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Alternative Management and Funding Models for Sustainable Operation and Maintenance of Stormwater WQ Assets

Report prepared for ACT Government – Environment and Planning

CABINET-IN-CONFIDENCE

MARSDEN JACOB ASSOCIATES

Marsden Jacob Associates
Financial & Economic Consultants

ABN 66 663 324 657
ACN 072 233 204

Internet: http://www.marsdenjacob.com.au
E-mail: economists@marsdenjacob.com.au

Melbourne office:
Postal address: Level 3, 683 Burke Road, Camberwell
Victoria 3124 AUSTRALIA
Telephone: 03 9882 1600
Facsimile: 03 9882 1300

Perth office:
Level 1, 220 St Georges Terrace, Perth
Western Australia, 6000 AUSTRALIA
Telephone: 08 9324 1785
Facsimile: 08 9322 7936

Sydney office:
Rod Carr 0418 765 393
Phillip Pickering 0434 884 220

Author: Joel Byrnes
jbyrnes@marsdenjacob.com.au

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Executive summary

Marsden Jacob Associates has investigated alternative models for the funding and management of stormwater WQ assets in the ACT.

We were engaged to do this because the ACT Government found in a 2014 review (ACT Government, 2014) that the existing arrangements are not working.

We undertook a detailed, independent assessment of the current arrangements in order to draw our own conclusions. We found many areas that require change, but our top three are:

- The ACT Government has not systematically recorded detailed operation and maintenance (O&M) expenditure for stormwater WQ assets. This is a problem because the adequacy, effectiveness and efficiency of funding cannot be assessed definitively without that detail
- Funding of approximately $6.8m per year is required to operate and maintain the existing stormwater WQ asset base in the ACT in line with recent engineering advice received by the ACT Government (Alluvium, 2014). Over the last two years, around $2.5m was spent each year on the O&M of stormwater WQ assets. Almost all of that was split between cleaning out Gross Pollutant Traps and operating a fleet of streetsweepers.
- This implies a current annual funding shortfall of up to $4.3m. But, the lack of detailed expenditure records, and no public reporting mechanisms on how O&M funds were allocated and/or spent means that we can't be certain. One of the first reforms the ACT Government should make is to address this weakness.

There are a number of issues with lines of responsibility and authority that we detail within the report. However, it is the funding arrangements that are the key area of weakness in the current arrangements.

Funding for O&M is currently allocated from consolidated revenue, by the ACT Government on an annual cycle. When measured against widely accepted best-practice criteria for funding mechanisms, this situation scores poorly.

We looked at how other states in Australia raise funds for stormwater WQ asset O&M functions. In Melbourne a $95 property based charge is levied on water bills each year. In 2013/14 it raised $232m. In NSW some councils have introduced a $25 charge per property to fund stormwater WQ assets.

We also looked at some international examples and found that in the United States property based stormwater charges are common place. The average charge in 2014 was US$57. Local governments in the United States often create stormwater utilities to operate and maintain stormwater WQ assets, funded by the stormwater charge. Just under 1,500 stormwater utilities existed in 2014.

We recommend that the ACT Government move away from funding stormwater WQ asset O&M from consolidated revenue. The Australian and international examples outlined in this report show that a cost-reflective stormwater charge could be feasible in the ACT.

Our brief was to develop and test a range of alternative options for the management and funding of stormwater WQ assets in the ACT. We developed eight alternatives that are detailed in this report. In summary they are:

Model Description
Refine current arrangements: Current arrangements for management and funding of stormwater WQ assets in the ACT are maintained, with a number of refinements to improve efficiency and accountability.
Hypothecate WAC: Funding for stormwater WQ asset O&M would be sourced from a hypothecated share of the Water Abstraction Charge (WAC).
Cost-reflective stormwater charge: ACT Government introduces a stormwater charge to fund prudent and efficient expenditure on the O&M of stormwater WQ assets in the ACT.
Developer charge: Raise upfront O&M funding for newly constructed stormwater WQ assets under Estate Development Plans in the ACT.
Stormwater Utility: Establish a distinct stormwater department within TAMS with responsibility to approve, accept, operate, maintain and renew stormwater assets in the ACT.
Transfer stormwater assets to Icon Water: Stormwater assets transferred to the existing asset base of Icon Water, thereby permitting Icon Water to impose a stormwater charge. Icon Water responsible for O&M functions.
Long-term performance based O&M contract: ACT Government enters into a long-term O&M contract with a third party service provider.
Long-term lease of stormwater assets: ACT Government would enter into a long-term arrangement with a private sector investor, who takes ownership of the stormwater WQ assets in the ACT for the period of the lease, in return for a lump-sum payment to the ACT Government. O&M funded by annual payment to owner.

We are in favour of the following three, after a multi-criteria assessment of each:

- Introduce a cost-reflective stormwater charge, and maintain existing institutional arrangements
- Create a stormwater utility for the ACT, that is funded by a cost-reflective charge
- Transfer the stormwater assets of the ACT to Icon Water, which would operate and maintain those assets and raise funding through the existing price determination process

The preferred option is for stormwater WQ assets to be transferred to Icon Water, and for a cost reflective stormwater charge to be introduced to fund optimal O&M activities.

This option would be a significant task to implement. We have outlined the range of issues that would need to be addressed. However, the tasks are not new or innovative, and for that reason we believe the preferred option is feasible to implement in the ACT.

Our triple bottom line assessment of the preferred option finds that it is the least cost means of raising the necessary additional funds to finance optimal O&M activities. We find that reliance on taxation measures has a cost burden of 22 cents for each dollar raised, while use of a cost reflective stormwater charge has a cost burden of 2 cents for each dollar raised. Therefore, a stormwater charge would be relatively more efficient and release income for more productive use in the ACT economy.

Notwithstanding, the stormwater charge would have some negative impacts. First, elderly and vulnerable members of society are likely to be disadvantaged by the imposition of the charge. We recommend utilising existing rebate schemes that apply to water and wastewater bills to mitigate those impacts. Second, there will be an increase in the cost of living for ACT residents.

1. Introduction to the project

1.1 Background

The ACT Government is in a unique situation in that it covers state and local government responsibilities. This means that it has a wider range of competing priorities for expenditure of public finances than most governments in Australia. A perceived consequence of this is that functions related to health and education, for example, are more likely to receive adequate funding because they are in the 'public eye'. In contrast, prudent funding of operation and maintenance activities is less likely to be noticed by the voting public, thereby attracting a diminished funding pool from available ACT Government revenue.

A broad based ACT Government review of Water Sensitive Urban Design in 2014 found that funding for maintenance of WSUD assets and their performance targets cannot be met. The review argued that a range of issues were contributing to the problem, including an increase in the number of WSUD assets that were being transferred to the ACT Government for ongoing operation and maintenance, which was not matched by corresponding funding for those activities.

The review recommended that alternative funding and management models for WSUD infrastructure be investigated. This report has been prepared in response to that recommendation.

There are a range of issues that currently affect the performance of stormwater treatment systems in the ACT. These extend from the earliest planning stages to operation and maintenance (Alluvium, 2014).

The ACT WSUD Code (2009) includes mandatory stormwater quality treatment targets for new development in the ACT. These have driven the construction of a significant number of new stormwater quality treatment systems in the ACT, including new types of systems designed at smaller scales for treatment closer to the source.

Recent research by Alluvium (2014) suggests the ACT Government has been unprepared for the wave of new stormwater treatment assets and has not been able to implement appropriate systems and processes, guidelines and standards, budgetary measures or management responses to keep up with the influx of new assets. Alluvium concluded that in this context, stormwater treatment systems are not meeting their intended objectives (Alluvium, 2014).

Regular and adequate operation and maintenance of stormwater assets has become a significant issue in the Territory. The budgetary and resourcing constraints have led to a number of issues which were explored as part of the ACT WSUD Review. The lack of coordination and planning across the stormwater network has also led to inefficiencies of assets. A number of issues are explored in the ACT WSUD Review that are not strictly associated with funding.

Limitations at the operations and maintenance stage represent a fundamental challenge for improving the performance of stormwater treatment in the ACT. There is a perception in some quarters of Government that an increase in the number of stormwater treatment systems has not been matched by increased maintenance funding. In response maintenance practices have therefore been confined to a basic minimum level of service. Larger tasks are undertaken on a reactionary basis when significant issues occur, and there is little or no capacity for monitoring, review or planning (Alluvium, 2014).

According to some maintenance staff, the operations and maintenance budget is so tight that they view their roles as entirely reactionary. Asset management systems are inadequate, and maintenance plans and life cycle costing information is not being captured in current processes. There is little opportunity for operations and maintenance staff to feed useful information back to the rest of government or industry (Alluvium, 2014).

This paints a grim picture for the future O&M of the existing stormwater WQ assets in the ACT. However, the situation may become relatively worse once the stormwater WQ assets likely to be built under the Basin Priority Project are in the ground.

On 26 February 2014, the ACT and Commonwealth Governments signed a joint funding agreement of up to $93.5 million for the ACT Basin Priority Project. The ACT Basin Priority Project's focus is improving the long-term water quality in the ACT and the Murrumbidgee River system.

Given the ACT's ability to significantly influence the water quality in the upper Murrumbidgee River, through the large volume of water flowing from and through the Territory, the business case for this investment primarily targets improving water quality from the ACT that enters the Murrumbidgee River. Activities funded will assist in achieving one of the primary objectives of the Commonwealth and ACT Water Management Partnership Agreement (January 2010), namely 'to improve the water quality and stream health of the waterways flowing into, and out of, the Australian Capital Territory into New South Wales', and as a consequence assist in the achievement of a number of other water quality and water management objectives under the agreement (ACT Government, 2013).

The ACT Government is faced with the likely scenario of receiving and accepting a large number of stormwater WQ assets under the Basin Priority Project that will need to be operated and maintained by the ACT Government. If it is in fact the case that funding for and management of the current stormwater WQ asset stock is inadequate, a significant increase in the asset stock from the BPP has the potential to place relatively more strain on the ACT Government budget.

1.2 What we were asked to do

Marsden Jacob Associates was engaged to development a report on Alternative Management and Funding Models for sustainable maintenance of Water Sensitive Urban Design (WSUD) Infrastructure for the ACT Government in accordance with the project brief.

The specific objectives of this study were to:

- Build on the understanding of the current ACT WSUD management arrangements
- Provide advice on the ACT's current WSUD management practices including identifying opportunities in how the Territory manages WSUD assets;
- Report on alternative management and funding models for sustainable maintenance of WSUD assets, informed by a full cost-benefit analysis and also considers the ACT Government's uniqueness of having state and local government responsibilities;
- Provide a triple bottom line analysis of the different mechanisms that are tested and compared against a number of scenarios; and
- Provide advice on the current WSUD management arrangements likely to impact on the ACT Basin Priority Project.

The report was to consider a range of current opportunities and alternative management options or strategies that could result in either a budget neutral outcome or identify long-term alternative sustainable funding.

2. Characteristics of the stormwater WQ asset stock in the ACT

This section defines the type of assets that have been included in the analysis. This is an important step, as there is not a generally accepted definition of stormwater WQ assets across the industry. We also present information on the number of stormwater WQ assets in the ACT and the estimated capital value of those assets.

2.1 What is a stormwater WQ asset?

A first step in this project was to clearly define what is meant by a stormwater WQ asset in the ACT.

For the purposes of this project our starting point was stormwater WQ assets that fall within the responsibility of TAMS management of municipal infrastructure. A number of these assets are linked to the Design Standards for Urban Infrastructure and would have been designed to the standards set out in this documentation. However a number of stormwater WQ assets (especially the more contemporary ones like bioretention systems and raingardens) that have been constructed to comply with the Territory Plan's high level targets are not covered by the Design Standards for Urban Infrastructure. This is because the standards have not been updated to reflect changes in industry practice. Notwithstanding, TAMS has accepted these assets as part of the municipal infrastructure network.

As a result, for the purpose of this evaluation we define stormwater WQ assets as those that:

- are municipal infrastructure constructed to comply with the WSUD targets outlined in the WSUD General Code and Territory Plan
- fall within the responsibility of TAMS management of municipal infrastructure
- are a stormwater WQ asset for which TAMS has sought a budget allocation for O&M.

Table 1 below lists asset classes from the TAMS asset database that are in and out of scope. This stormwater treatment systems classification is consistent with (Alluvium, 2014):

Table 1: Stormwater WQ assets

Stormwater WQ assets	
In scope	Out of scope
Large lakes and ponds (that have been constructed to comply with the WSUD targets)	Stormwater pits
Small ponds and wetlands	Stormwater channels (lined channels)
Swales	Dams
Raingardens and bioretention systems	Overland flow paths
Gross Pollutant Traps (GPTs) – includes trash racks	Assets that are primarily for conveyance of stormwater, such as pipes and drains within the road network
Vegetated waterways	
Cutoff drains	
Retarding basins	
Pervious paving	

TAMS has two databases in which data for stormwater WQ assets is held; one is focussed on asset condition and the other is primarily for the purpose of financial reporting. We worked with

TAMS in the preparation of this report to select assets and associated data from those databases for analysis in this report.

2.2 Number of stormwater WQ assets

The TAMS asset management database contains records on all stormwater WQ assets that have been accepted by the ACT Government. Table 2 provides summary statistics on the total number of assets that fall within scope, as well as totals for each class of asset, both in terms of number of assets and approximate size, measured in square metres.

Table 2: Number of stormwater WQ assets in the ACT

Asset type	Number	Area (sqm)
Lakes	2	1,645,482
Ponds & wetlands	87	1,369,113
Swales	11	6,628
Raingardens and bioretention systems	116	3,617
GPTs	205	Not applicable
Vegetated waterways	14	164,839
Cutoff drains	194	Not available
Retarding basins	29	289,770
Pervious paving	Not available	1,941

Source: Marsden Jacob and Alluvium analysis of TAMS WSUD asset management database and specific data provided by TAMS Strategic Finance

2.3 Capital value of stormwater WQ assets

A key challenge for this project was estimating what the future stormwater WQ assets O&M funding requirement should be. Although there are a number of alternate approaches to meeting that challenge, we settled on estimating O&M funding requirement as a function of the future capital value of stormwater WQ assets in the ACT. Here we outline the method applied to arrive at future capex values.

A first step in the analysis was to arrive at the capital value (before depreciation) of the *existing* stormwater WQ asset stock.

As previously mentioned, TAMS has two parallel databases in which it records details of stormwater WQ assets. One is for the purposes of asset management and the other for financial reporting. Through a collaborative process with TAMS Strategic Finance, we were able to make use of both databases to estimate the capital value of various asset types.

Where capital value estimates were held in the financial reporting database, we adopted those capital values as supplied to us by TAMS. Where capital values were not available (the minority of cases), we generally made use of the area (in sqm) of the asset recorded in the TAMS asset management database. The area was multiplied by a 'per unit' capital expenditure value sourced from Melbourne Water Corporation fact sheets. For example, the capital cost of swales was calculated by taking the aggregate area of swales in the ACT and multiplying that by $150 per square metre, which has been sourced from a Melbourne Water Corporation lifecycle costing fact sheet.

We note in Table 3 below the source of each capital value estimate.

Table 3: Sources of capital value estimates for stormwater WQ assets in ACT

Asset type	Capex source
Lakes	TAMS Strategic Finance Database
Ponds & wetlands	TAMS Strategic Finance Database
Swales	Area of swales (TAMS) x $150 per sqm (Melbourne Water life cycle costing fact sheet)
Raingardens and bioretention systems	Area of raingarden (TAMS) x varying rate per sqm (Melbourne Water life cycle costing fact sheet)
GPTs	TAMS Strategic Finance Database
Vegetated waterways	Area of vegetated waterways (TAMS) x $35 per sqm (Melbourne Water value for grass swales)
Cutoff drains	TAMS Strategic Finance Database
Retarding basins	TAMS Strategic Finance Database
Pervious paving	TAMS Strategic Finance Database

The aggregate replacement cost estimate for each stormwater WQ asset type is presented in Table 4 below. It is important to note that the capital values presented in Table 4 are estimates only, and should not be interpreted as audited or regulatory asset values.

Table 4: Capital value of stormwater WQ assets in ACT

Asset type	Capital value ($, 2015)
Lakes	21,135,669
Ponds & wetlands	416,347,124
Swales	994,248
Raingardens and bioretention systems	5,251,400
GPTs	73,141,120
Vegetated waterways	5,769,369
Cutoff drains	66,999,845
Retarding basins	8,662,207
Pervious paving	77,658
Total	**594,872,509**

Source: Marsden Jacob and Alluvium analysis of TAMS WSUD asset management database and specific data provided by TAMS Strategic Finance

We make use of the capital value calculations in section 4 of this report to develop estimates of:

- The 'optimal' stormwater WQ asset O&M revenue requirement
- A profile of likely stormwater WQ assets O&M revenue requirement out to 2035, taking into account contributions from greenfield and brownfield development, and the Basin Priority Project.

3. Current institutional arrangements for WSUD assets in the ACT

This section of the report provides an overview of the current institutional arrangements for the management and funding of stormwater WQ assets in the ACT. The purpose is to provide context to our assessment of current institutional and funding arrangements in the ACT. That assessment can be found in section 5 of this report.

3.1 Current ACT institutional water arrangements

Figure 1: ACT WSUD and stormwater institutional arrangements

The institutions that have key roles in stormwater WQ assets in the ACT are outlined in Figure 1.

At a high level, the Environment and Planning Directorate (EPD) is responsible for the development and implementation of water related policy, consistent with:

- the ACT Water Strategy 2014 – 44
- Murray Darling Basin Plan
- AP2 – the climate change strategy and action plan for the ACT
- The WSUD code

Within EPD the ACT Planning and Land Authority (ACTPLA) performs a largely regulatory role, as the authorising body for WSUD planning, plumbing regulation and utility technical regulation. Of particular relevance to this analysis, for greenfield developments, ACTPLA assesses proposed WSUD and stormwater plans against the requirements of the ACT WSUD code.

The Territory and Municipal Services Directorate (TAMS) has three main functions with respect to stormwater. First, TAMS Asset Acceptance is responsible for assessment of proposed WSUD and stormwater assets against technical standards. Second, Roads ACT, which sits within TAMS, is responsible for the operation and maintenance of 'hard' WSUD assets, such as the inlet and outlet structures for lakes and ponds, GPTs and stormwater gutters.

Third, Parks and Territory Services (PATS), also a division of TAMSD, is responsible for the operation and maintenance of 'soft' WSUD and stormwater assets, such as raingardens and swales. Of note here is a recent re-alignment of O&M responsibilities between Roads ACT and PATS. Roads ACT is now responsible for the water quality improvement function of stormwater WQ assets (i.e. sediment removal, maintenance of functional vegetation). PATS is now responsible for maintaining the amenity of stormwater WQ assets (i.e. litter removal/weeding). The basis for this is a renewed MOU between the two divisions, that has been operational for less than 12 months.

The Chief Minister's, Treasury and Economic Development Directorate (CMTEDD) has a number of important roles in the management of the water sector in the ACT. First, through its Treasury function, CMTEDD implements Cabinet decisions regarding budget allocations across the ACT Government. It is then the role of each Agency to make internal allocation decisions. Thus, following the allocation of total operation and maintenance funding from the budget by CMTEDD, TAMS Strategic Finance has the role of further allocating that funding to various TAMS operation and maintenance activities. This includes allocation of funding to both Roads ACT and PATS.

Second, CMTEDD facilitates the budget process allowing Budget Committee of Cabinet to consider funding of any business case. In the ACT, refurbishment and/or renewal of assets is classified as capital works and therefore funding is dependent on the approval of business cases.

Finally, The Land Development Authority (LDA), which sits within CMTEDD, has general oversight for the preparation of estate masterplans for the development of greenfield sites in the ACT. Therefore, LDA has a degree of influence over the nature of WSUD and stormwater plans for greenfield sites at the concept and design phase. Construction of WSUD and stormwater assets is generally procured through Procurement and Capital Works, a division of the CMTEDD.

3.2 The current regulatory framework for the management, operation and maintenance of water quality and stormwater assets in the ACT

A broad regulatory framework exists in the ACT for the management of stormwater and water quality assets in the ACT, as laid out in Figure 2.

The overarching regulatory structure is provided by the Territory Plan 2008. The object of the Territory Plan is to provide the people of the ACT with an attractive, safe and efficient environment in which to live, work and have their recreation.

The Territory Plan is prepared and administered by ACTPLA. The functions of the Plan are:

- To manage development, in particular land use and the built environment
- To guide assessment of development applications
- To guide development of new estate areas (future urban land) and the management of public land

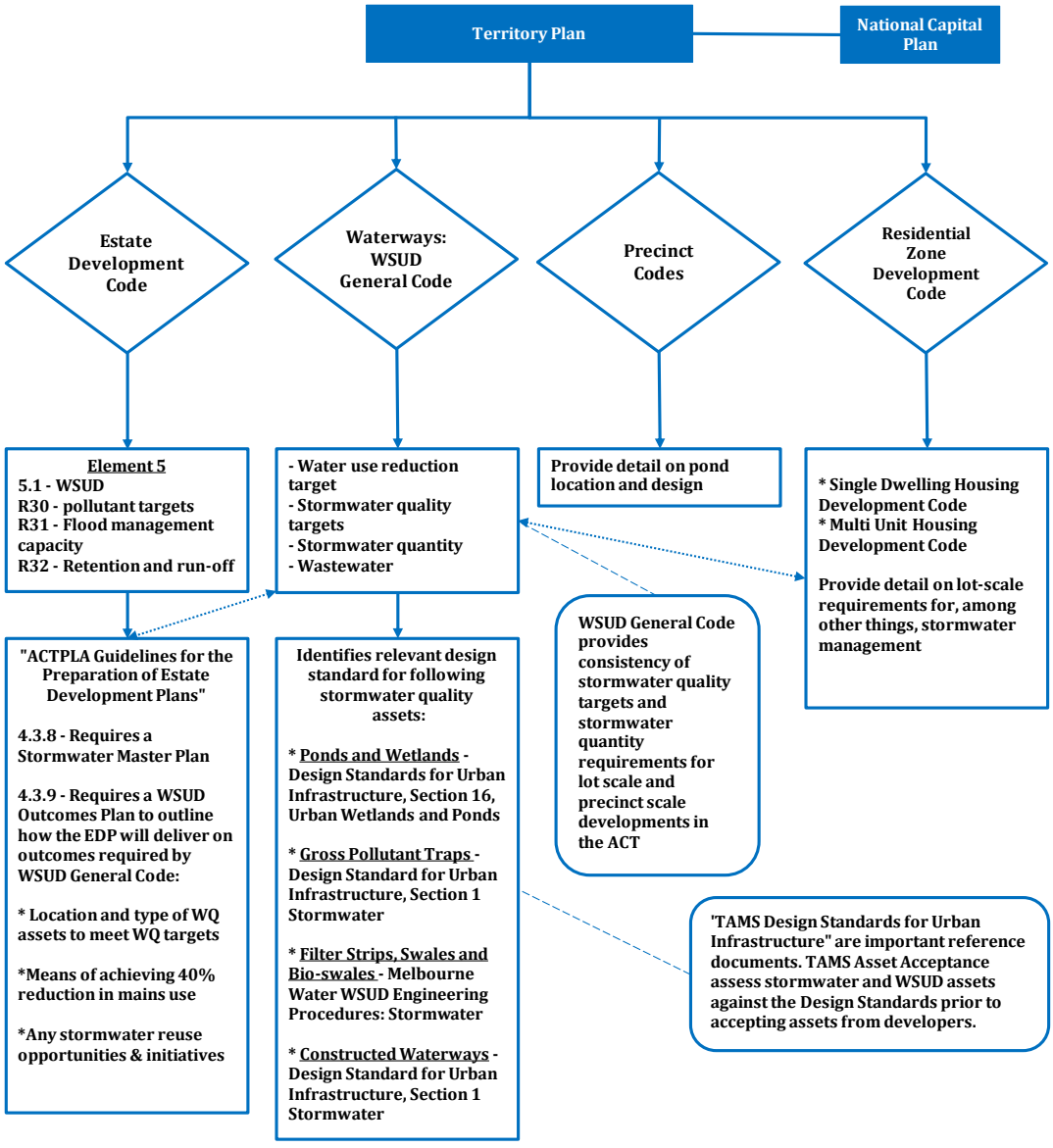
The Territory Plan must be consistent with the National Capital Plan, which is a Commonwealth Government regulatory instrument which governs land use of nationally significant areas within the ACT.

Development applications are assessed against a series of codes contained within the Territory Plan. Those codes are:

- Precinct codes – apply to geographical areas, which typically include more than one Land Use zone, and provide additional planning, design and environmental controls for individual blocks
- Development codes – apply to specific zones or development types. The only Development Code in the Territory Plan at present is the Estate Development Code, which provides a range of controls for the development of greenfield residential estates
- General codes – provide guidance on specific planning and design issues throughout the ACT, and cover matters such as community and recreational facilities, parking and vehicular access and waterways

Where there are conflicts between codes, the Precinct code will take precedence, followed by the development code, then the general codes.

Figure 2: Current regulatory framework for stormwater WQ assets in the ACT



There are four main elements of the Territory Plan that have direct influence over the stormwater and WSUD assets in the ACT. They are:

- Waterways: WSUD General Code – Sets out mandatory targets and requirements for reduction in mains water consumption, and the management of stormwater quality and quantity, and identifies the appropriate design guidelines for stormwater and WSUD assets in the ACT.
- Estate Development Code – Sets out the criteria against which Estate Development Plans (EDPs) are to be assessed in the ACT. Estate Development Plans (EDPs) set out the proposed subdivision pattern and infrastructure works for an estate. EDPs are in essence development applications that are submitted to ACTPLA for approval. ACTPLA assesses EDPs against the requirements of the Estate Development Code.
- Precinct Codes – Precinct codes are prepared for distinct geographic areas (typically suburbs) and provide detailed guidance on pond location and design requirements
- Residential Zone Development Code – Sets out the lot-scale stormwater and WSUD requirements for Single Dwelling Housing Developments and Multi Unit Housing Developments

The *Waterways: WSUD General Code* is the principal code for WSUD requirements in the ACT. It is referenced directly in the Residential Zone Development Code and indirectly in the Estate Development Code. This provides consistency in WSUD and stormwater requirements across the two development types.

ACTPLA has published guidelines for the preparation of EDPs. A Stormwater Master Plan and WSUD Outcomes Plan are required under that guidance. The WSUD Outcomes Plan must outline how the EDP will deliver on the requirements of the *Waterways: WSUD General Code*, and as a minimum must address:

- The location and type of proposed water quality measures such as filter strips, bio-swales, constructed waterways, retarding basins, on-site retention/detention basins proposed to meet water quality targets;
- The means of achieving a 40% reduction in mains water use; and
- Any stormwater reuse opportunities and initiatives

3.3 The roles and responsibilities of institutions in the stormwater WQ asset cycle

The purpose of this section is to provide an overview of roles and responsibilities of various institutions as stormwater WQ assets move through the asset lifecycle[1]. We define the stormwater WQ asset lifecycle as:

- regulation and policy;
- planning and coordination across the stormwater network;
- project inception;
- infrastructure approval;
- infrastructure construction;
- infrastructure asset handover process;

[1] Alluvium are the authors of the lifecycle process charts. They were developed following detailed consultation with various institutions in the ACT for this project.

- infrastructure operation; and
- infrastructure maintenance (including renewal and replacement).

For the purposes of this exercise, we have outlined the asset lifecycle for three scenarios:

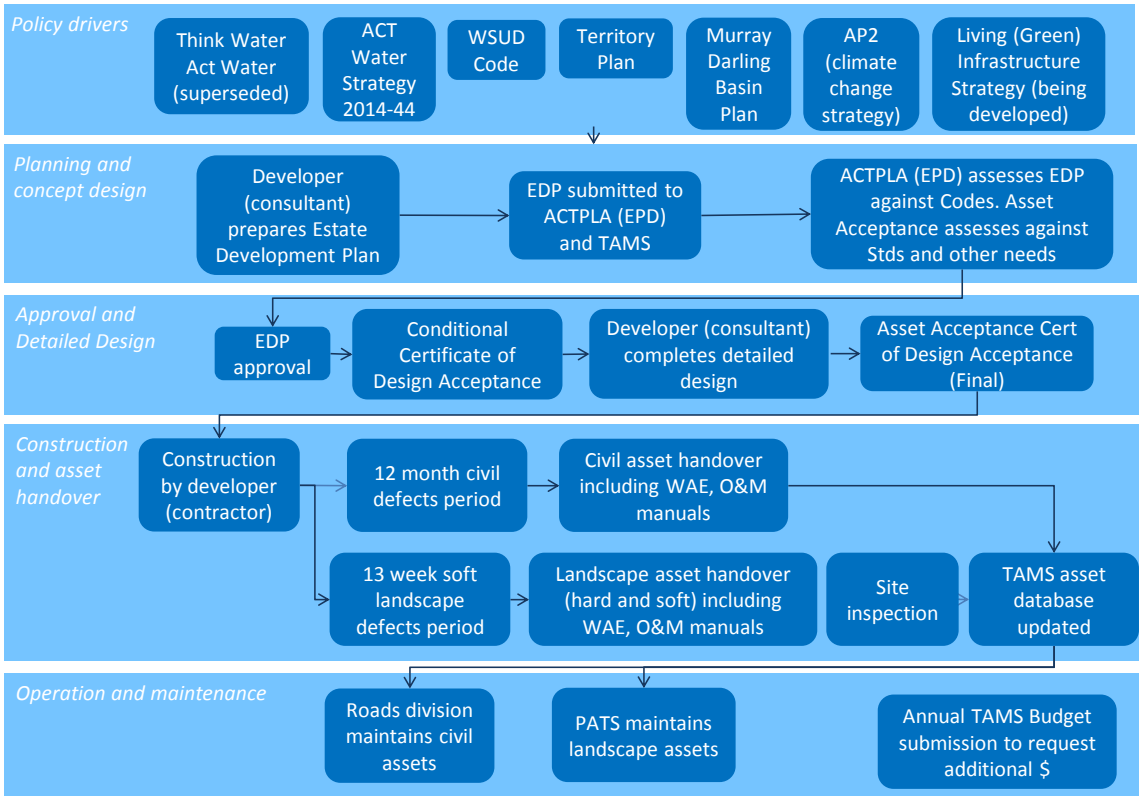
1. Estate assets
2. Capital works for land development
3. Retrofits

Each scenario is described in detail in the remainder of this section.

3.3.1 Scenario 1: Estate Development

Figure 3 outlines institutional arrangements for Estate Development stormwater WQ assets assets.

Figure 3: stormwater WQ asset process (Estate Development) in the ACT



Policy development rests with EPD, primarily through the ACT Water Strategy 2014 – 44 and the ACT WSUD code.

The process begins with the **development of an Estate Development Plan** (EDP). The developer will typically engage a consultant engineer and/or design firm to prepare the EDP. Stormwater and WSUD infrastructure will be a distinct element of the EDP. The LDA can have significant influence over the type of stormwater and WSUD infrastructure chosen for greenfield developments. The EDP is submitted to ACTPLA (EPD) and Roads ACT.

ACTPLA (EPD) **assesses the EDP** for compliance with the provisions of the WSUD code. Roads ACT assesses compliance with Municipal Infrastructure Standards and any other relevant needs.

Once the EDP is approved by ACTPLA (EPD) a Conditional Certificate of Design Acceptance is issued. This signals to the developer that it can proceed with detailed design of the EDP. Roads ACT receives the detailed design and has the role of issuing a **Certificate of Design Acceptance (Final)**.

With a Certificate of Design Acceptance (Final) in hand the developer will move on to **construction** of the Estate, including stormwater and WSUD assets. Construction is typically undertaken by a contractor, procured through the Procurement and Capital Works section of the LDA.

For 'hard' civil infrastructure assets, once constructed the assets are not handed over to Roads ACT until a 12 month civil defects period has expired. At that point, and assuming there are no defects, the asset is **formally handed over** to Roads ACT, accompanied by Works as Executed (WAE) quality documentation and O&M manuals. At this point the asset/s are registered in the TAMS asset management database.

For 'soft' landscape assets, a 13 week defects period applies, after which **formal handover** occurs, accompanied by WAE documentation and O&M manuals. Following a site inspection, the asset/s are included in the TAMS asset management database.

This means that TAMS has a record of WSUD and stormwater assets accepted by both Roads ACT and PATS within the one database.

Roads ACT is responsible for the **O&M** of 'hard' civil infrastructure WSUD and stormwater assets. PATS maintains and operates the 'soft' landscape WSUD and stormwater assets.

Funding for ongoing O&M of all new estate assets (e.g. street lights, footpaths, WSUD assets etc) is determined by an existing funding model controlled by CMTEDD. It is described in more detail in section 4.1. In essence, O&M funding is allocated each year in line with the model results.

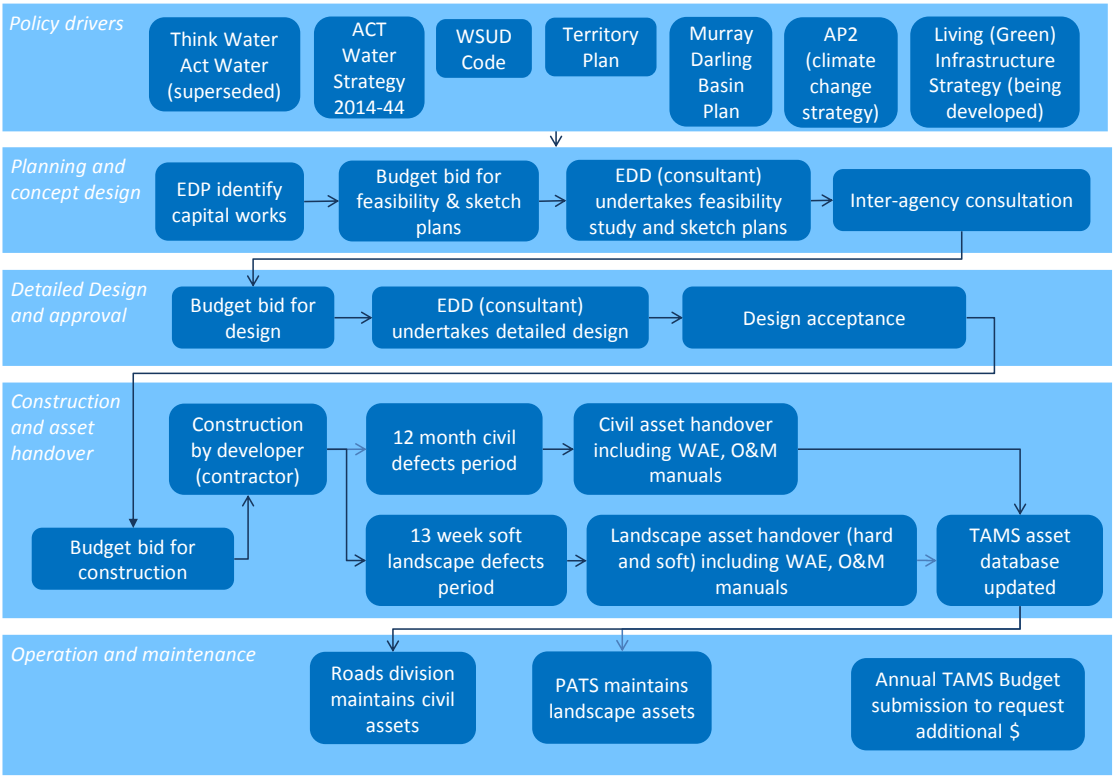
PATS is also allocated funding via a CMTEDD led process. However, we are unclear on the precise details at this point.

Sections 4.1 and 4.2 provide greater detail on levels of O&M expenditure.

3.3.2 Scenario 2: Capital works for land development

Figure 4 outlines institutional arrangements for capital works for land development in the ACT.

Figure 4: stormwater WQ asset process (capital works for land development) in ACT



The process for capital works for land development is largely similar to that for new estates, with a number of notable exceptions. Each is discussed below.

In the Planning and concept design phase, **EPD** is generally responsible for **identifying necessary capital works** to deliver a given policy outcome. EPD is generally required to seek budget funding for procurement of consulting services to undertake feasibility studies and concept sketches. Once those documents are in hand inter-agency consultation occurs to ensure the needs of various stakeholders across the asset lifecycle have been taken into account to the extent possible.

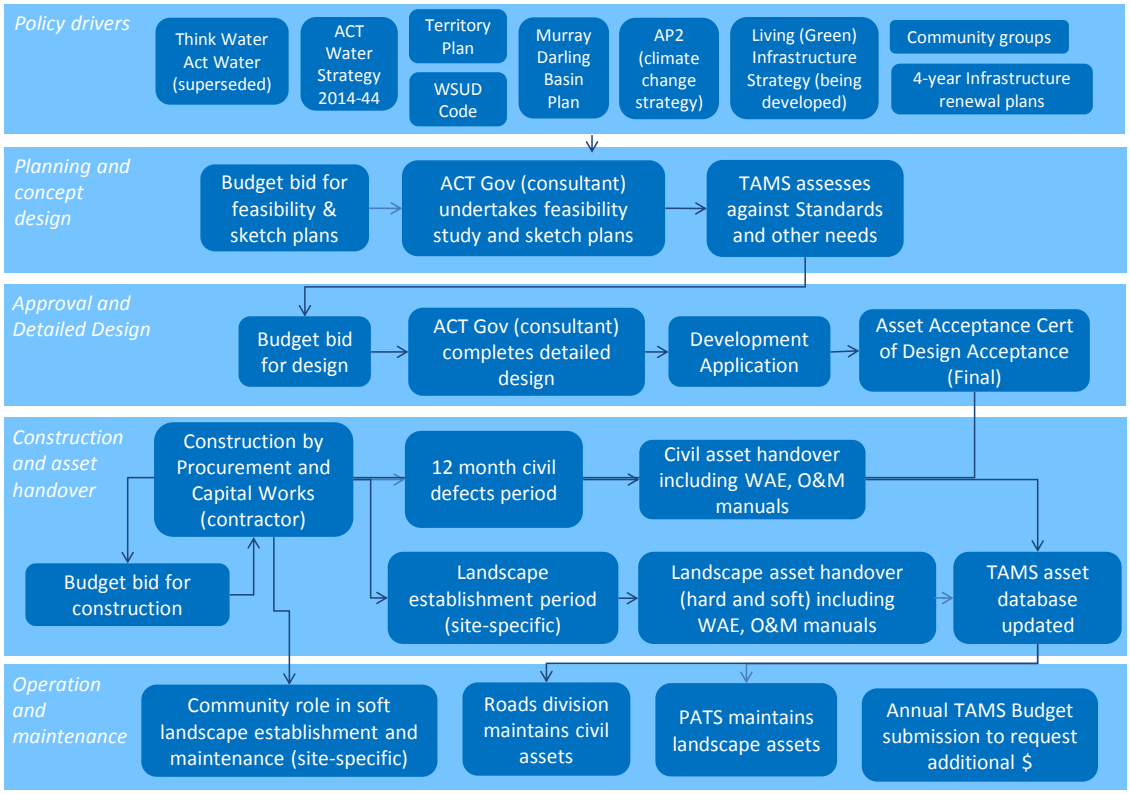
A budget bid is necessary to support detailed design, that is typically undertaken by a consultant. Following design acceptance, an additional budget bid is developed to support funding of construction. Once funding is allocated, a private contractor is generally engaged to undertake construction on behalf of the ACT Government.

The same asset acceptance and O&M protocols apply.

3.3.3 Scenario 3: Retrofits

Figure 5 outlines institutional arrangements for retrofit assets in the ACT.

Figure 5: stormwater WQ asset process (retrofits) in ACT



The process for retrofit WSUD assets is best described as a mix between that for new estate and capital work assets. The unique feature however, is greater involvement of community groups in identifying the need for the assets and then in the maintenance of the asset.

3.4 Current non-utility water charges in the ACT

There are four main water related charges in the ACT. They are:

1. Regulated water service charges, comprising:
   - a fixed charge (does not vary with volume supplied)
   - a universal usage charge that is applied on a per kl basis for the first 200kl of water consumed per connection
   - A relatively higher usage charge that is applied on a per kl basis for consumption in excess of 200kl
2. Regulated sewerage service charge, comprised of a fixed charge.
3. Water Abstraction Charge (WAC), which is a statutory fee levied by the ACT Government on Icon Water (for each kl of potable water supplied) and other users that are licensed to take water for non-urban purposes (non-potable water).
4. Utilities network facilities tax (UNFT), which is levied by the ACT Government on owners of any network facility on or under land in the ACT, including on Icon Water.

Regulated Water Service and Sewerage Service charges raise allowable revenue for the sustainable operation of Icon Water over the determination period.

In contrast, the WAC and UNFT are both so-called 'pass through' charges. This means that although the administrative burden for payment of each charge falls on Icon Water, the economic burden falls on customers.

Technically, this is achieved by the estimated WAC and UNFT revenue for each year being included within the revenue allowance for Icon Water by the regulator; the Independent Competition and Regulatory Commission. This inclusion allows for regulated water and sewerage prices to incorporate the costs of the UNFT and the WAC within the revenue raised by Icon Water through customer bills.

Table 5 outlines the WAC and UNFT charges that have been included in the most recent price direction for regulated water and sewerage services, as handed down by the Industry Panel in April 2015. Table 4 solely reflect the estimated WAC and UNFT charges levied upon Icon Water, and does not include WAC and UNFT revenue raised from other parties.

Table 5: WAC and UNFT revenue 2014-15 to 2017-18

Year	WAC ($2012-13)	UNFT ($2012-13)
2014-15	$25.94m	$7.84m
2015-16	$25.61m	$8.01m
2016-17	$25.29m	$8.19m
2017-18	$24.99m	$8.26m
Total	**$101.83m**	**$32.30m**

Source: (Industry Panel, 2015, p. 7)

The WAC and UNFT revenue in Table 5 , although collected by Icon Water, is passed through to the ACT Government.

The WAC is designed to ensure that the price of water is reflective of the value of water as a scarce natural resource, and to help ensure the sustainable pricing of water in the longer term. The WAC rate can be considered to incorporate allowances for the following factors:

- a component reflecting the costs of catchment maintenance and Government expenditure in relation to maintaining the water supply;
- a component reflecting scarcity value, being the value associated with the consumption of water preventing its alternative use for other purposes; and
- a component reflecting the environmental costs related to the use of water, including the effect on the environment from the flow of water downstream.

The UNFT is applied to the owners of utility network facilities installed on or under land in the ACT, including gas, telecommunication, electricity, water and sewerage network providers. It is a charge on the use of land by utilities operating within the Territory.

From discussions with CMTEDD for this project, we understand that the WAC and UNFT contribute to consolidated revenue. ACT Government policy is to avoid hypothecation of revenue. Therefore, the total quantum of revenue raised by the WAC is not necessarily directly comparable to overall water related expenditure.

4. Current funding and expenditure for ACT stormwater WQ asset operation and maintenance

The purpose of this section is to:

- Outline how O&M funding for stormwater WQ assets is determined in the ACT
- Present draft findings on current levels of stormwater WQ assets O&M expenditure
- Present our estimates of the 'optimal' revenue requirements for stormwater WQ assets O&M in the ACT
- Describe the methodology we followed in arriving at that estimate
- Compare current expenditure with optimal revenue estimate

4.1 O&M funding determination

Figure 6 summarises the determination process for recurrent stormwater WQ assets funding in the ACT.

CMTEDD has two distinct approaches. One is for the determination of funding for 'Estate' assets and the other is for core capital works.

For Estate assets (i.e. greenfield developments) CMTEDD and TAMS (Strategic Finance) have agreed a funding determination framework that is centred on a 'growth' model. In essence, the model calculates an appropriate O&M funding allocation for all estate assets, including but not limited to street lighting, rubbish bins, park benches, and stormwater WQ assets.

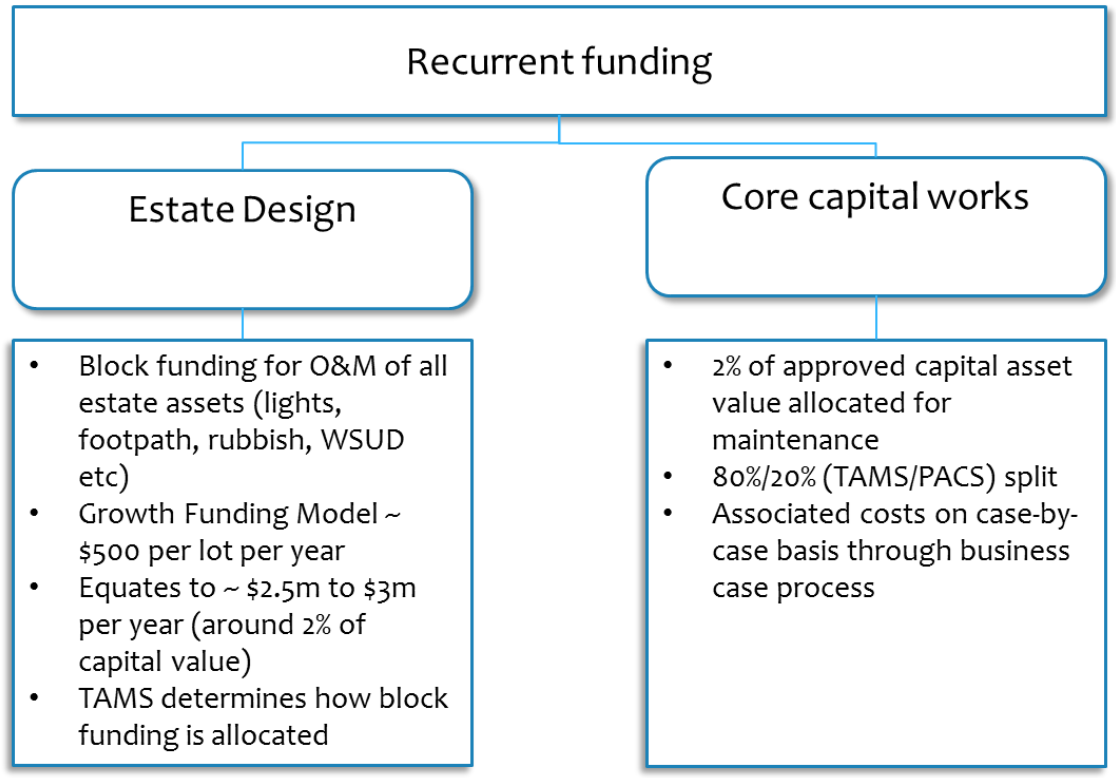
Funding is allocated on a 'per dwelling' basis. In this way, the funding base is designed to grow in line with new residential development. In the past financial year, we understand funding was approximately $500 per lot.

It is the responsibility of TAMS Strategic Finance to allocate the aggregate O&M funding pool across the range of assets that TAMS is required to operate and maintain. TAMS is not required to report back to CMTEDD on the allocation of the block funding for O&M.

The O&M funding determination process for core capital works assets is relatively more straight forward. Approximately 2% of the approved capital asset value is allocated to fund O&M functions for those assets. The funding is only available in year three after project completion. This approach is appropriate for civil assets, which typically do not require O&M funding in the initial years of operation. However, landscape assets require substantial O&M activities to ensure plants are well established. Therefore, the lack of O&M funding in the initial years creates a deficit for TAMS to fund.

80% of the aggregate O&M funding allocation is assigned to Roads ACT, with the remaining 20% assigned to PATS. Although this arrangement has only been in place for a year. Any associated costs, such as administration expenses, are considered on a case-by-case basis.

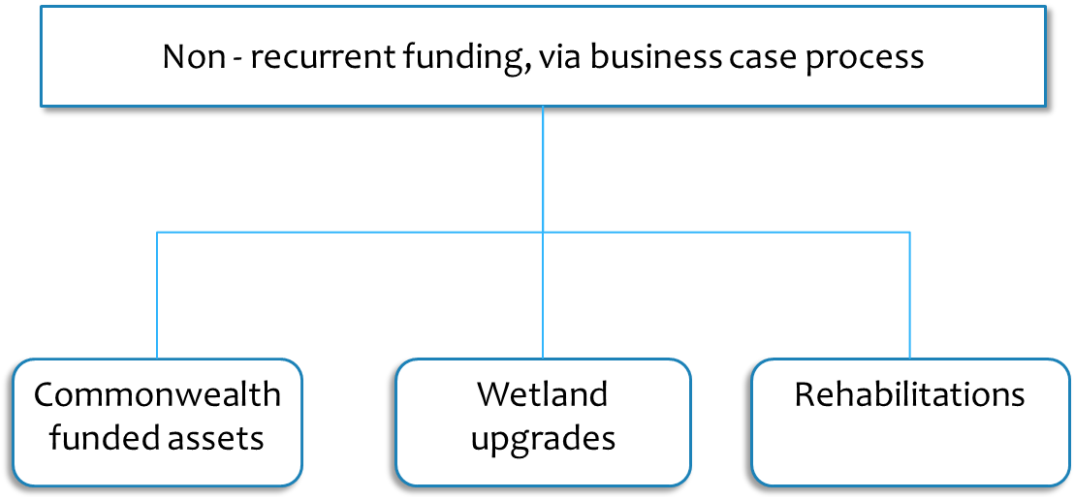
Figure 6: Recurrent O&M funding determination framework



Renewal/refurbishment activities are considered to be capital works in the ACT. As a result, funding for renewal/refurbishment is secured through case-by-case business cases, submitted to the CMTEDD in the annual budget cycle.

O&M that relates to Commonwealth funded assets is to be secured through a similar business case process.

Figure 7: Non-recurrent funding determination framework



4.2 O&M expenditure

TAMS is not in a position to provide detailed records of expenditure on stormwater WQ asset operation and maintenance activities in the ACT. We outline the reasons for this in greater detail in Section 5.5 of this report. Notwithstanding this limitation, we were provided with a number of educated estimates of stormwater WQ asset O&M over the past two years. The average expenditure is estimated to be approximately $2.5m per year, and is primarily targeted at cleaning of GPTs and the O&M of streetsweeping equipment. This estimate does not include funding of O&M functions undertaken by PATS. Unfortunately they are not in a position to estimate O&M expenditure.

This means that Marsden Jacob is not in a position to definitively calculate current expenditure on stormwater WQ asset O&M. A key recommendation of this report is that resources are allocated to the development of a system that captures timely and accurate O&M expenditure for stormwater WQ assets.

4.3 Optimal WSUD revenue requirement

In this section we outline our estimate of the optimal revenue requirement to operate and maintain stormwater WQ assets in the ACT such that they provide expected stormwater treatment benefits.

Estimating optimal revenue requirements is the first analytical step in designing alternative management models and funding mechanisms. The revenue requirement analysis provides the ACT Government with an understanding of the size and timing of necessary adjustments to existing funding arrangements to place stormwater WQ asset O&M on a sustainable footing (Zieburtz, 2007).

In order for stormwater WQ assets to provide anticipated water quality benefits, TAMS must receive sufficient total revenue to ensure proper operation and maintenance (O&M).

4.3.1 Optimal O&M funding requirements for existing assets

To arrive at the O&M funding required to operate and maintain existing stormwater WQ assets, we adopted estimates provided either by Alluvium or the ACT Government.

Alluvium (Alluvium, 2014) prepared a range of lifecycle O&M cost estimate formulas for a number of stormwater WQ assets in the ACT to inform the BPP analysis. Where possible Alluvium made use of those ACT specific formulas to estimate the optimal O&M funding required for existing assets.

Alluvium had not prepared ACT specific formulas for some asset classes. For some of those asset types the ACT Government has provided O&M funding metrics. For others, Alluvium provided us with advice based on industry best practice.

In all cases, O&M funding calculations are a function of asset size. For example, optimal O&M funding for raingardens is determined by multiplying the area of the raingarden (in sqm) by a unit rate. Precise methodologies are provided in Table 6 below.

Table 6: O&M funding estimate approach

Asset type	O&M funding estimate approach
Lakes	Area of lake x Alluvium O&M funding formula
Ponds & wetlands	Area of pond or wetland x Alluvium funding formula
Swales	Area of swale x $2.3 per sqm (provided by ACT Government)
Raingardens and bioretention systems	Area of raingarden x Alluvium O&M funding formula
GPTs	GPT type x Alluvium per unit O&M cost estimate
Vegetated waterways	Area of vegetated waterway x $2.3 per sqm (provided by ACT Government)
Cutoff drains	Length of channel (m) x $2.3 per m (provided by Alluvium)
Retarding basins	Area of retarding basin x $5 per sqm (best estimate from Alluvium based on industry experience)
Pervious paving	Area of pervious paving x $3 per sqm (best estimate from Alluvium based on industry experience)

The estimated optimal O&M funding requirement for existing assets in 2015 is approximately $6.8m.

4.3.2 Forecast optimal O&M funding requirements for existing assets

It is important to note that the forecasts presented in this section are based on best-available information and have been produced entirely for the purposes of this project.

Ideally, we would have been in a position to take forecasts of the number and size of various stormwater WQ asset types that would be required to service urban growth in the ACT, and use that information to forecast future O&M funding needs by applying the Alluvium O&M formulas. However, to do that would have required precise details of stormwater WQ assets for all developments in the ACT over the next 20 years, and in particular the size of those assets. Detailed information of that sort is typically not available until masterplans have been prepared.

To overcome this limitation we made use of the expected capital value of stormwater WQ assets in order to derived estimates of optimal O&M expenditure, applying a three step process.

First, we calculated the ratio of optimal O&M expenditure to capital value for the existing stock of stormwater WQ assets. The results are presented in Table 7.

Table 7: Ratio of optimal O&M expenditure to capital value of existing stormwater WQ assets in the ACT

Asset type	Ratio
Lakes	0.31%
Ponds & wetlands	0.40%
Raingardens & swales	2.17%
GPTs	4.50%
Vegetated waterways	6.59%
Cutoff drains	0.52%
Retarding basins	16.73%
Pervious paving	7.50%

To be clear, the optimal O&M estimates are based on formulas provided by Alluvium for the Basin Priority Project, which are a function of asset size and type, not the capital value of the asset.

Second, we developed forecasts of the capital value of stormwater WQ assets that would be required to service expected growth in the ACT housing stock. In order to grow the expected capital value of stormwater WQ assets in the ACT over the next 20 years, we made use of evidence from projects in Melbourne that suggests the average capex required for stormwater

water quality assets in greenfield areas is $3,750 per lot, and for infill areas $1,000 per lot. The rate of growth in lots (both greenfield and infill) was based on ACT Government planning projections supplied by the Land Development Authority (LDA).

Third, we applied the ratio of O&M expenditure to capital value from Table 7 to our forecasts of the future capital value of the stormwater WQ asset stock to derive estimates of future optimal O&M expenditure[2].

The forecasts are presented in the following section (4.4).

Common assumptions underpinning the optimal O&M revenue requirement analysis are shown in Table 8.

- The evaluation period for our modelling is 20 years, starting in 2016.
- Revenue requirements do not provide for capital rehabilitation.
- Capital costs exclude the cost of land.
- At the estate scale we assume most stormwater WQ assets are transferred to TAMS – consisting of estate scale sediment control/water quality management with ponds and wetlands, swales, rain gardens and stormwater harvesting; permeable pavements; retrofitted wetlands. We believe this is consistent with ACT experience.
- We assume assets are handed over in acceptable condition. Alluvium (2013) identified that establishment is not well-recognised as a key stage in the life cycle of a vegetated stormwater treatment system and appears generally to be undertaken poorly in the ACT. Developers and contractors are under pressure to hand assets over as quickly as possible, and the government is poorly equipped to recognise establishment issues. Therefore assets are being handed over in a poor state of establishment and rarely recover from this initial setback. Therefore, the O&M estimates presented in 4.4 are potentially understated.
- Basin Priority Project assets are assumed to be constructed in line with the funding agreement between the Commonwealth and ACT Government. The mix of stormwater WQ assets constructed through BPP funding is assumed to match the existing stormwater WQ asset mix. As a result, the capital base may be overstated, and therefore the optimal O&M funding requirement, because the BPP assets may allow removal of some existing assets, such as GPTs.

Table 8: Key assumptions

Category	Assumptions
Discount Rate	7%
Analysis Period	20 years
Analysis Start Year	2016
The ACT Basin Priority Project, capital value including co-contribution	
2016-17	$29,700,000 ($2,700,000)
2017-18	$33,000,000 ($3,000,000)
2018-19	$20,000,000 ($2,000,000)

[2] The analysis is broken into greenfield (estate) and non-estate land development because Treasury has different O&M funding approaches for these classes (see section 4.2 for details).

4.4 Forecasts

Figure 8 illustrates our current 'best estimate' of the necessary revenue requirement to fund optimal O&M activities for stormwater WQ assets in the ACT. This estimate was arrived at following a workshop held with various ACT Government staff on 10 August, and subsequent incorporation of additional data.

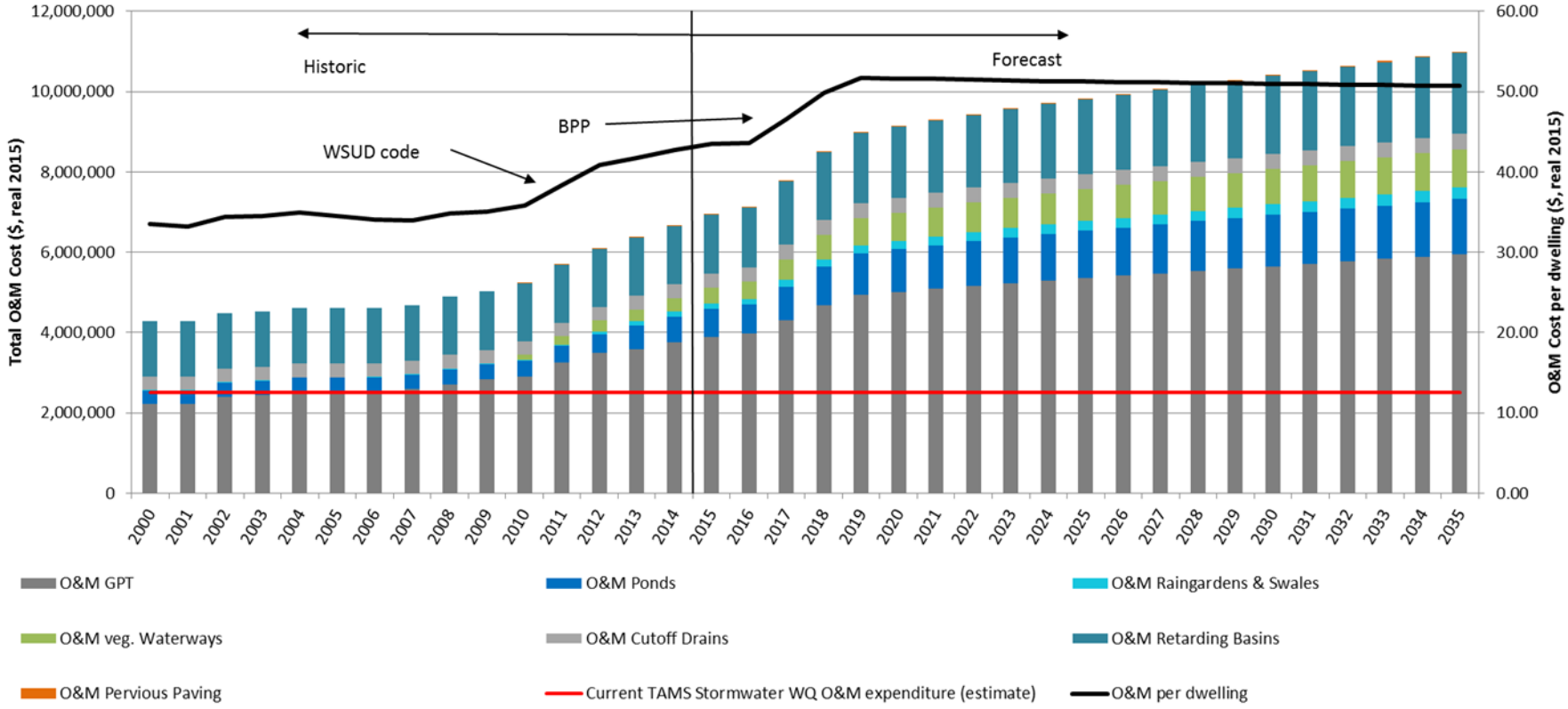
The left hand axis of Figure 8 measures total cumulative funding requirement. The right hand axis measures the funding requirement per lot.

The first uplift in O&M cost relates to an acceleration in the construction of stormwater quality treatment assets in response to the implementation of the WSUD code in the ACT.

The second uplift relates to the expected construction of BPP assets.

The O&M cost per dwelling declines slightly beyond 2020 because O&M associated with stormwater WQ assets to service new dwellings is relatively cheaper. This is due to an increase in the number of infill developments as a share of all new dwellings. This has the effect of bringing down the average cost per dwelling.

Figure 8: Stormwater WQ assets O&M revenue requirement



The estimated revenue requirement for 2014 was approximately $6.7m. This equates to $43 per dwelling.

TAMS inform us that approximately $2.5m was spent on O&M of stormwater WQ assets in 2014.

This suggests that the funding shortfall for 2014 could have been up to $4.2m. We must urge caution in relying on this estimate because TAMS is not in a position to provide a comprehensive record of actual expenditure on stormwater WQ asset O&M activities. As a result, actual expenditure may have been in excess of $2.5m in 2014. However, based on our consultations for this project and feedback on our Preliminary Draft Report, additional expenditure is likely to have been marginal.

We extend a final note of caution in interpreting the red line. If the current funding allocation model were to continue beyond 2015, real funding would increase in line with the growth in greenfield and non-greenfield assets. Therefore, the red line would not remain at a fixed level. However, we are not in a position to estimate the magnitude by which funding would increase because the approach to funding determination is not sufficiently transparent and relies to some extent on bureaucratic judgement.

5. Assessment of current management and funding arrangements

The purpose of the chapter is to outline an assessment of the current management and funding arrangements for stormwater water quality (WQ) assets in the ACT. The chapter is structured as follows:

Section 5.1 provides an overview of the assessment criteria against which we have assessed the existing arrangements. Sections 5.2 to 5.9 provide our detailed analysis against the assessment criteria. In section 5.10 we present a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis in light of our best practice assessment. The chapter end in section 5.10 with an assessment of how well suited the existing arrangements are to O&M of the Basin Priority Project assets.

5.1 Assessment framework

The assessment framework is split into two main areas: management criteria and funding criteria. Table 9 presents the best practice principles under each of the areas, along with the key criteria tests.

Table 9: Management and funding arrangements best practice principles

Principle	Key principle	Key criteria tests
	Management criteria	
Strategy and alignment	There should be appropriate and clear documentation containing the objectives for water quality asset O&M activities undertaken by or for the ACT Government. The management structure should support the objectives for water quality O&M in the ACT.	• Objectives for WQ O&M activities clearly documented • WQ objectives clearly understood and enabled by staff • Alignment and consistency of objectives, outputs and KPIs
Structure and responsibilities	The management structure should support the collective institution's authority to deliver on WQ O&M through providing clarity of roles and responsibilities. There should be clear lines of accountability for performance. The rules, guidelines and regulatory requirements necessary to enable decision making should be in place.	• Clarity of roles and responsibilities • Authority, decision making and accountability
Transparency	The management structure should promote procedural and operational transparency. There should be clear, consistent reporting on activities and outcomes. Reporting should be accessible to stakeholders and easily understood.	• Reporting requirements • Reporting frequency • Accessibility to key stakeholders
	Funding mechanism criteria	
Efficient cost recovery	Funding mechanism(s) should recover efficient, full direct costs of operating and maintaining WQ assets, providing revenue adequacy and stability.	• All efficient costs identified • Charges avoid monopoly rents • Ensure operational viability • Cross-subsidies are transparent
Cost allocation and sharing	Funding mechanisms should apply user pays principles as a basis for cost allocation and sharing. In other words, the share of WSUD costs recovered through direct contributions should be proportional to the beneficiary, in principle.	• User pays approach used when allocating costs • Cost share based on cost drivers.

Administrative efficiency	Funding mechanisms should provide incentives	• Simple and low cost to administer • Incentivise ACT Government O&M operational efficiency and effectiveness • Avoid perverse outcomes
Transparency and accountability	The calculation basis for charges underpinning a WSUD funding mechanism should be clear.	• Transparent, easy to calculate, understandable to users and published • Reviewed on a regular basis

5.2 Assessment of management and institutional arrangements

We have identified a range of areas where there is opportunities for improvement in the current management and institutional model for stormwater WQ asset O&M in the ACT. As foreshadowed above, our assessment has been undertaken with reference to the three key principles described in Table 9. Additionally, in section 5.10 we have prepared a SWOT assessment which highlights the current issues and opportunities for improvements in a way that complements our analysis in this section.

5.3 Strategy and alignment

5.3.1 Appropriate and clear documentation of stormwater WQ asset O&M objectives

This criterion assesses whether there is appropriate and clear documentation containing objectives for Stormwater WQ activities undertaken by and/or for the ACT Government.

Our review has concluded that there is clear documentation in the *Waterways: WSUD General Code*, in the form of pollutant reduction targets, regarding the expected outcomes from the operation of stormwater WQ assets. However, intermediate objectives to guide operation and maintenance activities to deliver on those pollutant reduction targets are not clearly documented.

For example, the WSUD General Code does not provide clear direction on how stormwater WQ assets should be operated in the ACT in order to provide the expected stormwater WQ outcomes. Similarly, for each individual asset type, it is not clear what contribution that asset should make to meeting whole of catchment or precinct WQ objectives.

The result of this lack of direction from intermediate operational objectives is operational and maintenance practices that appear to be largely driven by responding to incidents, such as a GPT reaching capacity and phone calls made by members of the public, rather than O&M scheduled to deliver optimal performance from the asset.

During our consultations we were told that the reactionary nature of O&M scheduling was a function of inadequate funding. However, even if adequate funding were provided, the lack of operational and maintenance objectives would likely result in the continuation of relatively inefficient O&M practices in the ACT because there would be no overarching framework to guide allocation of additional funds. An overarching framework would also require extensive engagement and education with officers who are responsible for O&M.

5.3.2 Stormwater WQ objectives clearly understood by staff

This criterion assesses whether the stormwater WQ asset O&M objectives are clearly understood by relevant staff. This should be evidenced by the activities and actions of staff.

Our consultations with staff across various ACT Government Directorates suggest that there is not a consistent understanding of the objectives of operating and maintaining stormwater WQ assets and the broader objectives for stormwater water quality policy in the ACT.

As an example relating to the objectives for operating and maintaining stormwater WQ assets, we were told of maintenance crews mowing the riparian zone of vegetated waterways under the belief that this was the most efficient means of maintaining the asset. While that may be a rational response where cost minimisation is the key objective, clearly such a practice would significantly reduce the performance of this particular stormwater WQ asset.

It was also clear that some O&M staff did not have an appreciation of the role raingardens and bio retention systems could potentially play in delivering on the stormwater WQ targets for a given catchment. Rather, these assets were seen as expensive and/or complex to maintain.

This further points to the importance of having clear intermediate objectives for the operation and maintenance of stormwater WQ assets, that are publicly available and form part of the accepted institutional framework. In the absence of such a framework, other generic objectives, such as cost minimisation, take precedence.

This principle applies to having intermediate objectives and understanding of WQ objectives for the lifecycle of WSUD. Concept and designing of assets should be considered with the catchment or precinct in mind, rather than as a compliance approach. Having intermediate understanding on the staging of assets to meet WQ objective is also important. For example, protection of raingardens and bioretention systems during the construction phase to allow for plant establishment and prevents disturbance or scour of the filter media surface will have a longer term WQ benefit as oppose to poorly functioning raingardens in the Territory because they do not follow this approach.

Our finding with respect to broader objectives for stormwater WQ policy echoes the findings of the ACT WSUD Review Report (2014), and in particular Issues 4 (EDP Guidelines), 10 (Selection of the most appropriate stormwater treatment measures), 11 (Lack of in-house stormwater modelling skills and capacity) and 12 (water quality monitoring data to provide feedback loop for future designs, maintenance planning and operation of WSUD measures). We understand that EPD and TAMS continue to work together on appropriate policy responses to the issues raised in that review.

5.3.3 Alignment and consistency of objectives, outputs and KPIs

While there is a reasonably common understanding of the high level objectives of the *Waterways: WSUD General Code*, at least within policy areas, the lack of stated objectives for the operation and maintenance of stormwater WQ assets in the ACT means that it is difficult to assess the consistency of objectives supporting these activities.

In terms of key performance indicators, it was not clear to us as to whether they exist for O&M activities. As we note in section 5.9 below, there is a lack of KPIs to assess the allocation of O&M funding across TAMS. This suggests that KPIs also do not exist to assess the effectiveness of stormwater WQ asset O&M activities.

Table 10 below provides our assessment of the current arrangements against each of the key criteria and an overall assessment.

Table 10: Strategy and alignment

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
Appropriate and clear documentation of stormwater WQ asset O&M objectives		●	
Stormwater WQ objectives clearly understood by staff		●	
Alignment and consistency of objectives, outputs and KPIs		●	
Overall assessment against criteria		●	

5.4 Structure and responsibilities

There are a range of aspects of structure and responsibilities that we have examined. These indicate that there are some critical issues that need to be addressed to ensure that there is clarity of roles and responsibilities and clear authority, decision making and accountability for stormwater WQ O&M in the ACT.

This is discussed in more detail below.

5.4.1 Clarity of roles and responsibilities

There is reasonable clarity of roles across the ACT Government in terms of the design and approval of stormwater WQ assets in the ACT. This is particularly the case for developments that require preparation of an EDP. Furthermore, there appears to be a clear understanding of staff in the TAMS and EPD directorates regarding roles and responsibilities. This is illustrated by the stormwater WQ asset lifecycle process charts presented in section 3.3.

Roles and responsibilities are less clearly outlined in the public domain for O&M activities. However, we were provided with a 2012 Memorandum of Understanding (MOU) that exists between Roads ACT and PATS, the purpose of which is to allocate O&M roles and responsibilities between the two institutions. However, we understand that this MoU is not publicly available and has been the subject of recent review.

Although it is a positive step that the MoU is in place, relative to the clear and publicly available information on the development approval process in the ACT (of which WSUD is a key part), similar information is not available regarding roles and responsibilities for stormwater WQ O&M activities.

5.4.2 Authority, decision making and accountability

Some of the issues related to authority, decision making and accountability that we have identified are:

Asset maintenance staff feel they do not have appropriate decision making powers or authority at the asset design stage

During consultations undertaken for this project we met with a range of staff responsible for the O&M of both 'hard' and 'soft' stormwater WQ assets. In those discussions a clear theme was a perceived lack of decision making powers invested in those staff with respect to asset design.

For instance, although ACTPLA refers aspects of EDPs to TAMS staff in the DA assessment process, O&M staff argued that the detail regarding assets provided in EDPs was insufficient for them to make informed decisions regarding the likely lifecycle performance of the proposed assets, or the likely lifecycle costs of those assets.

By the time detailed design documents were received, O&M staff felt that it was too late in the design process to have meaningful influence over the choice of assets.

It was argued that this misalignment of decision making powers on asset design had led to the selection of assets that were of relatively low capital cost, but in some instances, had poor lifecycle performance, when measured by the likelihood of delivering on the WSUD objectives espoused in the *Waterways: WSUD General Code*.

TAMS O&M staff suggested that for assets that did not require a DA (such as Capital Works) there was no mechanism through which they could provide input on design. This meant that the first time O&M staff saw the asset in any detail was at the Asset Acceptance stage.

Decision making power is limited by the approval process for DA's in the ACT

We were told during consultations that the structure of the Municipal Infrastructure Standards was having an overbearing influence on the range of stormwater WQ assets that could be used in the ACT. In particular, bio retention assets are generally not used in the ACT because there is not a design standard for this asset in the Municipal Infrastructure Standards. The result of this is that even if bio retention assets are determined to be 'best fit' for the stormwater WQ problem, it is unlikely that this type of asset would be accepted by TAMS, due to the lack of a design standard.

It follows that in some instances the best performing asset for a given location may not be constructed simply because the regulatory framework is out of date.

In the absence of a design standard, the use of industry best practice for bio retention systems and raingardens have also not worked in the Territory. The Strategic Review and Analysis of ACT Urban Water Quality Management Infrastructure (Alluvium, 2014) highlighted a number of raingardens that had been previously accepted by the ACT Government were not performing due to poor construction practices and lack of O&M. As a result, the ACT Government has opted to only accept infrastructure that complies with the design standards.

We understand that TAMS is in the process of revising the Municipal Infrastructure Standards, and that this project is well progressed. Therefore, it seems likely that this issue could be addressed through that project. We encourage the ACT to complete that task with haste, because selection of BPP assets is only a matter of months away. If the MIS update project is delayed unnecessarily, this could result in selection of some sub-optimal stormwater WQ assets under the BPP program.

We understand that this work being progressed by TAMS has a strong linkage to EPD's Territory Plan draft variation for WSUD provisions that will introduce the ACT WSUD Practice Guideline. The ACT WSUD Practice Guideline will provide an approvals pathway for developers and the government in understanding innovative approaches that considers the ACT conditions (which includes site suitability and O&M).

For landscape assets, the 13 week time period in which to reject assets for poor design is too short

When 'hard' and 'soft' stormwater WQ assets are constructed in the ACT, acceptance of those assets by TAMS is subject to a 'proving' period, during which the actual performance of the asset is assessed. For 'hard' assets that period is 12 months. However, for 'soft' assets, such as WSUD landscaping, the period of time is 13 weeks. The logic that underpins the differing time periods is unclear from available documentation.

The costs of failed 'soft' assets can be significant. For example, we have been supplied with the defect restoration costs for two wetlands where vegetation was poorly established. The total restoration costs for the two ponds was $57,000, which is still subject to a budget bid to rectify the defects.

PATS O&M staff argue that a longer asset proving period would be appropriate because the consequences of poorly designed or constructed landscape assets are not often apparent within 13 weeks of initial construction. Furthermore, staging of when to plant around wetlands or ponds should be avoided until at least 80% of the estate has been developed to avoid rectification of assets due to sediment runoff.

The authority to allocate O&M funding across TAMS is too remote from those accountable for O&M

As was outlined in section 4.2, an annual O&M budget for all TAMS functions is allocated by CMTEDD, at the direction of the ACT Cabinet, to TAMS. Allocation of that funding across functions is undertaken by TAMS Strategic Finance. During consultations, it was claimed that the allocation of funds within TAMS did not necessarily correspond to the O&M funding bid.

It was suggested that this is a result of a number of factors, which include changes in priorities between the budget bid and the funding being received, and insufficient consultation by TAMS Strategic Finance with TAMS O&M staff.

It follows that under this decision making framework for the allocation of TAMS O&M funding, it is likely that allocation of TAMS O&M funding is likely to be relatively inefficient. In some years the full costs of stormwater WQ asset O&M are unlikely to be matched with funding, while in others funding could be overallocated. Either outcome would lead to inefficient allocation of funds.

TAMS Strategic Finance is not systematically accountable to CMTEDD for the allocation of O&M funding across TAMS

We also understand from our discussions that TAMS Strategic Finance is not required to report to CMTEDD on how annual O&M funding has been allocated across the TAMS Directorate. The funding framework is likely to benefit from inclusion of such an accountability mechanism. This would provide CMTEDD with detailed data on actual rather than modelled O&M expenditure, and the collection of actual O&M data would assist TAMS Strategic Finance in managing and forecasting O&M expenditure.

Table 11: Structure and responsibilities performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
Clarity of roles and responsibilities			

Authority, decision making and accountability	●
Overall assessment against criteria	●

5.5 Transparency

Institutional arrangements should promote transparency so that institutions are accountable for their roles and responsibilities, and to allow stakeholders that are impacted by decisions to understand the framework under which those decisions were made.

5.5.1 Reporting requirements

There are insufficient reporting requirements with respect to the expenditure of O&M funds within TAMS. There is no formal requirement to report back to CMTEDD on how O&M funds were allocated and/or spent, although TAMS Strategic Finance does provide data to CMTEDD on an ad-hoc basis when requested to do so.

The lack of a formal reporting requirement is a weakness in the current institutional arrangements for a number of reasons. First, it doesn't allow for analysis of the efficiency of expenditure. Second, based on our consultations with TAMS staff, the lack of transparency (from the point of view of O&M staff) on how funding allocation are made is fuelling discontent within TAMS O&M staff regarding a perceived shortfall of O&M funding. Third, it is not possible to identify over or under allocation of funding over multiple time frames. Fourth, without a reporting framework, there is a lack of external pressure to be accountable for funding allocation decisions and the consequences of those decisions.

5.5.2 Reporting frequency and accessibility to key stakeholders

It follows that since there is no formal reporting framework for O&M allocation and/or expenditure, there is no consistent frequency for reporting. This also means that key stakeholders both within and external to TAMS, are unable to assess past O&M expenditure decisions.

Table 12: Transparency performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
Reporting requirements		●	
Reporting frequency and accessibility to key stakeholders		●	
Overall assessment against criteria		●	

5.6 Cost recovery

5.6.1 All efficient costs identified

For best practice funding mechanisms, the efficient cost is guided by the cost of maintaining, operating and renewing stormwater WQ assets over the planning period, plus administrative, overhead and financing costs.

As outlined in section 4.1, not all efficient costs are currently identified in the stormwater WQ asset O&M funding determination process. The current arrangements are most comprehensive in terms of assets constructed in growth areas. However, even in that case, the 'growth model' does not include the cost of operating stormwater WQ assets.

The costs of renewing stormwater WQ assets is not included in the O&M cost estimating framework. Rather, renewal costs are identified in an ad-hoc manner. Furthermore, renewal costs are treated as capital expenditure and therefore subject to individual budget bids for funding.

The nature of the existing funding determination models also means that it is unlikely that O&M costs are efficient. There does not appear to be an external review of the unit cost estimates that underpin the growth model funding calculations. Rather, the unit costs appear to be a function of past experience and negotiation between CMTEDD and TAMS.

A better approach would be to adopt a 'building-block[3]' methodology to O&M and renewal expenditure, subject to a degree of benchmarking, to provide some assurance that the costs identified are efficient and prudent.

A key weakness of the existing arrangements is that 'soft' assets are not capitalised, which means that they are not included in the calculations of capital works O&M funding outlined in section 4.1. It follows that the O&M cost associated with those assets is not included in the cost base at all.

For these reasons the existing arrangements do not perform well against this key criteria.

5.6.2 Charges avoid monopoly rents

Because a building block method is not employed, and the unit costs in the growth model do not appear to be subject to benchmarking, it is not possible to conclude that the existing basis for recovering stormwater WQ asset O&M avoids monopoly rents. By the same logic, it could be possible that for some activities there is an under recovery of costs.

We understand that the contract rates with the O&M service provider that maintains GPTs were determined through a formal procurement process overseen by the relevant authorities in the ACT Government. Therefore, it seems likely that those costs at least avoid monopoly rents.

5.6.3 Ensure operational viability

The funding mechanism should ensure operational viability of agencies responsible for operating and maintaining WSUD assets. This includes adequate funding for WSUD policy development, planning and, where deemed necessary, regulation.

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[3] The building block approach is the basis for price determinations of most regulated entities in Australia. It establishes individual cost benchmarks for each regulated entity through determining the different elements (or 'building blocks') that make up each business's revenue requirement. There are four main building blocks:

- Determining the value of the asset base
- Determining a reasonable rate of return on that asset value
- Allowing for the return of capital, which is the means of recovering the capital that has been invested in the asset base
- Allowing for operation and maintenance expenditure

During the consultations undertaken for this project it was claimed that the growth in the stormwater WQ asset base was not being matched by a growth in the size of the funds allocated to TAMS for O&M of those assets. While we have not been provided with definitive proof regarding this claim, the process for determining O&M funding would suggest that this is the case.

5.6.4 Cross-subsidies are transparent

To the extent that cross-subsidies exist between Roads ACT and PATS, those cross-subsidies will be more apparent under the MoU recently agreed between the two organisations. However, to the extent that TAMS O&M funds that should be allocated to stormwater WQ asset O&M are being directed to other TAMS O&M functions, this cross-subsidy is not transparent. The lack of a transparent reporting framework on how O&M funds are allocated across TAMS functions makes it difficult to draw conclusions with respect to this criteria.

Table 13: Cost recovery performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
All efficient costs identified			
Charges avoid monopoly rents			
Ensure operational viability			
Cross-subsidies are transparent			
Overall assessment against criteria			

5.7 Cost allocation and sharing

5.7.1 User pays approach

The funding mechanism should employ a user pays approach — typically including direct user pay contributions – when allocating costs.

Stormwater WQ asset O&M is currently funded from consolidated revenue. That is, there are no direct user pays charging mechanisms. This is a key weakness in the current arrangements because the lack of a direct stormwater related charge means that use of the price mechanism or other market-based instruments is not possible within the current framework.

Notwithstanding, to the extent that all in the ACT benefit from improved stormwater quality, the use of consolidated revenue could be viewed as a user pays mechanism, at the broadest conceptual level.

5.7.2 Cost share based on cost drivers

We understand that all O&M funding allocated to TAMS each year is, in turn, allocated entirely to TAMS O&M functions. This is in accordance with a 2008 Cabinet policy directive that O&M funding should only be allocated by Directorates to O&M functions. However, a view was expressed in consultations that the allocation of O&M funding across TAMS is not guided by a

formal framework. In particular, it has been suggested that O&M funding does not follow the allocations implied by the growth model.

At a minimum it would seem operationally efficient to allocate O&M funds according to the framework employed to develop the O&M funding bid each year.

Table 14: Cost allocation and sharing performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
User pays approach	●		
Cost share based on cost drivers	●		
Overall assessment against criteria	●		

5.8 Administrative efficiency

The funding mechanism should be efficient, demonstrated by the ease with which the mechanism is understood, low transaction costs incurred in administering the mechanism, built in parameters that incentive ongoing operational efficiency and effectiveness and features that provide resilience of the mechanism to charging circumstances. We review each of these criteria below.

5.8.1 Simple and low cost to administer

The existing funding mechanism is relatively simple in that there is one source of funding: consolidated revenue. However, our consultations would suggest that the means by which O&M funding for stormwater WQ assets is determined is not well understood by those responsible for asset O&M. This could be due to the complexity of the funding models or a lack of visibility for O&M staff. In our view it is more likely to be the latter, given that the funding determination framework outlined in section 4.1 is relatively straightforward.

Because the source of funding is consolidated revenue, the cost of raising the funding is likely to be relatively high under existing arrangements. State Government taxes are among the least efficient means of raising public revenue. A relatively more efficient revenue raising mechanism would be impose a user pays charging regime.

5.8.2 Incentivise ACT Government O&M operational efficiency and effectiveness

A best practice funding mechanism should incorporate incentives for the ACT Government to continually improve the efficiency and effectiveness with which funds are raised. Without such incentives, it is likely that the administrative costs of raising funds will rise through time.

In our review of information and discussions during consultations, we were not made aware of a specific efficiency mechanism that applied to the O&M funding allocation approach. However, in a broader sense, the imposition of 'efficiency dividends' across operational budgets for most Directorates in the ACT Government could be thought of as a global efficiency and effectiveness mechanism. Reducing operational funding (or at least restricting growth) by a certain percentage each year forces Directorates to improve operational efficiency and effectiveness.

We are also aware that the ACT Government is in the process of implementing a range of tax reforms, with the aim of progressively removing inefficient and distortive taxes, to be replaced with more efficient, broader based taxes.

In this context, it would seem appropriate for the ACT Government to examine the case for a stormwater WQ charge to fund the efficient and prudent costs of providing stormwater WQ functions. If such a charge were to be determined through a building block approach, incorporating benchmarking and/or peer review, this would provide an in-built efficiency mechanism, similar to that faced by Icon Water and other regulated utilities. A charge directly related to stormwater would also provide transparency to rate payers, placing additional pressure on the O&M operators to improve efficiency.

5.8.3 Avoid perverse outcomes

The funding mechanism should avoid perverse outcomes, such as creating an incentive to run-down or gold-plate assets, or to give un-justified preference to the O&M of a particular asset class or location.

In our review of the existing funding mechanism, the structure of the growth model appears to indirectly favour maintenance activities over operational activities. This is because the growth model was not designed to be applied to assets that have an operational component. For example, cleaning of a GPT is factored at 1.5 cleans per annum, but after a rainfall event of 25mm, inspections will be carried out to determine if further cleans are required. This operational component is not factored into the growth model.

To this extent, the growth model results in operation of stormwater WQ assets not being funded. From our discussions with stakeholders this appears to be an unintended consequence of using an accepted approach to funding broader TAMS O&M functions, that typically do not have an operational requirement.

Table 15: Administrative efficiency performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
Simple and low cost to administer			
Incentivise ACT Government efficiency and effectiveness			
Avoid perverse outcomes			
Overall assessment against criteria			

5.9 Transparency and accountability

The calculation basis for charges underpinning a funding mechanism should be clear.

5.9.1 Transparent charges

The funding mechanism should be transparent, easy to calculate, understandable to users and published.

The existing basis for determining O&M funding for TAMS assets is the 'growth model', describe in section 4.1. We believe that it is reasonably well understood by those that use the growth model each year to estimate O&M funding requirements, and from our review it appears to be a straightforward model. However, as stated in section 5.8.1, it is clearly not a transparent model that is published and accessible by a broader group in TAMS.

5.9.2 Regular review

The funding mechanism should be reviewed on a regular basis (e.g. every 3 years) so that charges keep pace with WSUD development and affected parties can seek review if they believe that the funding mechanism or the method of calculating WSUD charges is not reasonable.

We are not aware of any formal review process for either the growth model, the unit costs within the growth model or the approach taken to allocate O&M funds across various TAMS functions.

Table 16: Administrative efficiency performance

Key criteria tests	MJA assessment of performance against tests		
	LOW	MEDIUM	HIGH
Transparent charges	●		
Regular review	●		
Overall assessment against criteria	●		

5.10 Suitability of existing arrangements for Basin Priority Projects

The BPP is likely to result in a number of new stormwater WQ assets in the ACT. At the time of writing the BPP program was not at a stage where the type of assets or precise location of those assets is known. However, from the selection of the six priority catchments, it seems likely that BPP assets will not be located in growth area estates.

The implication of this is that the growth model funding mechanism will not apply to those assets. Furthermore, because Commonwealth Government funded assets are excluded from ACT Government O&M funding for Capital Works, that existing funding stream will also not apply to the BPP assets.

It seems likely therefore that a separate budget bid will be required for O&M funding related to the BPP assets. This bid could be for a long term funding agreement (perhaps 10 years) to underpin the operation and maintenance of these assets.

This is a potential weakness of the existing arrangements in terms of the BPP assets. Although a general framework exists for making budget bids, that budget bid would be considered on its individual merits, and, if a compelling case cannot be made for an O&M funding stream, relative to other pressing calls on the ACT Government budget at the time, adequate O&M funding may be at risk.

The BPP assets are also likely to be innovative in nature. This means that at least some of the BPP assets are unlikely to be design in accordance with a design standard acknowledged by TAMS, leaving open the potential for TAMS to not accept those assets. Furthermore, given

existing reservations that exist in TAMS regarding the costs of maintaining innovative assets such as raingardens, TAMS may be unwilling to fully maintain these types of assets.

A key criteria for the Commonwealth in approving the business case for the BPP assets will be the ability of the ACT Government to operate and maintain the new assets in a manner that will deliver the stormwater WQ benefits expected of those assets. Under the current arrangements it seems unlikely that the ACT Government will be in a position to make a compelling argument that the institutional capacity exists to maintain the more innovative assets, or that a robust funding mechanism exists to maintain the BPP assets.

5.11 SWOT analysis

Our analysis outlined in this chapter is summarised in the SWOT analysis presented in Figure 9.

Figure 9: SWOT Analysis of existing arrangements

	Helpful to the objective	**Harmful to the objective**
Internal to ACT Gov	**Strengths** • Single layer of gov responsible for stormwater management • ACT Gov has broader revenue raising powers, which could be used to raise additional funding or redirect existing water resource charges, such as the WAC • ACT Gov has greater scope to enter into innovative institutional and funding arrangements relative to local government	**Weaknesses** • Calls on ACT Government budget relatively wider than local government • Stormwater management lacks an explicit water quality objective • O&M is reactionary, as a result of insufficient funding and a lack of clarity regarding the objectives for O&M • Asset manager has little influence over design of asset to be managed • 'Soft' WSUD assets are not capitalised, therefore do not attract funding under the growth model • Existing arrangements not well suited to long term funding of O&M for BPP assets
External to ACT Gov	**Opportunities** • BPP assets could potentially reduce the O&M requirements for existing assets if designed with that objective in mind • Private sector operators could be attracted to the O&M task facing the ACT if a number of institutional and funding changes were made.	**Threats** • Structural decline in ACT Government consolidated revenue will place existing O&M funding model under pressure • Existing stormwater assets are ageing, approaching a period where renewal/de-commissioning is likely. Existing funding mechanism for O&M is not well suited to this type of 'lumpy' expenditure

6. Review of management and funding approaches in Australia and internationally

This section provides an overview of alternate management and funding models for stormwater WQ assets in Australia and internationally.

6.1 Overview of funding and management options in other Australian states

The remainder of section 6.1 outlines existing arrangements in NSW, Victoria, Queensland and South Australia. The remaining states and territories do not have 'stand alone' management and funding models for stormwater WQ assets.

The key points of interest from our review are:

- NSW allowed local government to levy a Stormwater Management Services Charge in 2006, but take up has been patchy and fewer councils have implemented the charge than was expected. The per property rate is capped and councils must comply with a comprehensive reporting framework. Funds raised can only be spent on O&M of new stormwater assets.
- The Waterways and Drainage Charge has been levied in metropolitan Melbourne in various incarnations since 1927. The current rate is $95.48 per property, per year. The charge appears as a separate item on water bills each quarter. The charge is approved by an independent economic regulator every four years, and is tested for efficiency and effectiveness. The charge raises significant revenue for Melbourne Water ($232m in 2013/14).
- The South Australian Government created a Stormwater Management Authority in 2006 and agreed to contribute $4m a year (in real terms) to a Stormwater Management Fund. Ongoing operation and maintenance cannot be funded by the Stormwater Management Authority. Councils that receive funding are subject to a comprehensive quarterly reporting framework.
- Only a handful of councils in regional Queensland have specific stormwater related charges. Brisbane City Council and Gold Coast City Council appear to fund stormwater operation and maintenance from consolidated revenue.

This means that while the ACT Government is not alone in funding stormwater WQ asset O&M from consolidated revenue, there are a number of precedents that the ACT could point to if a move was made toward a specific stormwater charge.

6.1.1 New South Wales

Table 17: Management and funding arrangements for WSUD and stormwater in NSW

State	Policy driver	Institutional change	The Funding Instrument	Outcomes
NSW	– NSW Government recognised the importance of urban stormwater and introduced Waterways Package in the late 1990's – This included the Urban Stormwater Program, which provided $82 million of funding for local programs over a 5-year period – This raised the profile of stormwater management and motivated councils to improve stormwater practices – Significant environmental gains achieved – The program demonstrated the need to establish a sustainable funding source for providing for improved stormwater management.	– The Local Government Act 1993 was amended in October 2005 to allow councils to levy a stormwater management service charge (SMSC) for improved stormwater management. – Changes came into force in April 2006 – The maximum annual charge for stormwater management services is prescribed in the regulations.	– Councils have the option of levying a SMSC for the provision of stormwater management services. – The charge is capped at the lower of: – $25 per residential property (for residential strata lot councils may charge up to 50% of the adopted charge as applied to standard residential properties) – $25 per 350m² (or part thereof) for urban business land; or – the cost of providing the additional stormwater management services. – The annual stormwater charge must be calculated to reflect the reasonable cost of providing the services to the community. – The charge can only be levied on properties where council provides a stormwater management service. – The income from the charge can be spent on both capital projects and recurrent expenditure relating to new or additional stormwater management services	– "The levy cannot contribute to the maintenance of existing stormwater infrastructure and has not removed the stormwater infrastructure backlog" Local Government NSW submission to Senate Inquiry **Monitoring** – The Office of Environment and Heritage (OEH), with assistance from DLG, has undertaken a 'snapshot' desktop review to check on the implementation of the SMSC. The review relied on published council information and DLG data for FY 2006/07 to 2008/09. – No further monitoring / reviews were undertaken. **Findings of review** – Councils levying the charge have increased their stormwater management spending on average by 89%. – In 2008/09, 77 councils (out of 152 LGAs) levied a stormwater management service charge, raising over $39.3 million. – An average metropolitan council charging the SMSC can raise over $1 million per annum for additional stormwater management services. – The increased funding is resulting in more on-the-ground capital works and increased maintenance of council stormwater assets. – Most councils levying the charge are appropriately raising and spending the revenue. **Reporting** – The proposed stormwater management services to be funded by the charge and other sources must be included in a council's draft Management Plan – Reporting on actual stormwater management services provided vs services proposed in the draft management plan must be included in a council's Annual Report.

Sources:
NSW Department of Local Government, 2006, Stormwater Management Service Charge Guidelines;
https://www.olg.nsw.gov.au/content/frequently-asked-questions-about-stormwater-management
Office of Environment and Heritage, 2011, Stormwater management service charge implementation monitoring (covering financial years 2006–07 to 2008–09)

6.1.2 Victoria

Table 18: Management and funding arrangements for WSUD and stormwater in Victoria

State	Policy driver	Institutional change	The Funding Instrument	Outcomes
Melbourne Water	— Originally known as the Drainage Rate, a charge has been levied on property owners within Melbourne Water's operating area since 1927. — The VIC government's Our Water Our Future action plan extended Melbourne Water's waterways and drainage boundary by more than 5000 square kilometres to cover the majority of the Port Phillip and Westernport catchment. — This made Melbourne Water the caretaker of river health and responsible for regional drainage, waterways and floodplain management for the entire region.	— Melbourne Water's waterways and drainage responsibilities are outlined in the Water Act 1989 and its Statement of Obligations — Section 259 of the Water Act 1989 (Part 13) permits Melbourne Water to levy waterways and drainage charges on properties within its "Waterway Management District". All properties deemed rateable under the meaning of the Local Government Act 1989 are liable for the Waterways and Drainage Charge.	— Melbourne Water uses the waterways and drainage funds to manage the health of waterways, streamside vegetation, flood protection, and drainage services across the whole of the Port Phillip Bay Catchment. — The charge is collected by seven water retailers within the region on behalf of Melbourne Water from around 1.8 million property owners across the region — There is a Waterways and Drainage charge for properties within the urban growth boundary ($95.48 for residential) and a Waterways (only) charge for properties outside the urban growth boundary (UGB) ($52.48 for residential)	— The ESC regulates the prices and service standards for the provision of waterways and drainage services. The Waterways Operating Charter supports pricing submissions to the ESC. — MW's revenue from waterways charges amounted to $232 million in 2013/14 and $220 million in 2012/13 (p. 84 annual report)
VIC Councils	— Stormwater infrastructure in regional areas of Victoria and drainage for smaller catchments in metropolitan areas is generally managed by Councils.	— Local council are also able to apply offset rates if they set up the appropriate mechanisms within their planning provision. To date no Victorian council has undertaken this process. The City of Melbourne is considering if this will be an appropriate mechanism to assist funding of stormwater quality improvement works.	— Some councils may be in a position to fund small scale projects through its rate base. However, there is internal competition for funding of these projects. — The majority of large scale stormwater harvesting projects are co-funded by federal and state government grants. — Melbourne City Council notes that "If development is occurring in the flood prone areas we currently do not have a mechanism to levy a fee for the works that are required in order to provide this development with a better level of flood protection. We are going to be exploring various models with as developer contributions or an offset, as part of our Elizabeth Street Catchment Plan actions in the coming years."	No information is available

Sources:
http://www.melbournewater.com.au/aboutus/customersandprices/Pages/Waterways-and-drainage-charge.aspx
http://www.melbournewater.com.au/aboutus/customersandprices/Documents/WP3%20FAQs%20WWDC.pdf
Melbourne Water, 2014, Annual Report

6.1.3 South Australia

Table 19: Management and funding arrangements for WSUD and stormwater in South Australia

State	Policy driver	Institutional change	The Funding Instrument	Outcomes
South Australia	— State Government has provided grant funding to assist Local Government with stormwater management. — A long term commitment of State Government support was entered into as part of the 2006 State-Local Government Stormwater Agreement — This included the establishment of the Stormwater Management Committee, which operated until enabling legislation established the Stormwater Management Authority. — The 2006 agreement was superseded by the 2013 Stormwater Management Agreement.	— The Local Government Act 1999 was amended by the Local Government (Stormwater Management) Amendment Act 2007, — approving the Stormwater Management Agreement, — establishing the Stormwater Management Authority, and — establishing the Stormwater Management Fund — As part of the 2006 Agreement the State Government agreed to contribute $4 million per year, CPI adjusted, for a period of 30 years, to the Fund.	— The Authority may provide funding through the Stormwater Management fund for the following purposes: — floodplain mapping, — preparation of stormwater management plans, — stormwater infrastructure works (including associated technical investigations and land acquisition) and investigations, — investigations, research, pilot programmes, and — community education initiatives — It seems that fund does NOT pay for ongoing maintenance costs. — An applicant may be a local council or group of local councils, a statutory drainage authority or any other person, company or body. — Applications may be submitted at any time. There are no specific funding rounds.	— A total of $32.8 million has been approved towards 96 projects worth $75.4 million from Sept 2006 to June 2014. — About 10% of the funding went towards flood mapping and stormwater management plans. — The remaining 90% of the funds went towards infrastructure works. **Reporting / Audits** — Stormwater Management Authority and the Stormwater Management Fund are audited annually by Auditor-General — Funding recipients must report to the Authority on a quarterly basis

Sources:
Local Government (Stormwater Management) Amendment Act 2007
Stormwater Management Authority, 2014, Annual Report 2013/14
Stormwater Management Authority, 2013, Stormwater Management Fund Guide For Applicants

6.1.4 Queensland

Table 20: Management and funding arrangements for WSUD and stormwater in Queensland

Council	Description
Logan City Council	Logan City Council's Stormwater Quality and Flow Management Guidelines permits stormwater quality offsets where on-site treatment is not feasible. Council accepts stormwater quality offsets in the form of a financial contribution in lieu of on-site treatment for proposed developments. The offset contributions are used to deliver in-fill and regional stormwater quality solutions designed to meet or exceed the stormwater quality treatment yield of the developed site. *Source: Logan City Council, 2013, Stormwater Quality and Flow Management Guidelines*
Mackay Regional Council	Mackay Regional Council imposes a Natural Environment Levy. This provides a sustained funding source for environmental projects, including maintenance of stormwater quality assets. The Natural Environment Levy was introduced by council in 2003. Ratepayers contribute to the levy yearly via their rates. Mackay Regional Council's voluntary mechanism for stormwater quality management provides a funding source for regional stormwater quality improvement projects. The mechanism allows developers to make a payment to Council in lieu of providing stormwater quality management within their development. As the mechanism is voluntary it is not an infrastructure charge. *Source:* *Mackay Regional Council, 2015, Submission to Senate Inquiry into Stormwater Resources in Australia* *http://www.mackay.qld.gov.au/environment/natural_environment/natural_environment_levy* *Mackay Regional Council, 2014, Council Policy Voluntary Mechanism for Stormwater Quality Management*
Redlands City Council	In 2007, Redland City Council in Queensland implemented an infrastructure contribution scheme specifically to fund new and improved stormwater infrastructure. The stormwater infrastructure contribution scheme is based on charging new developments a share of the cost of Council's planned program of trunk stormwater infrastructure upgrades through to year 2021. The total cost of stormwater infrastructure has been apportioned across catchments based on the impervious area for different land uses in each catchment. The fee applies for changes of use and reconfigurations of land parcels.

6.2 Overview of international funding and management options for WSUD assets

Although we have investigated alternative models for stormwater WQ asset management and funding in a range of locations, our focus here is on the United States, because approaches there are of most relevance to the ACT.

The key findings of our review are:

- The United States is the leading developed nation in terms of innovative approaches to management and funding models. Stormwater Utilities are a common institutional model, and property based stormwater charges are applied widely. In the Chesapeake Bay region (a large, sensitive estuary that drains Washington, DC) municipalities have recently entered into a Public Private Partnership to fund and manage construction of new infrastructure, but also fund ongoing operation and maintenance. The U.S. Environmental Protection Agency commits significant resources to leading research and analysis of innovative approaches.
- In parts of Germany (Munich and Berlin) stormwater is directed into the sewer network for treatment and disposal. Properties are charged a Stormwater Drainage Charge. The charge varies according to the area of a property that is impervious.
- In the UK, urban water authorities are responsible for stormwater drainage, and collect funds to finance capital and operational expenditure (around £1bn per year) in one of four ways:
    - Through the standing (UK equivalent of fixed) charge
    - A charged based on the rateable value of a property
    - As part of the volumetric rate
    - A charge based on the site area of a property
- The UK water sector regulator (OFWAT) recommended in 2003 that water authorities switch to the site area approach. So far only four of 32 water authorities use the site area approach.
- According to (Chouli & Deutsch, 2008), in the Netherlands a share of house and land taxes are paid to water board for the purposes of stormwater management. In Denmark, 40% of sewerage revenues are to be directed to funding stormwater management activities.

Table 21: A selection of international management and funding arrangements for stormwater WQ assets

State	Policy driver	Institutional change	The Funding Instrument	Outcomes
USA	- Federal Clean Water Act - National Pollution Discharge Elimination System - State and federal courts ruled that storm water utility fees are necessary to maintain the public storm water system.	Stormwater Charges/Fees administered through Stormwater Utilities Credits are available to properties with on-site detention works	Funds maintenance, capital improvements, and repair and replacement.	Just under 1,500 stormwater utilities in the United States. Service an average population of 73,900 people. Average annual charge of US$57.48 per property.
Germany	Federal Water Act "Wasserhaushaltsgesetz (WHG)" State Water Acts „Landeswassergesetzes" State Local Tax Acts "Kommunalabgabengesetz (KAG)" regulate municipal charges	Municipalities' Stormwater Drainage Charge (Niederschlagswassergebühr). Property owners can apply for exemption if they can demonstrate on-site works	Funds new infrastructure, O&M and replacement	Munich: Euro 1.30 per sqm (~ A$1.85) of impervious area connected to drainage network Berlin: Euro 1.744 per sqm (~ A$2.50) of impervious area
UK	Flood and Water Management Act (2010)	Surface Water Drainage Charge for household and non-household customers. For some water authorities, property owners can reduce the charge paid through on-site works.	Surface Water Drainage Charge, primarily included in fixed and or variable urban water charges.	In total the UK water authorities raise around £1bn per year from Surface Water Drainage Charges.

6.2.1 Stormwater utilities in the United States – an overview and lessons for the ACT

In the United States stormwater management and funding is primarily the responsibility of local government. A growing and now widespread approach to stormwater management has been the formation of stormwater utilities, supported by stormwater levies or charges.

There is no clear definition of a stormwater utility. It can take a number of forms, ranging from a distinct division or department of a local government, through to a legally independent entity, backed by statute. The views of state governments in the US is an important determinant of how formally constituted a stormwater utility is likely to be, because it is often State Government that must pass enabling legislation.

Western Kentucky University has surveyed stormwater utilities in the US each year since 2007. According to its latest survey (Campbell, Dymond, Kea, & Dritschel, 2014), in 2014 there were just under 1,500 stormwater utilities in the United States. Five states had more than 100 stormwater utilities.

The average population served by a stormwater utility was 73,900 however this is skewed by the inclusion of the stormwater utility that services Los Angeles with a population of 3,000,000. The median population serviced was 19,200. This evidence suggests that the ACT, with a population of around 387,000 in December 2014, is not too small to support a stormwater utility.

Stormwater utilities are supported by a wide range of funding mechanisms, but the most common mechanism is an Equivalent Residential Unit (ERU). This is essentially a fixed fee that applies to typical residential lots. In some states ERU rates are varied where a residential property owner has reduced or increased the percentage of the lot that is impervious.

The average stormwater charge per property in 2014 was US$57.48 per year. The median fee was US$48. This equates to A$82 and A$68 at an exchange rate of 1AUD =0.7USD. That places the average stormwater charge in United States in a comparable range with those in metropolitan Melbourne.

In summary, the wide use of stormwater utilities in various forms in the United States provides international precedence for the ACT to move toward a stormwater utility structure. If the ACT were to consider a stormwater charge of some sort, the use of property based charges in the United States, and the level of those charges also provides significant evidence of the feasibility of such an approach to funding stormwater expenditure.

7. Alternative funding and management model analysis

In this chapter we evaluate alternative management and funding[4] arrangements for stormwater WQ assets in the ACT. A high-level multicriteria assessment of each option is also provided, assessing each option in terms of the extent to which it would improve relative to the current arrangements. This chapter builds on our analysis of current arrangements outlined in chapter 5.

The assessment of the current management and funding arrangements in the ACT set out in chapter 5 highlights several generic weaknesses. For the eight alternative models outlined in this chapter, we assume that the following reforms are enacted to correct the generic weaknesses:

- Better align roles and responsibilities. In particular, those with responsibility for the operation and maintenance of assets should have formal and meaningful input into the design of assets.
- Design approval should be based partly on an assessment of the lifecycle cost of the asset. For the avoidance of doubt, this should explicitly include the costs of operating, maintaining and refurbishing the asset.
- Developing a financial framework that records operation, maintenance and refurbishment costs for stormwater WQ assets. It has been clear from this project that the current framework is incomplete, meaning that the ACT Government is not in a position to estimate current O&M expenditure. This in turn has made it difficult for us to analyse the efficiency of O&M spending and the adequacy of O&M funding.
- Allow the Municipal Infrastructure Standards to be revised more frequently, as this would permit innovative and modern stormwater WQ assets to be approved for construction in the ACT.

7.1 Multicriteria assessment of alternative models

The models that were assessed are summarised in Table 22. They differ in three main ways:

1. **Ownership of the asset** – The ACT Government currently owns all stormwater WQ assets in the ACT. Under a number of the alternate models below private sector ownership is introduced, either partially or fully.
2. **Maintenance of the asset** – The ACT Government is currently responsible for the operation and maintenance of stormwater WQ assets in the ACT. Some functions, such as cleaning of GPTs, are contracted out. For some models below, maintenance responsibility is entirely transferred to the private sector. Under others, the current O&M roles and responsibilities are retained.
3. **Funding determination and source** – The current approaches to funding stormwater WQ O&M are described in section 4.1. Alternative arrangements are proposed for the majority of models outlined below. These range from 'building block' approaches to determining funding through to negotiated terms between the ACT Government and the

[4] For the avoidance of doubt, efficient costs related to policy development and implementation should be recovered via the proposed funding mechanism.

private sector. We also suggest greater reliance on user charging as a means of raising stormwater WQ O&M funds.

Table 22: Snapshot of alternative management and funding models for the ACT

Model Option	Model Description	Asset ownership	O&M responsibility	Contract out?	Funding determination	Funding source	Funding mechanism
1	***Refine current arrangements:*** Current arrangements for management and funding of stormwater WQ assets in the ACT is maintained, with a number of refinements to improve efficiency and accountability.	ACT Government	ACT Government	Partial	Existing approach	Consolidated revenue	General taxation
2	***Hypothecate WAC:*** Funding for stormwater WQ asset O&M would be sourced from a hypothecated share of the Water Abstraction Charge (WAC).	ACT Government	ACT Government	Partial	Share of capex or building block	WAC	Existing mechanisms for WAC
3	***Cost-reflective stormwater charge:*** ACT Government introduces a stormwater charge to fund prudent and efficient expenditure on the O&M of stormwater WQ assets in the ACT.	ACT Government	ACT Government	Partial	Building block	Fixed or variable property-based charge	Property rates or Icon Water bill
4	***Developer charge:*** Raise upfront O&M funding for newly constructed stormwater WQ assets under Estate Development Plans in the ACT.	ACT Government	ACT Government	Partial	NPV Building block	Developer charge	New Developer Charge
5	***Stormwater Utility:*** Establish a distinct stormwater department within TAMS with responsibility to approve, accept, operate, maintain and renew stormwater assets in the ACT.	ACT Government	ACT Government	Partial	Building block	Fixed or variable property-based charge	Property rates or Icon Water bill
6	***Transfer stormwater assets to Icon Water:*** Stormwater assets transferred to the existing asset base of Icon Water, thereby permitting Icon Water to impose a stormwater charge. Icon Water responsible for O&M functions.	Icon Water	Icon Water	Partial	Building block	Fixed or variable property-based charge	Property rates or Icon Water bill
7	***Long-term performance based O&M contract:*** ACT Government enters into a long-term O&M contract with a third party service provider.	ACT Government	Contractor	Full	Competitive tender	Multiple options	Multiple options
8	***Long-term lease of stormwater assets:*** ACT Government would enter into a long-term arrangement with a private sector investor, who takes ownership of the stormwater WQ assets in the ACT for the period of the lease, in return for a lump-sum payment to the ACT Government. O&M funded by annual payment to owner.	Private sector	Private sector asset owner	Full	Lease negotiations	Stormwater charge	Property rates or Icon Water bill

We have applied the assessment framework utilised in section 5.2 in order to assess the relative merits of the eight options outlined in Table 22. The assessment is a principles-based ranking of the extent to which the option would lead to an improvement relative to the current arrangements.

We apply a simple 'traffic light' assessment, which is illustrated in Table 23.

Table 23: Multicriteria ranking legend

Low ranking against key criteria	
Medium ranking against key criteria	
High ranking against key criteria	

The results are summarised in Table 24. We explain the basis for our assessment in section 7.2.

Table 24: Assessment of options against management criteria

	Options							
Criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Overall ranking of option against all criteria								
Ranking against management criteria								
Structure and responsibilities – overall ranking								
Clarity of roles and responsibilities								
Authority, decision making and accountability								
Transparency – overall ranking								
Reporting requirements								
Reporting frequency								
Accessibility to key stakeholders								
Ranking against funding criteria								
Efficient cost recovery – overall assessment								
All efficient costs identified								
Charges avoid monopoly rents								
Ensure operational viability								
Cross-subsidies are transparent								
Cost allocation and sharing – overall assessment								
User pays approach used when allocating costs								
Cost share based on cost drivers								
Administrative efficiency – overall assessment								
Simple and low cost to administer								
Incentivise ACT Government O&M operational efficiency and effectiveness								
Avoid perverse outcomes								
Transparency and accountability								
Transparent, easy to calculate, understandable to users and published								
Reviewed on a regular basis								

Our preferred options are implementing a cost-reflective stormwater charge (option 3) and transferring stormwater assets to Icon Water (option 6).

7.2 Alternative models overview description and analysis

In the remainder of this section we provide an overview of each model and identify:

- the owner of the asset
- the party responsible for asset O&M
- the provider of O&M services
- the approach to O&M funding determination
- the source of O&M funding

Although the scope of this project was only O&M of stormwater WQ assets in the ACT, under a number of the models we suggest that funding also be extended to renewal and refurbishment costs.

7.2.1 Option 1: Refine current arrangements

Overview of model

Under this model the current arrangements for management and funding of stormwater WQ assets in the ACT is maintained, with a number of refinements to improve efficiency and accountability.

The current roles and responsibilities would be retained. The ACT Government would own all stormwater WQ assets in the ACT. TAMS, in the form of Roads ACT and PATS, would be responsible for operating and maintaining those assets. TAMS Strategic Finance and CMTEDD would continue to make use of the funding determination framework described in section 4.1. This includes use of the growth model and the existing arrangement of allocating 2% of the capex value of capital works projects annually, for the ongoing O&M of non-estate assets.

The key changes under this model would be:

- broadening the base of assets that are captured in the funding determination framework
- Funding O&M of landscape assets immediately following asset acceptance.
- inserting a performance framework that requires TAMS Strategic Finance to report back to CMTEDD each year on how the annual O&M funding was allocated across TAMS functions and how the funding was expended.

Who owns the assets?

The ACT Government would continue to own stormwater WQ assets under this model. Design of assets would be undertaken by consulting engineers and construction by contractors. For estate assets, infrastructure would be designed in accordance with the ACTPLA *Guidelines for the Development of Estate Development Plans, Municipal Infrastructure Standards* and the *Territory Plan* requirements including the soon to be released WSUD Practice Guideline.

Who is responsible for operation and maintenance of the assets?

Responsibility for O&M of stormwater WQ assets would rest with the ACT Government. The existing MoU between Roads ACT and PATS would be the guiding framework for the allocation of O&M roles and responsibilities. Responsibility would extend to recording and reporting on O&M expenditure.

Who undertakes maintenance of the assets?

The ACT Government would have the option of contracting out some or all of the O&M functions. The current arrangements are for some functions to be provided by a third party contractor (mainly GPT O&M). Under this option the current share of contracted out O&M could be maintained or increased.

How is O&M funding determined?

O&M funding would be determined under the existing frameworks. Specifically, funding for estate developments would be determined through use of the growth model described in section 4.1. However, that model would be refined to include a provision for the operation of stormwater WQ assets. This is necessary because the current growth model only allows for routine maintenance activities. The range of stormwater WQ assets that are captured by the growth model would also need to be expanded.

For non-estate assets, it would be necessary to capitalise the 'soft' stormwater WQ assets in order to allocate adequate O&M funding to those assets. Under the current arrangements those assets are not capitalised and therefore do not attract an annual O&M funding allocation. As part of this project, we have assisted TAMS in including a wider range of stormwater WQ assets in the asset register held by TAMS Strategic Finance. This asset register could be used as the basis for capitalising soft assets.

Under this model TAMS Strategic Finance would be required to report back to CMTEDD each year on how the total O&M funding allocation to TAMS was allocated across the various functions of TAMS, and the actual expenditure against that allocation. This would have multiple benefits, including the ability to track the pattern of O&M expenditure through multiple years and assess the efficiency with which O&M funding is spent.

What is the source of O&M funding?

The source of funding would continue to be consolidated revenue. As was outlined in section 4.4 the current funding allocated to stormwater WQ assets O&M by TAMS Strategic Finance is likely to be less than optimal. Therefore, under this model it is likely that there would be an increase in the share of consolidated revenue that is allocated to stormwater WQ asset O&M functions.

Table 25: Basis for multicriteria assessment of option 1

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		Would not lead to an improvement because the current roles and responsibilities matrix would remain

Authority, decision making and accountability		Accountability would be improved because Strategic Finance would be required to report annually on allocation of funds and expenditure
Transparency – overall ranking		
Reporting requirements		The introduction of reporting on funding allocation and expenditure would lead to an improvement
Reporting frequency		Since there is no reporting at present the introduction of a reporting framework would lead to an improvement
Accessibility to key stakeholders		This options does not require publicly available reporting and is therefore no improvement on the current situation
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The existing funding models do not attempt to identify efficient costs in any robust way. Since this options would simply require some minor refinements of that model, there would be no improvement
Charges avoid monopoly rents		See above
Ensure operational viability		This option is unlikely to improve operational viability because the funding determination process would still have no link to the actual costs of O&M.
Cross-subsidies are transparent		This option does not address cross-subsidies
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		This option does not make use of a user pays approach
Cost share based on cost drivers		There is no cost-share under this option because funding is from consolidated revenue
Administrative efficiency – overall assessment		
Simple and low cost to administer		This option would be a slight improvement because the changes to existing approaches would be minor and within existing institutional settings
Incentivise ACT Government O&M operational efficiency and effectiveness		There is no external pressure on ACT Government costs under this option, meaning that there is no incentive to improve performance
Avoid perverse outcomes		There is no improvement against this criteria
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		The use of existing models would perpetuate the existing lack of transparency
Reviewed on a regular basis		There is no regular review proposed under this option

7.2.2 Option 2: Hypothecate a share of the WAC

Overview of model

Under this model the existing arrangements for the management and operation of stormwater WQ assets would be maintained. The key difference is in the determination and source of O&M funding.

Funding for stormwater WQ asset O&M would be sourced from a hypothecated share of the Water Abstraction Charge (WAC). There are a number of options for the precise determination of that hypothecated share, outlined in further detail below.

To ensure the funding allocation would be adequate to meet expenditure requirements through time, the hypothecated share would be assessed at regular time intervals (perhaps every three years). To guard against inefficient use of funds, we would recommend that an efficiency hurdle be included in any hypothecated funding model. For example, the hypothecated funding share would reduce by a given percentage each year as a means of incentivising continuous efficiency and productivity gains in stormwater WQ asset O&M.

Who owns the assets?

The ACT Government would continue to own all stormwater WQ assets in the ACT.

Who is responsible for maintenance of the assets?

TAMS would continue to be responsible for the O&M of stormwater WQ assets in the ACT. However, under this option TAMS Strategic Finance would be required to report annually on how hypothecated WAC revenue had been allocated to various O&M functions. The level of reporting would need to be relatively detailed to guard against the risk that hypothecated funding was allocated to non-stormwater WQ asset O&M activities within TAMS. Such a reporting framework would be vital to underpin the credibility of the hypothecation scheme.

TAMS Strategic Finance would also be required to report annually on how hypothecated funds were expended. Again, this would need to be a detailed report and made publicly available.

Who undertakes maintenance of the assets?

The current arrangements for O&M provision could continue, including application of the MoU between RoadsACT and PATS to allocate roles and responsibilities. TAMS would be free to increase the degree of contracted O&M services or retain the current mix. Given the inclusion of an efficiency hurdle, it is likely that private sector contracting would be a means of meeting the efficiency requirement.

How is O&M funding determined?

There are two main options to determine O&M funding under this model. They are:

1. Determine the share of the WAC to be hypothecated by applying a multiple of the capital value of the asset base, in a manner similar to that implemented under current arrangements. The existing model would need to be amended to include allowance for operation functions and through capitalisation of 'soft' landscape assets.
2. Determine the share to be hypothecated by applying a building block approach to estimating the prudent and efficient stormwater WQ asset O&M functions and costs to be funded. Meeting the prudency and efficiency test would likely require review of the building block model by a qualified independent third party. The ACT Government Cabinet would be required to approve the degree of hypothecation. Although this would likely be an annual approval as part of the budget process, it would be advantageous for a guiding 'determination' to be agreed over the forward estimates of the ACT Budget. Doing so would provide some degree of certainty regarding the likely O&M funding stream, allowing long-term planning to be put in place.

Under both options TAMS Strategic Finance would be required to report annual and publicly to CMTEDD against a range of performance metrics, which would have the objective of tracking efficient and prudent expenditure of hypothecated funds.

What is the source of O&M funding?

The source of funding would be a hypothecated share of the WAC. Given that the estimated optimal O&M funding requirement outlined in section 4.4 is just less than 25 percent of the total WAC raised in 2013/14, it may be necessary to raise the WAC by a certain percentage to ensure that the functions currently funded by the WAC can continue.

Table 26: Basis for multicriteria assessment of option 2

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		Would not lead to an improvement because the current roles and responsibilities matrix would remain
Authority, decision making and accountability		Accountability would be improved because Strategic Finance would be required to report annually on allocation of funds and expenditure. Relative to option 1 the reporting would be more detailed.
Transparency – overall ranking		
Reporting requirements		The introduction of reporting on funding allocation and expenditure would lead to an improvement
Reporting frequency		Since there is no reporting at present the introduction of a reporting framework would lead to an improvement
Accessibility to key stakeholders		This options requires publicly available reporting on how hypothecated funds have been allocated and spent, and is therefore an improvement on the current situation
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The existing funding models do not attempt to identify efficient costs in any robust way. Since this options would simply require some minor refinements of that model, there would be no improvement. Under the option where the basis for hypothecation is a building block approach this criteria would improve.
Charges avoid monopoly rents		The existing models do not seek to identify efficient costs. However, under the building block model approach the process would guard against monopoly rents. Therefore the ranking would improve.
Ensure operational viability		This option is unlikely to improve operational viability because the funding determination process would still have no link to the actual costs of O&M. Where hypothecation is based on a building block approach, the ranking would improve.
Cross-subsidies are transparent		This option does not address cross-subsidies
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		Only under the building block approach would this ranking improve
Cost share based on cost drivers		See above
Administrative efficiency – overall assessment		
Simple and low cost to administer		Hypothecation based on existing funding frameworks would result in an improvement. Use of the building block method would result in additional costs incurred in preparing and reviewing the building block model.
Incentivise ACT Government O&M operational efficiency and effectiveness		There would only be an improvement in this criteria where the building block model is reviewed externally. Under the non-building block model TAMS would be under very little pressure to improve efficiency. In fact, hypothecation almost always introduces the risk of increasing inefficiency because the department is receiving a 'monopoly' of sorts on those funds that is not subject to challenge.
Avoid perverse outcomes		There would only be an improvement in this criteria where the building block model is reviewed externally
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		The use of existing models would perpetuate the existing lack of transparency. Under the building block approach the ranking for this criteria would improve.
Reviewed on a regular basis		Although the basis for hypothecation would be reviewed on a regular basis, this would only be a minor improvement on existing arrangements

7.2.3 Option 3: Cost-reflective stormwater charge

Overview of model

Under this model the ACT Government would introduce a stormwater charge that would have the purpose of funding prudent and efficient expenditure on the O&M of stormwater WQ assets in the ACT. Further details on various aspects of the model are outlined below.

Who owns the assets?

The ACT Government would continue to own all stormwater WQ assets in the ACT.

Who is responsible for maintenance of the assets?

TAMS would continue to be responsible for the O&M of stormwater WQ assets in the ACT. However, under this option TAMS Strategic Finance would be required to report annually to CMTEDD on how the funds raised through the stormwater charge had been allocated to various O&M functions. The reporting would need to be detailed and transparent and possibly provided directly to those paying the stormwater charge. The degree of reporting would be necessary to guard against the risk that funds raised by the stormwater charge were partly allocated to O&M functions not related to the charge. This would be vital to protecting the integrity of the stormwater charge.

TAMS Strategic Finance would also be required to report annually on how funds raised by the stormwater charge had been expended. It would be especially important to report on the outcomes achieved from expenditure. Under a scenario where the basis of the stormwater charge included refurbishment and renewal costs, the reporting framework would need to clearly demonstrate how an adequate asset renewal fund was being built up through time to fund lumpy renewal and refurbishment costs.

Who undertakes maintenance of the assets?

The current arrangements for O&M provision could continue, including application of the MoU between RoadsACT and PATS to allocate roles and responsibilities. TAMS would be free to increase the degree of contracted O&M services or retain the current mix. Given the inclusion of an efficiency hurdle (see below), it is likely that private sector contracting would be a means of meeting the efficiency requirement.

How is O&M funding determined?

O&M funding would be raised through a new stormwater charge, to be applied to all properties that are connected to one or more stormwater WQ assets in the ACT.

Ideally, the stormwater charge would only fund prudent and efficient O&M expenditure that is directly related to stormwater WQ assets in the ACT. However, if existing title records do not provide sufficient detail to allow this, the charge could apply to every property. Relatively lower rates could apply to properties that are zoned in areas with minimal stormwater WQ assets. A building block process would be followed to determine prudent and efficient expenditure.

Ideally, the allowable revenue to be raised via the stormwater charge would be determined through an independent regulatory process undertaken by the ICRC. However, the transaction costs incurred may not be justified by the incremental benefits from independent determination.

It would be important to assess those relative costs and benefits prior to proceeding with that approach.

In the absence of an independent determination process, third party review of the cost base by a qualified independent third party would be a minimum requirement. That review should be made publicly available so that those paying the stormwater charge know the basis for the charge. This would also bring the advantage of making the ACT Government publicly accountable for the magnitude of the stormwater charge.

The initial process of determining prudent and efficient expenditure is likely to be time consuming and relatively costly, however subsequent charge determination rounds should incur relatively lower costs. The determination period for the stormwater charge could match the Icon Water determination process or the process followed to alter other property based charges in the ACT.

There are three main forms that the stormwater charge could take. The first is a fixed charge per connected property (as is the case in Melbourne and parts of NSW). The second is a fixed charge per square metre of land, which is the approach applied for non-residential property stormwater charges in some parts of NSW. The third is a stormwater charge that would vary depending on the extent to which the surface area of land is impervious. The variable charge would decrease as the proportion of a lot that is impervious decreases. Such a charging structure would, in principle, provide an incentive for the property owner to 'disconnect' a proportion of the lot from the stormwater WQ network. This approach is currently being implemented by some Councils in Melbourne for in-fill and redevelopments.

What is the source of O&M funding?

The source of O&M funding under this model is a stormwater charge applied to every rateable property in the ACT (i.e. residential and non-residential). There are a range of mechanisms that could be used to impose the charge on property owners.

The first is to include the stormwater charge on Icon Water bills. Ideally the stormwater charge would be explicitly listed on the Icon Water bill so that the costs of operating and maintaining the stormwater WQ assets in the ACT were transparent to property owner. This feature would be mandatory under the option where the stormwater charge varies according the proportion of the lot that is impervious.

Alternatively, the stormwater charge could be included in the Icon Water allowable revenue building block as a 'pass through' event, which is how the WAC is currently recovered from Icon Water customers.

Under each alternative mechanism, Icon Water would be required to pass through the funds raised by the stormwater charge to consolidated revenue. CMTEDD would subsequently allocate the stormwater charge funds to TAMS via the annual ACT budget.

The second broad option would be to apply the stormwater charge to each property in the ACT via existing property rates. Again, it would be ideal to have the stormwater charge listed as a separate charge from general property rates. Funds raised would be distributed from consolidated revenue to TAMS via the annual ACT budget process. The stormwater quality charge would be similar in nature to the existing emergency services levy.

We would suggest that the stormwater charge be in addition to the existing WAC, since the stormwater charge would send a clear price signal of the costs of operating and maintaining stormwater WQ assets. However, there is a risk that in doing so the stormwater charge would be

'double dipping' from those who already pay the WAC. If a certain percentage of the existing WAC is used to fund O&M activities, the WAC should be reduced by that amount[5].

If deemed necessary for political rather than efficiency reasons, the ACT Government could reduce the WAC by a necessary amount to achieve no net increase in the 'cost of living' expenses incurred by ACT property owners as a result of the stormwater charge.

Table 27: Basis for multicriteria assessment of option 3

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		Would not necessarily lead to an improvement because it is not a necessary condition that current roles and responsibilities change to implemented a cost-reflective stormwater charge.
Authority, decision making and accountability		Accountability would be improved because Strategic Finance would be required to report annually on allocation of funds and expenditure. The reporting would also be public, and therefore subject to wide scrutiny.
Transparency – overall ranking		
Reporting requirements		The detailed and public reporting framework for funding allocation and expenditure would lead to an improvement
Reporting frequency		Since there is no reporting at present the introduction of a reporting framework would lead to an improvement
Accessibility to key stakeholders		This options requires publicly available and detailed reporting on how funds raised by the stormwater charge have been allocated and spent, and is therefore an improvement on the current situation
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The use of a building block approach to determine the stormwater charge is a significant improvement against this criteria.
Charges avoid monopoly rents		The use of a building block model approach would guard against monopoly rents.
Ensure operational viability		Since the basis for the stormwater charge is efficient and prudent expenditure this approach is a significant improvement in terms of ensuring operational viability.
Cross-subsidies are transparent		The use of a building block approach would expose cross-subsidies
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		The building block approach is typically based on taking a user pays approach to allocating costs
Cost share based on cost drivers		Since the basis for the stormwater charge is efficient and prudent expenditure this approach gives a solid foundation for sharing costs on the basis of cost drivers.
Administrative efficiency – overall assessment		
Simple and low cost to administer		The initial set-up costs are likely to be significant as the ACT Government adjusts to a building block approach. There would also be changes to either Icon Water or existing property bills. The introduction of a stormwater charge would require a significant public education campaign.
Incentivise ACT Government O&M operational efficiency and effectiveness		The introduction of an efficiency hurdle would place significant pressure on the ACT Government to improve operational efficiency and effectiveness.
Avoid perverse outcomes		Of itself this option does not avoid perverse outcomes because how the stormwater is imposed, even if it is based on a building block approach, can still put in place perverse incentives.
Transparency and accountability		

[5] From our consultations and research, it has not been possible to determine whether WAC revenue is allocated to O&M of stormwater WQ assets.

Transparent, easy to calculate, understandable to users and published		The stormwater charge would be transparent and published, however the building block model would not necessarily be understandable to those paying the charge.
Reviewed on a regular basis		The stormwater charge would be reviewed regularly as part of the determination process

7.2.4 Option 4: Developer charge

Overview of model

This model would be a means of raising upfront O&M funding for newly constructed stormwater WQ assets under Estate Development Plans in the ACT. As such, it is not a model that represents a holistic approach to the management and funding of stormwater WQ assets, and would need to be considered as a complement to a broader model that funds existing assets and those to be constructed outside of estate developments, including BPP related assets and urban infill/renewal assets.

In essence, developers would be required to make a developer contribution that was the expected net present cost of O&M activities for the stormwater WQ assets that are constructed in new developments in order to comply with the requirements of the *Waterways: General WSUD Code.*

The payment would be made either as a lump sum at the commencement or completion of estate development, or as a per lot amount as lots are developed over the life of the development.

This would be an entirely unique model without precedent in any of the states or countries that we have examined for this project. However, it would have the advantage of aligning the incentives of the developer to those faced by the ACT as the acceptor of constructed stormwater WQ assets. Since developers would be required to make developer contributions as well as fund the construction of stormwater WQ assets, it is more likely that developers would choose stormwater WQ assets that are least cost from a total lifecycle perspective.

Who owns the assets?

The ACT Government would continue to own all stormwater WQ assets in the ACT.

Who is responsible for maintenance of the assets?

TAMS would continue to be responsible for the O&M of stormwater WQ assets in the ACT.

Who undertakes maintenance of the assets?

The current arrangements for O&M provision could continue, including application of the MoU between RoadsACT and PATS to allocate roles and responsibilities.

How is O&M funding determined?

O&M funding would be raised through a developer charge, to be applied to all new developments that require an EDP.

The developer charge would be calculated with the intent of recovering only prudent and efficient O&M expenditure over some pre-determined period (for example 15 years). To the

extent possible the developer charge would be calculated applying a building block approach. Unique developer charges would be calculated for each EDP to recover O&M costs for assets approved through the EDP. The process would dovetail with the existing approval process for stormwater WQ assets. This means that the developer would propose the infrastructure to be constructed, estimate the lifecycle cost of operating and maintaining that infrastructure and the developer contribution that would recover those lifecycle costs (with an acceptable degree of tolerance for uncertainty in development rates and actual costs incurred). TAMS asset acceptance would be responsible for approving the proposed developer charge, with input from ACTPLA.

What is the source of O&M funding?

The source of funding would be a developer charge, levied on a per lot basis. The most likely mechanism is payment of the developer charge as approval is provided for development of each lot.

It would be important for developer charge payments to be held in a ring-fenced, interest bearing account, that could only be accessed for the purposes of funding O&M activities of the stormwater WQ assets that are associated with developer charges. The integrity of the model would be undermined if the developer contributions were to be held as consolidated revenue.

Table 28: Basis for multicriteria assessment of option 4

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		Would not lead to an improvement because the current roles and responsibilities matrix would remain largely unchanged
Authority, decision making and accountability		Authority and decision making would be improved because those with a role in O&M of assets would also have a role in approving the proposed developer charge.
Transparency – overall ranking		
Reporting requirements		There are no arrangements for increased levels of reporting
Reporting frequency		There is no change in the reporting requirements
Accessibility to key stakeholders		Through the DA approval process the key stakeholders (developers and Asset Acceptance) would have relatively greater transparency regarding how funding of estate assets has been determined
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The use of a building block approach to determine the stormwater charge, were it to proceed, would represent an improvement, but only for estate assets.
Charges avoid monopoly rents		The use of a building block model approach would guard against monopoly rents, but only for estate assets.
Ensure operational viability		Since this model only applies to new assets in estate developments, it does not represent an improvement in the operational viability, because sustainable funding mechanisms would also be required for existing and BPP assets.
Cross-subsidies are transparent		The use of a building block approach would expose cross-subsidies, but only for new estate assets.
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		Only to the extent that it applies to new estate assets
Cost share based on cost drivers		See above
Administrative efficiency – overall assessment		

Simple and low cost to administer		The developer charge would work within existing development approval frameworks. However, since it is an untested model the development industry is likely to resist this approach.
Incentivise ACT Government O&M operational efficiency and effectiveness		There is not formal reporting on expenditure required under this model. Therefore there is no significant external pressure applied on the ACT Government to improve efficiency.
Avoid perverse outcomes		This model does represent an improvement because it introduces a lifecycle costing nexus to the design of stormwater WQ assets.
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		The basis of the developer charge will be transparent to the key stakeholders involved in the DA approval process.
Reviewed on a regular basis		Since each EDP will require preparation of a developer charge, the basis for the charge will be reviewed regularly

7.2.5 Option 5: Create a stormwater utility

Overview of model

This model draws on a common institutional framework for the construction, operation and maintenance of stormwater WQ and conveyance assets in the United States. A stormwater utility can take varying forms, however is essentially an institution within government that is entirely responsible for stormwater across a certain geographic area. In some instances the utility is a legally separate entity, while in others it is simply a distinct department or division within the broader bureaucracy. A defining feature of a stormwater utility is its ability to levy a stormwater charge to fund asset construction, operation and maintenance. Although some stormwater utilities are funded from consolidated revenue, they are by far the minority of cases.

According to a recent survey (Campbell, Dymond, Kea, & Dritschel, 2014) of stormwater utilities in the United States, there are almost 1,500 stormwater utilities in Northern America (including Canada), with the average stormwater utility servicing 73,900 people. The average fee charged by a stormwater utility is US$4.79 a month ($US57.48 per year) per property.

In terms of operationalising this model in the context of the ACT, it would most likely require the establishment of a distinct stormwater department within TAMS. That department would have the responsibility to approve, accept, operate, maintain and renew stormwater assets in the ACT. The creation of a separate, legally distinct stormwater utility would be ideal, however the transactions costs of this option could outweigh the benefits, at least in the short term. A feasibility study would be an essential next step in investigating this option to identify and quantify all relevant costs and benefits.

We suggest that the stormwater utility take on all stormwater assets in the ACT. This would avoid the ‘border disputes’ and blame games that can occur where two institutions have responsibilities for assets that regularly adjoin.

Who owns the assets?

Under this model the ACT Government would retain ownership of all stormwater assets in the ACT.

Who is responsible for maintenance of the assets?

The stormwater utility would be responsible for operation and maintenance of all stormwater assets in the ACT. This would include stormwater conveyance assets as well stormwater WQ

assets. Because a stormwater charge would be in place, the stormwater utility would also be responsible for reporting on allocation of stormwater charge funds and expenditure of those funds each year.

Who undertakes maintenance of the assets?

O&M functions could be undertaken under similar arrangements to those that presently exist. The advantage of the stormwater utility model however is that there would be no need for MoUs between departments. The management of the stormwater utility would be responsible for the efficient and effective operation and maintenance of all stormwater assets in the ACT, and as such would be required to organise activities in a manner to best discharge those responsibilities. As under other models, the stormwater utility would be free to increase the degree of contracted O&M services or retain the current mix. The existence of a stormwater charge would also mean that an efficiency hurdle (see below) would be in place, making it likely that private sector contracting would be a means of meeting the efficiency requirement.

How is O&M funding determined?

O&M funding would be determined under the same set of arrangements as that outlined for option 3 above. The key difference under the stormwater utility model would be an expanded range of assets to be maintained. This would require a relative increase in effort to arrive at the prudent and efficient expenditure. However, the flipside of this is that independent, formal determination by the ICRC is more likely to be justifiable to those paying the stormwater charge.

What is the source of O&M funding?

The possible sources of O&M funding would be the same as those outlined for option 3.

Table 29: Basis for multicriteria assessment of option 5

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		The stormwater utility would 'internalise' many of the institutional frictions that exist under the current arrangements
Authority, decision making and accountability		Authority and decision making would significantly improve because there would be one department responsible for the entire stormwater network
Transparency – overall ranking		
Reporting requirements		If funded by a stormwater charge reporting requirements would improve
Reporting frequency		See above
Accessibility to key stakeholders		Since the stormwater charge would be in place reporting to stakeholders would be public and detailed
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The use of a building block approach to determine the stormwater charge is a significant improvement against this criteria.
Charges avoid monopoly rents		The use of a building block model approach would guard against monopoly rents.
Ensure operational viability		Since the basis for the stormwater charge is efficient and prudent expenditure this approach is a significant improvement in terms of ensuring operational viability.

Cross-subsidies are transparent		The use of a building block approach would expose cross-subsidies
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Cost share based on cost drivers		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Administrative efficiency – overall assessment		
Simple and low cost to administer		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Incentivise ACT Government O&M operational efficiency and effectiveness		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Avoid perverse outcomes		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option
Reviewed on a regular basis		Since a stormwater charge would fund the stormwater utility the same ranking applies for this option

7.2.6 Option 6: Transfer stormwater assets to Icon Water

Overview of model

Under this model stormwater WQ assets in the ACT would be transferred to Icon Water. The purpose of this would be to add the stormwater assets to the existing asset base of Icon Water, thereby permitting Icon Water to impose a stormwater charge, determined through the four-yearly price determination process undertaken by the ICRC.

Responsibility for maintenance of the assets would also rest with Icon Water. Although Icon Water staff do not have direct experience in maintaining and operating stormwater assets, the corporation does have a long history in the management of outsourced O&M services, recording activities and costs in a systematic manner and the preparation of regulatory funding submissions applying prudency and efficiency principles.

This model would likely require the transfer of a number of stormwater WQ assets staff from both Asset Acceptance and TAMS to Icon Water in order to fill the short-term capability gap. Stormwater WQ policy could still be developed within EPD, in keeping with the current development of broader water resource policy.

Who owns the assets?

Under this model Icon Water would own the assets. Since Icon Water is a Government Business Enterprise (GBE) of the ACT Government, this would not represent a 'privatisation' of stormwater WQ assets in the ACT, and would be unlikely to result in a change to the ACT Government balance sheet or credit rating.

Who is responsible for maintenance of the assets?

Icon Water would be responsible for the maintenance of assets, under the same framework that makes Icon Water responsible for the O&M of its existing asset base.

Who undertakes maintenance of the assets?

There are a range of possibilities under this model. First, Icon Water could take on the existing TAMS O&M staff along with the existing O&M contracts with third party providers. Alternatively, Icon Water may choose to deploy its own O&M staff, after a period of re-training, or contract out the entire O&M function to a third party.

How is O&M funding determined?

O&M funding would be determined under the formal building block approach that currently applies to Icon Water when determining allowable revenue for the O&M of its water and sewer infrastructure. This means that O&M funding would only be for prudent and efficient expenditure and would be subject to formal regulatory oversight. The basis for O&M funding would be transparent and robust.

What is the source of O&M funding?

We suggest that under this model Icon Water impose a stormwater charge, which would be a distinct change on the typical Icon Water bill. The typical residential water bill in metropolitan Melbourne has a separate 'waterways and drainage' component. The key requirements for a stormwater charge have been previously outlined in section 7.2.3.

Table 30: Basis for multicriteria assessment of option 6

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		The existing frictions between departments regarding O&M responsibilities would be reduced substantially by moving within a single corporate structure
Authority, decision making and accountability		The inclusion within the existing price determination framework would result in a significant improvement against this criteria
Transparency – overall ranking		
Reporting requirements		Bring stormwater functions within the Icon Water reporting framework would represent a significant improvement
Reporting frequency		See above
Accessibility to key stakeholders		See above
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The use of a building block approach to determine the stormwater charge is a significant improvement against this criteria.
Charges avoid monopoly rents		The use of a building block model approach would guard against monopoly rents.
Ensure operational viability		Since the basis for the stormwater charge is efficient and prudent expenditure this approach is a significant improvement in terms of ensuring operational viability.
Cross-subsidies are transparent		The use of a building block approach would expose cross-subsidies
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		The building block approach is typically based on taking a user pays approach to allocating costs
Cost share based on cost drivers		Since the basis for the stormwater charge is efficient and prudent expenditure this approach gives a solid foundation for sharing costs on the basis of cost drivers.
Administrative efficiency – overall assessment		

Simple and low cost to administer		The initial set-up costs are likely to be significant as the process of transferring assets to a corporation is far from straight forward. There would also be changes to either Icon Water or existing property bills. The introduction of a stormwater charge would require a significant public education campaign.
Incentivise ACT Government O&M operational efficiency and effectiveness		The introduction of an efficiency hurdle would place significant pressure on the Icon Water to improve operational efficiency and effectiveness.
Avoid perverse outcomes		Of itself this option does not avoid perverse outcomes because how the stormwater is imposed, even if it is based on a building block approach, can still put in place perverse incentives.
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		The stormwater charge would be transparent and published, however the building block model would not necessarily be understandable to those paying the charge.
Reviewed on a regular basis		The stormwater charge would be reviewed regularly as part of the determination process

7.2.7 Option 7: Long term performance based O&M contract

Overview of model?

Under this model the ACT Government would enter into a long-term O&M contract with a third party service provider. The contract would establish performance metrics for stormwater WQ asset O&M to be met by the contractor. If those performance metrics were not met, or only partially met, a graduated, sliding scale of penalties would be imposed, which would have the effect of requiring the contractor to undertake works to meet the target at no additional cost, or deny the contractor a share of the payment due for that period.

Long-term O&M contracts are commonplace in the urban water sector, but less so in the stormwater sector. However, a recent example can be found at Wollongong City Council, which has established a 5 year panel of stormwater asset maintenance providers. In 2013 the value of the panel was $5m in total and had seven service providers.

In preparing this report we consulted with a range of private sector urban water O&M service providers to gauge whether this model would be of commercial interest. All the firms we spoke with said that this would be of interest and identified the following as key features to make such an arrangement commercially viable:

- A long-term contract (10 years minimum) that would allow the provider to optimise industrial relation arrangements
- A degree of control over the assets, which would give the operator the flexibility to re-arrange treatment trains to improve performance, and reduce the costs of complying with the performance framework
- A fixed concession payment over the life of the contract
- A clearly documented contract that established and delineated roles and responsibilities and the allocation of risks

Who owns the assets?

The ACT Government would retain ownership of the assets under this model. However, as highlighted above, it would be necessary for the contractor to have a degree of autonomous control over the asset base in order to optimise treatment trains.

Who is responsible for maintenance of the assets?

The third party contractor would be entirely responsible for the operation and maintenance of the stormwater WQ assets in the ACT within the terms of the contract. An important point to note here is that the private sector provider is unlikely to be attracted to this model if the public sector has a significant influence over how and when O&M activities should be undertaken.

Who undertakes maintenance of the assets?

The third party contractor would be most likely to undertake O&M activities employing a mix of own staff and sub-contracted staff. One of the key benefits under this model comes from the flexibility in industrial relation arrangements, allowing the contractor to manage costs through peaks and troughs of activity.

How is O&M funding determined?

O&M funding would be determined through the tendering process for the long-term O&M contract. Private sector contractors would bid to provide the services required under the contract at a certain price, typically expressed as a given payment each year. This provides revenue certainty for the O&M provider, and funding requirement certainty for the ACT Government. The private sector contractor takes on the risk that funding is inadequate to cover actual costs. This is key to driving innovation on the part of the third part contractor, who must continually improve operations to drive efficiencies and generate a reasonable rate of return under the contract.

What is the source of O&M funding?

Although the funding source could be consolidated revenue, private sector contractors are unlikely to be attracted to this model as the certainty of funding could be questioned, particular in the ACT where the revenue base is subject to a relatively unique range of functions such as the provision of schools and healthcare.

A more attractive model would be the imposition of a stormwater charge, under very similar arrangements to those outlined for option 3.

Table 31: Basis for multicriteria assessment of option 7

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		The roles and responsibilities for O&M would be entirely transferred to the third-party, significantly improving the current situation
Authority, decision making and accountability		The third party would be held entirely accountable for O&M performance and have significant decision making authority under the terms of the contract
Transparency – overall ranking		
Reporting requirements		There would be detailed reporting under the terms of the contract
Reporting frequency		Since there is no reporting at present the introduction of a reporting framework would lead to an improvement
Accessibility to key stakeholders		The reporting may not be entirely accessible due to commercial in confidence provisions
		funding criteria
Efficient cost recovery – overall assessment		

All efficient costs identified		The market tendering process is likely to result in efficient costs being revealed
Charges avoid monopoly rents		See above
Ensure operational viability		From the perspective of the ACT Government, operational viability would be improved because the risks of cost blow-outs would have been transferred to the third party
Cross-subsidies are transparent		It is unlikely that any cross-subsidies implemented by the third party would be revealed
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		Assuming a stormwater charge is implemented, this model would result in an improvement
Cost share based on cost drivers		See above
Administrative efficiency – overall assessment		
Simple and low cost to administer		The initial set-up costs are likely to be significant as the ACT Government adjusts to both a storm water charge and a long-term O&M contract. There would also be changes to either Icon Water or existing property bills. The introduction of a stormwater charge would require a significant public education campaign.
Incentivise ACT Government O&M operational efficiency and effectiveness		The introduction of an efficiency hurdle and the transfer of O&M functions to the third party would place a significant premium on cost efficiencies.
Avoid perverse outcomes		Of itself this option does not avoid perverse outcomes because how the stormwater charge is imposed, even if it is based on a building block approach, can still put in place perverse incentives.
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		The stormwater charge would be transparent and published, however the building block model would not necessarily be understandable to those paying the charge.
Reviewed on a regular basis		The stormwater charge would be reviewed regularly as part of the determination process

7.2.8 Option 8: Long term lease of stormwater assets

Overview of model

Under this model, the ACT Government would enter into a long-term arrangement with a private sector investor, under which the investor would take ownership of the stormwater WQ assets in the ACT for the period of the lease, in return for a lump-sum payment to the ACT Government.

Through taking ownership, the private sector investor would be responsible for operating and maintaining the assets. The ACT Government would typically need to provide a regular payment to the investor to fund O&M activities. Alternatively, the ACT Government could impose a stormwater charge, which would be paid directly to the asset owner in order to operate and maintain the assets.

This models is beneficial to the investor if the stormwater charge payment is sufficient to cover actual O&M expenses and provide a steady, reasonable rate of return on the value of the assets, over and above financing costs. By taking ownership of the asset, the investor has a high degree of control in terms of optimising the asset base. For example, assets could be removed or re-arranged within treatment trains for a particular catchment to improve performance and reduce O&M costs. In this way the investor would have a clear incentive to develop innovate stormwater WQ asset treatment techniques that would reduce O&M costs over the life of the lease.

This model is beneficial to the ACT Government because it removes the burden from the public sector for O&M of the assets and provides an injection of capital as a result of the purchase. If this option were implemented by 2019, there would also be the possibility of the ACT Government receiving a payment from the Commonwealth Government, equivalent to 15% of the asset sale proceeds, so long as the proceeds of the asset sale were invested in productivity-enhancing infrastructure by the ACT Government. In February 2015[6] the ACT was the first State or Territory to enter into an agreement with the Commonwealth Government under the National Partnership Agreement on Asset Recycling.

Who owns the assets?

For the life of the lease, the assets would be owned by the private sector investor. The assets could be returned to the ACT Government at the end of the lease, and the lease terms would require the assets to be returned in a pre-defined condition. It is more likely that the lease would be re-tendered at the conclusion of the lease period.

Who is responsible for maintenance of the assets?

The private sector investor is entirely responsible for maintenance of the assets for the life of the lease. As the owner, the investor takes on all risks regarding asset performance and changes in performance requirements.

Who undertakes maintenance of the assets?

Typically maintenance would be undertaken by private sector service providers. This could be the investing firm itself, or the investor could contract out maintenance to a third party. Given the link between innovation and commercial feasibility under this option, maintenance is likely to be provided by a private sector provider with a relatively high degree of expertise.

How is O&M funding determined?

Under this model, O&M funding could be determined in a number of ways. First, the tender process could be used to reveal the least cost annual payment required to operate and maintain the assets over the life of the lease. By definition, the market bidding process would mean O&M costs are prudent and efficient.

Second, the ACT Government could offer a fixed fee payment under the terms of the lease (presumably subject to indexation). The lowest price bid for the assets would effectively reveal the prudent and efficient level of O&M expenditure for the asset base.

Third, a stormwater charge, determined following the process outlined for option 3, would be passed through to the investor to fund O&M activities. However, it should be noted that private sector investors are generally averse to models where revenue streams are subject to independent regulatory oversight. In order to attract private sector investors under this approach to funding determination, the ACT Government could guarantee the annual service payment to the asset owner, and fund that payment from the revenue raised by the stormwater charge. In that way the ACT Government would be taking on the risk from regulatory determinations over the life of the lease.

[6] http://federalfinancialrelations.gov.au/content/npa/infrastructure/asset_recycling/ACT.pdf

What is the source of O&M funding?

Depending on the funding determination framework, the funding source would be either consolidated revenue, a hypothecated share of the WAC, revenue from a stormwater charge or a financial stream from consolidated revenue, backed by a stormwater charge.

Table 32: Basis for multicriteria assessment of option 8

	Options	
Criteria		**Reason for ranking**
Overall ranking of option against all criteria		
		management criteria
Structure and responsibilities – overall ranking		
Clarity of roles and responsibilities		The sale of all stormwater assets to the investor would internalise previous tensions regarding roles and responsibilities
Authority, decision making and accountability		The asset owner would be entirely accountable for O&M and have significant authority to make decisions on assets.
Transparency – overall ranking		
Reporting requirements		Although there would be reporting around performance metrics, there would be minimal reporting on costs
Reporting frequency		Since there is no reporting at present the introduction of a reporting framework would lead to an improvement
Accessibility to key stakeholders		Because the assets would be owned by the private sector there is unlikely to be a greater degree of transparency to key stakeholders
		funding criteria
Efficient cost recovery – overall assessment		
All efficient costs identified		The market led process for the purchase of the assets would result in the identification of efficient costs.
Charges avoid monopoly rents		The market led process would guard against monopoly rents.
Ensure operational viability		The operational viability of the ACT Government is likely to be improved since O&M functions and costs would have been entirely transferred to the asset owner.
Cross-subsidies are transparent		It is unlikely that any cross-subsidies implemented by the third party would be revealed
Cost allocation and sharing – overall assessment		
User pays approach used when allocating costs		If a stormwater charge is introduced, the building block approach is typically based on taking a user pays approach to allocating costs
Cost share based on cost drivers		Since the basis for the stormwater charge is efficient and prudent expenditure this approach gives a solid foundation for sharing costs on the basis of cost drivers.
Administrative efficiency – overall assessment		
Simple and low cost to administer		The initial set-up costs are likely to be significant as the ACT Government goes through the process of selling the assets and transferring responsibilities for O&M. However, once in place, from the perspective of the ACT Government this model is likely to be simple and low cost.
Incentivise ACT Government O&M operational efficiency and effectiveness		For the asset owner relatively higher returns on investment will be achieved through continually improving efficiency and effectiveness.
Avoid perverse outcomes		Of itself this option does not avoid perverse outcomes because how the stormwater is imposed, even if it is based on a building block approach, can still put in place perverse incentives.
Transparency and accountability		
Transparent, easy to calculate, understandable to users and published		If a stormwater charge is used to fund annual payments, the basis for the charge would be transparent and published, however the building block model would not necessarily be understandable to those paying the charge.
Reviewed on a regular basis		The stormwater charge would be reviewed regularly as part of the determination process

7.3 Performance of models under alternative scenarios

In this section we test the performance of each model option under the following three alternative scenarios:

1. Land development in the ACT is relatively slower than forecast
2. There is a significant 'bounce back' in water consumption in the ACT
3. The Basin Priority Project business case is unsuccessful

The results of our analysis are summarised in Table 33 below.

Table 33: Summary of scenario analysis

		Impact on ranking under each scenario		
Model options	Overall ranking under base case scenario	Scenario 1	Scenario 2	Scenario 3
1 - Refine current arrangements		Negative	Potentially positive	Potentially positive
2 - Hypothecate WAC		No change	Potentially positive	Potentially positive
3 - Cost-reflective stormwater charge		No change	No change	No change
4 - Developer charge		No change	No change	No change
5 - Stormwater Utility		No change	No change	No change
6 - Transfer stormwater assets to Icon Water		No change	No change	No change
7 - Long-term performance based O&M contract		No change	No change	No change
8 - Long-term lease of stormwater assets		No change	No change	No change

Explanations of how we arrived at these results is provided in the remainder of this section.

7.3.1 Scenario one – Land development in the ACT is relatively slower than forecast

Growth in consolidated revenue is influenced by land release through stamp duty payments. A slow down in the release and development of land would lead to a decline in aggregate revenue to the ACT Government, unless off-set by alternative sources.

Under this scenario, models that source funding from consolidated revenue would rank lower because funding for O&M would probably receive even greater scrutiny as the ACT Government worked to deliver 'front line' human services within a lower budget constraint.

Model options	Overall ranking under base case scenario	Impact on ranking under scenario 1
1 - Refine current arrangements		Negative – The relative size of the consolidated revenue pool would decline. However, the demand for services that are funded out of consolidated revenue would not necessarily decline. For example, demand for social services and healthcare is not likely to be linked to the release of land. As a result, the pressure on the ACT budget to cut funding across the board would increase. This would presumably extend

		to the funding of stormwater WQ asset O&M activities.
2 - Hypothecate WAC		No change – Since a share of the WAC would be hypothecated for expenditure on stormwater WQ asset O&M, it would not be possible to divert hypothecated WAC revenue to fund social services and healthcare costs.
3 - Cost-reflective stormwater charge		No change – since the stormwater charge will recover efficient costs on a per property basis, the charge per property would simply increase slightly to recover the full revenue requirement.
4 - Developer charge		No change – the developer charge is designed to recover costs that are directly related to the development of that property or precinct.
5 - Stormwater Utility		No change – see comments for option 3
6 - Transfer stormwater assets to Icon Water		No change – see comments for option 3
7 - Long-term performance based O&M contract		If the payments under the contract are financed through a cost-reflective stormwater charge, no change.
8 - Long-term lease of stormwater assets		As above.

7.3.2 Scenario two – Bounce back in water consumption

A 'bounce back' in water consumption would lead to an increase in the amount of revenue collected under the WAC. There are two flow on influences from this. First, consolidated revenue would likely increase by the quantum of the increase in WAC revenue, holding all other factors constant. Second, for models that rely on hypothecation of revenue raised through the WAC, the funding pool for O&M would increase.

In the short term this scenario would favour those options that derive funding from either consolidated revenue or WAC revenue. However, the relative advantage is likely to be short lived. A significant increase in water consumption is unlikely to be met with complete acceptance from policy makers and the community. It seems plausible that such an outcome would be met with calls to 'conserve water'. The response of the ACT community during the past drought suggests that the increased consumption would be unlikely to continue for an extended period, limiting the benefit from increased WAC revenue.

Model options	Overall ranking under base case scenario	Impact on ranking under scenario 2
1 - Refine current arrangements		Positive in the short term, no change in the long term – Although the quantum of WAC revenue would increase initially, potentially increasing consolidated revenue funds available for stormwater WQ asset O&M, the increase in consumption is likely to be short lived.
2 - Hypothecate WAC		Positive in the short term, no change in the long term – Similar reasoning as above.
3 - Cost-reflective stormwater charge		No change – Stormwater charge is not linked to the rate of water consumption.
4 - Developer charge		No change – the developer charge is not linked to the rate of water consumption.
5 - Stormwater Utility		No change – see comments for option 3
6 - Transfer stormwater assets to Icon Water		No change – see comments for option 3

7 - Long-term performance based O&M contract		If the payments under the contract are financed through a cost-reflective stormwater charge, no change.
8 - Long-term lease of stormwater assets		As above.

7.3.3 Scenario three – Basin Priority Project business case is unsuccessful

The BPP project is expected to have two main influences on the optimal O&M funding requirement. First, the increase in number of stormwater WQ assets in the ACT will result in an increase in the aggregate optimal funding requirement. Our analysis in section 4.4 suggests the necessary increase is around $1.4m per year. Second, one of the expected benefits from BPP assets is a relative improvement in sub-catchment treatment train performance. As such, there is an expectation that some existing stormwater WQ assets will be removed and for other assets, stormwater WQ performance will improve, providing a relative reduction in required O&M activities for those assets. This would in turn lead to a relative reduction in O&M expense.

The detailed engineering has not yet been undertaken, so it is difficult to estimate with any precision what the relative efficiency gains will be and the resultant reduction in O&M funding required.

Should the outcome be a relative decline in the optimal funding requirement, then there would be relatively less pressure on consolidated revenue and/or hypothecation of the WAC. Therefore, options 1 and 2 would improve. However, the decline in overall funding requirement would need to be significant, such that the O&M requirement would fall within the current $2.5m funding envelop. This seems unlikely.

For the remaining options, there would be no impact on the ranking because the quantum of funds to be recovered through the stormwater charge would simply be relatively lower.

In summary, under each of the scenarios described above, the relative ranking of the options is unlikely to change significantly.

8. Reform option implementation pathways

Guidance on implementation pathways is provided in this section of the report. The aim is to provide a sense of the extent to which the top three options are technically feasible to implement.

The common element across the three preferred options is introduction of a cost-reflective stormwater charge. To avoid repetition, this section begins with an implementation pathway for that common element, and then addressing the unique features of each of the three alternative options.

8.1 Introduction of a cost-reflective stormwater charge

The stormwater charge should be cost-reflective. The first step toward implementation therefore is to itemise and record the range of prudent and efficient operation and maintenance activities for each stormwater WQ asset type in the ACT.

This should be a detailed exercise. The question of how much detail is required is an interesting one. In the first instance, the ICRC should provide advice to the relevant Directorate (presumably TAMS). The ICRC will draw on experience from undertaking prudency and efficiency reviews across a range of infrastructure sectors, including urban water and wastewater.

The next step will be to identify efficient unit rates for undertaking various O&M tasks. Preferably unit rates will be tested against private sector suppliers as a way of benchmarking current public sector rates.

As a result of this project, TAMS now has a reasonably comprehensive database of stormwater WQ assets in the ACT. This database should be used as the starting point to estimate annual prudent and efficient O&M costs for each asset. From that exercise an aggregate O&M cost can be derived.

EDP should also estimate efficient planning and policy development related expenditure to be recovered through the cost reflective stormwater charge.

We suggest that either the ICRC or an independent expert consultant review the estimate of prudent and efficient O&M costs. It is likely that a number of changes will be required following the review, and those changes should be incorporated where justified.

Completion of the above process will result in the determination of a prudent and efficient aggregate O&M revenue requirement.

The final step in the process will be developing a tariff schedule for the stormwater charge that estimates the necessary charge per property to recover the prudent and efficient revenue requirement. Tariff schedules are typically prepared by expert consultants.

The above process is likely to require 12 to 15 months to complete.

We suggest CMTEDD be responsible for planning and procuring the process as this will provide independence, and officers in CMTEDD are most likely to have the necessary skills and experience to oversee the process.

8.2 Stormwater utility

The establishment of a stormwater utility could be relatively straightforward or complex, depending of the type of entity that is chosen. If the stormwater utility is effectively a stand alone division of TAMS, the process for establishment would most likely be that implemented following a change to the Machinery of Government. We do not envisage the need for detailed legal advice or legislative change if this is the case. However, regulatory change or legislative instruments may be required to implement certain aspects that relate to roles and responsibilities.

If the stormwater utility is to be a formally separate legal identity, the process would be far more complex. It would first be necessary to seek expert legal advice on the legislative and regulatory changes necessary to implement such a change.

Given the likely transactions costs that would be incurred to establish a separate entity it would be prudent to undertake a detailed feasibility study, undertaken by expert consultants with a strong legal background in public sector governance.

8.3 Transfer stormwater assets to Icon Water

This option is the most complex to administer because it potentially involves the transfer of assets into a legal corporation, the valuation of the stormwater WQ asset base and the transfer of staff from TAMS to Icon Water. As a result, it would be necessary to prepare a detailed feasibility study for this option to understand the full range of complexities and opportunities to minimise transaction and transition costs.

If Icon Water were expected to recover both a return on the capital value of the assets and the consumption of the asset over time (i.e. regulatory depreciation), it would first be necessary to value the regulatory asset base, following relevant Australian Accounting Standards. This is not a trivial exercise and involves painstaking and detailed engineering investigation of asset condition and assessment of remaining useful lives.

If Icon Water was only expected to recover efficient O&M costs, valuation of the asset would not be strictly necessary. However, the steps outlined in determining the cost reflective stormwater charge would be necessary.

At present Icon Water does not have as a corporate objective stewardship of the waterways, lakes and ponds in urban ACT. If stormwater WQ assets were transferred to Icon Water it would be necessary to include such an objective in the relevant regulatory instrument. The desired outcome would be to bind Directors to the additional objective, such that they required Icon Water management to act in such a way that the objective was met.

In practical terms, this simply means that the leadership of Icon Water be responsible for operating Icon Water in such a way as to operate and maintain the stormwater WQ assets with the effect of delivering beneficial waterway outcomes, as opposed to least-cost operation and maintenance.

The transfer of stormwater WQ assets to Icon Water would also have a legal dimension, given the corporate form of Icon Water. Expert legal advice should be sought on the precise steps necessary to effect legal transfer of assets.

At present TAMS staff are largely responsible for the operation and maintenance of stormwater WQ assets. It seems logical that those staff would also be transferred to Icon Water. This

process would require consultation with existing staff and an assessment of the industrial relations implications from such a change in employer.

Icon Water would need to establish a new division that would be responsible for the stormwater WQ assets. This would not be a trivial task, however Icon Water management have recent experience in internal structural reform. Therefore, it is likely that the task in itself is within the skills and capabilities of existing Icon Water management to deliver.

8.4 Refine Current Arrangements

Through the process of its independent analysis, Marsden Jacob concluded that refining current arrangements was not among the top three options, and as a result did not outline an implementation pathway for that option. However, EPD requested that an implementation pathway be included for that option.

As was outlined in 7.2.1, this option would require three main changes:

- broadening the base of assets that are captured in the funding determination framework
- Funding O&M of landscape assets immediately following asset acceptance.
- inserting a performance framework that requires TAMS Strategic Finance to report back to CMTEDD each year on how the annual O&M funding was allocated across TAMS functions and how the funding was expended.

We outline the implementation tasks for each below.

8.4.1 Broadening base of assets

In section 4.1 it was established that the existing funding determination framework for core capital works excludes 'soft' WQ assets because they are typically not capitalised. As a result, there is not recurrent funding allocated for operation and maintenance of those assets. This situation could be reversed by either capitalising soft WQ assets, or including a 'shadow' capitalised value for those assets should relevant accounting standards not permit formal capitalisation. The outcome should be identical: That adequate funding is allocated for O&M of soft WQ assets.

It would be opportune for CMTEDD and TAMS Strategic Finance to review the assets that are included in the 'growth' model for estate assets, particularly as the requirements for WQ assets in estate development have incrementally changed since the growth model was first developed.

8.4.2 Funding O&M of landscape assets at the time of asset acceptance

The lifecycle cost assessment that is assumed to occur under all options would identify when O&M funding is required to commence. The starting year for funding could be identified in the growth model (to the extent that soft assets are included). For core capital works assets, it would be necessary to identify soft assets in a manner that would allow O&M funding for those assets to commence from the year of asset acceptance. We did not investigate the barriers to implementing this change in the context of ACT Government information technology management.

8.4.3 O&M expenditure reporting framework

The reporting framework could follow existing 'report back' procedures for other recurrent expenditure programs in the ACT Government. The framework need not be onerous, but should allow TAMS and CMTEDD to identify on a regular basis the main drivers of expenditure, whether they align with expected lifecycle costs and the reasons for divergence from expected expenditure or fund allocation.

9. Triple bottom line assessment of preferred option

In this section we provide a triple bottom line assessment of the preferred option (Option 6: Transfer stormwater WQ assets to Icon Water). The assessment has been undertaken in broad accordance with the ACT Government Guidelines on Triple Bottom Line Assessment for the ACT Government.

9.1 Step 1: Problem identification and policy goal

Policy questions	Response/explanation
What is the problem to be addressed?	In summary, the ACT Government currently underfunds operation and maintenance activities for stormwater WQ assets. The current gap is estimated at $4.3m a year. This means that numerous stormwater WQ assets are not performing as designed and not delivering the stormwater WQ benefits that were anticipated.
What is the policy goal?	The policy goal is to fund O&M activities optimally such that the benefits to waterways in the ACT and the Murray Darling Basin are delivered.
Is government intervention necessary and can we be sure it will not make things worse in the long term?	Government currently funds O&M activities. Therefore, addressing the problem requires government intervention of some sort. It is unlikely that providing optimal (prudent and efficient) funding for stormwater WQ assets in the ACT will result in a worse outcome in the long term, given that performance of assets is poor at present.
What options have been considered?	Eight alternative options for the management and funding of stormwater WQ asset O&M activities in the ACT have been considered in detail.
Does the preferred approach align with the ACT Government's strategic priorities?	

Does the domestic and international evidence support intervention?	Yes, the preferred option (funding through a property based, cost-reflective stormwater charge) is a common approach in the United States. In Australia, metropolitan Melbourne has a similar charge on all residential properties.
Is the policy proposal technically feasible?	There are a number of significant steps to be followed if the preferred option were to be implemented. However, they are not novel or innovative. Therefore, the preferred option is technically feasible to implement.

9.2 Step 2: Preliminary assessment

In the matrix below, we indicate all expected impacts (positive, negative, or not applicable (n/a)) of the policy proposal against each of the TBL assessment criterion. Significant impacts are highlighted in **bold.**

Social	**Economic**	**Environmental**
Community and individual health	ACT Government Budget	Biodiversity
n/a	**Positive**	n/a
Access to services	Productivity and Innovation	Landscape changes
n/a	**Positive**	n/a
Housing and affordable housing	Income levels and distribution	Heritage
n/a	n/a	n/a
Access to social networks and community activities	Employment	Natural resources
n/a	n/a	n/a
Human rights	Small Business Impact	Environmental quality
n/a	n/a	Positive
Gender	Skills and Education	Greenhouse gas emissions
n/a	n/a	n/a
Indigenous and multicultural	Investment and Economic Growth	Water
n/a	n/a	n/a
Impacts on different age groups	Consumption	Air
Negative	n/a	n/a
Disability	Competition	Microclimate
n/a	n/a	n/a
Disadvantaged and vulnerable	Cost of living	Visual quality
Negative	**Negative**	n/a
Justice and crime	Procurement	Waste
n/a	n/a	n/a

9.3 Section 3: Detailed analysis

In this section we provide detailed analysis of the significant impacts.

9.3.1 Social Impacts

Impacts on different age groups and impacts on disadvantaged and vulnerable
The preferred option will result in an additional stormwater charge levied against each property that has a connection with Icon Water. The charge will appear on existing water and wastewater bills. Because this is a new charge, it is likely to have a disproportionate impact on certain groups in the community. Although the principle of 'user pays' is defensible on economic efficiency grounds, and would support an argument that the stormwater charge should be applied universally across the ACT population, there are obvious equity considerations that must be taken into account. To address equity concerns, it is often desirable to implement mitigation measures to reduce disproportionate impacts on particular groups in society under 'user pays' charging regimes. The impact on the elderly and disadvantaged/ vulnerable groups from a new, additional stormwater charge could be offset by offering a rebate on the stormwater charge to certain groups in society. In particular, those that fall in relatively low income brackets, those with health conditions and the elderly who typically have constrained incomes. Icon Water currently offers rebates on water and wastewater bills to Pension Concession cardholders. Health Care cardholders are eligible for rebates on water bills only. Icon Water also has a Financial Hardship policy that offers flexible payment arrangements from customers that experience difficulty in paying bills. That policy could extent to the payment of the stormwater charge.

9.3.2 Economic impacts

ACT Government Budget
What recurrent costs are associated with the proposal? Are these costs to a specific directorate, or whole-of-government? What is the capital associated with this proposal? What are the associated operating costs, including accommodation, maintenance, leasing costs, staffing (including on-costs), consultants and contractors, consumables, etc.? What are the transition costs? Are there any savings to the ACT Government Budget associated with this proposal? What potential is there for savings or the use of existing resources? What reviews have been done in terms of better application of shared services or similar? ***Recurrent costs associated with the proposal*** Under this proposal recurrent costs would be incurred mainly by Icon Water and the Independent Competition and Regulatory Commission (ICRC). Icon Water would incur additional recurrent costs in the form of: • Additional overhead costs associated with managing an additional division that is responsible for the operation and maintenance of stormwater WQ assets in the ACT • Additional asset management costs that result from the transfer of stormwater WQ assets to Icon Water • Additional staffing costs, either in terms of Icon Water staff or contractors, to undertake O&M activities However, to a certain extent, those costs are already being borne within the TAMS Directorate, where responsibility for O&M currently lies. As a result, the above costs would not be a material addition to existing costs borne by the ACT Government.

Icon Water would also incur additional recurrent costs to prepare its regulatory pricing submission every five years. It is difficult to estimate those additional costs with precision. However, Icon Water incurred costs of $3.97m to prepare and conclude the most recent price determination. The revenue allowed under that determination was $296m in total. This suggests that there is a 1.34% transaction cost incurred by Icon Water for each dollar of revenue approved under that formal price determination framework.

The ICRC would also incur costs to assess the component of the price submission that relates to the stormwater charge. The ICRC incurred costs of $2.36m for the most recent Icon Water price determination. This suggests a transaction cost of 0.8% for each dollar of approved revenue ($2.36m/$296m = 0.8%).

Current funding of stormwater WQ asset O&M is estimated at approximately $2.5m per year. The optimal funding requirement in 2014 was approximately $6.7m, suggesting a funding gap of $4.2m per year. The transaction costs to the ACT Government (i.e. Icon Water and the ICRC) under the most recent price determination were $6.33m. This represents a total transaction cost of 2.14% for each additional dollar of approved revenue. This implies a transaction cost of approximately $90,000 to determine approved revenue of $4.2m under a price determination process.

The additional $90,000 in transaction costs would be incurred every fifth year on average because regulatory determinations occur on a five yearly cycle.

Associated operating costs

Optimal O&M costs for existing stormwater WQ assets in the ACT are estimated to be $6.8m in 2015. Additional stormwater WQ assets will be built to service growth in new developments and infill developments. The Basin Priority Project is also expected to result in an increase in stormwater WQ assets through a number of ACT catchments. The optimal operation and maintenance costs for existing and additional assets in the future is expected to be (in $2015) $9.1m in 2020, $9.8m in 2025, $10.4m in 2030 and $11m in 2035.

The purpose of the stormwater charge is to raise funds to finance those optimal O&M costs in the future.

Transition costs

There are a range of transition costs that will be incurred if stormwater WQ assets are to be transferred to Icon Water. These include:

- Initial valuation of the stormwater WQ assets for regulatory purposes (approximately $300,000)
- Various consultancy costs for advice on integrating a new stormwater WQ asset base and O&M function within Icon Water (approximately $200,000)
- Potential redundancy costs if the transfer of assets to Icon Water results in corporate function and/or planning efficiencies (have not been estimated)

Savings to the ACT Government Budget associated with this proposal

Through transferring the source of funding to a cost reflective stormwater charge, the ACT Government Budget would no longer be required to fund existing stormwater WQ asset O&M funding (approximately $2.5m per year) and an additional $4.3m required each year to fund optimal O&M activities. Since those activities are currently funded from consolidated revenue, this proposal would represent a saving to the ACT Government Budget of at least $2.5m per year, and up to $6.8 per year.

The ACT Government faces the task of raising an additional $4.3m in 2015 to fund optimal O&M activities for stormwater WQ assets in the ACT. Under the best case scenario that funding gap will remain at $4.3m

in future years. However, should funding of stormwater WQ asset O&M not grow in line with the growth in the size of the asset base, the funding gap will increase.

Without a cost reflective stormwater charge the ACT Government would need to finance the funding gap via consolidated revenue. This implies the need to increase consolidated revenue through an increase in one or more tax mechanisms. Alternatively, the ACT Government could reduce funding to some other function. In economic terms both approaches incur costs. Raising the rate of a tax has a cost, known as the Marginal Excess Burden (MEB) of tax. Cutting funding to another function would result in the loss of benefits to those in society that were benefiting from that function.

The weighted average MEB of tax in the ACT is currently around 22%. That is, there are costs to the ACT economy of 22c for each dollar of revenue raised. This implies that the transaction cost of financing the funding gap through additional tax revenue is approximately $946,000 per year.

Financing the funding gap through an increase in taxes is therefore $856,000 more costly in terms of transactions costs, relative to the cost of raising equal funds via a cost reflective stormwater charge.

Cost of living

The proposal will result in an increase in the cost of living for the majority of residents in the ACT. The proposed stormwater charge would be in addition to existing water and wastewater charges. A per household charge of $40 to $45 per year would raise the required revenue to fund optimal O&M activities for stormwater WQ assets in the ACT.

The per household charge would be relatively higher if a return on the asset base was recovered and/or depreciation of the asset base was recovered.

9.3.3 Environmental Impacts

Environmental quality

The proposal will result in optimal funding of O&M activities for stormwater WQ assets in the ACT. This will result in asset that are more likely to perform the water quality functions for which they were designed, leading to improved environmental quality in the waterways, ponds and wetlands of the ACT. Because the majority of those waterways drain into the Murrumbidgee River, it is expected that water quality will improve in the Murray Darling Basin immediately downstream of the ACT.

10. References

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