
6 STORMWATER MANAGEMENT ISSUES

Stormwater management issues are the factors that may impede the achievement of the adopted management objectives. The issues have been categorised as environmental, managerial, and social. The issues in this plan have been identified by a combination of the following processes:

- a desk-top study, based upon issues previously raised in numerous reports;
- discussions and a workshop with staff from Councils, Sydney Water, RTA and Upper Parramatta River Catchment Trust;
- a Stakeholders Meeting with interested community, government and non-government organisations held on the 1st October, 1998 at Wentworthville.

Table 21 lists the identified stormwater management issues and the predicted causes of the issues.

Some issues have been identified in concentrated areas within the catchment. These 'hot spots' are shown in Table 22.

Table 21: Management Issues and Causes

Category	Issue	Possible Causes
ENVIRONMENTAL	E1. Elevated nutrient concentrations (Phosphorus and Nitrogen) in catchment, particularly in Toongabbie Creek and Blacktown Creek	Excessive application of fertiliser; washing of vehicles on impervious surfaces; sewer overflows (36% N, 31% P - Sydney Water) and exfiltration (leaks); septic leaks and soaks from tanks @ Castle Hill; atmospheric deposition of nitrogen; leachate from landfill; point sources
	E2. High nutrient levels in sediments of ponds and weirs	As above; accumulation over time
	E3. Increased temperature range in catchment streams (particularly low minimum temperatures)	Removal of riparian vegetation; alteration of the natural water level by construction of weirs; dams; removal of natural controls; routing of stormwater drains directly into creeks
	E4. High Bio-chemical Oxygen Demand (BOD) within catchment	Excessive algal growth; sewer overflows and exfiltration; increased organic matter eg. grass clippings; septic leaks and soaks from tanks @ Castle Hill
	E5. Elevated bacterial (faecal coliform) levels in catchment, especially Toongabbie Creek system, during both wet and dry weather	Sewer overflows and sewage exfiltration (including leaks from private systems); septic leaks and soaks from tanks @ Castle Hill; faecal contamination from animals
	E6. Algal blooms in Toongabbie Creek system and Lake Parramatta (including Blue-green algae) along still water sections	Nutrient discharges in stormwater; increased light intensity & temperature (from clearing of riparian vegetation); sewer overflows; septic leaks and soaks from tanks @ Castle Hill;
	E7. Marked changes in catchment stream hydrology: increase in peak flow rates and flow volumes; decline in base flows between storms (billabong effects); and changes to soil moisture levels in riparian zone	Impervious surfaces and increased efficiency of stormwater drainage systems; flood mitigation works; dams and weirs; irrigation of parks and ovals and residential lawns and gardens
	E8. Erosion of stream banks	Hydrological and hydraulic ⁱ impacts from increased urban drainage and impervious surfaces; removal of riparian vegetation; scouring from drainage outlets and sewer overflows (eg. Toongabbie Creek); limited corridors from urban planning

Category	Issue	Possible Causes
ENVIRONMENTAL	E9. Degradation of aquatic habitat (including the demise of aquatic fauna in Toongabbie & Finlaysons Creeks), and reduced diversity & abundance of stream invertebrates in Blacktown, Toongabbie, Lower Hunts, and Upper Blue Gum Creeks, and Lake Parramatta	Toxins in runoff; increased peak & altered flows; sedimentation; nutrient impacts from runoff; sewage contamination; high suspended solids; removal of riparian vegetation; channelisation of streams (Cooper, Brickfield, Finlaysons Creeks and Upper Parramatta River); runoff from freeways (M2, M4); septic leaks and soaks from tanks in Castle Hill, West Pennant Hills & North Rocks
	E10. Elevated levels of suspended solids in catchment (especially after storm events)	Erosion and sedimentation from construction sites (including residential, commercial, industrial developments, infrastructure and utilities); erosion of stream banks; dredging of sediments; spillage from vehicles (poor covering of loads); remobilisation of sediments during storms
	E11. Increases in heavy metals and organochlorines in sediments downstream of industrial areas in Toongabbie Creek (Seven Hills), and Greystanes Creek (Girraween), and downstream of motorways in Pendle Hill and Finlaysons Creeks (M4) and Darling Mills Creek (M2)	Industrial water pollution; runoff from motorways; leachate from contaminated land
	E12. Toxic materials and solutions	Accidental and deliberate spillage
	E13. Weeds (eg. African Boxthorn, African Olive, Privet, Lantana, Moth Vine, Morning Glory) adjacent to waterways; Salvinia in Lake Parramatta; Alligator Weed in Pendle Hill Creek and Toongabbie Creek; <i>Ludwigia peruviana</i> (Water Primrose), Willows, and Water Milfoil along streams at specific sites	Garden escapes; removal of canopy vegetation; high nutrients from runoff and sewage; changes to soil moisture from altered hydrology
	E14. Degradation & depletion of riparian vegetation	Erosion of stream banks; competition with weeds; clearing for development including flood mitigation works; hydrological impacts; limited corridor width; hydraulic impacts
	E15. Restriction of movement of fish and aquatic vertebrates	Retaining structures such as dams and weirs; lack of flow
	E16. Litter and oils and surface films in watercourses	Dumping of rubbish; recreational boats; construction sites; shopping centres; industrial areas; roads; railways; increased waste charges leading to illegal dumping; home mechanics
	E17. Increase in dissolved oxygen ranges	Intense algal growth

Category	Issue	Possible Causes
MANAGERIAL	M1. Inadequacy of current planning instruments to address the water quality issues	Different approaches eg. subject-related vs. city-wide DCPs, prescriptive development controls vs. FSRs, landscape policies not analogous with stormwater policies; archaic plans and codes; lack of understanding
	M2. Poor information correlation, duplication of practices and lack of coordination between Councils and between State and Local Government	Lack of consistent guidelines and management practices; poor clarity of responsibility
	M3. Variability in water quality sampling methods and accuracy	Many sampling groups using different kits and procedures
	M4. Poor information on wet weather quality (most pollutant loads occur during storms)	Water sampling generally not undertaken during wet weather due to high expense
	M5. Difficult to establish stream priorities based on degradation	Lack of measured wet weather water quality data on individual creeks
	M6. Inadequate funding of stormwater management	Insufficient allocation of rate income and limitation of funding opportunities by legislation
	M7. Restricted asset maintenance	Lack of understanding of maintenance regimes and inadequate funding
	M8. Insufficient section 94 contributions for water quality from new development infrastructure. Council can not recoup full costs for land acquisition and infrastructure costs	Legal restrictions eg. Environmental Planning and Assessment Act, Just Terms and Compensation Act and Land and Environment Court precedents; no dedicated funds in the past for water quality
	M9. Complying and exempt development - reduction of council and community control	Amendments to EPAA; lack of council policy and procedure
	M10. Conflicts between siting of OSD, architectural and landscape design and existing vegetation on development sites	Poor planning at development application stage; lack of integration and site planning
	M11. Poor creek maintenance	Lack of resources and planning; mixed ownership; low priority of councils
	M12. Poor erosion and sediment control on construction sites	Insufficient staff; insufficient time available to spend on each site; lack of will; no single person responsible for the site

Category	Issue	Possible Causes
	M13. Dysfunctional communication and facilitation of stormwater management	Lack of communication & publicity of stormwater management endeavours; minimal community participation in decision - making
SOCIAL	S1. General lack of understanding of catchment issues by the multi-cultural community and the links between individual/collective actions and the creeks	Insufficient public awareness campaigns
	S2. Poor visual amenity, particularly in Toongabbie Creek sub-catchment	Channelisation of drains; removal of indigenous and riparian vegetation; litter; sedimentation; weed and algal growth
	S3. Reduced recreational opportunities - unhealthy for swimming in all water bodies	Faecal contamination; litter; nuisance plant and algal growth; oils & greases; toxic spills
	S4. Odorous, tainted water	High nutrient loads; stagnation due to de-oxygenation of water body by nuisance algae
	S5. Destruction of aboriginal and non-aboriginal relics	Sites adjacent or within waterways containing relics are not always known to staff and community and can be ignorantly ruined; lack of involvement with Aboriginal Land Councils
	S6. Restricted public access to creeks	Mixed ownership of land, poorly defined access routes

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- i. Hydrology: the science dealing with water on the land, or under the earth's surface, its properties, laws, geographical distribution, etc. (Macquarie Dictionary, 1991)
 - ii. Hydraulic: the science treating the laws governing water or other liquids in motion and their application in engineering (Macquarie Dictionary, 1991)

Table 22: Hot Spots in the Upper Parramatta River Catchment

Baulkham Hills Shire

Location	Issue
Castle Hill Commercial Centre	Litter, hydrocarbons
Abattoir, Crane Road, Castle Hill	High faecal coliform levels ¹⁰
Old Northern Road and North Rocks Road	Old septic tanks still in use
Goodhall Avenue, Baulkham Hills (downstream of Winston Hills shops)	Murky water, grease & oils, thinners, high faecal coliform levels
M2 Motorway	Erosion of embankments adjacent to stormwater drainage, disconnection of first flush treatment measures - hydrocarbons and heavy metals untreated
Westfields Shopping Centre, North Rocks	Litter, grease, oils
North Rocks Industrial Area	Toxic Chemicals, hydrocarbons, heavy metals, litter, unknown discharges
Seville Reserve, North Rocks	High faecal coliform levels
Darling Mills Creek (upstream of Flood Retarding Basin)	Landslip, sedimentation
North Rocks - upstream of Lake Parramatta	Sewer overflows and exfiltration problem
Darling Mills Creek (near Speers Road, North Parramatta)	Sedimentation and associated environmental weeds

Blacktown City

Location	Issue
Lalor Creek - upstream of Seven Hills Road	Bank erosion and litter from residential areas and Ashley Brown Reserve
Seven Hills Industrial Area	Toxic Chemicals, hydrocarbons, heavy metals, litter, unknown discharges, sewer overflow from Lalor Park carrier
Dog pound, Prospect	High BOD ¹¹ , bacteria
Blacktown Creek - upstream reach	Aquatic weeds - <i>Typha orientalis</i> ¹² & <i>Myriophyllum aquaticum</i>

¹⁰ Refer to Appendix 3 for an explanation of faecal coliforms

¹¹ Bio-chemical Oxygen Demand (BOD) – refer to Appendix 3 for further information

Location	Issue
William Lawson Reserve, Blacktown Creek	High BOD, Odour, Algae blooms, litter, undesigned sewer overflow, discharge from meat processing plant, leachate from landfill
Orana Park - Blacktown Creek	Severe bank erosion, hydrocarbons and litter from Blacktown Mega Centre (St Martins)
International Peace Park - Blacktown Creek	Severe erosion, old landfill site (suspected leachate), weeds (<i>Typha orientalis</i>)
Blacktown Creek - upstream of McCoy park	Sedimentation, weeds (<i>Typha orientalis</i>)
Toongabbie Creek, upstream of Powers Road	High velocities from concrete channels creating erosion downstream & flooding of adjoining properties (industrial area)
Toongabbie Creek, downstream of Powers Rd, Seven Hills	Severe erosion
Grantham Creek, upstream of railway line	Severe erosion, litter, weeds (<i>Typha orientalis</i> , <i>Egeria densa</i>), sedimentation
Metella Creek - Metella Reserve, Prospect	Stream bank stability, litter, hydrocarbons, sediments
Greystanes Creek	Nutrients (indicated by algae, weeds), litter, sediment

Holroyd City

Location	Issue
Girraween Industrial Area	Toxic Chemicals, hydrocarbons, heavy metals, litter, unknown discharges
Greystanes Creek	Nutrients (indicated by algae, weeds), litter, sediment
M4 motorway	Hydrocarbons and heavy metals source
Pendle Hill Creek near M4 Motorway	Severe bank erosion
Pendle Hill Creek, M4 Motorway to Magowar Road	Erosion, extensive weed growth
Pendle Hill Commercial Centre	Litter, sewer overflow in car park (Toongabbie and Pendle Hill carrier)
Pendle Hill Creek, Reserve (downstream end)	Sewer overflow (Toongabbie & Pendle Hill Carrier)

¹² *Typha Orientalis* is a native emergent water plant. However it is opportunistic and highly competitive, and has proliferated in areas of disturbance. In such cases it is recognised as a weed.

Location	Issue
Wentworthville Shopping Centre	Litter
Central Gardens, Merrylands West	Carp, bird faeces - bacteria.
Coopers Creek (lower section)	Severe erosion

Parramatta City

Location	Issue
Greystanes Creek, Toongabbie (lower section)	Severe erosion, weeds, litter, sedimentation, sewer overflow from Toongabbie and Pendle Hill carrier and 29 Woodlawn Drive, Toongabbie
Toongabbie Creek - Oakes Road to Third Settlement Reserve	Severe bank and bed erosion, sedimentation
Hood Street, Old Toongabbie	Sewer Overflow
Lake Parramatta	Weed (<i>Salvinia molesta</i> and <i>Nymphaea mexicana</i>)
Sewer Pumping Station 103 at Northmead	Sewer Overflow from failure
Parramatta River	Alligator Weed (<i>Alternanthera philoxeroides</i>)
Parramatta CBD	Litter, large area of impervious surfaces