

Appendix H

Table 9 Stormwater Management
Implementation Strategy

Table 9.1a: Stormwater Management Implementation Strategy – Association of Councils (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
1.1 Develop an education and awareness program in schools, in cooperation with the Department of Education to link littering with impacts on the waterway.	2*	\$2,000	\$2,000	0	\$2,000	0	\$2,000	0	\$2,000
1.2 Develop and construct educational signs in public areas, in particular along waterways adjacent to stormwater control facilities, to provide information and feedback on the status and improvements in stormwater quality and projects being undertaken to improve water quality eg. signs next to a litter boom can report on the volume of litter collected each month and show improvements over time.	6*	\$20,000	\$2,000	0	\$2,000	0	\$2,000	0	\$2,000
3.1 Influence State Government to introduce legislation to require manufacturers to reduce packaging and provide return fees for recyclables (for example, container deposits, and waste oil).	14	0	0	\$2,000	\$2,000	0	0	0	0
1.3 Support anti-Litter education campaigns at a local level through signage and local education. eg. Clean -Up Australia Day, The Drain is Just for Rain, Streets to rivers project, Cooks River Valley Association garbage and gutters street clean up projects.	57*	0	0	0	0	\$26,000	\$13,000	0	\$13,000
2.1 Support EPA "dob in a dumper" hotline through advertising within Cooks River catchment.	60*	0	0	0	0	0	0	\$2,000	\$15,000
NUTRIENTS AND BACTERIA									
12.1 Identify appropriate response procedures to manage blue green algal blooms.	20	0	0	0	0	0	0	0	0
8.2 Influence state government to investigate alternatives to phosphorus use in detergents.	26	0	0	\$2,000	0	0	0	0	0
11.3 Incorporate in planning controls a requirement for future Golf Course developments to incorporate nutrient management controls.	42*	\$3,000	\$2,000	0	0	0	0	0	0
8.3 Educate the community to prevent car washing on the street. In residential areas, where there is no alternative, provide an incentive by negotiating with local car washing places for first visit free coupons to encourage use of carwash centres.	73*	0	0	0	0	\$30,000	\$7,500	0	\$7,500
11.2 Educate residents about over fertilising by developing and distributing an information brochure.	148*	0	0	0	0	\$30,000	\$7,500	0	0
TOXICANTS									
14.1 Lobby EPA to audit all licensed premises in the catchment.	21	\$1,000	0	0	0	0	0	0	0
14.2 Education/Training/Auditing of small industrial premises and businesses through expansion of past solutions to pollution, education and auditing programs. Target metal premises, motor vehicle repairers and chemical manufacturers as a priority.	84*	0	0	0	0	\$30,000	\$30,000	0	\$30,000
14.3 Initiate increased auditing of non-EPA licensed industrial and commercial premises by Council officers. As a priority, investigate industrial area upstream of the high metal concentrations within Cup and Saucer Creek near Kingsgrove Road.	124*	0	0	0	0	0	0	\$67,000	\$67,000
MANAGERIAL									
19.1 Identify and map ownership of all government land within the Cooks River Catchment and agree responsibilities between land managers in the catchment.	3	\$5,000	\$1,000	0	\$1,000	0	\$1,000	0	\$1,000
19.2 Define and agree notes and responsibilities for stormwater and catchment management within Cooks River based on Action No. 90.	17	\$5,000	0	0	0	0	0	0	0

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
17.1 Investigate and develop opportunities for community, schools and businesses which are part of the problem to become part of the solution by becoming involved in stormwater management. For example, through on ground works, green industry awards, bush regeneration/tree planting, community bird watching programs, school problem solving, curriculum.	50*	0	0	0	0	\$26,000	0	0	\$13,000
17.2 Implement greater use of ethnic media to reach non-English speaking community. Develop information sheets and disseminate through community centres and schools.	51*	0	0	0	0	0	0	\$10,000	\$5,000
20.1 Integrate Council's knowledge and information through catchment wide water quality monitoring and reporting. Evaluate data to determine strategic responses to problems identified by the monitoring program.	89	\$50,000	0	\$50,000	0	\$50,000	0	\$50,000	0
SUSPENDED SOLIDS									
21.1 Educate occupiers of commercial premises and residences about not hosing down footpath areas.	83*	0	0	\$30,000	0	0	\$15,000	0	\$15,000
22.2 Educate construction contractors on appropriate sediment controls based on best practice guidelines (eg. signs on sediment fences).	90*	0	0	0	0	0	\$13,000	0	\$13,000
HABITAT LOSS AND RIVER HEALTH									
25.2 Develop a catchment policy for landscaping along foreshore and waterways using native species, based on existing reports and incorporate into Council planning controls.	27*	\$8,000	0	0	0	0	0	0	0
TOTAL		\$94,000	\$7,000	\$97,000	\$7,000	\$192,000	\$91,000	\$129,000	\$183,500

* These Actions for a component of the recent Stormwater Trust Grant (\$1.3 million) and may be partly funded by this program.

Table 9.1b: Stormwater Management Implementation Strategy – Association of Councils (Level 2 Actions)

Action	Rank	Financial Year and Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
NUTRIENTS AND BACTERIA				
9.2 Investigate the feasibility of introducing dung beetles to decompose dog droppings in council Park areas based on outcomes of Strathfield council trial.	45	\$1,500	\$15,000	0
TOTAL		\$1,500	\$15,500	\$2,500

Table 9.2a: Stormwater Management Implementation Program – Canterbury Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
5.1 Trial management options for litter in parks along the Cooks River foreshore by removing bins and providing signage "Thank You for caring for the park and the Cooks River". In some areas providing additional bin facilities is another. Monitor success of the trial bin project and implement appropriate strategy for ALL parks along the Cooks River foreshore.	28	\$8,000	0	0	0	0	0	0	0
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$3,120	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$3,120	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$1,920	0	0	\$2,400	0	\$2,400
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$1,870	\$2,400	0	\$2,400	0	\$2,400
6.1 Maintain the existing pollutec pollutant trap at the park near Belmore Rugby League field.	62	0	\$10,000	0	\$10,000	0	\$10,000	0	\$10,000
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$6,240	0	0	\$3,120
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$480	\$6,240
7.10 Install and maintain proposed GPT at Tasker Park, Campsie.	128	0	0	0	0	0	0	\$150,000	\$15,000
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$360,000	0	\$360,000	0	\$360,000	0	\$360,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$2,400	\$36,000
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$1,870	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$480	\$480	0	\$480	0	\$480	0	\$480
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$6,240	\$3,120	0	\$3,120	0	\$3,120
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$6,900	0	0	\$1,700
13.8 Install backwash storage tanks and dispose of backwash from Roselands and Canterbury Pools to sewer.	106	\$60,000	\$5,000	0	0	0	0	0	0
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$6,240	0	0	\$3,120	0	\$3,120
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$4,800	\$2,880	0	\$2,880	0	\$2,880	0	\$2,880

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$24,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$4,800	0	0	\$2,400	0	\$2,400
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$6,000	0	0	\$6,000
14.3 Initiate increased auditing of non-EPA licensed industrial and commercial premises by Council officers. As a priority, investigate industrial area upstream of the high metal concentrations within Cup and Saucer Creek near Kingsgrove Road.	124	0	0	0	0	0	0	0	\$16,200
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$6,240	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$3,120	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$7,200	0	0	0	0	0
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$3,120	0	0	\$3,120	0	\$3,120
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$3,120	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$50,000	0
24.3 Refill eroded ground behind embankment along Cooks River downstream of Fore St, Earlwood.	41	\$25,000	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$9,600	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$12,480	0	\$12,480	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$24,000	0	\$24,000	0	\$24,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$6,000	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$3,120	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$2,400	0	0	0	0	0	0	0

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$3,120	0	0	0	0	0
28.4 Prepare a Mangrove Management Plan to identify areas for regeneration either via natural colonisation or habitat generation and areas where mangroves are removed to prevent flooding. Comply with NSW State Rivers and Estuaries Policy.	35	0	0	0	0	\$10,000	0	0	0
28.5 Negotiate with DLWC to replace sheet piling along Cooks River, between the Undercliff Bridge and the footbridge at Flinders Road with more natural bank stabilisation where possible.	49	0	0	0	0	0	0	\$2,000	0
27.1 Incorporate Wollli Creek Mangroves and Saltmarsh through planning policies and bushcare regeneration programs. Investigate measures to minimise sedimentation and disturbance from railways.	67	0	0	0	0	0	0	\$1,600	0
27.2 Protect the Third Ave Remnant bushland in Campsie, through incorporation in planning policies.	68	0	0	0	0	0	0	\$1,600	0
27.5 Undertake bush regeneration and protection works on remnant vegetation along Wollli Creek from Bexley Road, eastwards.	72	0	0	0	0	0	0	\$5,000	\$5,000
TOTAL		\$124,150	\$402,360	\$50,350	\$426,880	\$65,620	\$437,920	\$225,560	\$527,180

Table 9.2b: Stormwater Management Implementation Program – Canterbury Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.4 Provide buffer strips behind embankment walls of channel at Rudd Park, Belfield where necessary.	96	\$1,500	\$15,000	\$5,000
7.15 Retrofit litter baskets/silt traps at selected pits in Orissa St subcatchment, Campsie.	135	\$1,000	\$10,000	\$1,000
7.20 Provide gross pollutant interceptors at pipe outlets (approx. 3) to Cup and Saucer Creek at industrial area near Alfred St, Campsie.	143	\$2,500	\$25,000	\$7,000
7.13 Provide pit litter baskets at selected locations in Campsie industrial area within Cup and Saucer Creek catchment.	145	\$1,000	\$10,000	\$10,000
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$156,000	\$40,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$144,000	\$144,000
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$4000	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$480	\$4,800	0
13.4 Construct small wetland above the tidal limit at Heynes Reserve, Canterbury to receive flows from Cup and Saucer canal.	101	\$5,000	\$75,000	\$7,500
13.7 Construct offline wetland upstream of tidal limit on Omaha Canal.	104	\$5,000	\$100,000	\$10,000
NUTRIENTS AND BACTERIA				
16.1 Investigate need for site remediation and leachate control at the former brick pit at Harp St, Campsie.	12	\$2,500	\$25,000	0
SUSPENDED SOLIDS				
24.12 Provide bank stabilisation along the Cooks River between Illawarra Rd to Marsh St, Arncliffe.	107	\$5,000	\$100,000	\$25,000
24.13 Provide bank stabilisation, in association with revegetation works, along the Cooks River between Church St to Ford Ave, Hurlstone Park.	112	\$5,000	\$100,000	\$2,500
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$5,000	\$48,000	\$2,400
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$1,000	\$2,400	0
28.8 Negotiate with DLWC to selectively replace steel sheet piling along Cooks River banks between Church Street, Canterbury and Flinders Road, using rock embankment/natural vegetation, following a feasibility study.	121	\$5,000	\$62,500	\$2,500
TOTAL		\$53,980	\$937,700	\$256,900

Table 9.3a: Stormwater Management Implementation Program – Rockdale Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
5.1 Trial management options for litter in parks along the Cooks River foreshore by removing bins and providing signage "Thank You for caring for the park and the Cooks River". In some areas providing additional bin facilities is another. Monitor success of the trial bin project and implement appropriate strategy for ALL parks along the Cooks River foreshore.	28	\$8,000	0	0	0	0	0	0	0
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$2,600	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$2,600	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$1,600	0	0	\$2,000	0	\$2,000
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$1,560	\$1,300	0	\$1,300	0	\$1,300
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$5,200	0	0	\$2,500
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$400	\$5,200
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$300,000	0	\$300,000	0	\$300,000	0	\$300,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$2,000	\$30,000
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$1,560	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	0	\$400	0	\$400	0	\$400	0	\$400
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$5,200	\$2,600	0	\$2,600	0	\$2,600
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$6,000	0	0	\$1,500
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$5,200	\$2,600	0	\$2,600	0	\$2,600

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$4,000	\$2,400	0	\$2,400	0	\$2,400	0	\$2,400
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	\$20,000	0	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$4,000	0	0	\$2,000	0	\$2,000
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$5,000	0	0	\$5,000
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks (where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$5,200	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$2,600	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$6,000	0	0	\$4,000	0	\$4,000
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$2,600	0	0	\$2,600	0	\$2,600
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$2,600	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River., (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$50,000	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$8,000	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$10,400	0	\$10,400	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$20,000	0	\$20,000	0	\$20,000	0	\$20,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$20,000	0	\$20,000	0	\$20,000

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$5,000	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$2,600	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$2,000	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$2,600	0	0	0	0	0
28.4 Prepare a Mangrove Management Plan to identify areas for regeneration either via natural colonisation or habitat generation and areas where mangroves are removed to prevent flooding. Comply with NSW State Rivers and Estuaries Policy.	35	0	0	0	0	0	0	0	0
27.1 Incorporate Wollli Creek Mangroves and Saltmarsh through planning policies and bushcare regeneration programs. Investigate measures to minimise sedimentation and disturbance from railways.	67	0	0	0	0	0	0	\$1,600	0
27.5 Undertake bush regeneration and protection works on remnant vegetation along Wollli Creek from Bexley Road, eastwards.	72	0	0	0	0	0	0	\$5,000	\$5,000
TOTAL		\$322,800	\$41,960	\$41,960	\$369,300	\$359,900	\$359,900	\$69,400	\$409,100

Table 9.3b: Stormwater Management Implementation Program – Rockdale Council (Level 2 Actions)

Action	Rank	Financial Year and Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.3 Provide minor gross pollutant traps on pipe outlets to Bardwell Creek near Bardwell Rd.	87	\$5,000	\$120,000	\$50,000
7.7 Provide coarse trash rack along Bardwell Creek near Ellerslie Rd, Bexley North to protect the downstream bushland.	105	\$3,000	\$30,000	\$100,000
7.18 Provide pit litter baskets at selected locations within Bardwell Creek catchment.	140	\$5,000	\$100,000	\$100,000
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$130,000	\$30,000
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$120,000	\$120,000
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$4,000	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$1,000	0	\$4,000
13.3 Construct wetland along Bardwell Creek downstream of Ellierslie Road and rehabilitate riparian zone where possible through Shepard Reserve and Favell Picnic Area.	95	\$5,000	\$250,000	\$25,000
13.6 Construct offline wetlands or pond system adjacent to Muddy Creek in White Oak Reserve.	103	\$5,000	\$125,000	\$12,500
13.10 Investigate opportunity to develop additional wetland as part of the proposed NPWS regional park in lower Wolli Creek area.	123	\$5,000	\$500,000	\$20,000
SUSPENDED SOLIDS				
24.5 Provide buffer strips along drainage line to Bardwell Creek through Jubilee Park and Bardwell Park.	64	\$3,000	\$30,000	\$5,000
24.9 Investigate appropriate bank remediation works along Bardwell Creek in conjunction with revegetation upstream of Bardwell Rd, Bardwell Park.	94	\$5,000	\$100,000	\$5,000
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$4,000	\$40,000	\$2,000
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	0	\$2,000	0
TOTAL		\$55,000	\$473,500	\$473,500

Table 9.4a: Stormwater Management Implementation Program – Marrickville Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
5.1 Trial management options for litter in parks along the Cooks River foreshore by removing bins and providing signage "Thank You for caring for the park and the Cooks River". In some areas providing additional bin facilities is another. Monitor success of the trial bin project and implement appropriate strategy for ALL parks along the Cooks River foreshore.	28	\$8,000	0	0	0	0	0	0	0
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$1,560	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$1,560	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$960	0	0	\$1,200	0	\$1,200
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$930	0	0	\$780	0	\$780
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$3,120	0	0	\$1,560
7.8 Install proposed pollutant trap at Tennyson St, Dulwich Hill subcatchment outlet.	110	0	0	0	0	0	0	\$150,000	\$15,000
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$240	\$3,120
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$180,000	0	\$180,000	0	\$180,000	0	\$180,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$1,200	\$18,000
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$930	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	0	\$240	0	\$240	0	\$240	0	\$240
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$3,120	\$1,560	0	\$1,560	0	\$1,560
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$3,600	0	0	\$900
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$3,120	0	0	\$1,560	0	\$1,560

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$2,400	\$1,440	0	\$1,440	0	\$1,440	0	\$1,440
16.2 Remediate Tempe Reserve landfill area to prevent off site leachate of contaminants.	63	0	0	0	0	0	0	\$100,000	\$10,000
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$12,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$2,400	0	0	\$1,200	0	\$1,200
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$3000	0	0	\$3,000
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$3,120	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$1,560	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$3,600	0	0	\$2,400	0	\$2,400
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$1,560	0	0	\$1,560	0	\$1,560
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$1,560	0	0	0	0	0	0	0
24.4 Investigate cause of sludge buildup at Mackay Park, Marrickville.	47	0	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$4,800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$6,200	0	\$6,200	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$12,000	0	\$12,000	0	\$12,000	0	\$12,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$12,000	0	\$12,000	0	\$12,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$3,000	0	0	0	0	0	0	0

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$1,560	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$1,200	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$1,560	0	0	0	0	0
28.4 Prepare a Mangrove Management Plan to identify areas for regeneration either via natural colonisation or habitat generation and areas where mangroves are removed to prevent flooding. Comply with NSW State Rivers and Estuaries Policy.	35	0	0	0	0	\$10,000	0	0	0
28.5 Negotiate with DLWC to replace sheet piling along Cooks River, between the Undercliff Bridge and the footbridge at Flinders Road with more natural bank stabilisation where possible.	49	0	0	0	0	0	0	\$2,000	0
27.3 Protection of remnant vegetation within Marrickville Foreshore Reserves.	69	0	0	0	0	\$5,000	0	0	\$5,000
TOTAL		\$23,330	\$193,680	\$25,170	\$207,240	\$215,940	\$215,940	\$259,640	\$272,520

Table 9.4b: Stormwater Management Implementation Program – Marrickville Council (Level 2 Actions)

Action	Rank	Financial Year and Expenditure		
		Year One Investment Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.2 Investigate feasibility of installing a gross pollutant interceptor on pipe outlet near Thornley St, Marrickville.	86	\$5,000	\$70,000	\$5,000
7.5 Retrofit pit litter baskets at selected sites Hercules St area, Dulwich Hill.	97	\$1,000	\$10,000	\$5,000
7.21 Install gross pollutant traps before pipe outlets (approx. 2) to Cooks River at HJ Mahoney Memorial Reserve, Marrickville South.	139	\$5,000	\$100,000	\$30,000
7.22 Install gross pollutant traps before pipe outlets (approx. 3) to Cooks River at Steel Park, Marrickville South.	140	0	0	0
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$78,000	\$18,000
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$72,000	\$7,200
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$4000	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$240	\$2,400	0
8.5 Provide public car wash areas in existing high density residential areas which drain and are connected to sewer or a suitable alternative. Also provide signs to educate people about carwashing in the streets.	119	\$2,000	\$20,000	\$10,000
SUSPENDED SOLIDS				
24.8 Develop erosion & sediment control plan for Cooks River Goods Yards, Sydenham.	93	\$3,000	\$30,000	\$10,000
24.12 Provide bank stabilisation along the Cooks River between Illawarra Rd to Marsh St, Arncliffe.	107	\$5,000	\$100,000	\$2,500
24.13 Provide bank stabilisation, in association with revegetation works, along the Cooks River between Church St to Ford Ave, Hurlstone Park.	112	\$5,000	\$100,000	\$2,500
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$2,400	\$24,000	\$1,200
24.16 Install drainage pumping station /detention pit and silt screen at Mary Street, St Peters.	149	\$5,000	\$150,000	\$15,000
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$120	\$1,200	0
28.8 Negotiate with DLWC to selectively replace steel sheet piling along Cooks River banks between Church Street, Canterbury and Flinders Road, using rock embankment/natural vegetation, following a feasibility study.	121	\$5,000	\$62,500	\$2,500
TOTAL		\$52,760	\$820,100	\$108,900

Table 9.5a: Stormwater Management Implementation Program – South Sydney (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$3,120	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$3,120	0	0	0	0	0	0	00
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$800	0	0	\$1,000	0	\$1,000
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$1,870	\$2,400	0	\$2,400	0	\$2,400
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$2,600	0	0	\$1,300
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$480	\$6,240
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$150,000	0	\$150,000	0	\$150,000	0	\$150,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$1,000	\$15,000
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$780	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$200	\$200	0	\$200	0	\$200	0	\$200
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$2,600	\$1,300	0	\$1,300	0	\$1,300
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$3,000	0	0	\$750
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$2,600	0	0	\$1,300	0	\$1,300
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$4,800	\$2,880	0	\$2,880	0	\$2,880	0	\$2,880
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$10,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$2,000	0	0	\$1,000	0	\$1,000
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$2,500	0	0	\$2,500

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANGIERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$2,600	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$1,300	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$3,000	0	0	\$2,000	0	\$2,000
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$1,300	0	0	\$1,300	0	\$1,300
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$1,300	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$41,000	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$5,200	0	\$5,200	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$10,000	0	\$10,000	0	\$10,000	0	\$10,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$10,000	0	\$10,000	0	\$10,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$2,500	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$1,300	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$1,000	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$1,300	0	0	0	0	0
TOTAL		\$19,420	\$163,080	\$59,070	\$176,780	\$23,300	\$183,380	\$6,680	\$209,170

Table 9.5b Stormwater Management Implementation Program – South Sydney Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$65,000	\$15,000
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$60,000	\$6,000
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$2,500	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$2,000	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$2,000	\$20,000	\$1,000
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$1,000	0
TOTAL		\$14,900	\$22,000	\$22,000

Table 9.6a: Stormwater Management Implementation Program – Hurstville Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$1,200	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$1,200	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$720	0	0	\$900	0	\$900
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$700	\$600	0	\$600	0	\$600
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$2,350	0	0	\$1,200
7.1 Require the incorporation of litter & erosion controls into redevelopment of the site upstream of King Georges Rd, Hurstville.	85	\$3,000	0	0	0	0	0	0	0
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$200	\$2,340
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$297,000	0	\$297,000	0	\$297,000	0	\$297,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$900	\$13,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$700	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$1,300	\$1,500	0	\$1,500	0	\$1,500	0	\$1,500
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	0	\$2,340	0	\$1,200	0	\$1,200
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$2,700	0	0	\$680
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$2,340	0	0	\$1,200	0	\$1,200
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$1,800	\$100	0	\$100	0	\$100	0	\$100
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$9,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$1,800	0	0	\$900	0	\$900
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$2,250	0	0	2,250

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$2,340	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$1,200	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$2,700	0	0	\$1,800	0	\$1,800
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$1,200	0	0	\$1,200	0	\$1,200
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$1,200	0	0	0	0	0	\$4,500	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$3,600	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$4,700	0	\$4,700	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$9,000	0	\$9,000	0	\$9,000	0	\$9,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	\$40,000	0	\$40,000	0	\$40,000	0	\$40,000
HABITAT LOSS AND RIVER HEALTH									
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$1,200	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$1,200	0	0	0	0	0
TOTAL		\$12,740	\$347,600	\$16,660	\$350,540	\$21,000	\$355,400	\$10,300	\$375,370

Table 9.6b: Stormwater Management Implementation Program – Hurstville Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$1,000	\$5,850	\$13,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$54,000	\$5,400
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$200	\$2,250	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$1,800	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$1,800	\$18,000	\$900
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$900	0
TOTAL		\$8,400	\$19,800	\$19,801

Table 9.7a: Stormwater Management Implementation Program – Bankstown Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$1,200	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$1,200	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$720	0	0	\$900	0	\$900
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$700	\$600	0	\$600	0	\$600
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$2,350	0	0	\$1,200
6.2 Maintain existing trash rack at Muir Rd, Chullora.	108	0	\$20,000	0	\$20,000	0	\$20,000	0	\$20,000
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$200	\$2,340
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$135,000	0	\$135,000	0	\$135,000	0	\$135,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$900	\$13,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$700	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$180	\$180	0	\$180	0	\$180	0	\$180
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	0	\$2,340	0	\$1,200	0	\$1,200
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$2,700	0	0	\$680
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$2,340	0	0	\$1,200	0	\$1,200
TOXICANTS									
14.6 Install oil separator upstream of Freshwater Creek to catch oils from motor wreckers entering the waterway.	new	\$80,000	\$5,000	0	\$5,000	0	\$5,000	0	\$5,000
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$1,800	\$100	0	\$100	0	\$100	0	\$100
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$9,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$1,800	0	0	\$900	0	\$900

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$2,250	0	0	2,250
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$2,340	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$1,200	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$2,700	0	0	\$1,800	0	\$1,800
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$1,200	0	0	\$1,200	0	\$1,200
SUSPENDED SOLIDS									
24.1 Investigate and install erosion controls for development immediately upstream of drainage channel at eastern boundary of Rookwood Cemetery and for the channel itself.	33	\$2,000	0	0	0	0	0	0	0
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$1,200	0	0	0	0	0	\$4,500	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River.. (eg. Third Ave. Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$3,600	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$4,700	0	\$4,700	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$9,000	0	\$9,000	0	\$9,000	0	\$9,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	\$9,000	0	\$9,000	0	\$9,000	0	\$9,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$2,250	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$1,200	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$900	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$1,200	0	0	0	0	0
26.2 Protect Freshwater Creek during redevelopment of the Chullora Site through appropriate planning controls and design. Continue to liaise with Bankstown Bushland Society in this process.	66	\$5,000	0	0	0	0	0	0	0
TOTAL		\$98,770	\$178,280	\$16,660	\$181,220	\$21,000	\$186,080	\$10,300	\$206,050

Table 9.7b: Stormwater Management Implementation Program – Bankstown Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.17 Provide GPT/wetland downstream of Hume Highway along Greenacre Park SWS.	137	\$1,000	\$5,850	\$13,500
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$58,500	13,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$54,000	\$5,400
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$200	\$2,250	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$1,800	0
8.5 Provide public car wash areas in existing high density residential areas which drain and are connected to sewer or a suitable alternative. Also provide signs to educate people about carwashing in the streets.	119	\$2,000	\$20,000	\$10,000
SUSPENDED SOLIDS				
24.15 Install detention basin at Chullora Railway Workshops.	133	\$5,000	\$100,000	\$20,000
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$1,800	\$18,000	\$900
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$900	0
TOTAL		\$20,400	\$63,300	\$63,300

Table 9.8a: Stormwater Management Implementation Program – Strathfield Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$900	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$900	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	\$8,000	0	0	0	0	0	0	0
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$560	0	0	\$700	0	\$700
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$1,800	0	0	\$900
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$150	\$1,800
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$105,000	0	\$105,000	0	\$105,000	0	\$105,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$750	\$10,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$550	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$140	\$140	0	\$140	0	\$140	0	\$140
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$1,800	\$900	0	\$900	0	\$900
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$2,100	0	0	\$525
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$1,800	0	0	\$900	0	\$900
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$1,400	\$90	0	\$90	0	\$90	0	\$90
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$7,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$1,400	0	0	\$700	0	\$700
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$1,750	\$1,750	0	\$1,750

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$1,800	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$900	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$2,100	0	0	\$1,400	0	\$1,400
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$900	0	0	\$900	0	\$900
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$900	0	0	0	0	0	0	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$2,800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$3,600	0	\$3,600	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$7,000	0	\$7,000	0	\$7,000	0	\$7,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$7,000	0	\$7,000	0	\$7,000
HABITAT LOSS AND RIVER HEALTH									
28.12 Construct proposed wetland in Cox's Creek upstream of Drone Street.	-	\$72,000	0	0	\$3,000	0	\$3,000	0	\$3,000
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$1,750	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$900	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$700	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$900	0	0	0	0	0
TOTAL		\$89,040	\$112,230	\$14,060	\$123,130	\$16,250	\$129,480	\$4,500	\$143,205

Table 9.8b: Stormwater Management Implementation Program – Strathfield Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.14 Investigate provision of Litter baskets at Cosgrove Road/ Madeline St industrial area.	134	\$1,500	\$15,000	\$10,000
7.16 Investigate provision of offline GPT or wet pond system on vacant land at bend in Cooks River adjacent to Dean Reserve, Strathfield.	136	\$5,000	\$125,000	\$10,000
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$4,500	\$45,000	\$10,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$5,000	\$42,000	\$4,200
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$1,750	0	\$10,000
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$1,400	\$10,000
13.2 Investigate provision of constructing an urban stream at Strathfield Golf Course/Freshwater Park.	91	\$5,000	\$200,000	\$10,000
13.5 Investigate feasibility of installing a constructed wetland in Cooke Park downstream of Madeline Street, or upstream of Madeline Street in Begnell Park.	102	\$5,000	\$125,000	\$12,500
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$1,400	\$14,000	\$700
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$700	0
28.3 Investigate naturalising concrete channel by placing rock and planting native vegetation at Chain of Ponds reserve area, where space allows.	48	\$5,000	\$100,000	\$2,000
28.6 Investigate river bank stabilisation works and create a more natural bank and riparian zone at Freshwater Park.	56	\$5,000	\$100,000	2,500
TOTAL		\$39,550	\$768,100	\$82,400

Table 9.9a: Stormwater Management Implementation Program – Botany Bay Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$650	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$650	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$400	0	0	\$500	0	\$500
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$390	\$320	0	\$320	0	\$320
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$1,300	0	0	\$650
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$100	\$1,300
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$750,000	0	\$750,000	0	\$750,000	0	\$750,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$500	\$7,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$390	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$100	\$100	0	\$100	0	\$100	0	\$100
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$1,300	\$650	0	\$650	0	\$650
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$1,500	0	0	\$375
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$1,300	\$650	0	\$650	0	\$650
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$1,000	\$60	0	\$60	0	\$60	0	\$60
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$5,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$1,000	0	0	\$500	0	\$500
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$1,250	\$1,250	0	\$1,250

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$1,300	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$650	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$1,500	0	0	\$1,000	0	\$1,000
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$650	0	0	\$650	0	\$650
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$650	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$2,500	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$2,000	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$2,600	0	\$2,600	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$5,000	0	\$5,000	0	\$5,000	0	\$5,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$5,000	0	\$5,000	0	\$5,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$1,250	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$650	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$500	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$650	0	0	0	0	0
28.4 Prepare a Mangrove Management Plan to identify areas for regeneration either via natural colonisation or habitat generation and areas where mangroves are removed to prevent flooding. Comply with NSW State Rivers and Estuaries Policy.	35	0	0	0	0	\$10,000	0	0	0
TOTAL		\$6,490	\$755,160	\$10,490	\$761,780	\$21,650	\$765,680	\$5,700	\$775,505

Table 9.9b: Stormwater Management Implementation Program – Botany Bay Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$3,000	32,500	\$7,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$3,000	\$30,000	\$3,000
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$1,250	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$1,000	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$1,000	\$10,000	\$500
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$500	0
TOTAL		\$8,650	\$11,000	\$11,000

Table 9.10a: Stormwater Management Implementation Program – Burwood Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$260	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$260	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$160	0	0	\$200	0	\$200
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$150	\$130	0	\$130	0	\$130
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$520	0	0	\$260
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$40	\$520
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$30,000	0	\$30,000	0	\$30,000	0	\$30,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$200	\$3,000
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$150	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$40	\$40	0	\$40	0	\$40	0	\$40
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$520	\$260	0	\$260	0	\$260
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$600	0	0	\$150
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$520	\$260	0	\$260	\$260	0
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$400	\$25	0	\$25	0	\$25	0	\$25
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$2,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$400	0	0	\$200	0	\$200
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$500	\$500	0	\$500

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$520	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$260	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$600	0	0	\$400	0	\$400
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$4,260	0	0	\$260	0	\$260
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$260	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$1,000	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$1,040	0	\$1,040	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$2,000	0	\$2,000	0	\$2,000	0	\$2,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$2,000	0	\$2,000	0	\$2,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$500	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$260	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$200	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$260	0	0	0	0	0
TOTAL		\$2,590	\$32,065	\$8,190	\$34,715	\$4,660	\$36,275	\$2,540	\$39,945

Table 9.10b: Stormwater Management Implementation Program – Burwood Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$1,300	\$13,000	\$3,000
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$1,200	\$12,000	\$1,200
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$420	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	0	\$400	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$400	\$4,000	\$200
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	0	\$400	0
TOTAL		\$3,320	\$4,400	\$4,400

Table 9.11a: Stormwater Management Implementation Program – Auburn Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$130	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$130	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$80	0	0	\$100	0	\$100
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$75	\$60	0	\$60	0	\$60
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$260	0	0	\$130
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$20	\$260
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$15,000	0	\$15,000	0	\$15,000	0	\$15,000
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$100	\$1,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$80	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$20	\$20	0	\$20	0	\$20	0	\$20
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$260	\$130	0	\$130	0	\$130
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$300	0	0	\$75
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$260	\$130	0	\$130	0	\$130
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$200	\$20	0	\$20	0	\$20	0	\$20
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$1,000	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$200	0	0	100	0	100
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$25	\$25	0	\$25

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$260	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$130	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$300	0	0	\$200	0	\$200
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$130	0	0	\$130	0	\$130
SUSPENDED SOLIDS									
24.1 Investigate and install erosion controls for development immediately upstream of drainage channel at eastern boundary of Rookwood Cemetery and for the channel itself.	33	\$2,000	0	0	0	0	0	0	0
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$130	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$500	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$520	0	\$520	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$1,000	0	\$1,000	0	\$1,000	0	\$1,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	0	0	\$1,000	0	\$1,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$130	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$130	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$100	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$130	0	0	0	0	0
TOTAL		\$3,180	\$16,040	\$2,495	\$16,360	\$2,105	\$17,915	\$1,140	\$19,880

Table 9.11b: Stormwater Management Implementation Program – Auburn Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$650	\$6,500	\$1,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$600	\$6,000	\$600
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$250	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$200	0
SUSPENDED SOLIDS				
24.14 Provide stream remediation/bank stabilisation along Cooks River downstream of Chullora Rail Workshops to Strathfield Golf Course.	117	\$5,000	\$750,000	\$5,000
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$200	\$2,000	\$100
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$100	0
TOTAL		\$7,100	\$7,200	\$7,200

Table 9.12a: Stormwater Management Implementation Program – Randwick Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$130	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$130	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$80	0	0	\$100	0	\$100
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$260	0	0	\$130
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$20	\$260
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	0	0	0	0	0	0	0
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$100	\$1,500
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$80	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$20	\$20	0	\$20	0	\$20	0	\$20
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$260	\$130	0	\$130	0	\$130
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$300	0	0	\$75
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$260	\$130	0	\$130	0	\$130
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$200	\$20	0	\$20	0	\$20	0	\$20
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$500	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$200	0	0	100	0	100
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$25	\$25	0	\$25
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$260	0	0	0	0	0	0	0

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$130	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$150	0	0	\$100	0	\$100
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$130	0	0	\$130	0	\$130
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$130	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$500	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$520	0	\$520	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$1,000	0	\$1,000	0	\$1,000	0	\$1,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	0	0	0	0	\$1,000
HABITAT LOSS AND RIVER HEALTH									
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$130	0	0	0	0	0
TOTAL		\$ 950	\$1,040	\$2,140	\$1,300	\$1,605	\$1,755	\$1,140	\$4,720

Table 9.12b: Stormwater Management Implementation Program – Randwick Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.6 Install pit litter baskets in area near the Australian Golf Club where appropriate.	98	\$1,000	\$10,000	\$5,000
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$650	\$6,500	\$1,500
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$300	\$3,000	\$300
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$250	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$200	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$100	\$1,000	\$100
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$100	0
TOTAL		\$2,700	\$20,800	\$6,900

Table 9.13a: Stormwater Management Implementation Program – Kogarah Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$65	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$65	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$40	0	0	\$50	0	\$50
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$70	\$30	0	\$30	0	\$30
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$130	0	0	\$65
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$10	\$130
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$7,500	0	\$7,500	0	\$7,500	0	\$7,500
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$50	\$7,50
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$40	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$20	\$20	0	\$20	0	\$20	0	\$20
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$130	\$65	0	\$65	0	\$65
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$150	0	0	\$40
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$130	\$65	0	\$65	0	\$65
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$100	\$20	0	\$20	0	\$20	0	\$20
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$500	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$100	0	0	\$50	0	\$50
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$25	\$25	0	\$25

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$130	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$65	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$150	0	0	\$100	0	\$100
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$65	0	0	\$65	0	\$65
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$65	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$250	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$800	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$260	0	\$260	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$500	0	\$500	0	\$500	0	\$500
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$500	0	\$500	0	\$500
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$65	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$65	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$50	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$65	0	0	0	0	0
0		\$ 600	\$8,040	\$1,680	\$8,700	\$1,065	\$8,990	\$ 570	\$9,282

Table 9.13b: Stormwater Management Implementation Program – Kogarah Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$300	\$3,250	\$750
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$300	\$3,000	\$300
NUTRIENTS AND BACTERIA				
13.1 Investigate water management practices on all Golf Courses and identify opportunities to install wetlands or options for waste refuse.	34	\$200	0	0
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$100	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$100	\$1,000	\$100
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$100	0
TOTAL		\$1,300	\$1,150	\$1,150

Table 9.14a: Stormwater Management Implementation Program – Ashfield Council (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$65	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$65	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$40	0	0	\$50	0	\$50
5.2 Target regular users of parks adjacent to river eg. sporting clubs. Encourage these clubs to be responsible for leaving the area free of Litter after use of the facilities through leasing or hire arrangements to implement a cleanup charge for areas left in an unsatisfactory state.	61	0	0	\$70	\$30	0	\$30	0	\$30
3.2 Upgrade recycling bins which perform poorly in conjunction with the Inner Sydney Waste Board, by identifying alternate bins or educating users to prevent litter escaping.	79	0	0	0	0	\$130	0	0	\$65
2.2 Warn and fine people littering in accordance with EPA authority for action to be taken by authorised Council officers. Implement a recording system for fines issued.	115	0	0	0	0	0	0	\$10	\$130
4.3 Revise existing dry street sweeping programs based on cost-benefits and continue in commercial, industrial and residential areas, including carparks.	154	0	\$7,500	0	\$7,500	0	\$7,500	0	\$7,500
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$50	\$7,50
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$40	0	0	0	0	0	0	0
9.1 Provide 'doggie dunnit' bags/stations at designated dog exercise parks.	22	\$20	\$20	0	\$20	0	\$20	0	\$20
10.1 Review procedures of council maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$130	\$65	0	\$65	0	\$65
10.2 Educate the community not to sweep or blow leaves into the gutter by providing alternative disposal options (mulch and compost) and supporting the Cooks River Valley Association's "Garbage and Gutters" initiative.	59	0	0	0	0	\$150	0	0	\$40
8.4 Incorporate in council planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$130	\$65	0	\$65	0	\$65
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$100	\$20	0	\$20	0	\$20	0	\$20
15.2 Review weed management strategies in Council Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	\$500	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$100	0	0	\$50	0	\$50
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$25	\$25	0	\$25

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
MANAGERIAL									
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$130	0	0	0	0	0	0	0
18.2 Incorporate into DCP's additional controls for owner/developers who build or pave over more than 50% of land area. Investigate opportunity to provide incentives/rebates for those who install additional stormwater controls.	9	0	0	\$65	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	\$800	0	0	\$100	0	\$100
20.2 Undertake mapping of stormwater infrastructure in all Council areas using existing GIS base map.	52	0	0	\$65	0	0	\$65	0	\$65
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$65	0	0	0	0	0	0	0
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River,. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$250	0
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	\$600	0	0	0	0	0
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	0	0	\$260	0	\$260	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$500	0	\$500	0	\$500	0	\$500
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	0	0	\$500	0	\$00	0	\$500
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$65	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	0	0	\$65	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within Council planning policies and development controls.	8	\$50	0	0	0	0	0	0	0
25.4 Provide native vegetation maps and lists to nurseries, landscapers and residents to promote greater use of native vegetation in landscaping works.	24	0	0	\$65	0	0	0	0	0
TOTAL		\$ 600	\$8,040	\$2,130	\$8,700	\$1,065	\$8,490	\$ 570	\$9,282

Table 9.14b: Stormwater Management Implementation Program – Ashfield Council (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$300	\$3,250	\$750
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	\$300	\$3,000	\$300
NUTRIENTS AND BACTERIA				
11.1 Investigate opportunities to replace fertiliser used on playing fields with worms (based on outcomes of ongoing trial into effectiveness by Marrickville Council) or reuse captured stormwater which may be high in nutrients for ground irrigation.	46	\$200	\$100	0
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	\$100	\$1,000	\$100
HABITAT LOSS AND RIVER HEALTH				
25.3 Investigate incorporation of propagation programs for native riparian vegetation in Council nurseries.	10	\$200	\$100	0
TOTAL		\$1,101	\$1,150	\$1,150

Table 9.15a: Stormwater Management Implementation Program – Sydney Water (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
7.9 Maintain GPT and construct wetland in redevelopment of SRA land at Chullora Rail Workshops and provide maintenance.	118	0	\$25,000	0	0	0	0	\$250,000	0
6.3 Investigate improvements to litter boom along Cooks River at Fifth Avenue Campsie with Cooks River Valley Association to improve the performance of the boom.	109	0	0	0	0	\$10,000	0	0	\$10,000
6.4 Maintain existing GPT at Orissa Drain, Fifth Avenue Campsie.	125	0	\$34,300	0	\$34,300	0	\$34,300	0	\$34,300
6.5 Maintain existing GPT and drainage pumping station/detention basin at the Brickpit, Railway Road, Sydenham.	127	0	\$90,000	0	\$90,000	0	\$90,000	0	\$15,000
6.6 Maintain existing trash rack at Mackey Park, Marrickville.	141	0	\$20,000	0	\$20,000	0	\$20,000	0	\$20,000
6.7 Maintain existing trash rack at Cup & Saucer Creek, Canterbury.	150	0	\$20,000	0	\$20,000	0	\$20,000	0	\$20,000
6.8 Maintain existing GPT at Wollie Creek, Kingsgrove.	151	0	\$90,000	0	\$90,000	0	\$90,000	0	\$90,000
NUTRIENTS AND BACTERIA									
8.6 Investigate options to implement requirement for inspection of sewer and stormwater connections into certification required for all residential and commercial property sales.	25	0	0	\$13,000	0	0	0	0	0
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	0	0	\$30,000	\$1,800	0	\$1,800	0	\$1,800
MANAGERIAL									
19.1 Identify and map ownership of all government land within the Cooks River Catchment and agree responsibilities between land managers in the catchment.	3	\$5,000	0	0	\$1,000	0	\$1,000	0	\$1,000
19.2 Define and agree responsibilities for stormwater and catchment management within Cooks River based on Action No. 90.	17	\$5,000	0	0	0	0	0	0	0
18.3 State agencies to ensure stormwater management policies for developments (such as the M5 Motorway, Rail Yard redevelopment and Airport expansions etc.) are consistent with Council planning policies and controls for stormwater management.	18	\$1,000	0	0	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	0	0	0	0	0	0
SUSPENDED SOLIDS									
24.2 Investigate continued dredging of sediments in most severely silted up reaches of the River. (eg. Third Ave, Campsie) upstream of Footbridge linking Barool Avenue and Church Street, Canterbury and identify actions in accordance with the requirements of the NSW State Rivers and Estuaries Policy.	40	0	0	0	0	0	0	\$50,000	0
23.4 Maintain existing detention pit/drainage pumping station at Carrington Road, Marrickville.	120	0	\$20,600	0	\$20,600	0	\$20,600	0	\$20,600
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
HABITAT LOSS AND RIVER HEALTH									
28.3 Investigate naturalising concrete channel by placing rock and planting native vegetation at Chain of Ponds reserve area, where space allows.	48	0	0	0	0	0	0	\$50,000	\$1,500
28.5 Replace sheet piling along Cooks River, between the Undercliff Bridge and the footbridge at Flinders Road with more natural bank stabilisation where possible.	49	0	0	0	0	0	0	\$200,000	0
28.7 Replace concrete embankment along Muddy Creek near White Oak Reserve with rock/vegetation and link to the adjacent reserve.	80	0	0	0	0	0	0	\$200,000	\$5,000
28.9 Naturalise concrete stormwater channel through Parry Park by placing rock and planting native vegetation.	130	0	0	0	0	0	0	\$75,000	0
28.10 Narrow Alexandra Canal with islands and bank extensions from Canal Rd as proposed in Alexandra Canal Water Management Plan.	146	0	0	0	0	0	0	\$2,000,000	\$2,000
28.11 Dechannel 250m section of stormwater channel between the head of Alexandra Canal and Sydney Park as proposed in Alexandra Canal Water Management Plan.	147	0	0	0	0	0	0	\$1,000,000	\$1,000
TOTAL		\$11,000	\$30,000	\$43,000	\$301,700	\$10,000	\$301,700	\$3,825,000	\$246,200

Table 9.15b: Stormwater Management Implementation Program – Sydney Water (Level 2 Actions)

Action	Rank	Financial Year and Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
7.11 Provide gross pollutant interceptor/GPT near pipe outlet of Mascot West SWS or further upstream where accessible for maintenance.	131	\$5,000	\$100,000	\$10,000
7.12 Provide gross pollutant interceptor near pipe outlet of Munní SWS upstream of proposed dechannelisation works.	132	\$5,000	\$200,000	\$20,000
7.16 Investigate provision of offline GPT or wet pond system on vacant land at bend in Cooks River adjacent to Dean Reserve, Strathfield.	136	\$5,000	\$250,000	\$20,000
7.17 Provide GPT/wetland downstream of Hume Highway along Greenacre Park SWS.	137	\$5,000	\$125,000	\$15,000
7.19 Provide gross pollutant trap/interceptor at a suitable and accessible location upstream of Botany Rd SWS pipe end.	142	\$5,000	\$250,000	\$25,000
7.20 Provide gross pollutant interceptors at pipe outlets (approx. 3) to Cup and Saucer Creek at industrial area near Alfred St, Campsie.	143	\$5,000	\$75,000	\$20,000
7.23 Determine feasibility of providing gross pollutant traps on pipe outlets (approx. 3) to Cox's Creek near King Georges Rd, Greenacre or combined (wetland) facility in the parkland on the northern side of the canal.	152	\$5,000	\$150,000	\$30,000
NUTRIENTS AND BACTERIA				
13.4 Construct small wetland above the tidal limit at Heynes Reserve, Canterbury to receive flows from Cup and Saucer canal.	101	\$5,000	\$150,000	\$15,000
13.5 Investigate feasibility of installing a constructed wetland in Cooke Park downstream of Madeline Street, or upstream of Madeline Street in Begnell Park.	102	\$5,000	\$250,000	\$15,000
13.6 Construct offline wetlands or pond system adjacent to Muddy Creek in White Oak Reserve.	103	\$5,000	\$250,000	\$15,000
13.7 Construct offline wetland upstream of tidal limit on Omaha Canal.	104	\$5,000	\$200,000	\$15,000
13.9 Replace concrete lined canal through Hughes Park, Canterbury with linear wetland or pool/riffle sequences along this reach of Cup and Saucer Creek.	116	\$5,000	\$150,000	\$15,000
13.11 Trial the creation of wetlands in the upper sections of Alexandra Canal as proposed in Alexandra Canal Water Environment Plan.	144	\$5,000	\$3,000,000	\$2,000
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	0	0	0
HABITAT LOSS AND RIVER HEALTH				
28.2 Dechannelise the concrete drain between the head of Alexandra Canal and Green Square (lower Sheas Creek) as proposed in Alexandra Canal Water Management Plan.	13	\$1000	\$10,000	0
TOTAL		\$66,000	\$5,160,000	\$217,000

Table 9.16a: Stormwater Management Implementation Program – Railways (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4 +	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
4.1 Develop and implement a planning policy requiring GPT and/or litter interceptors to be installed (and maintained by the development), in new commercial, industrial and shopping centre developments and redevelopments.	29	\$3,120	0	0	0	0	0	0	0
4.2 Implement a policy for new commercial developments and redevelopments to install adequate and appropriately designed bins.	36	\$3,120	0	0	0	0	0	0	0
1.4 Stencil Drains to educate people on the link between their backyard and the waterway and make drains readily identifiable (ie. through numbering).	58	0	0	\$1,920	0	0	\$2,400	0	\$2,400
NUTRIENTS AND BACTERIA									
8.1 Introduce a planning policy to ensure that adequate facilities such as car washing areas are provided for new developments, including units, residential, commercial and industrial.	15	\$1,870	0	0	0	0	0	0	0
10.1 Review procedures of maintenance crews and park managers in regard to disposal of grass clippings and plant material from maintenance strips and parks. Make any required changes to procedure and educate and enforce implementation.	53	0	0	\$6,240	\$3,120	0	\$3,120	0	\$3,120
8.4 Incorporate in planning controls a policy requiring car washing facilities to be connected to sewer (refer to Strathfield Council model).	111	0	0	\$6,240	\$3,120	0	\$3,120	0	\$3,120
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$4,800	\$2,880	0	\$2,880	0	\$2,880	0	\$2,880
15.2 Review weed management strategies in Parks and identify opportunities to reduce spraying through revegetation or improved practise.	75	0	0	0	0	0	0	0	0
14.4 Encourage the installation of on site detention facilities where feasible within industrial and business properties for water reuse.	77	0	0	\$20,000	0	0	\$10,000	0	\$10,000
14.5 Audit connections from industrial areas to stormwater and implement policies to ensure connections are reviewed on sale, or for any new or redevelopments.	81	0	0	0	0	\$25,000	0	\$25,000	0
MANAGERIAL									
19.1 Identify and map ownership of all government land within the Cooks River Catchment and agree responsibilities between land managers in the catchment.	3	\$5,000	0	0	\$5,000	0	\$5,000	0	\$5,000
18.1 Councils to incorporate detention basins, rainwater collection tanks(where practicable), limiting % of land areas that can be surfaced, and setbacks into planning requirements for new and re-development applications.	7	\$6,240	0	0	0	0	0	0	0
19.2 Define and agree responsibilities for stormwater and catchment management within Cooks River based on Action No. 90.	17	\$5,000	0	0	0	0	0	0	0
18.3 State agencies to ensure stormwater management policies for developments (such as the M5 Motorway, Rail Yard redevelopment and Airport expansions etc.) are consistent with Council planning policies and controls for stormwater management.	18	\$1,000	0	0	0	0	0	0	0
17.3 Include signage with all new 'visible' stormwater management facilities to inform community of stormwater objectives, problems and solutions.	44	0	0	0	0	0	0	0	0
SUSPENDED SOLIDS									
22.1 Require construction sites to implement stormwater controls defined in the "Blue Book" (NSW Government, 1998), by incorporating requirements for the best practise techniques in all Council development approvals and building approvals.	37	\$3,120	0	0	0	0	0	0	0

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
24.7 Develop erosion & sediment control plan for the exposed soil areas of Enfield Marshalling Yards. Investigate opportunities to provide buffer strips and sediment basins at appropriate locations.	78	\$30,000	0	0	\$15,000	0	\$15,000	0	\$15,000
21.2 Develop procedures to manage sediment discharges from industrial activities such as concrete cutting.	92	0	0	0	0	0	0	0	0
24.10 Develop sediment control plan for Chullora Rail Workshops to control runoff from exposed surfaces. Investigate opportunity for buffer strips and sediment basins at appropriate locations.	99	0	0	\$20,000	0	0	\$10,000	0	\$10,000
24.11 Develop erosion & sediment control plan for Eveleigh Railway Workshops.	100	0	0	\$30,000	0	0	\$10,000	0	\$10,000
22.3 Audit implementation and effectiveness of sediment controls on construction sites. Compliance with development approval conditions to be enforced by Council officers.	113	0	0	\$12,500	0	\$12,500	0	\$12,500	0
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000
HABITAT LOSS AND RIVER HEALTH									
25.1 Incorporate setbacks of at least 10m from creeklines and 20 m from main river bank in LEPs / DCP's / planning instruments to allow re-establishment of a riparian zone.	4	\$6,000	0	0	0	0	0	0	0
28.1 Investigate additional opportunities for replacement of concrete stormwater channels with more natural drainage lines based on ownership of land adjacent to the channel.	5	\$3,120	0	0	0	0	0	0	0
26.1 Incorporate, preservation of existing foreshore vegetation remnants and natural waterways and land adjacent to the channel, within planning policies and development controls.	8	\$2,400	0	0	0	0	0	0	0
26.2 Protect Freshwater Creek during redevelopment of the Chullora Site through appropriate planning controls and design. Continue to liaise with Bankstown Bushland Society in this process.	66	\$5,000	0	0	\$5,000	0	\$5,000	0	\$5,000
27.1 Incorporate Wollli Creek Mangroves and Saltmarsh through planning policies and bushcare regeneration programs. Investigate measures to minimise sedimentation and disturbance from railways.	67	0	0	0	0	\$5,000	0	0	\$5,000
27.4 Protection of Cooks River Clay Plains Scrub Forest within proposed redevelopment site at Rail Yards.	71	\$5,000	0	0	\$5,000	0	\$5,000	0	\$5,000
28.9 Naturalise concrete stormwater channel through Parry Park by placing rock and planting native vegetation.	130	0	0	0	0	0	0	\$75,000	0
TOTAL		\$84,790	\$50,880	\$96,900	\$87,120	\$42,500	\$119,520	\$112,500	\$124,520

Table 16b: Stormwater Management Implementation Program – Railways (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.4 Investigate opportunities to install GPT's where pipes discharge to waterways.	158	0	0	0
SUSPENDED SOLIDS				
24.8 Develop erosion & sediment control plan for Cooks River Goods Yards, Sydenham.	93	\$3,000	\$30,000	\$10,000
23.2 Investigate opportunities to install sediment controls immediately prior to all stormwater pipe discharges to waterways.	138	0	0	0
TOTAL		\$3,000	\$10,000	\$10,000

Table 17a: Stormwater Management Implementation Program – RTA (Level 1 Actions)

Action	Rank	Financial Year and Expenditure							
		Year 1		Year 2		Year 3		Year 4+	
		Capital	Maint.	Capital	Maint.	Capital	Maint.	Capital	Maint.
LITTER									
3.3 Review mixed and recyclable waste removal program to ensure frequency and timing is adequate. Upgrade waste removal program to increase frequency of bins emptied in areas where required.	155	0	0	0	0	0	0	\$2,400	\$36,000
TOXICANTS									
15.1 In all areas where weed spraying is undertaken along drainage lines implement stormwater verge revegetation planting as detailed in the Sydney Water Trial (Durham, 1997).	11	\$4,800	\$2,880	0	\$2,880	0	\$2,880	0	\$2,880
MANAGERIAL									
19.1 Identify and map ownership of all government land within the Cooks River Catchment and agree responsibilities between land managers in the catchment.	3	\$5,000	0	0	\$1,000	0	\$1,000	0	\$1,000
19.2 Define and agree responsibilities for stormwater and catchment management within Cooks River based on Action No. 90.	17	\$5,000	0	0	0	0	0	0	0
18.3 State agencies to ensure stormwater management policies for developments (such as the M5 Motorway, Rail Yard redevelopment and Airport expansions etc.) are consistent with Council planning policies and controls for stormwater management.	18	\$1,000	0	0	0	0	0	0	0
SUSPENDED SOLIDS									
23.1 Maintain and regularly clean out manholes and sediment traps. Ensure sediments are disposed of appropriately.	151	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000
23.3 Review maintenance schedules and cleaning techniques for existing road drain sediment traps and implement improvement program. Ensure sediments are tested for contamination and disposed of appropriately.	157	0	\$24,000	0	\$24,000	0	\$24,000	0	\$24,000
TOTAL		\$15,800	\$50,880	\$ 0	\$51,880	\$ 0	\$51,880	\$2,400	\$87,880

Tables 17b: Stormwater Management Implementation Program – RTA (Level 2 Actions)

Action	Rank	Expenditure		
		Year One Investigation Cost	Year Two+ Estimated Capital Cost	Estimated Annual Maintenance Cost
LITTER				
4.5 Investigate locations where trapped street gully pits could be installed along roads to trap litter and sediments.	156	\$5,000	\$650,000	\$150,000
SUSPENDED SOLIDS				
23.2 Investigate opportunities to install sediment controls immediately prior to all Council and Agency stormwater pipe discharges to waterways.	138	0	0	0
TOTAL		\$5,000	\$150,000	\$150,000