

### 6.3 Calculator limitations

Household water use assumption in the calculator is based on per capita water usage and end-use breakdown data for an average detached house as adapted from data in Think Water Act Water Vol 1 (2003). To determine average household water use for different dwelling types, the calculator adjusts indoor water use by the number of people expected to live in the dwelling, and outdoor water use by the planting area requiring irrigation. Whilst this is a reasonable approach, the accuracy of indoor and outdoor water use for new dwellings should be validated with more recently measured data for new dwellings of different types (e.g. compact, mid-sized and large blocks). In the absence of this data, we have relied on the calculator for average household water use for different dwelling types.

In the calculator, the number of people expected to live in a dwelling is based on the number of bedrooms as per Table 14. To determine water use for different dwelling types, we have assumed the following noting that typical number of people per dwelling is closer to 2.5 in the ACT:

- Compact blocks, mid-sized and large blocks: 3 people per dwelling (i.e. 4 bedrooms)
- Apartment: 2 people per dwelling (i.e. 2 bedrooms)

**Table 14. Functionality in calculator to vary household water usage**

Number of Bedrooms	Assumed number of people in the house
1	1
2	2
3	2
4	3
5	4

In the calculator, water use in the bathroom (not including toilet), laundry and kitchen is based on water use by the following fixtures and appliances – shower head, washing machine and dishwasher respectively. Water use cannot be separated into fixtures and appliances; therefore, it is not possible to determine water savings for water efficient fixtures or water efficient appliances alone.

Reducing flow rate on outdoor taps (from 20L/min to 12L/min) creates water savings for irrigation and non-irrigation outdoor water uses. There is no functionality to model this in the calculator. The approach adopted for this project is to reduce outdoor water use by 40% and reduce irrigation water demand on rainwater tanks by 40% by an equivalent reduction in irrigation rates (L/m<sup>2</sup>/day).

### 6.4 Recommendations for rainwater harvesting

With respect to the use of rainwater tanks in urban settings to generate potable water savings, we note that, at present, householders have the responsibility for managing their rainwater tanks and thus they need to know how to undertake required operation and maintenance tasks. In a survey of Melbourne residents by the Australian Bureau of Statistics, it was found that only 58% of survey respondents with a rainwater tank claimed to undertake any kind of rainwater tank maintenance; and only 48% claimed to clean gutters, 26% checked/repaired inlets for insect proofing, 22% checked pipe work and connections, 20% checked or cleaned for sediments and only 5% carried out any other tasks (Australian Bureau of Statistics, 2013).

It is noted also that householders have no legal obligation to undertake maintenance other than to minimise public health risks, and so the motivation to undertake the required tasks is of critical importance.

Tucker et al. (2011) undertook a phone survey of 1,984 households in South East Queensland to provide greater understanding of the attitudes and behaviours of rainwater tank owners. A number of insights were gained



relating to the motivation for owning and using household rainwater tanks. Participants with mandated rainwater tanks were found to have lower levels of motivation than retrofitters, suggesting that they may experience a lack of control and independence when relating to their tank. Their drive to engage in maintenance behaviour may subsequently lack self-directed motivation, and O&M may therefore be seen as a meaningless activity. The authors note (Tucker et al., 2011):

*The message from this finding is that among the mandated sample, people felt as though they did not know enough about rainwater tank maintenance and they were not willing to put in the effort to find out more or to engage in many of the maintenance behaviours required. This suggests that greater education is needed among those who install rainwater tanks or other decentralised systems on their property as part of a government mandate, rather than as an individual choice to do so. The subject of "choice" seems an important one when dealing with psychological motivation that will ultimately drive householders' behaviour.*

We recommend, therefore, that if any WSUD Code revision options identified in this report are taken up by Government, that they be implemented in conjunction with a rainwater tank operation and maintenance public education campaign.

It is also recommended that with respect to properties constructed prior to the implementation of the ACT Waterways WSUD General Code, the ACT water savings calculator be used as a means of applying for a rebate to retrofit homes in order to be compliant with the ACT Waterways WSUD General Code. Property owners should be eligible for a rebate where they can demonstrate, using the calculator, that their renovation / retrofit will reduce mains water consumption in their home to below target levels.

Finally, it is also recommended that the ACT Government request that Icon Water install and retrofit, over some appropriate time period, Smart Meters and Outflow Meters to all existing and new properties in the ACT.



## 7 City-wide potable water savings, cost estimates and implementation plan information

To determine city-wide potable water savings, the number of new dwellings per year has been assumed to be 3,000 with the following distribution for different dwelling types:

- 70 % of new dwellings are houses:
  - 30 % are Compact blocks (<250sqm)
  - 50 % are Mid-sized blocks (250-500sqm)
  - 20 % are Large blocks (>500sqm)
- 30 % of new dwellings are apartments.

Potable water savings have been estimated using the assumptions in Section 6. Total potable water savings over a 40-year period (2020-2060) and associated Net Present Cost are provided in Table 15. Costing assumptions are outlined in Table 16.

Table 15. Potable water savings from 2020 to 2060 and associated Net Present Cost for each option

Option	Total Water Savings (ML)	Net Present Cost (\$)		
		ACT Government	Other	Net Present Total Cost (\$) / ML
Option 1: 75% Roof Water Collection	4,347	\$43,872	\$18,872,500	\$4,352
Option 2: Rainwater tank on compact blocks	7,029	\$43,872	\$22,467,262	\$3,203
Option 3: Rainwater tank certified installation	4,838	\$43,872	\$3,145,417	\$659
Option 4: Rainwater tank maintenance / part replacement	14,684	\$51,167,485	\$-	\$3,484
Option 5: Outdoor taps flow rate not exceeding 12L/min	17,771	\$43,872	\$7,489,087	\$424
Option 6: Mandatory minimum 4-star WELS ratings for plumbing fixtures (houses and apartments)	28,641	\$43,872	\$11,554,592	\$405
Option 7: Demand Management (combination of options 5 and 6 plus mandatory minimum 4-star WELS ratings required for appliances in apartments)	50,410	\$131,616	\$17,117,914	\$342
Option 8: Source substitution (combination of options 1, 2, 3 and 4)	35,436	\$58,615,921	\$49,427,977	\$3,049
Option 9: Plumbing certification (combination of options 3, 5 and 6)	55,011	\$175,488	\$20,113,549	\$369
Option 10: Combination of all options including mandatory minimum 4-star WELS ratings required for appliances in apartments	83,245	\$58,747,538	\$65,048,074	\$1,487

Table 16. Costing assumptions

Option	ACT Government		Other	
	OPEX	CAPEX	OPEX	OPEX
Option 1: 75% Roof Water Collection	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> </ul>		<ul style="list-style-type: none"> <li>Additional \$750 per dwelling for plumbing connection</li> </ul>	<ul style="list-style-type: none"> <li>Additional \$150 per dwelling for plumbing certification</li> </ul>
Option 2: Rainwater tank on compact blocks	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> </ul>		<ul style="list-style-type: none"> <li>Additional \$2,500 per dwelling for tank installation</li> </ul>	
Option 3: Rainwater tank certified installation	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> </ul>			<ul style="list-style-type: none"> <li>Additional \$150 per dwelling for tank in installation certification</li> </ul>
Option 4: Rainwater tank maintenance / part replacement	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> <li>2 FTE increasing by 1 FTE every 10 years</li> <li>\$300 per dwelling for 1<sup>st</sup> year inspection</li> <li>\$500 per dwelling for parts replacement in 1<sup>st</sup> year for 15% of new dwellings</li> <li>\$500 per dwelling every 5 years for inspection and maintenance</li> <li>\$1,000 per dwelling every 10 years for [parts replacement (rebate program)]</li> </ul>			
Option 5: Outdoor taps flow rate not exceeding 12L/min	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> </ul>		<ul style="list-style-type: none"> <li>Additional \$100 per dwelling for flow restrictors on outdoor taps</li> </ul>	<ul style="list-style-type: none"> <li>Additional \$150 per dwelling for plumbing certification</li> </ul>
Option 6: Mandatory minimum 4-star WELS ratings for plumbing fixtures (houses and apartments)	<ul style="list-style-type: none"> <li>5 % of 1 FTE for WSUD Code revision</li> </ul>		<ul style="list-style-type: none"> <li>Additional \$120 per dwelling for taps (no premium for toilets)</li> </ul>	<ul style="list-style-type: none"> <li>Additional \$150 per dwelling for plumbing certification</li> </ul>
Option 7: Demand Management (combination of options 5 and 6 plus mandatory minimum 4-star WELS ratings required for appliances in apartments)	<ul style="list-style-type: none"> <li>15 % of 1 FTE for WSUD Code revision</li> </ul>		<ul style="list-style-type: none"> <li>Additional \$100 per dwelling for flow restrictors on outdoor taps</li> <li>Additional \$120 per dwelling for taps (no premium for toilets)</li> <li>Additional \$100 for 4-star washing machine</li> <li>Additional \$100 for 4-star dishwasher</li> </ul>	<ul style="list-style-type: none"> <li>Additional \$150 per dwelling for plumbing certification</li> </ul>



Option	ACT Government		Other
	OPEX	CAPEX	OPEX
Option 8: Source substitution (combination of options 1, 2, 3 and 4)	<ul style="list-style-type: none"> <li>• 20 % of 1 FTE for WSUD Code revision</li> <li>• 2 FTE increasing by 1 FTE every 10 years</li> <li>• \$500 per dwelling every 5 years for inspection and maintenance</li> <li>• \$1,000 per dwelling every 10 years for [parts replacement (rebate program)</li> <li>• Note: compact block tanks included through inclusion of Option 2</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$250 per dwelling for plumbing connection</li> <li>• Additional \$2,500 per dwelling for tank installation</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$150 per dwelling for plumbing certification</li> </ul>
Option 9: Plumbing certification (combination of options 3, 5 and 6)	<ul style="list-style-type: none"> <li>• 20 % of 1 FTE for WSUD Code revision</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$100 per dwelling for flow restrictors on outdoor taps</li> <li>• Additional \$120 per dwelling for taps (no premium for toilets)</li> <li>• Additional \$100 for 4-star washing machine</li> <li>• Additional \$100 for 4-star dishwasher</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$150 per dwelling (apartment) for plumbing certification</li> <li>• Additional \$250 per dwelling (house) for plumbing certification</li> </ul>
Option 10: Combination of all options including mandatory minimum 4-star WELS ratings required for appliances in apartments	<ul style="list-style-type: none"> <li>• 35 % of 1 FTE for WSUD Code revision</li> <li>• 2 FTE increasing by 1 FTE every 10 years</li> <li>• \$500 per dwelling every 5 years for inspection and maintenance</li> <li>• \$1,000 per dwelling every 10 years for [parts replacement (rebate program)</li> <li>• Note: compact block tanks included through inclusion of Option 2</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$250 per dwelling for plumbing connection</li> <li>• Additional \$2,500 per dwelling for tank installation</li> <li>• Additional \$100 per dwelling for flow restrictors on outdoor taps</li> <li>• Additional \$120 per dwelling for taps (no premium for toilets)</li> <li>• Additional \$100 for 4-star washing machine</li> <li>• Additional \$100 for 4-star dishwasher</li> </ul>	<ul style="list-style-type: none"> <li>• Additional \$150 per dwelling (apartment) for plumbing certification</li> <li>• Additional \$250 per dwelling (house) for plumbing certification</li> </ul>

\* 1 FTE is assumed to be \$200,000



## 7.1 Option 1 – Change the minimum roof area connected to rainwater tanks to 75%

### Description:

Under the current ACT Waterways WSUD General Code, the minimum roof area required to be connected to a rainwater tank in new dwellings is 50%, or a certain roof area in square metres, depending on the size of the block.

It is proposed that this minimum roof area be increased to 75% and that the references to roof areas in square metres be removed.

This option will require the installation of charged line systems and potentially upsizing the overflow pipe on rainwater tanks.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

### Other benefits:

Increased capture of roofwater at the block level reduces the amount of estate-level stormwater management infrastructure for water quality and flow management. Reduction in mains water use per household will result in a lower household expenditure on water bills, which should translate to lower household financial stress and increased household and community expenditure elsewhere.

### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

### Water saved/supplied and net changes to water balance over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	9	9	0	9
2021/22	17	17	0	17
2022/23	25	25	0	25
2023/24	32	32	0	32
2024/25	39	39	0	39
2025/26	45	45	0	45
2026/27	51	51	0	51
2027/28	57	57	0	57
2028/29	62	62	0	62



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2029/30	67	67	0	67
2030/31	73	73	0	73
2031/32	80	80	0	80
2032/33	85	85	0	85
2033/34	90	90	0	90
2034/35	95	95	0	95
2035/36	99	99	0	99
2036/37	103	103	0	103
2037/38	107	107	0	107
2038/39	110	110	0	110
2039/40	112	112	0	112
2040/41	117	117	0	117
2041/42	121	121	0	121
2042/43	125	125	0	125
2043/44	128	128	0	128
2044/45	132	132	0	132
2045/46	135	135	0	135
2046/47	138	138	0	138
2047/48	141	141	0	141
2048/49	144	144	0	144
2049/50	146	146	0	146
2050/51	150	150	0	150
2051/52	154	154	0	154
2052/53	158	158	0	158
2053/54	162	162	0	162



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2054/55	165	165	0	165
2055/56	169	169	0	169
2056/57	172	172	0	172
2057/58	174	174	0	174
2058/59	177	177	0	177
2059/60	179	179	0	179

Costs (\$) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$10,000	\$1,102,500	\$220,500
2021/22	\$-	\$10,000	\$1,102,500	\$220,500
2022/23	\$-	\$10,000	\$1,102,500	\$220,500
2023/24	\$-	\$10,000	\$1,102,500	\$220,500
2024/25	\$-	\$10,000	\$1,102,500	\$220,500
2025/26	\$-	\$-	\$1,102,500	\$220,500
2026/27	\$-	\$-	\$1,102,500	\$220,500
2027/28	\$-	\$-	\$1,102,500	\$220,500
2028/29	\$-	\$-	\$1,102,500	\$220,500
2029/30	\$-	\$-	\$1,102,500	\$220,500
2030/31	\$-	\$-	\$1,102,500	\$220,500
2031/32	\$-	\$-	\$1,102,500	\$220,500
2032/33	\$-	\$-	\$1,102,500	\$220,500
2033/34	\$-	\$-	\$1,102,500	\$220,500
2034/35	\$-	\$-	\$1,102,500	\$220,500



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2035/36	\$-	\$-	\$1,102,500	\$220,500
2036/37	\$-	\$-	\$1,102,500	\$220,500
2037/38	\$-	\$-	\$1,102,500	\$220,500
2038/39	\$-	\$-	\$1,102,500	\$220,500
2039/40	\$-	\$-	\$1,102,500	\$220,500
2040/41	\$-	\$-	\$1,102,500	\$220,500
2041/42	\$-	\$-	\$1,102,500	\$220,500
2042/43	\$-	\$-	\$1,102,500	\$220,500
2043/44	\$-	\$-	\$1,102,500	\$220,500
2044/45	\$-	\$-	\$1,102,500	\$220,500
2045/46	\$-	\$-	\$1,102,500	\$220,500
2046/47	\$-	\$-	\$1,102,500	\$220,500
2047/48	\$-	\$-	\$1,102,500	\$220,500
2048/49	\$-	\$-	\$1,102,500	\$220,500
2049/50	\$-	\$-	\$1,102,500	\$220,500
2050/51	\$-	\$-	\$1,102,500	\$220,500
2051/52	\$-	\$-	\$1,102,500	\$220,500
2052/53	\$-	\$-	\$1,102,500	\$220,500
2053/54	\$-	\$-	\$1,102,500	\$220,500
2054/55	\$-	\$-	\$1,102,500	\$220,500
2055/56	\$-	\$-	\$1,102,500	\$220,500
2056/57	\$-	\$-	\$1,102,500	\$220,500
2057/58	\$-	\$-	\$1,102,500	\$220,500
2058/59	\$-	\$-	\$1,102,500	\$220,500
2059/60	\$-	\$-	\$1,102,500	\$220,500



## 7.2 Option 2 – Rainwater harvesting and reuse for compact blocks (<250 m<sup>2</sup>)

### Description:

Under the current ACT Waterways WSUD General Code, there is no requirement for rainwater harvesting and reuse on compact blocks (<250 m<sup>2</sup>).

It is proposed that a 2KL rainwater tank is required on compact blocks for toilet, laundry and outdoor water use including irrigation.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

### Other benefits:

Increased capture of roofwater at the block level reduces the amount of estate-level stormwater management infrastructure for water quality and flow management. Reduction in mains water use per household will result in a lower household expenditure on water bills, which should translate to lower household financial stress and increased household and community expenditure elsewhere.

### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

### Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	14	14	0	14
2021/22	27	27	0	27
2022/23	40	40	0	40
2023/24	52	52	0	52
2024/25	63	63	0	63
2025/26	73	73	0	73
2026/27	83	83	0	83
2027/28	92	92	0	92
2028/29	101	101	0	101
2029/30	108	108	0	108
2030/31	119	119	0	119
2031/32	129	129	0	129



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2032/33	138	138	0	138
2033/34	146	146	0	146
2034/35	154	154	0	154
2035/36	161	161	0	161
2036/37	167	167	0	167
2037/38	173	173	0	173
2038/39	178	178	0	178
2039/40	182	182	0	182
2040/41	189	189	0	189
2041/42	195	195	0	195
2042/43	202	202	0	202
2043/44	208	208	0	208
2044/45	213	213	0	213
2045/46	218	218	0	218
2046/47	223	223	0	223
2047/48	228	228	0	228
2048/49	232	232	0	232
2049/50	236	236	0	236
2050/51	243	243	0	243
2051/52	250	250	0	250
2052/53	256	256	0	256
2053/54	262	262	0	262
2054/55	267	267	0	267
2055/56	273	273	0	273
2056/57	278	278	0	278



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2057/58	282	282	0	282
2058/59	286	286	0	286
2059/60	290	290	0	290

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers etc)	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$10,000	\$1,575,000	\$-
2021/22	\$-	\$10,000	\$1,575,000	\$-
2022/23	\$-	\$10,000	\$1,575,000	\$-
2023/24	\$-	\$10,000	\$1,575,000	\$-
2024/25	\$-	\$10,000	\$1,575,000	\$-
2025/26	\$-	\$-	\$1,575,000	\$-
2026/27	\$-	\$-	\$1,575,000	\$-
2027/28	\$-	\$-	\$1,575,000	\$-
2028/29	\$-	\$-	\$1,575,000	\$-
2029/30	\$-	\$-	\$1,575,000	\$-
2030/31	\$-	\$-	\$1,575,000	\$-
2031/32	\$-	\$-	\$1,575,000	\$-
2032/33	\$-	\$-	\$1,575,000	\$-
2033/34	\$-	\$-	\$1,575,000	\$-
2034/35	\$-	\$-	\$1,575,000	\$-
2035/36	\$-	\$-	\$1,575,000	\$-
2036/37	\$-	\$-	\$1,575,000	\$-
2037/38	\$-	\$-	\$1,575,000	\$-



Year	Additional costs to ACT Government		Additional costs to others (customers / developers etc)	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2038/39	\$-	\$-	\$1,575,000	\$-
2039/40	\$-	\$-	\$1,575,000	\$-
2040/41	\$-	\$-	\$1,575,000	\$-
2041/42	\$-	\$-	\$1,575,000	\$-
2042/43	\$-	\$-	\$1,575,000	\$-
2043/44	\$-	\$-	\$1,575,000	\$-
2044/45	\$-	\$-	\$1,575,000	\$-
2045/46	\$-	\$-	\$1,575,000	\$-
2046/47	\$-	\$-	\$1,575,000	\$-
2047/48	\$-	\$-	\$1,575,000	\$-
2048/49	\$-	\$-	\$1,575,000	\$-
2049/50	\$-	\$-	\$1,575,000	\$-
2050/51	\$-	\$-	\$1,575,000	\$-
2051/52	\$-	\$-	\$1,575,000	\$-
2052/53	\$-	\$-	\$1,575,000	\$-
2053/54	\$-	\$-	\$1,575,000	\$-
2054/55	\$-	\$-	\$1,575,000	\$-
2055/56	\$-	\$-	\$1,575,000	\$-
2056/57	\$-	\$-	\$1,575,000	\$-
2057/58	\$-	\$-	\$1,575,000	\$-
2058/59	\$-	\$-	\$1,575,000	\$-
2059/60	\$-	\$-	\$1,575,000	\$-



### 7.3 Option 3 – Rainwater tank installation: certified plumbing connections, pumps and diverters

#### Description:

Modelled savings arising from rainwater tanks are generally optimistic. A study undertaken across Melbourne by the CSIRO in 2015 found that 17% of existing household rainwater tanks were not actually plumbed in, and that 10% had non-functioning pumps and 8% had faulty electronic diverters (CSIRO, 2015).

Under the current ACT Waterways WSUD General Code, there are requirements for on-site stormwater retention and detention using rainwater tanks. Compliance with these rules is demonstrated through a report from a suitably qualified person consistent with the methods specified in the ACT Practice Guidelines for Water Sensitive Urban Design.

It is proposed that the notes in the code be changed to indicate that plumbing compliance is required for rainwater tank installation including plumbing connections and rainwater tank pumps and diverters as part of the building certification process, to help drive greater compliance with the code and enhance water savings.

#### *In terdependence with other options:*

The option is feasible without other options being implemented.

#### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

#### Other benefits:

This option ensures that potable water savings and associated other benefits from rainwater harvesting is being realised.

#### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

#### Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	10	10	0	10
2021/22	19	19	0	19
2022/23	27	27	0	27
2023/24	36	36	0	36
2024/25	43	43	0	43
2025/26	51	51	0	51
2026/27	57	57	0	57
2027/28	64	64	0	64
2028/29	69	69	0	69

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2029/30	75	75	0	75
2030/31	82	82	0	82
2031/32	89	89	0	89
2032/33	95	95	0	95
2033/34	101	101	0	101
2034/35	106	106	0	106
2035/36	111	111	0	111
2036/37	115	115	0	115
2037/38	119	119	0	119
2038/39	122	122	0	122
2039/40	125	125	0	125
2040/41	130	130	0	130
2041/42	134	134	0	134
2042/43	139	139	0	139
2043/44	143	143	0	143
2044/45	147	147	0	147
2045/46	150	150	0	150
2046/47	154	154	0	154
2047/48	157	157	0	157
2048/49	160	160	0	160
2049/50	162	162	0	162
2050/51	167	167	0	167
2051/52	172	172	0	172
2052/53	176	176	0	176
2053/54	180	180	0	180



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2054/55	184	184	0	184
2055/56	188	188	0	188
2056/57	191	191	0	191
2057/58	194	194	0	194
2058/59	197	197	0	197
2059/60	200	200	0	200

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$10,000	\$-	\$220,500
2021/22	\$-	\$10,000	\$-	\$220,500
2022/23	\$-	\$10,000	\$-	\$220,500
2023/24	\$-	\$10,000	\$-	\$220,500
2024/25	\$-	\$10,000	\$-	\$220,500
2025/26	\$-	\$-	\$-	\$220,500
2026/27	\$-	\$-	\$-	\$220,500
2027/28	\$-	\$-	\$-	\$220,500
2028/29	\$-	\$-	\$-	\$220,500
2029/30	\$-	\$-	\$-	\$220,500
2030/31	\$-	\$-	\$-	\$220,500
2031/32	\$-	\$-	\$-	\$220,500
2032/33	\$-	\$-	\$-	\$220,500
2033/34	\$-	\$-	\$-	\$220,500
2034/35	\$-	\$-	\$-	\$220,500



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2035/36	\$-	\$-	\$-	\$220,500
2036/37	\$-	\$-	\$-	\$220,500
2037/38	\$-	\$-	\$-	\$220,500
2038/39	\$-	\$-	\$-	\$220,500
2039/40	\$-	\$-	\$-	\$220,500
2040/41	\$-	\$-	\$-	\$220,500
2041/42	\$-	\$-	\$-	\$220,500
2042/43	\$-	\$-	\$-	\$220,500
2043/44	\$-	\$-	\$-	\$220,500
2044/45	\$-	\$-	\$-	\$220,500
2045/46	\$-	\$-	\$-	\$220,500
2046/47	\$-	\$-	\$-	\$220,500
2047/48	\$-	\$-	\$-	\$220,500
2048/49	\$-	\$-	\$-	\$220,500
2049/50	\$-	\$-	\$-	\$220,500
2050/51	\$-	\$-	\$-	\$220,500
2051/52	\$-	\$-	\$-	\$220,500
2052/53	\$-	\$-	\$-	\$220,500
2053/54	\$-	\$-	\$-	\$220,500
2054/55	\$-	\$-	\$-	\$220,500
2055/56	\$-	\$-	\$-	\$220,500
2056/57	\$-	\$-	\$-	\$220,500
2057/58	\$-	\$-	\$-	\$220,500
2058/59	\$-	\$-	\$-	\$220,500
2059/60	\$-	\$-	\$-	\$220,500



## 7.4 Option 4 – Rainwater tank maintenance: pumps and diverters replacement program

### Description:

Potable water savings will be lost over time without effective maintenance of rainwater tanks and associated equipment.

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that rainwater tank installations will be inspected by ACT government employees on a regular (every 5 years), ongoing basis, and pumps and diverters replaced (as needed but expected to be every 10 years) free of charge by government approved plumbing contractors, if the property owner is happy for this to occur. Alternatively, the property owner can have the equipment replaced by a contractor of their choice and claim the expense from the ACT Government. An inspection is proposed in the first year to rectify tanks that are not adequately installed.

### *In terdependence with other options:*

The option is viable without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

### Other benefits:

This option ensures that potable water savings and associated other benefits from rainwater harvesting is being realised.

### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

### Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	10	10	0	10
2021/22	19	19	0	19
2022/23	27	27	0	27
2023/24	36	36	0	36
2024/25	43	43	0	43
2025/26	63	63	0	63
2026/27	82	82	0	82
2027/28	100	100	0	100
2028/29	118	118	0	118
2029/30	136	136	0	136



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2030/31	152	152	0	152
2031/32	168	168	0	168
2032/33	183	183	0	183
2033/34	198	198	0	198
2034/35	213	213	0	213
2035/36	239	239	0	239
2036/37	264	264	0	264
2037/38	290	290	0	290
2038/39	314	314	0	314
2039/40	338	338	0	338
2040/41	362	362	0	362
2041/42	383	383	0	383
2042/43	404	404	0	404
2043/44	424	424	0	424
2044/45	442	442	0	442
2045/46	472	472	0	472
2046/47	500	500	0	500
2047/48	527	527	0	527
2048/49	553	553	0	553
2049/50	578	578	0	578
2050/51	601	601	0	601
2051/52	623	623	0	623
2052/53	644	644	0	644
2053/54	664	664	0	664
2054/55	682	682	0	682



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2055/56	712	712	0	712
2056/57	740	740	0	740
2057/58	767	767	0	767
2058/59	793	793	0	793
2059/60	818	818	0	818

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$961,250	\$-	\$-
2021/22	\$-	\$961,250	\$-	\$-
2022/23	\$-	\$961,250	\$-	\$-
2023/24	\$-	\$961,250	\$-	\$-
2024/25	\$-	\$961,250	\$-	\$-
2025/26	\$-	\$1,686,250	\$-	\$-
2026/27	\$-	\$1,686,250	\$-	\$-
2027/28	\$-	\$1,686,250	\$-	\$-
2028/29	\$-	\$1,686,250	\$-	\$-
2029/30	\$-	\$1,686,250	\$-	\$-
2030/31	\$-	\$4,091,250	\$-	\$-
2031/32	\$-	\$4,091,250	\$-	\$-
2032/33	\$-	\$4,091,250	\$-	\$-
2033/34	\$-	\$4,091,250	\$-	\$-
2034/35	\$-	\$4,091,250	\$-	\$-
2035/36	\$-	\$4,826,250	\$-	\$-



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2036/37	\$-	\$4,826,250	\$-	\$-
2037/38	\$-	\$4,826,250	\$-	\$-
2038/39	\$-	\$4,826,250	\$-	\$-
2039/40	\$-	\$4,826,250	\$-	\$-
2040/41	\$-	\$7,231,250	\$-	\$-
2041/42	\$-	\$7,231,250	\$-	\$-
2042/43	\$-	\$7,231,250	\$-	\$-
2043/44	\$-	\$7,231,250	\$-	\$-
2044/45	\$-	\$7,231,250	\$-	\$-
2045/46	\$-	\$7,966,250	\$-	\$-
2046/47	\$-	\$7,966,250	\$-	\$-
2047/48	\$-	\$7,966,250	\$-	\$-
2048/49	\$-	\$7,966,250	\$-	\$-
2049/50	\$-	\$7,966,250	\$-	\$-
2050/51	\$-	\$10,371,250	\$-	\$-
2051/52	\$-	\$10,371,250	\$-	\$-
2052/53	\$-	\$10,371,250	\$-	\$-
2053/54	\$-	\$10,371,250	\$-	\$-
2054/55	\$-	\$10,371,250	\$-	\$-
2055/56	\$-	\$10,371,250	\$-	\$-
2056/57	\$-	\$10,371,250	\$-	\$-
2057/58	\$-	\$10,371,250	\$-	\$-
2058/59	\$-	\$10,371,250	\$-	\$-
2059/60	\$-	\$10,371,250	\$-	\$-



## 7.5 Option 5 – Include a maximum 12L/min flow requirement for outdoor plumbing fixtures

### Description:

Under the current ACT Waterways WSUD General Code, the use of water-efficient plumbing fixtures is already mandatory for all new dwellings in the ACT. However, this only applies to indoor plumbing fixtures.

It is proposed that this requirement under the code be extended to include outdoor plumbing fixtures (maximum flow of 12L/min).

### *Interdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

### Other benefits:

Reduction in mains water use per household will result in a lower household expenditure on water bills, which should translate to lower household financial stress and increased household and community expenditure elsewhere.

### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	21	-2	0	-2
2021/22	42	-3	0	-3
2022/23	63	-4	0	-4
2023/24	85	-6	0	-6
2024/25	106	-7	0	-7
2025/26	128	-8	0	-8
2026/27	149	-9	0	-9
2027/28	171	-10	0	-10
2028/29	192	-11	0	-11
2029/30	214	-12	0	-12
2030/31	236	-13	0	-13
2031/32	257	-14	0	-14



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2032/33	279	-15	0	-15
2033/34	301	-16	0	-16
2034/35	322	-17	0	-17
2035/36	344	-18	0	-18
2036/37	366	-18	0	-18
2037/38	388	-19	0	-19
2038/39	410	-19	0	-19
2039/40	432	-20	0	-20
2040/41	454	-21	0	-21
2041/42	476	-21	0	-21
2042/43	498	-22	0	-22
2043/44	520	-23	0	-23
2044/45	542	-23	0	-23
2045/46	564	-24	0	-24
2046/47	586	-24	0	-24
2047/48	608	-25	0	-25
2048/49	630	-25	0	-25
2049/50	652	-26	0	-26
2050/51	674	-27	0	-27
2051/52	696	-27	0	-27
2052/53	718	-28	0	-28
2053/54	740	-29	0	-29
2054/55	762	-29	0	-29
2055/56	784	-30	0	-30
2056/57	806	-30	0	-30



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2057 /58	828	-31	0	-31
2058/59	850	-31	0	-31
2059/60	873	-32	0	-32

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$10,000	\$210,000	\$315,000
2021/22	\$-	\$10,000	\$210,000	\$315,000
2022/23	\$-	\$10,000	\$210,000	\$315,000
2023/24	\$-	\$10,000	\$210,000	\$315,000
2024/25	\$-	\$10,000	\$210,000	\$315,000
2025/26	\$-	\$-	\$210,000	\$315,000
2026/27	\$-	\$-	\$210,000	\$315,000
2027/28	\$-	\$-	\$210,000	\$315,000
2028/29	\$-	\$-	\$210,000	\$315,000
2029/30	\$-	\$-	\$210,000	\$315,000
2030/31	\$-	\$-	\$210,000	\$315,000
2031/32	\$-	\$-	\$210,000	\$315,000
2032/33	\$-	\$-	\$210,000	\$315,000
2033/34	\$-	\$-	\$210,000	\$315,000
2034/35	\$-	\$-	\$210,000	\$315,000
2035/36	\$-	\$-	\$210,000	\$315,000
2036/37	\$-	\$-	\$210,000	\$315,000
2037/38	\$-	\$-	\$210,000	\$315,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2038/39	\$-	\$-	\$210,000	\$315,000
2039/40	\$-	\$-	\$210,000	\$315,000
2040/41	\$-	\$-	\$210,000	\$315,000
2041/42	\$-	\$-	\$210,000	\$315,000
2042/43	\$-	\$-	\$210,000	\$315,000
2043/44	\$-	\$-	\$210,000	\$315,000
2044/45	\$-	\$-	\$210,000	\$315,000
2045/46	\$-	\$-	\$210,000	\$315,000
2046/47	\$-	\$-	\$210,000	\$315,000
2047/48	\$-	\$-	\$210,000	\$315,000
2048/49	\$-	\$-	\$210,000	\$315,000
2049/50	\$-	\$-	\$210,000	\$315,000
2050/51	\$-	\$-	\$210,000	\$315,000
2051/52	\$-	\$-	\$210,000	\$315,000
2052/53	\$-	\$-	\$210,000	\$315,000
2053/54	\$-	\$-	\$210,000	\$315,000
2054/55	\$-	\$-	\$210,000	\$315,000
2055/56	\$-	\$-	\$210,000	\$315,000
2056/57	\$-	\$-	\$210,000	\$315,000
2057/58	\$-	\$-	\$210,000	\$315,000
2058/59	\$-	\$-	\$210,000	\$315,000
2059/60	\$-	\$-	\$210,000	\$315,000



## 7.6 Option 6 – Mandatory minimum 4-star WELS ratings for plumbing fixtures

### Description:

Currently, the ACT Waterways WSUD General Code states there is a mandatory requirement for plumbing fixtures in new dwellings to be at least 3-star WELS rated. In the ACT Practice Guidelines for WSUD, however, it is stated that a minimum 4-star rating for plumbing fixtures in new dwellings is required in the Territory.

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that indoor plumbing fixtures (except for shower heads) in new dwellings must be at least 4-star WELS rated.

### *Interdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses and apartments).

### Other benefits:

Reduction in mains water use per household will result in a lower household expenditure on water bills, which should translate to lower household financial stress and increased household and community expenditure elsewhere. At a city-scale, the reduction in wastewater flows will result in lower treatment cost.

### Project risks:

Risks to, or associated with, human health, environmental health, technical matters, social acceptance or finance/expenditure arising from the implementation of this option are not deemed significant.

### Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	34	-1	36	-1
2021/22	69	-2	71	-2
2022/23	104	-3	107	-3
2023/24	138	-4	143	-4
2024/25	173	-5	178	-5
2025/26	208	-6	214	-6
2026/27	243	-7	249	-7
2027/28	277	-8	285	-8
2028/29	312	-8	321	-8
2029/30	347	-9	356	-9
2030/31	382	-10	392	-10
2031/32	417	-11	428	-11



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2032/33	452	-11	463	-11
2033/34	487	-12	499	-12
2034/35	522	-13	535	-13
2035/36	557	-13	570	-13
2036/37	592	-14	606	-14
2037/38	627	-14	642	-14
2038/39	662	-15	677	-15
2039/40	698	-15	713	-15
2040/41	733	-16	748	-16
2041/42	768	-16	784	-16
2042/43	803	-17	820	-17
2043/44	838	-17	855	-17
2044/45	873	-18	891	-18
2045/46	908	-18	927	-18
2046/47	944	-19	962	-19
2047/48	979	-19	998	-19
2048/49	1014	-19	1034	-19
2049/50	1050	-20	1069	-20
2050/51	1085	-20	1105	-20
2051/52	1120	-21	1141	-21
2052/53	1155	-21	1176	-21
2053/54	1190	-22	1212	-22
2054/55	1225	-22	1247	-22
2055/56	1260	-23	1283	-23
2056/57	1296	-23	1319	-23



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2057/58	1331	-24	1354	-24
2058/59	1366	-24	1390	-24
2059/60	1402	-24	1426	-24

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$10,000	\$360,000	\$450,000
2021/22	\$-	\$10,000	\$360,000	\$450,000
2022/23	\$-	\$10,000	\$360,000	\$450,000
2023/24	\$-	\$10,000	\$360,000	\$450,000
2024/25	\$-	\$10,000	\$360,000	\$450,000
2025/26	\$-	\$-	\$360,000	\$450,000
2026/27	\$-	\$-	\$360,000	\$450,000
2027/28	\$-	\$-	\$360,000	\$450,000
2028/29	\$-	\$-	\$360,000	\$450,000
2029/30	\$-	\$-	\$360,000	\$450,000
2030/31	\$-	\$-	\$360,000	\$450,000
2031/32	\$-	\$-	\$360,000	\$450,000
2032/33	\$-	\$-	\$360,000	\$450,000
2033/34	\$-	\$-	\$360,000	\$450,000
2034/35	\$-	\$-	\$360,000	\$450,000
2035/36	\$-	\$-	\$360,000	\$450,000
2036/37	\$-	\$-	\$360,000	\$450,000
2037/38	\$-	\$-	\$360,000	\$450,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2038/39	\$-	\$-	\$360,000	\$450,000
2039/40	\$-	\$-	\$360,000	\$450,000
2040/41	\$-	\$-	\$360,000	\$450,000
2041/42	\$-	\$-	\$360,000	\$450,000
2042/43	\$-	\$-	\$360,000	\$450,000
2043/44	\$-	\$-	\$360,000	\$450,000
2044/45	\$-	\$-	\$360,000	\$450,000
2045/46	\$-	\$-	\$360,000	\$450,000
2046/47	\$-	\$-	\$360,000	\$450,000
2047/48	\$-	\$-	\$360,000	\$450,000
2048/49	\$-	\$-	\$360,000	\$450,000
2049/50	\$-	\$-	\$360,000	\$450,000
2050/51	\$-	\$-	\$360,000	\$450,000
2051/52	\$-	\$-	\$360,000	\$450,000
2052/53	\$-	\$-	\$360,000	\$450,000
2053/54	\$-	\$-	\$360,000	\$450,000
2054/55	\$-	\$-	\$360,000	\$450,000
2055/56	\$-	\$-	\$360,000	\$450,000
2056/57	\$-	\$-	\$360,000	\$450,000
2057/58	\$-	\$-	\$360,000	\$450,000
2058/59	\$-	\$-	\$360,000	\$450,000
2059/60	\$-	\$-	\$360,000	\$450,000



## 7.7 Option 7 – Combination of options 5 and 6 (demand management)

### Description:

Under the current ACT Waterways WSUD General Code, there is a mandatory requirement for plumbing fixtures in new dwellings to be at least 3-star WELS rated and no requirement for water efficiency in outdoor plumbing fixtures.

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that indoor plumbing fixtures (except for shower heads) in new dwellings must be at least 4-star WELS rated, and that a requirement for maximum flow rates of 12L/min (~2-star equivalent) on outdoor plumbing fixtures through the use of inline flow restrictors be included. The code is to be amended also to indicate that appliances in new apartments must be at least 4-star WELS rated.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses and apartments).

Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roof-water, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	61	-3	40	-3
2021/22	121	-5	81	-5
2022/23	182	-7	121	-7
2023/24	243	-9	162	-9
2024/25	304	-11	202	-11
2025/26	365	-13	242	-13
2026/27	426	-15	283	-15
2027/28	488	-17	323	-17
2028/29	549	-18	364	-18
2029/30	611	-19	404	-19
2030/31	672	-21	444	-21
2031/32	733	-23	485	-23
2032/33	794	-25	525	-25
2033/34	856	-26	566	-26
2034/35	918	-28	606	-28



Year	Potable water saved (ML/yr)	Alternative water source supplied (roof-water, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2035/36	979	-29	646	-29
2036/37	1041	-30	687	-30
2037/38	1103	-31	727	-31
2038/39	1165	-32	768	-32
2039/40	1228	-33	808	-33
2040/41	1289	-34	849	-34
2041/42	1351	-35	889	-35
2042/43	1413	-36	929	-36
2043/44	1475	-37	970	-37
2044/45	1537	-38	1010	-38
2045/46	1599	-39	1051	-39
2046/47	1661	-40	1091	-40
2047/48	1724	-41	1131	-41
2048/49	1786	-42	1172	-42
2049/50	1848	-42	1212	-42
2050/51	1910	-44	1253	-44
2051/52	1972	-45	1293	-45
2052/53	2034	-46	1333	-46
2053/54	2096	-47	1374	-47
2054/55	2158	-48	1414	-48
2055/56	2220	-49	1455	-49
2056/57	2282	-50	1495	-50
2057/58	2344	-51	1535	-51
2058/59	2406	-51	1576	-51
2059/60	2469	-52	1616	-52



Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$30,000	\$750,000	\$450,000
2021/22	\$-	\$30,000	\$750,000	\$450,000
2022/23	\$-	\$30,000	\$750,000	\$450,000
2023/24	\$-	\$30,000	\$750,000	\$450,000
2024/25	\$-	\$30,000	\$750,000	\$450,000
2025/26	\$-	\$-	\$750,000	\$450,000
2026/27	\$-	\$-	\$750,000	\$450,000
2027/28	\$-	\$-	\$750,000	\$450,000
2028/29	\$-	\$-	\$750,000	\$450,000
2029/30	\$-	\$-	\$750,000	\$450,000
2030/31	\$-	\$-	\$750,000	\$450,000
2031/32	\$-	\$-	\$750,000	\$450,000
2032/33	\$-	\$-	\$750,000	\$450,000
2033/34	\$-	\$-	\$750,000	\$450,000
2034/35	\$-	\$-	\$750,000	\$450,000
2035/36	\$-	\$-	\$750,000	\$450,000
2036/37	\$-	\$-	\$750,000	\$450,000
2037/38	\$-	\$-	\$750,000	\$450,000
2038/39	\$-	\$-	\$750,000	\$450,000
2039/40	\$-	\$-	\$750,000	\$450,000
2040/41	\$-	\$-	\$750,000	\$450,000
2041/42	\$-	\$-	\$750,000	\$450,000
2042/43	\$-	\$-	\$750,000	\$450,000
2043/44	\$-	\$-	\$750,000	\$450,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2044/45	\$-	\$-	\$750,000	\$450,000
2045/46	\$-	\$-	\$750,000	\$450,000
2046/47	\$-	\$-	\$750,000	\$450,000
2047/48	\$-	\$-	\$750,000	\$450,000
2048/49	\$-	\$-	\$750,000	\$450,000
2049/50	\$-	\$-	\$750,000	\$450,000
2050/51	\$-	\$-	\$750,000	\$450,000
2051/52	\$-	\$-	\$750,000	\$450,000
2052/53	\$-	\$-	\$750,000	\$450,000
2053/54	\$-	\$-	\$750,000	\$450,000
2054/55	\$-	\$-	\$750,000	\$450,000
2055/56	\$-	\$-	\$750,000	\$450,000
2056/57	\$-	\$-	\$750,000	\$450,000
2057/58	\$-	\$-	\$750,000	\$450,000
2058/59	\$-	\$-	\$750,000	\$450,000
2059/60	\$-	\$-	\$750,000	\$450,000



## 7.8 Option 8 – Combination of options 1, 2, 3, 4 (source substitution)

### Description:

Under the current ACT Waterways WSUD General Code, there are requirements for on-site stormwater retention and detention using rainwater tanks, including a minimum roof area required to be connected to a rainwater tank in new dwellings of 50%. Compliance with these rules is demonstrated through a report from a suitably qualified person consistent with the methods specified in the ACT Practice Guidelines for Water Sensitive Urban Design. There is no requirement for rainwater harvesting and reuse on compact blocks (<250 m<sup>2</sup>).

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that 75% of the roof area in new dwellings is required to be connected to a rainwater tank and that a 2KL rainwater tank is required on compact blocks for toilet, laundry and outdoor water use including irrigation. Compliance is also required for rainwater tank installation including plumbing connections, rainwater tank pumps and diverters under the building certification process to help drive greater compliance with the code and enhance water savings. Rainwater tank installations will be inspected by ACT government employees on a regular (every 5 years), ongoing basis, and pumps and diverters replaced (as needed but expected to be every 10 years) free of charge by government approved plumbing contractors, if the property owner is happy for this to occur. Alternatively, the property owner can have the equipment replaced by a contractor of their choice and claim the expense from the ACT Government.

This option will require the installation of charged line systems to rainwater tanks.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses only).

Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	41	41	0	41
2021/22	80	80	0	80
2022/23	116	116	0	116
2023/24	151	151	0	151
2024/25	184	184	0	184
2025/26	233	233	0	233
2026/27	280	280	0	280
2027/28	325	325	0	325
2028/29	368	368	0	368
2029/30	409	409	0	409

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2030/31	453	453	0	453
2031/32	496	496	0	496
2032/33	536	536	0	536
2033/34	575	575	0	575
2034/35	611	611	0	611
2035/36	664	664	0	664
2036/37	714	714	0	714
2037/38	763	763	0	763
2038/39	809	809	0	809
2039/40	854	854	0	854
2040/41	902	902	0	902
2041/42	948	948	0	948
2042/43	991	991	0	991
2043/44	1032	1032	0	1032
2044/45	1070	1070	0	1070
2045/46	1125	1125	0	1125
2046/47	1177	1177	0	1177
2047/48	1227	1227	0	1227
2048/49	1274	1274	0	1274
2049/50	1319	1319	0	1319
2050/51	1367	1367	0	1367
2051/52	1412	1412	0	1412
2052/53	1456	1456	0	1456
2053/54	1497	1497	0	1497
2054/55	1535	1535	0	1535



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2055/56	1590	1590	0	1590
2056/57	1642	1642	0	1642
2057/58	1691	1691	0	1691
2058/59	1739	1739	0	1739
2059/60	1784	1784	0	1784

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$440,000	\$3,150,000	\$315,000
2021/22	\$-	\$440,000	\$3,150,000	\$315,000
2022/23	\$-	\$440,000	\$3,150,000	\$315,000
2023/24	\$-	\$440,000	\$3,150,000	\$315,000
2024/25	\$-	\$440,000	\$3,150,000	\$315,000
2025/26	\$-	\$1,450,000	\$3,150,000	\$315,000
2026/27	\$-	\$1,450,000	\$3,150,000	\$315,000
2027/28	\$-	\$1,450,000	\$3,150,000	\$315,000
2028/29	\$-	\$1,450,000	\$3,150,000	\$315,000
2029/30	\$-	\$1,450,000	\$3,150,000	\$315,000
2030/31	\$-	\$4,800,000	\$3,150,000	\$315,000
2031/32	\$-	\$4,800,000	\$3,150,000	\$315,000
2032/33	\$-	\$4,800,000	\$3,150,000	\$315,000
2033/34	\$-	\$4,800,000	\$3,150,000	\$315,000
2034/35	\$-	\$4,800,000	\$3,150,000	\$315,000
2035/36	\$-	\$5,850,000	\$3,150,000	\$315,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2036/37	\$-	\$5,850,000	\$3,150,000	\$315,000
2037/38	\$-	\$5,850,000	\$3,150,000	\$315,000
2038/39	\$-	\$5,850,000	\$3,150,000	\$315,000
2039/40	\$-	\$5,850,000	\$3,150,000	\$315,000
2040/41	\$-	\$9,200,000	\$3,150,000	\$315,000
2041/42	\$-	\$9,200,000	\$3,150,000	\$315,000
2042/43	\$-	\$9,200,000	\$3,150,000	\$315,000
2043/44	\$-	\$9,200,000	\$3,150,000	\$315,000
2044/45	\$-	\$9,200,000	\$3,150,000	\$315,000
2045/46	\$-	\$10,250,000	\$3,150,000	\$315,000
2046/47	\$-	\$10,250,000	\$3,150,000	\$315,000
2047/48	\$-	\$10,250,000	\$3,150,000	\$315,000
2048/49	\$-	\$10,250,000	\$3,150,000	\$315,000
2049/50	\$-	\$10,250,000	\$3,150,000	\$315,000
2050/51	\$-	\$13,600,000	\$3,150,000	\$315,000
2051/52	\$-	\$13,600,000	\$3,150,000	\$315,000
2052/53	\$-	\$13,600,000	\$3,150,000	\$315,000
2053/54	\$-	\$13,600,000	\$3,150,000	\$315,000
2054/55	\$-	\$13,600,000	\$3,150,000	\$315,000
2055/56	\$-	\$13,600,000	\$3,150,000	\$315,000
2056/57	\$-	\$13,600,000	\$3,150,000	\$315,000
2057/58	\$-	\$13,600,000	\$3,150,000	\$315,000
2058/59	\$-	\$13,600,000	\$3,150,000	\$315,000
2059/60	\$-	\$13,600,000	\$3,150,000	\$315,000



## 7.9 Option 9 – Combination of options 3, 5 and 6 (plumbing certification focus)

### Description:

Under the current ACT Waterways WSUD General Code, there are requirements for on-site stormwater retention and detention using rainwater tanks. Compliance with these rules is demonstrated through a report from a suitably qualified person consistent with the methods specified in the ACT Practice Guidelines for Water Sensitive Urban Design. There is also a mandatory requirement for plumbing fixtures in new dwellings to be at least 3-star WELS rated but no water-efficiency requirements for outdoor plumbing fixtures.

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that indoor plumbing fixtures (except for shower head) in new dwellings must be at least 4-star WELS rated, and that a requirement for maximum flow rates of 12L/min (~2-star equivalent) on outdoor plumbing fixtures through the use of inline flow restrictors. The ACT Waterways WSUD General Code is to be amended to indicate that appliances in new apartments must be at least 4-star WELS rated. In addition, the notes in the code are to be changed to indicate that compliance certificate is requirement for fixtures and appliances. Compliance certificate for rainwater tank installation including plumbing connections, rainwater tank pumps and diverters is also required under the building certification process, to help drive greater compliance with the code and enhance water savings.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses and apartments).

### Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	70	7	40	7
2021/22	139	13	81	13
2022/23	208	19	121	19
2023/24	277	25	162	25
2024/25	345	30	202	30
2025/26	413	35	242	35
2026/27	481	39	283	39
2027/28	548	44	323	44
2028/29	615	48	364	48
2029/30	682	51	404	51
2030/31	750	56	444	56
2031/32	817	61	485	61

Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2032/33	885	65	525	65
2033/34	952	69	566	69
2034/35	1018	73	606	73
2035/36	1085	76	646	76
2036/37	1151	79	687	79
2037/38	1216	82	727	82
2038/39	1282	84	768	84
2039/40	1347	86	808	86
2040/41	1413	90	849	90
2041/42	1479	93	889	93
2042/43	1545	96	929	96
2043/44	1611	99	970	99
2044/45	1677	101	1010	101
2045/46	1742	104	1051	104
2046/47	1808	106	1091	106
2047/48	1873	108	1131	108
2048/49	1938	110	1172	110
2049/50	2003	112	1212	112
2050/51	2069	115	1253	115
2051/52	2135	118	1293	118
2052/53	2201	121	1333	121
2053/54	2267	124	1374	124
2054/55	2333	127	1414	127
2055/56	2398	129	1455	129
2056/57	2463	132	1495	132



Year	Potable water saved (ML/yr)	Alternative water source supplied (roofwater, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2057/58	2529	134	1535	134
2058/59	2594	136	1576	136
2059/60	2658	138	1616	138

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$40,000	\$750,000	\$660,000
2021/22	\$-	\$40,000	\$750,000	\$660,000
2022/23	\$-	\$40,000	\$750,000	\$660,000
2023/24	\$-	\$40,000	\$750,000	\$660,000
2024/25	\$-	\$40,000	\$750,000	\$660,000
2025/26	\$-	\$-	\$750,000	\$660,000
2026/27	\$-	\$-	\$750,000	\$660,000
2027/28	\$-	\$-	\$750,000	\$660,000
2028/29	\$-	\$-	\$750,000	\$660,000
2029/30	\$-	\$-	\$750,000	\$660,000
2030/31	\$-	\$-	\$750,000	\$660,000
2031/32	\$-	\$-	\$750,000	\$660,000
2032/33	\$-	\$-	\$750,000	\$660,000
2033/34	\$-	\$-	\$750,000	\$660,000
2034/35	\$-	\$-	\$750,000	\$660,000
2035/36	\$-	\$-	\$750,000	\$660,000
2036/37	\$-	\$-	\$750,000	\$660,000
2037/38	\$-	\$-	\$750,000	\$660,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2038/39	\$-	\$-	\$750,000	\$660,000
2039/40	\$-	\$-	\$750,000	\$660,000
2040/41	\$-	\$-	\$750,000	\$660,000
2041/42	\$-	\$-	\$750,000	\$660,000
2042/43	\$-	\$-	\$750,000	\$660,000
2043/44	\$-	\$-	\$750,000	\$660,000
2044/45	\$-	\$-	\$750,000	\$660,000
2045/46	\$-	\$-	\$750,000	\$660,000
2046/47	\$-	\$-	\$750,000	\$660,000
2047/48	\$-	\$-	\$750,000	\$660,000
2048/49	\$-	\$-	\$750,000	\$660,000
2049/50	\$-	\$-	\$750,000	\$660,000
2050/51	\$-	\$-	\$750,000	\$660,000
2051/52	\$-	\$-	\$750,000	\$660,000
2052/53	\$-	\$-	\$750,000	\$660,000
2053/54	\$-	\$-	\$750,000	\$660,000
2054/55	\$-	\$-	\$750,000	\$660,000
2055/56	\$-	\$-	\$750,000	\$660,000
2056/57	\$-	\$-	\$750,000	\$660,000
2057/58	\$-	\$-	\$750,000	\$660,000
2058/59	\$-	\$-	\$750,000	\$660,000
2059/60	\$-	\$-	\$750,000	\$660,000



## 7.10 Option 10 – All options combined

### Description:

Under the current ACT Waterways WSUD General Code, there is a mandatory requirement for plumbing fixtures in new dwellings to be at least 3-star WELS rated and no requirement for water-efficient outdoor plumbing fixtures. There are also requirements for on-site stormwater retention and detention using rainwater tanks, including a minimum roof area required to be connected to a rainwater tank of 50%. Compliance with these rules is demonstrated through a report from a suitably qualified person consistent with the methods specified in the ACT Practice Guidelines for Water Sensitive Urban Design.

The option proposed here is that the ACT Waterways WSUD General Code be amended to indicate that indoor plumbing fixtures (except for shower head) in new dwellings must be at least 4-star WELS rated, and that a requirement for maximum flow rates of 12L/min (~2-star equivalent) on outdoor plumbing fixtures through the use of inline flow restrictors. The ACT Waterways WSUD General Code is to be amended to indicate that appliances in new apartments must be at least 4-star WELS rated.

In addition, the code is to be amended to indicate that 75% of the roof area in new dwellings is required to be connected to a rainwater tank and that a 2KL rainwater tank is required on compact blocks for toilet, laundry and outdoor water use including irrigation. Compliance is also required for rainwater tank installation including plumbing connections, rainwater tank pumps and diverters under the building certification process to help drive greater compliance with the code and enhance water savings.

Rainwater tank installations will be inspected by ACT government employees on a regular (every 5 years), ongoing basis, and pumps and diverters replaced (as needed but expected to be every 10 years) free of charge by government approved plumbing contractors, if the property owner is happy for this to occur. Alternatively, the property owner can have the equipment replaced by a contractor of their choice and claim the expense from the ACT Government. This option will require the installation of charged line systems to rainwater tanks.

### *In terdependence with other options:*

The option is feasible without other options being implemented.

### *Key customers/stakeholders:*

The option is targeted at residential water users (houses and apartments).

Water saved/supplied and net changes to water balance, over 40 years:

Year	Potable water saved (ML/yr)	Alternative water source supplied (roof water, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2020/21	98	35	40	35
2021/22	194	69	81	69
2022/23	289	101	121	101
2023/24	382	131	162	131
2024/25	473	159	202	159
2025/26	580	203	242	203
2026/27	684	245	283	245

Year	Potable water saved (ML/yr)	Alternative water source supplied (roof water, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2027/28	787	285	323	285
2028/29	889	324	364	324
2029/30	988	360	404	360
2030/31	1091	400	444	400
2031/32	1191	438	485	438
2032/33	1290	474	525	474
2033/34	1387	508	566	508
2034/35	1482	540	606	540
2035/36	1593	588	646	588
2036/37	1702	634	687	634
2037/38	1809	679	727	679
2038/39	1915	722	768	722
2039/40	2018	763	808	763
2040/41	2125	806	849	806
2041/42	2229	848	889	848
2042/43	2331	887	929	887
2043/44	2431	924	970	924
2044/45	2529	959	1010	959
2045/46	2642	1009	1051	1009
2046/47	2752	1057	1091	1057
2047/48	2861	1103	1131	1103
2048/49	2967	1146	1172	1146
2049/50	3071	1188	1212	1188
2050/51	3178	1231	1253	1231
2051/52	3282	1273	1293	1273



Year	Potable water saved (ML/yr)	Alternative water source supplied (roof water, stormwater, wastewater) (ML/yr)	Reduction in wastewater flows to ICON's sewer network (ML/yr)	Reduction in stormwater flows to downstream waterways (ML/yr)
2052/53	3384	1312	1333	1312
2053/54	3484	1349	1374	1349
2054/55	3582	1384	1414	1384
2055/56	3694	1434	1455	1434
2056/57	3805	1482	1495	1482
2057/58	3914	1528	1535	1528
2058/59	4020	1571	1576	1571
2059/60	4124	1613	1616	1613

Costs (\$M) over 40 years:

Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2020/21	\$-	\$470,000	\$3,900,000	\$660,000
2021/22	\$-	\$470,000	\$3,900,000	\$660,000
2022/23	\$-	\$470,000	\$3,900,000	\$660,000
2023/24	\$-	\$470,000	\$3,900,000	\$660,000
2024/25	\$-	\$470,000	\$3,900,000	\$660,000
2025/26	\$-	\$1,450,000	\$3,900,000	\$660,000
2026/27	\$-	\$1,450,000	\$3,900,000	\$660,000
2027/28	\$-	\$1,450,000	\$3,900,000	\$660,000
2028/29	\$-	\$1,450,000	\$3,900,000	\$660,000
2029/30	\$-	\$1,450,000	\$3,900,000	\$660,000
2030/31	\$-	\$4,800,000	\$3,900,000	\$660,000
2031/32	\$-	\$4,800,000	\$3,900,000	\$660,000
2032/33	\$-	\$4,800,000	\$3,900,000	\$660,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2033/34	\$-	\$4,800,000	\$3,900,000	\$660,000
2034/35	\$-	\$4,800,000	\$3,900,000	\$660,000
2035/36	\$-	\$5,850,000	\$3,900,000	\$660,000
2036/37	\$-	\$5,850,000	\$3,900,000	\$660,000
2037/38	\$-	\$5,850,000	\$3,900,000	\$660,000
2038/39	\$-	\$5,850,000	\$3,900,000	\$660,000
2039/40	\$-	\$5,850,000	\$3,900,000	\$660,000
2040/41	\$-	\$9,200,000	\$3,900,000	\$660,000
2041/42	\$-	\$9,200,000	\$3,900,000	\$660,000
2042/43	\$-	\$9,200,000	\$3,900,000	\$660,000
2043/44	\$-	\$9,200,000	\$3,900,000	\$660,000
2044/45	\$-	\$9,200,000	\$3,900,000	\$660,000
2045/46	\$-	\$10,250,000	\$3,900,000	\$660,000
2046/47	\$-	\$10,250,000	\$3,900,000	\$660,000
2047/48	\$-	\$10,250,000	\$3,900,000	\$660,000
2048/49	\$-	\$10,250,000	\$3,900,000	\$660,000
2049/50	\$-	\$10,250,000	\$3,900,000	\$660,000
2050/51	\$-	\$13,600,000	\$3,900,000	\$660,000
2051/52	\$-	\$13,600,000	\$3,900,000	\$660,000
2052/53	\$-	\$13,600,000	\$3,900,000	\$660,000
2053/54	\$-	\$13,600,000	\$3,900,000	\$660,000
2054/55	\$-	\$13,600,000	\$3,900,000	\$660,000
2055/56	\$-	\$13,600,000	\$3,900,000	\$660,000
2056/57	\$-	\$13,600,000	\$3,900,000	\$660,000
2057/58	\$-	\$13,600,000	\$3,900,000	\$660,000



Year	Additional costs to ACT Government		Additional costs to others (customers / developers) etc	
	CAPEX (\$/yr)	OPEX (\$/yr)	CAPEX (\$/yr)	OPEX (\$/yr)
2058/59	\$-	\$13,600,000	\$3,900,000	\$660,000
2059/60	\$-	\$13,600,000	\$3,900,000	\$660,000

