should be regarded as an organisational investment rather than an operational overhead.

Investment may include:

- workforce development;
- recruitment;
- mentoring;
- coaching;
- education;

- professional development;
- digital systems;
- collaborative delivery arrangements;
- specialist advisory support;
- research; and
- innovation.

Capability investment should therefore become an integral component of long-term infrastructure planning rather than a short-term response to immediate project demand.

Implementation Perspective 2

Plan Capability Across the Entire Implementation Lifecycle

Implementation capability should not be concentrated solely within project delivery.

It should be deliberately planned across the complete implementation lifecycle.

That lifecycle begins with identifying service needs and concludes only when infrastructure has been successfully integrated into reliable operation.

Accordingly, implementation capability should support:

- service need identification;
- strategic planning;
- options investigation;
- assessment of options and associated risks;
- business case preparation;
- investment approvals;
- delivery readiness;
- procurement;
- detailed design;
- construction;
- commissioning;
- operational readiness; and
- reliable operation.

Different stages require different combinations of capability.

Recognising these differences enables organisations to align capability more effectively with implementation requirements throughout the lifecycle.

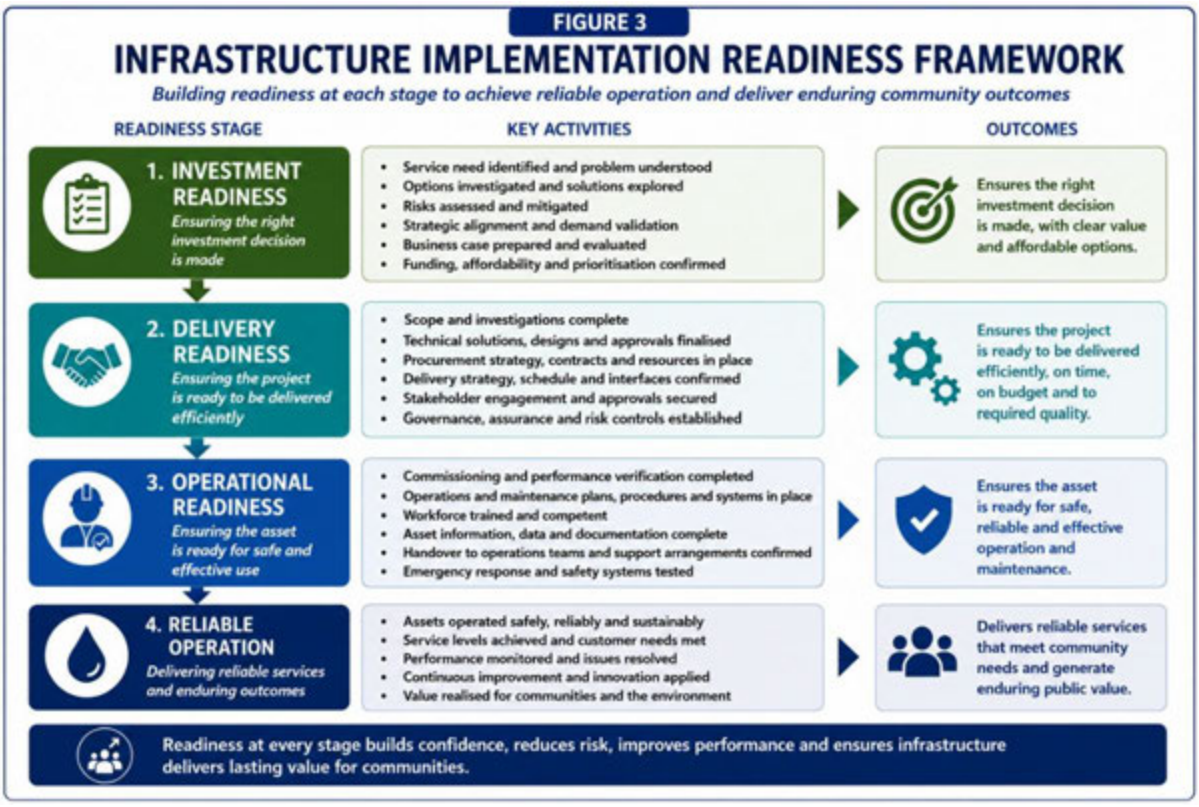

Figure 3. Infrastructure Implementation Readiness Framework. The framework illustrates the progressive stages of readiness required to successfully translate infrastructure investment into reliable community services. Investment Readiness supports informed investment decisions, Delivery Readiness prepares projects for efficient implementation, Operational Readiness enables successful transition into service, and Reliable Operation delivers enduring public value.

Investment Readiness

Projects should achieve an appropriate level of **Investment Readiness** before investment decisions are sought.

Investment Readiness includes:

- clearly identified service needs;
- strategic objectives;
- options investigated and assessed;
- associated risks identified and evaluated;
- preferred option selected;
- stakeholder engagement completed;
- governance arrangements established;
- funding requirements identified; and
- business case prepared.

Projects that are genuinely investment ready provide greater confidence that implementation can proceed in a disciplined and predictable manner.

Delivery Readiness

Following investment approval, projects should achieve **Delivery Readiness** before entering procurement or construction.

Delivery Readiness includes:

- completed investigations;
- confirmed scope;
- established risk register;
- delivery strategy;
- procurement documentation;
- early contractor and designer involvement, where appropriate;
- structured industry consultation;
- environmental approvals;
- land availability;
- stakeholder engagement;
- implementation schedule; and
- transition planning.

Delivery-ready projects reduce uncertainty, improve implementation efficiency and enable delivery partners to mobilise effectively.

Operational Readiness

Implementation is not complete when construction finishes.

Its purpose is to deliver reliable services to communities.

Operational Readiness therefore ensures that infrastructure can be safely and effectively integrated into operational service.

Operational Readiness includes:

- commissioning;
- testing;
- operator training;
- operating procedures;
- maintenance planning;

- asset information;
- system integration;
- emergency response arrangements; and
- operational acceptance.

Implementation therefore concludes not at practical completion, but when infrastructure consistently delivers the intended community service outcomes.

Implementation Perspective 3

Align Capability with Infrastructure Investment Programs

Implementation capability should be planned alongside long-term infrastructure investment programs.

Capability planning should therefore consider:

- program and project prioritisation;
- future investment profiles;
- workforce requirements;
- specialist expertise;
- delivery market capacity;
- regional collaboration opportunities;
- capability investment priorities; and
- succession planning.

Capability demand fluctuates over time.

Some capabilities are required continuously.

Others are needed periodically.

Capability should therefore be sourced through an appropriate balance of:

- internal organisational capability;
- shared regional capability;
- specialist state capability;
- collaborative delivery arrangements; and
- strategic industry partnerships.

Capability investment should be regarded as a strategic organisational decision that strengthens long-term implementation performance rather than simply responding to current project workloads.

Capability planning itself should become a continuous organisational activity informed by changing service needs, implementation experience, workforce evolution, technological change and organisational learning.

Part II – Key Message

Infrastructure Implementation Capability should be deliberately planned rather than allowed to evolve through circumstance.

Capability Architecture, Capability Mapping, Capability Maturity and Capability Investment provide a structured framework for understanding and developing that capability.

Planning capability across the complete implementation lifecycle—from service need identification through Investment Readiness, Delivery Readiness, Operational Readiness and reliable operation—provides the foundation upon which a sustainable implementation ecosystem can subsequently be developed.

PART III

Building a Sustainable Infrastructure Implementation Ecosystem

Part II proposed that Infrastructure Implementation Capability should be deliberately planned through Capability Architecture, Capability Mapping, Capability Maturity Assessment and Capability Investment. Those concepts establish **what** capability is required and how organisations can develop it.

An equally important question is **how that capability should be organised across the water sector.**

Implementation capability is not determined solely by the capability of individual organisations.

Rather, it emerges from the way capability is distributed, connected and continuously strengthened across governments, Local Water Utilities, regional organisations, delivery partners, professional institutions and industry.

Successful implementation therefore depends upon building a sustainable implementation ecosystem rather than simply strengthening individual organisations.

This Part proposes three complementary Implementation Perspectives for organising implementation capability across the sector.

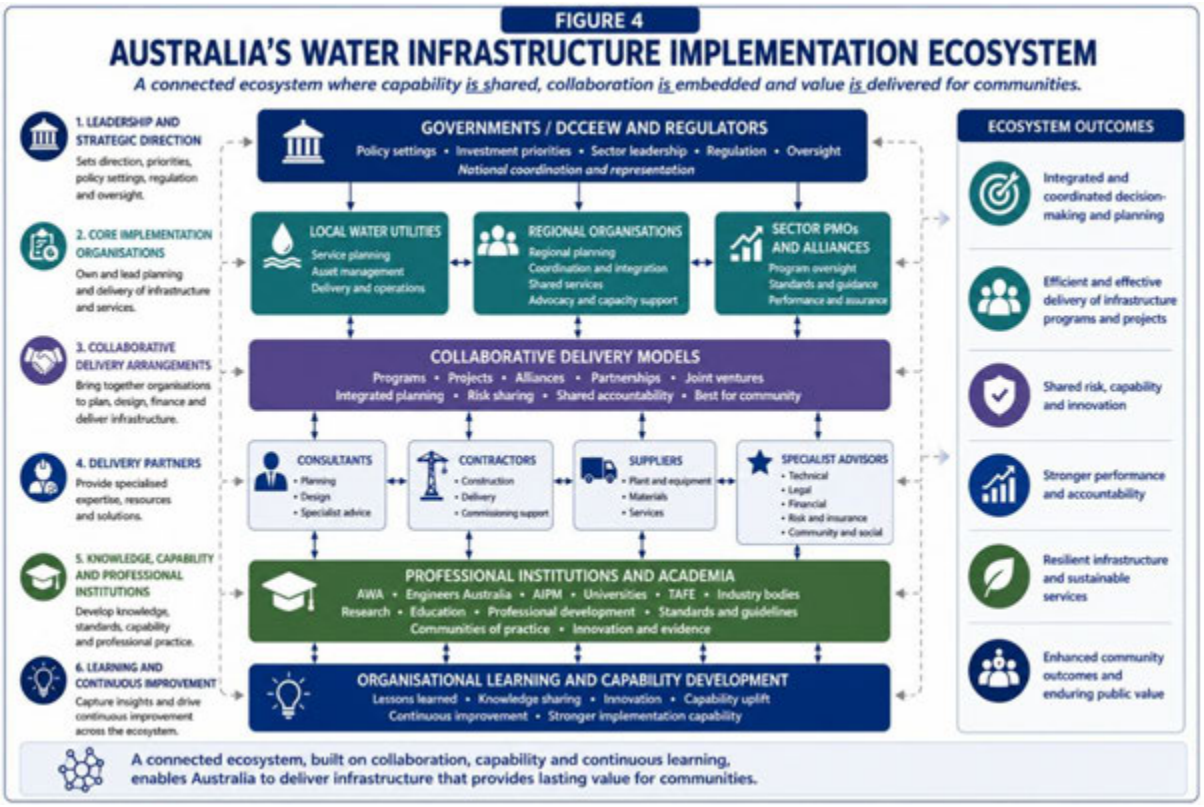

Figure 4. Australia's Water Infrastructure Implementation Ecosystem. A conceptual framework illustrating how Infrastructure Implementation Capability is strengthened through an interconnected ecosystem of governments, Local Water Utilities, regional organisations, collaborative delivery models, delivery partners, professional institutions and academia. The framework demonstrates how shared capability, coordinated governance, organisational learning and continuous improvement collectively support the successful delivery of infrastructure and enduring community outcomes.

Implementation Perspective 4

Organise Implementation Capability Across the Water Sector

Infrastructure implementation capability should be viewed as a shared sector resource rather than the sole responsibility of individual organisations.

No single organisation—regardless of its size—can reasonably be expected to maintain expert capability across every discipline required throughout the implementation lifecycle.

Nor is this necessarily desirable.

Some implementation capabilities are required continuously and should remain embedded within Local Water Utilities and other delivery organisations.

Others are required intermittently, at varying levels of intensity, or are more efficiently provided through shared arrangements.

Accordingly, implementation capability should be organised through a balanced combination of:

- local organisational capability;
- shared regional capability;
- specialist state capability;
- collaborative delivery arrangements; and
- strategic external capability.

A Balanced Capability Architecture

While implementation capability should be organised collaboratively, it is equally important that Local Water Utilities retain sufficient internal capability to remain informed clients, effective asset owners and competent service providers.

Core implementation functions should therefore remain resident within individual organisations where there is an ongoing operational need.

As a general principle, these core capabilities should maintain a level of utilisation that supports competency, organisational learning and career development. In practice, this is likely to require utilisation well above 50 per cent and, where practicable, approaching approximately 80 per cent through an appropriate balance of capital delivery, operational support and continuous improvement activities.

Capabilities that are highly specialised, infrequently required or difficult to sustain within individual organisations may be more effectively provided through regional collaboration, specialist state resources or strategic partnerships.

This balanced approach enables organisations to maintain ownership of their core implementation responsibilities while gaining efficient access to specialist expertise when required.

The objective is therefore **not to make every organisation self-sufficient**, but to ensure that every organisation has **timely, reliable and affordable access to the capability it requires**.

Implementation Perspective 5

Build Long-Term Capability Through Collaborative Delivery

Collaborative delivery models are increasingly being adopted across Australia's water sector.

Their value extends well beyond procurement efficiency.

When implemented effectively, collaborative delivery arrangements provide an opportunity to strengthen long-term implementation capability across both clients and delivery partners.

Sustained collaboration encourages:

- shared organisational learning;
- consistent implementation practices;
- knowledge transfer;
- innovation;
- improved resource utilisation;
- workforce stability; and
- continuous capability development.

Importantly, collaborative delivery also contributes to **market capability**.

A visible and sustainable pipeline of delivery-ready work enables consultants, contractors and specialist suppliers to recruit, develop and retain skilled personnel, invest confidently in systems and innovation, and optimise self-performed work where sufficient volumes justify those investments.

These benefits extend well beyond individual projects and contribute directly to strengthening implementation capability across the sector.

Program Management Offices

Program Management Offices (PMOs) represent another important capability mechanism.

Their value extends beyond reporting and administration.

Properly structured, PMOs strengthen governance, coordination, organisational learning and implementation performance.

PMOs may operate at several complementary levels.

Sector PMOs can support governments through portfolio governance, capability development, resource planning, investment prioritisation and strategic reporting across major infrastructure investment programs.

Regional PMOs can provide shared implementation capability supporting collaborative delivery arrangements involving multiple Local Water Utilities.

Project PMOs strengthen coordination, governance and delivery performance for major individual programs or projects.

Although their functions differ, each contributes to a common objective:

Strengthening implementation capability through coordination, consistency, prioritisation, organisational learning and continuous improvement.

PMOs should therefore be regarded as capability-building organisations rather than administrative support functions.

Implementation Perspective 6

Manage Infrastructure Implementation as an Integrated System

Perhaps the most important lesson emerging from major infrastructure programs is that implementation behaves as an integrated system rather than a sequence of independent activities.

Planning, governance, commercial strategy, procurement, engineering, delivery, commissioning and operations are highly interdependent.

Optimising individual functions independently rarely optimises the implementation system as a whole.

Successful implementation therefore depends upon **Integrated Implementation Planning**.

Integrated Implementation Planning

Integrated Implementation Planning brings together operational, governance, commercial, technical and delivery considerations from the earliest stages of program development so that implementation decisions optimise overall system performance rather than individual organisational objectives.

One practical illustration is the planning of a **major reservoir renewal program**.

Effective implementation sequencing required simultaneous consideration of:

- operational constraints, including maintaining customer service, network configuration and system resilience;
- asset condition and service risk;
- program and project prioritisation;
- governance approval pathways;
- funding availability;
- market capability;

- delivery partner resource planning;
- opportunities for efficient self-performance where sufficient work volumes existed;
- construction sequencing; and
- operational transition requirements.

Optimising any one of these factors independently would not have optimised the implementation system.

The solution required integrated planning across planning, governance, operations, commercial management and delivery.

Layered Governance

This experience also demonstrated that governance arrangements themselves can significantly influence implementation performance.

Where infrastructure programs comprise multiple projects sharing common strategic objectives, governance can often be streamlined through a **Layered Governance** approach.

A program business case establishes the overarching strategic need, investment objectives, delivery strategy, governance framework, implementation approach and expected program benefits.

Subsequent project approvals can then focus primarily on project-specific matters such as asset condition, local risks, operational priority, timing and funding requirements.

This approach reduces duplication, improves governance efficiency and enables many project approvals to be exercised under delegated authorities appropriate to their scale and risk while preserving robust governance and accountability.

Governance arrangements should also retain sufficient flexibility to respond to exceptional implementation circumstances.

During the establishment of new collaborative delivery models or significant implementation reforms, appropriately controlled transitional governance arrangements or delegated authorities may assist essential mobilisation activities while maintaining transparency, accountability and sound governance.

Balanced Implementation Systems

Infrastructure implementation systems behave much like the water systems they ultimately create.

Increasing the capacity of one component within a hydraulic system does not necessarily improve overall performance if constraints remain elsewhere.

Implementation systems exhibit the same behaviour.

Strengthening one part of the implementation process frequently transfers constraints to another part of the system.

Improving strategic planning may significantly increase the number of projects ready for delivery.

Unless corresponding capability exists in procurement, engineering, commercial management, construction, commissioning and operational transition, implementation constraints simply emerge elsewhere.

Maintaining a **delivery-ready pipeline** of appropriately prioritised projects therefore becomes an important mechanism for balancing workflow, supporting market capability, enabling efficient deployment of delivery resources and reducing the cyclical inefficiencies that occur when workloads fluctuate significantly.

Continuous Feedback

Balanced implementation systems depend upon continuous feedback.

Implementation experience, operational performance and emerging risks should be systematically captured throughout planning, delivery, commissioning and operation.

These lessons should continually inform future planning, governance arrangements, capability development and investment decisions.

Implementation capability therefore becomes a continuously improving system rather than a collection of individual projects.

Part III – Key Message

Infrastructure Implementation Capability achieves its greatest value when organised as an integrated implementation ecosystem.

Balanced organisational capability, collaborative delivery, appropriately structured PMOs, Integrated Implementation Planning, Layered Governance and continuous organisational learning collectively strengthen the sector's ability to consistently transform infrastructure investment into reliable services for communities

PART IV

Sustaining Infrastructure Implementation Capability

Parts II and III proposed practical approaches for developing Infrastructure Implementation Capability and organising it into a sustainable implementation ecosystem.

The long-term success of these initiatives, however, depends upon the sector's ability to continually develop people, strengthen institutions and retain the knowledge gained through implementation.

Implementation capability is not a static organisational asset.

It evolves through leadership, collaboration, experience, organisational learning and continuous improvement.

The next phase of Australia's water reform therefore presents an opportunity not only to strengthen infrastructure implementation, but also to strengthen the institutional capability that will support future generations of water professionals and the communities they serve.

This Part presents three complementary Implementation Perspectives for sustaining that capability.

Implementation Perspective 7

Leadership as an Implementation Capability

Leadership is frequently regarded as an organisational attribute.

Within infrastructure implementation it should also be recognised as a critical implementation capability.

Successful implementation leaders do considerably more than manage projects.

They create the conditions that enable governments, Local Water Utilities, regional organisations, delivery partners, operators and stakeholders to work together effectively throughout the implementation lifecycle.

Implementation leadership includes the ability to:

- establish clear strategic direction;
- integrate planning, operational, commercial and delivery objectives;
- build trust across organisational boundaries;
- enable timely and informed decision-making;
- resolve competing priorities;
- remove implementation bottlenecks;
- encourage innovation; and
- foster a culture of collaboration, accountability and continuous improvement.

As infrastructure systems become increasingly interconnected, leadership becomes progressively less about directing individual activities and increasingly about integrating diverse capabilities into a coherent implementation system.

Leadership therefore represents an enduring investment in implementation capability rather than simply a management function associated with individual projects.

Implementation Perspective 8

Organisational Learning and Knowledge Transfer

Every infrastructure program generates valuable knowledge.

The challenge is ensuring that this knowledge strengthens future implementation rather than being lost as projects conclude or experienced practitioners retire or move on.

Organisational learning should therefore be regarded as a deliberate implementation capability.

Lessons emerging during planning, delivery, commissioning and operation should be systematically captured, evaluated and incorporated into future infrastructure planning, governance arrangements, delivery models and operational practices.

This requires considerably more than maintaining project records.

It requires organisations to establish practical mechanisms that encourage knowledge sharing across disciplines, projects and organisations.

Examples include:

- post-implementation reviews;
- communities of practice;
- mentoring and coaching;
- cross-functional learning forums;
- implementation reviews;

- PMO knowledge repositories; and
- structured lessons-learned processes.

Knowledge transfer is equally important.

Experienced practitioners possess practical implementation knowledge that cannot always be documented in procedures or manuals.

Mentoring, coaching and deliberate succession planning therefore become important mechanisms for transferring implementation experience to future generations.

Implementation capability is strengthened when experienced practitioners deliberately develop future leaders rather than simply delivering today's infrastructure programs.

Integrating Diverse Sources of Knowledge

Successful implementation also depends upon recognising and integrating diverse sources of knowledge and experience.

Operational knowledge, engineering expertise, scientific research, community perspectives and, where appropriate, Aboriginal and Torres Strait Islander knowledge and perspectives can all contribute to better implementation decisions.

Early and meaningful engagement enables these perspectives to inform planning, design, implementation and the long-term stewardship of water infrastructure.

Viewed in this way, knowledge integration is not simply an engagement activity.

It is an implementation capability that contributes directly to better decisions, stronger community confidence and more sustainable long-term outcomes.

Implementation Perspective 9

Continuous Improvement and Sector Capability

Infrastructure Implementation Capability should never be regarded as complete.

As technologies evolve, customer expectations change, climate resilience requirements increase and infrastructure systems become increasingly interconnected, implementation capability must continue to evolve.

Continuous improvement therefore becomes an essential characteristic of high-performing implementation organisations.

Regular capability reviews, implementation maturity assessments, benchmarking, innovation, collaborative research and ongoing professional development all contribute to strengthening implementation capability over time.

Equally important is maintaining an implementation ecosystem that remains adaptable to changing organisational and sector needs.

Capability Architecture, Capability Mapping, Capability Investment and collaborative implementation arrangements should themselves be reviewed periodically to ensure they continue to support future infrastructure investment programs.

The objective is not organisational perfection.

The objective is organisational learning.

The Role of Professional Institutions and Academia

Sustaining implementation capability is a shared responsibility.

Professional institutions, industry associations, universities and vocational education providers—including Engineers Australia, the Australian Water Association (AWA), the Australian Institute of Project Management (AIPM), Australian universities and vocational education providers—play an important role in strengthening Australia's long-term implementation capability.

Through research, thought leadership, professional accreditation, education, conferences, technical publications and communities of practice, these organisations help translate practical implementation experience into collective sector knowledge while fostering innovation and continuous improvement.

Equally important, they provide visibility of the profession, inspire future generations and help establish education, professional development and career pathways that attract, develop and retain the implementation leaders and practitioners of tomorrow.

Closer collaboration between governments, Local Water Utilities, regional organisations, industry, professional institutions and academia therefore represents an important opportunity to further strengthen Australia's implementation capability and long-term sector resilience.

Collectively, these efforts provide a strong foundation upon which Australia can continue building its national implementation capability.

Harnessing Australia's Collective Capability

Australia enters the next phase of water reform from a position of considerable strength.

Exceptional implementation capability already exists across governments, Local Water Utilities, regional organisations, industry and academia.

Australian practitioners continue to make significant contributions to major water infrastructure programs internationally, while Australia's own water sector has benefited greatly from professionals who have brought global experience and perspectives into Australian practice.

Harnessing this collective knowledge and experience, continuing to attract and develop practitioners with diverse national and international experience, and investing in the next generation of implementation leaders presents a timely opportunity to organise, integrate and continuously strengthen Australia's implementation capability.

Infrastructure investment enhances services to communities.

Effective implementation capability transforms those investments into reliable infrastructure, resilient organisations and enduring public value.

The next phase of Australia's water reform presents an opportunity not only to strengthen water infrastructure, but also to strengthen the national implementation capability that will continue delivering benefits for generations to come.

A summary of the nine complementary Implementation Perspectives is provided in Appendix A to assist readers in relating the individual recommendations to the overall Infrastructure Implementation Capability Framework.

CONCLUSION

Australia's water sector has developed an enviable reputation for technical excellence, sound regulation and reliable service delivery. The Productivity Commission's National Water Reform Review provides an important opportunity to build on these strengths.

This paper has argued that Infrastructure Implementation Capability deserves greater recognition as a strategic capability supporting successful water sector reform.

While policy, regulation and operational excellence remain fundamental, their success ultimately depends upon the sector's ability to consistently translate service needs into reliable community outcomes through effective implementation.

The framework presented in this paper proposes a practical approach for achieving that objective through deliberate capability planning, integrated implementation systems, collaborative delivery, organisational learning and continuous capability development.

Recognising Infrastructure Implementation Capability as a strategic national capability complements the Commission's existing reform themes by strengthening the sector's ability to successfully implement future reform initiatives.

Ultimately, successful water reform will be judged not only by the quality of the policies that are developed, but by the services that communities ultimately receive.

Strengthening Australia's Infrastructure Implementation Capability provides an opportunity to bridge that gap.

Appendix A

Summary of the Nine Implementation Perspectives

Implementation Perspective	Description	Section
Perspective 1	Adopt a Deliberate Capability Architecture	Part II
Perspective 2	Plan Capability Across the Entire Implementation Lifecycle	Part II
Perspective 3	Align Capability with Infrastructure Investment Programs	Part II
Perspective 4	Organise Implementation Capability Across the Water Sector	Part III
Perspective 5	Build Long-Term Capability Through Collaborative Delivery	Part III
Perspective 6	Manage Infrastructure Implementation as an Integrated System	Part III
Perspective 7	Leadership as an Implementation Capability	Part IV
Perspective 8	Organisational Learning and Knowledge Transfer	Part IV
Perspective 9	Continuous Improvement and Sector Capability	Part IV