



Stormwater Guidelines

Asset Management and Systems

1. Guidelines Definitions

AC – Auckland Council

ACSW - Auckland Council Stormwater Unit

ADT – Average Daily Traffic

AEP - Annual Exceedance Probability: The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year

Air, Land, Water Plan (ALW Plan) means the ALW Plan of the legacy Auckland Regional Council

AMP - Asset Management Plan

AT - Auckland Transport

ATCOP - Auckland Transport Code of Practice

CCO – Council Controlled Organisation

Contaminant is as defined by the Resource Management Act 1991 and means any substance (including gases, odorous compounds, liquids, solids, and microorganisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy, or heat:

- When discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or,
- When discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.

Discharge is as defined by the Resource Management Act 1991 and means to emit, deposit, and allow to escape.

Integrated treatment is the treatment of road run-off jointly with land use run-off in public stormwater treatment devices. In some cases this may be more efficient and effective than providing separate treatment for road run-off, but this may not always be appropriate.

LOS – Levels of Service

Network consents are the resource management consents required (by the Resource Management Act (1991)) to be held by local authorities for the discharge of stormwater (from all urban land-uses, including roads) to the environment. The consents are held by AC but AT is bound by the consent conditions in terms of runoff from roads.

NZTA– New Zealand Transport Agency

Public Stormwater Network includes:

- Any pipe, drain, drainage channel, land drainage work or treatment facility, vested in or under the control of the Council, which serves more than one freehold lot; and,
- Any drain, drainage channels, land drainage works or treatment facilities within a legal road reserve or other public places; and, Any drain, drainage channel, land drainage work or treatment facility over which the Council has exercised control for a period of not less than 20 years; and,
- Any drain, drainage channel, land drainage work or treatment facility declared to be a public drain under section 462 of The Local Government Act 1974.

Road corridor has the same meaning as **road** in the Local Government Act 1974 (Section 315). In short, it covers the total area of land between road boundaries including:

- carriageway (formed road)
- footpath including kerb and channelling
- cycleways, cycle paths
- land that is legally designated as road but is not currently formed as carriageway or footpath

SOI – Statement of Intent

Stormwater is water that originates during precipitation events. It may also be used to apply to water that originates with snowmelt that enters the stormwater system. Stormwater that does not soak into the ground becomes surface runoff, which either flows directly into surface waterways or is channelled into storm sewers, which eventually discharge to surface waters.

Terminology is used in this document to describe whether an aspect or statement is a requirement under law/mandatory or good practice:

- **Must** – indicates something that is mandatory or required by law
- **Should** – indicates a recommendation
- **May** – indicates something that is optional and may be considered for use.

Treatment train is a sequence of structural Stormwater Management Practices which together achieve optimal flow management and pollutant removal from urban stormwater.

Water Sensitive Design (WSD) is an inter-disciplinary design approach to stormwater management that operates at complementary scales of the region, the catchment, and the site for planning and land development¹. Water Sensitive Design seeks to protect, enhance, and ultimately utilise natural systems and processes for enhanced stormwater management, ecosystem services, and community outcome. Its principles are:

- Promote Inter-Disciplinary Planning and Design
- Protect the values and functions of natural ecosystems
- Avoid adverse effects of stormwater or manage them as close to source as possible
- Utilise natural systems and processes for stormwater management

WSD seeks to control water at the source (both rainfall and stormwater runoff) via the use of various devices that minimise the effect of infrastructure and are designed to be as close as possible to the conditions of natural ground and vegetation. It promotes the use of building roofs, parking lots, and other horizontal surfaces to convey water to either distribute it into the ground or collect it for reuse. WSD options encompass the use of structural devices (engineered systems) and non-structural devices (vegetated, natural systems). The integration of WSD devices permits the developer and designer to use an array of stormwater management devices that are both cost-effective and environmentally sound. WSD has been proven to reduce development and infrastructure costs, minimize operations and maintenance costs, and improve the marketability of projects.

2. Guideline Statement

The Mayor's vision outlines turning Auckland into the world's most liveable city by 2040. The Auckland Plan has identified that an efficient and integrated network of roads and public transport is vital to delivering this vision. As a Council Controlled Organisation (CCO), AT is responsible for delivering the region's transport services – from roads and footpaths to cycling, parking and public transport. Through the Statement of Intent (SOI) and to contribute to the achievement of priority areas and targets contained in the Auckland Plan, AT is required to prioritise and optimise investment across transport modes and related infrastructure.

AT has developed a set of guidelines to ensure that the transport services will be delivered on a consistent basis around the Auckland region. These guidelines identify the approach that AT will apply when managing the transport assets. The approach identified in the guidelines is cognizant with the Level of Service identified in the Integrated Transport Programme and Asset Management Plan.

¹ Lewis, M. and James, J (2012). Draft Low Impact Design Manual for the Auckland Region. Prepared by Boffa Miskell for AC. AC Guideline Document GD-04, Vol 1. February 2012.

3. Background

AT has the overriding responsibility for stormwater in the road corridor. However, as stormwater traverses both land and organisational boundaries, AT and the AC Stormwater Unit (ACSW) have agreed to work collaboratively to take advantage of the skills and knowledge that resides in both organisations. ACSW has the on-going responsibility for the general maintenance works associated with stormwater treatment devices and the piped network. ACSW will also focus on the environmental impacts of stormwater runoff. AT will be responsible for the planning and design of new assets and the asset management process/renewals, in collaboration with ACSW.

The stormwater network consents that were applied for under the legacy Council structure and consents that have been granted to date are held by AC. As the road network is one of the major contributors of stormwater runoff to the receiving environment, AT and ACSW have agreed that while the consents will stay in the name of AC, AT will be bound by the consent conditions as they apply to the road network. As a consequence AT must ensure that the conditions of consent are identified and accounted for in the planning and design processes for new works within the road corridor.

Future network consents will be applied for jointly by ACSW and AT, to cover the network assets of both parties. Consent conditions will be negotiated jointly and AT will manage its assets for compliance.

The Air Land Water Plan (ALW Plan), previously used by the Auckland Regional Council with regard to discharges to the receiving environment, still applies until it is replaced by the Unitary Plan. The ALW Plan imposes requirements on discharges to the receiving environment and AT is bound to take the provisions and rules in the Plan into account when designing new roads and considering renewal works of existing road corridors.

Historically the maintenance of stormwater assets has been undertaken by different sections within the legacy Councils. Some stormwater assets were managed by Parks, some by the stormwater units and others through maintenance contracts. Over time, a more consistent approach is sought and the guidelines and the agreement between AT and ACSW to work collaboratively is part of that process.

The guidelines outline the approach that AT and ACSW have agreed to take in managing stormwater and its impacts on the environment in the Auckland region.

4. Purpose and Scope

The purpose of the stormwater guidelines is to achieve a consistent and coherent approach to the provision of stormwater treatment as part of the road design process the Auckland region. AT and ACSW have agreed that stormwater treatment should be considered at the concept planning phase onwards for all new roads and the redevelopment of existing roads, and the guidelines outline the process and approvals required to give effect to this.

Further, the guidelines seek to ensure that all stormwater assets are appropriately identified and maintained through the AMP process in an effort to protect the receiving environments within the Auckland region.

AT supports the Auckland Plan goals to become the world's most liveable city. Included in the Plan are outcomes for Auckland by 2040:

- Safe and healthy Auckland – addressed through protecting streams, and water bodies from contamination from adjoining land uses
- A green Auckland or Auckland as an eco-city – addressed through managing streams, contaminants, planting and considering adjacent the impact of land-uses.
- A beautiful Auckland that is loved by its people – managing flooding, streams and contaminant loads discharged to all receiving environments

Guidelines from the Auckland Plan that guide how the works must be implemented include:

- Working together on Auckland priorities – AT and ACSW
- Plan for sustainability – integrate asset management, renewals and new asset design
- Reduced adverse environmental effects from Auckland's transport system
- Make the best of every dollar spent – apply prudent asset management practices and design principles to consider the best outcome for the environment and people – not just the cheapest.

The guidelines on stormwater in the road reserve seek to ensure road designs factor in initiatives to address the quality and quantity of the stormwater generated, taking a low impact urban design or treatment at source approach where practicable. The guidelines also seek to ensure prudent asset management practices capture the asset information and are appropriately funded to address maintenance requirements in a timely manner. Design option decisions should utilise the whole-of-life cost basis, particularly with regard to operational expenditure.

The Stormwater Guidelines are aligned with the AT Guidelines on Street Amenities and Vegetation in the road reserve. The guidelines also acknowledge that road corridors often form part of the overland flow path, which also receive runoff and associated contaminants from adjacent private land.

5. Guidelines

5.1 Approach

AT wishes to work closely with ACSW to ensure funding arrangements appropriate to delivering the works are considered prior to the works commencing. When considering the design of new stormwater management options the following factors must be demonstrated by the project owner:

- A life cycle costing of the preferred option is considered to ensure environmental factors as well as maintenance frequency and costs are included.
- Whether the preferred option is fit for purpose or is under consideration just because it has always been done that way.
- The whole of road design/treatment is considered rather than incremental treatment applied to the new section. At times incremental and/or retrofitted treatment of the widened road may be most appropriate but often, the design of the resulting road surface will require different or a modified treatment solution. While the cost initially may be greater, long-term the whole of road approach is more likely to result in a more prudent asset management and cost/maintenance savings.
- During concept and preliminary design, consideration should be given to the consent conditions likely to be required at the time a consent is applied for. This may be affected by national policy and objectives, Unitary Plan or Network Consents.
- Any impact on Watercare's systems in the Combined Sewer Areas

AT is tasked under the legislation with controlling and managing the transport network for Auckland. In designing the stormwater management options for new roads and managing the same in existing roads, project owners and designers must:

- Be leaders – implementing environmentally sound approaches, and
- Consider treatment and mitigation at source (WSD) rather than treatment at the bottom of the catchment wherever practicable. Light rainfall events up to 50% AEP account for almost all the contaminant load in run-off.
- Consider design for rainfall up to 10% AEP design storm. Rainfall run-off should be managed within the road reserve to maintain acceptable levels of service for road users, limiting hazards and nuisance.

- Ensure survivability or recovery of infrastructure, accessibility for emergency services and protection of personal safety and habitable or commercial property for 1% AEP storm events. Significant consequences of run-off exceeding the design peak flow; greater protection for identified critical infrastructure (0.5% AEP); and effects of coastal inundation from tides, sea-level rise or tsunami must also be considered.
- Provide value for money in terms of discharge quality and quantity.
- Give effect to the provisions of the Waitakere Ranges Heritage Area Act (2008) for any works within the Heritage area (see the ATCOP for further information).

5.2 New Works

The proposed stormwater treatment and flow management options must be reviewed and approved by the Investigation and Design (I&D) Design Review Committee. The design of all new stormwater treatment solutions for road runoff must demonstrate consideration of:

- Compliance with requirements of Network Discharge Consents.
- Compliance with recommendations of any relevant Corridor Management plans and Stormwater Catchment Management plans (where these exist).
- The treatment requirements detailed in TP10 (Auckland Regional Council Technical Publication #10), although it is acknowledged that in brownfield areas and when devices are retrofitted, treatment design levels may not be as high as TP10 requirements.
- Technical specifications stated in the Drainage chapter of the ATCOP.
- The Combined Sewer Area (managed by Watercare)
- WSD options where appropriate (see ATCOP for treatment device options).
- Provision for major and minor event road drainage. This will include consideration of any defined overland flow paths, and includes discharges from adjoining land to road corridor, and the effects of discharges from the road corridor to adjoining land (see ATCOP for design objectives).
- Effect based design approach.
- The sensitivity of the receiving environment.
- Locating the device(s) to allow for easy access and maintenance (considering whole-of-life costs).

When new roading works meet any of the following factors, the proposed stormwater treatment options must also be submitted to the ACSW team for design approval prior to submitting the design to the I&D Design Review Committee:

- The runoff discharges to a sensitive receiving environment
- The volume of traffic on road is expected or does exceed 10,000 ADT
- Network consent conditions apply to the discharge location or road runoff
- The project value is greater than \$1 million and involves the treatment of road runoff
- The project is in the Combined Sewer Area (refer to Watercare)

Consideration must also be given during the design process to the funding options available for the project as well as the consequential operating costs as a result of the approved design.

A maintenance manual should be developed for newly constructed treatment options (where applicable) and incorporated into the Operational Maintenance Plan. The maintenance requirements for the device/system must be provided to the Team Leader, Asset Quality Assurance.

5.3 Renewals and Maintenance

The maintenance of existing treatment devices was managed in different ways by legacy Councils, with some being managed by maintenance contracts and others maintained by Parks. AT and ACSW have agreed that improving the consistency will be an on-going process for the Auckland region in terms of how the maintenance works are managed.

Vegetative treatment options such as rain gardens and swales should be maintained in accordance with the guidelines on vegetation in the road corridor, as well as any requirements listed in the maintenance contracts and the ATCOP. Swale vegetation must not be cut so short or sprayed so as to reduce the effectiveness of the swale as a treatment option.

Where an Operational Maintenance Plan is in place for an asset, maintenance must be carried out in accordance with that plan.

Although a like for like replacement of treatment devices nearing the end of their useful lifetime may offer the best outcome in terms of cost, the replacement of treatment options must consider whether:

- An alternative WSD option would be suitable,
- New or updated corridor and/or catchment management plans now require a different level of treatment or mitigation,
- Network consent requirements now require improved treatment or mitigation levels
- Changing the treatment option would offer a better environmental outcome, and
- The lifecycle costs for the replacement option are acceptable. This is to be assessed on the basis of published whole-life option selection criteria, or will require the Asset Planning Manager's approval.

6. Monitoring and Review

These guidelines shall be reviewed in 12 months and thereafter as part of the three year review cycle aligned to the Long Term Plan.

7. Related Guidelines

The performance standards and detailed specifications for the management of stormwater in the road corridor are given in the ATCOP.

These guidelines also refer to the AT Guidelines on Vegetation in the Road Reserve and Street Amenities.

8. Document Status

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