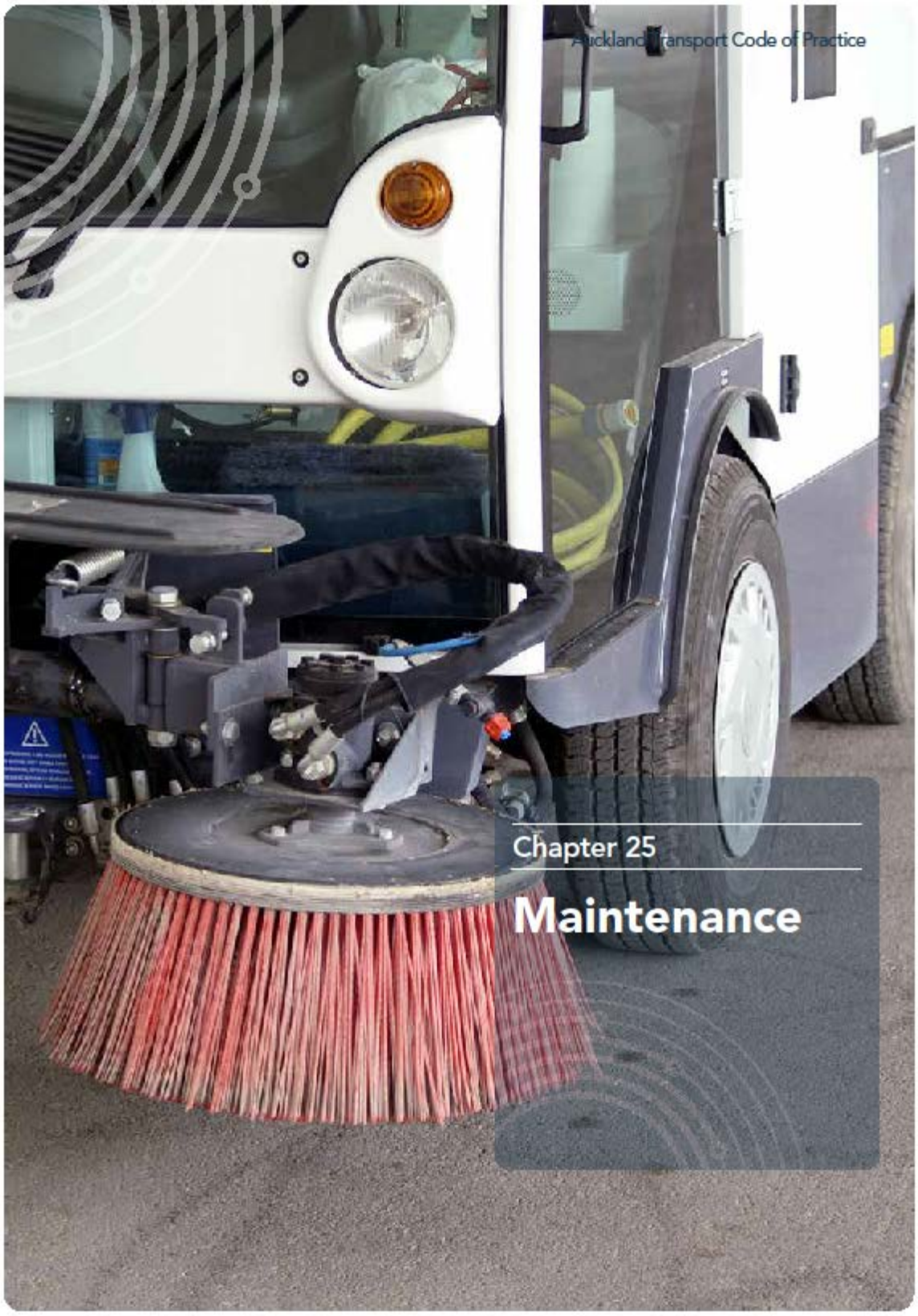
Auckland Transport Code of Practice
Chapter 25
Maintenance

25 Maintenance

Maintenance works include all maintenance and the renewal of roading assets within the road network including:

- Inspection of the road network assets and reporting faults, condition and needs of the network.
- Corridor Access Strategy, incorporating co-ordination with Road Utilities, Supervision / escort of over dimension/overweight vehicles, assessing Vehicle Crossing damage.
- Developer Network and Asset Inspections, including RCM RAMM Link, Asset Management Plan interface, Routine Inspections.
- Asset Inventory Change management processes, incorporating assessing Assets to be added to the network via subdivision or new infrastructure including the handover processes and agreement of asset condition.

25.1 Auckland Transport Guidelines

It is essential that the following Auckland Transport Guidelines are read at the following embedded hyperlinks, before reading the rest of this chapter.

Footpath and Walkway Guidelines (PDF 119KB)

Kerb and Channel Guidelines (PDF 71KB)

Local Area Traffic Management Guidelines (PDF 83KB)

Reseal Guidelines (PDF 61KB)

Signage Guidelines (PDF 93KB)

Stormwater Guidelines (PDF 101KB)

Street Amenities in the Road Corridor Guidelines (PDF 83KB)

Street Lighting Guidelines (PDF 115KB)

Vegetation in the Road Corridor Guidelines (PDF 105KB:

AC Weed Management Policy (PDF 500KB)

Asset Ownership Guidelines

Seismic Management Guidelines

Road Marking Guidelines
To be developed in the future.

Sustainability and Environmental Guidelines:
Currently being drafted.

Weed Management Policy
Currently being drafted by Auckland Council. Link to be provided in due course.

Unformed Legal Roads Guidelines
To be developed in the future.

25.2 Maintenance of Assets by Developers

The developer is responsible for the maintenance of all the works until they are formally accepted by Auckland Transport.

1. The roads, footpaths, drainage systems, street lighting, landscaping, reserve planting and any other assets vested in Auckland Council and its CCOs as part of a subdivision must be maintained to the standard required by this Code and any applicable Resource Consent or other subsequent Auckland Transport approval for the required maintenance periods after the Section 224(c) Certificate has been issued.

2. The maintenance period commences from the date of issue of the 224c Certificate pursuant to the Resource Management Act 1991, or if Titles have not been issued within four (4) months of the Section 224c Certificate date of issue then the maintenance period will commence from the Title issuing date.

3. The maintenance period is six (6) months for roads, including street lights, footpaths and road drainage.

4. The maintenance period is 24 months for street trees, reserves, landscaped areas, rain gardens and storm water quality ponds. Reference should also be made to the specific requirements of the Auckland Council Parks and Reserves Section and the Storm Water Quality Ponds part of the Auckland Council Storm Water Section.

5. To ensure the performance of the vested assets, the Resource Consent holder must enter into a maintenance bond with Auckland Transport. This bond must be provided prior to the issue of the Section 224(c) Certificate. The bond must either be a bank bond pursuant to Section 109 of the Resource Management Act (RMA) 1991 from a registered trading bank or bond agent (to Auckland Transport's satisfaction) or a cash bond in accordance with the requirements of Section 10 of the RMA 1991.

6. The maintenance bond required by Auckland Transport for the maintenance of works is 150% of 2.5% of the total construction value of the works under maintenance to Auckland Transport and a sum of money to cover the cost of CCTV inspections and Benkelman beam tests.

7. On completion of the maintenance period the applicant needs to complete the following requirements:

    a) Written confirmation from the Developer's Representative that the assets have been maintained and are in good condition.

b) Prior to the expiry of the maintenance period the subdivider must arrange for all berms and reserves on the subdivision to be mown, road carriageway, kerb and channel swept and all catchpits and other stormwater treatment devices to be cleaned out.

c) Arrange a joint inspection of the works to be carried out with the t the relevant Auckland Transport Engineer.

d) Complete a CCTV video inspection of the storm water pipelines within one (1) month of requesting the release of the bond, and provide Auckland Transport and Auckland Council Storm Water Section with the CCTV video inspection reports and inspection DVDs for approval.

e) Complete Benkelman beam testing of the road within a month of the request for release of the bond, and provide the test results and report to the relevant Auckland Transport Engineer for approval.

f) If the vested asset is not completed by the date stated in the Section 224(c) Certificate but is bonded as an uncompleted item, then the maintenance period commences from the date of the uncompleted works bond release.

8. Any faults, defects or damage to any of these works must be remedied at the consent holder's cost.

9. Any cost incurred by the Auckland Transport in preparing, checking, assessing and release of any bond must be met by the Resource Consent holder.

10. If the Resource Consent holder fails to maintain the vested assets, Auckland Transport may undertake the works necessary to bring the assets up to the standard required by Auckland Transport and the cost of this work may be deducted from the bond. If there is a shortfall in the bond value and the final cost of the works undertaken by Auckland Transport, these costs will be recovered from the Resource Consent holder. In addition, the cost of maintenance of any replacement works for the following 24 months will be deducted from the bond.

25.3 Road Service and Maintenance Priority Levels

					Routine	Increased Service Level		
Maintenance Priority (MP)	**Classification / Description**	**Traffic Volume**	**Form**	**COPTTM Level**	**Service Level (SL)**	**High Public Profile** NOTE 2	**An AELG Lifeline Route** NOTE 3	**Public Transport Route or High % HCV** NOTE 4
MP1	Generally Primary Arterials	> 20,000vpd	Generally be multi-lane and may have limited access control NOTE 1	Level 2 with some at Level 3 by exception	SL1	SL1	SL1	SL1
MP2	Generally Secondary Arterials	>20,000vpd	Generally be two lane and generally have no limited access control	Level 2	SL2	SL1	SL1	SL1
MP3	Generally Collector Roads, but may include some Secondary Arterials	10,000vpd to 20,000vpd	Generally be two lane and generally have no limited access control	Level 2	SL3	SL1	SL2	SL2
MP4	Generally Local and Collector Roads	5,000vpd to 10,000vpd	Generally be two lane and generally have no limited access control	Level 1 with some at Level 2 by exception	SL4	SL2	SL3	SL3
MP5	Generally Local Sealed Roads	1,000vpd to 5,000vpd	Generally be two lane and generally have no limited access control	Level 1	SL5	SL2	SL3	SL3
MP6	Generally Local Sealed Roads with low traffic volume. Mostly urban/rural residential roads	< 1,000vpd	Generally be two lane and generally have no limited access control	Level 1	SL6	SL3	SL4	SL4
MP7	Unsealed Roads	< 1,000vpd	Generally be two lane, but can be down to single lane, and generally have no limited access control	Level 1	SL7	SL4	SL4	SL4
MP8	Accessways and Carparks	Varies	Covers all accessways such as service lanes, walkways, footpaths, bridle trails etc. This category also covers on road and off road carpark areas.	Level 1 where required	SL8	SL4	SL4	SL4

NOTES:

NOTE 1 The SL1 road hierarchy also includes for roads and/or intersecting areas with motorways and/or significant State Highway routes.

NOTE 2 High Public Profile Routes will be identified by exception and may vary from high profile retail areas (e.g Queen Street) to routes that encourage and promote tourism (e.g. scenic routes).

NOTE 3 Lifelines Routes will be identified by exception and will generally follow those routes identified by the Auckland Emergency Lifelines Group (AELG).

NOTE 4 High HCV routes will be identified by exception, rather than by an identified percentage value of HCV's on a particular route. Freight Route description can also cover rural and urban routes identified for forestry and/or quarry traffic. Bus Routes will be identified by exception and also cover High Occupancy Vehicle (HOV) lanes and transit lanes (T2 and T3)

Figure 143: Road Service and Maintenance Priority Levels

25.4 Sustainability

Consideration of existing and potential means of promoting sustainability in pavement design, materials, pavement and drainage maintenance activities and construction should be given by designers and others involved in determining what materials and processes go into these activities.

The pavement design, materials, pavement and drainage maintenance activities and construction approaches for all maintenance and renewals works should align with the following sustainability outcomes

Target zero waste through waste minimisation and/or recycling/re-use maximisation;

Energy savings;

Reduction in contribution to greenhouse gases production;

Contribution to whole of life cost reductions for maintenance of road transport assets;

Usage of bio fuels and other similar fuel derivatives.

Given the numerous existing and potential sustainable inputs into road pavements, this might include consideration of some of the following:

The use of recycled materials in road construction, such as:

Asphalt, in the production of recycled asphalt pavement (RAP) mixes as is already permitted by existing NZTA specifications.

Aggregates, with the use of recycled crushed concrete, the re-processing of waste aggregates and the use of industrial by-products (such as slag in asphalt).

The use of various materials in construction, such as subgrade undercut situations where a variety of suitable materials could be made available.

For example glass sand, millings (where environmental concerns may need to be addressed) or other recycled materials may be suitable.

The sourcing of locally available materials in order to reduce the transport distance for the materials.

The use of stabilisation/modification of pavement aggregate is promoted within the provisions of NZTA specifications such as NZTA M/4 in order to make locally available aggregates suitable for use as basecourse material.

The use of slightly lesser grades of pavement aggregate is suitable for use in some applications where the use of premium aggregate is unnecessary. Some provisions have been made in this document to allow this.

The stabilisation of existing road materials, including:

In situ stabilisation which incorporates the current use of some recycled materials or by-products as additives.

Designing pavements in order to allow future in situ stabilisation.

Processing and treating of pavement aggregates using pug mills.

The provision of incentives, where opportunities arise, for the use of sustainable materials or construction.

25.5 Contaminated Materials

Sites will be checked against the criteria for activity type and contamination thresholds established by the Ministry for the Environment in National Environmental Standard (NES) and their guideline documents and also in the Auckland Council "Auckland Regional Plan for Air Land and Water" (ALW).

In particular the contaminants that may be present in some of the existing pavement materials are;

- Polycyclic aromatic hydrocarbons (PAH)
- Total petroleum hydrocarbons (TPH)
- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Heavy metals

If a site is identified as having potential contamination issues a sampling plan must be developed and submitted to the Auckland Transport representative for approval.

All agreed sampling, contaminant testing and analysis are to be carried out by an approved IANZ (International Accredited New Zealand) certified laboratory.

All results must be checked against the contaminant criteria in the NES to see if the specific contaminant levels have been exceeded. If the levels are exceeded, then the developer/designer/contractor must establish if resource consent is required for the pavement renewal works.

In any required design process it must be clearly demonstrated that all options have been considered for mitigating the presence of contaminated materials within the requirements of the NES the Ministry guidelines and the ALW. The first preference is to maintain and use the materials on site with the excavation and removal of the contaminated materials to landfills as the least preferred option.

If material is to be removed from site, then the materials must be classified using the following system;

- Contaminated Fill – contains contaminants above the maximum admissible concentrations for fill at local landfill sites;
- Managed Fill - contains contaminants below the maximum admissible concentrations for fill at local landfill sites;
- Cleanfill – material defined as cleanfill under the ALW and the Ministry "Guide for the Management of Cleanfills".

Where resource consent is required for the pavement renewal works, the developer/designer/contractor must obtain the consent and provide all reports and testing data required, including a Remedial Action Plan (RAP).

25.6 Noise and Vibration Management

All activities must comply with the noise requirements of the Resource Management Act (RMA) and the relevant operative District of Unitary plan requirements.

Where construction noise is likely to be an issue, a plan must be prepared and submitted to the Auckland Transport representative for review and approval. The plan must outline the nature of the intended works and the methodology required to comply with the RMA and District/Unitary Plan requirements and work within the limits prescribed in NZS 6803:1999 – Acoustics, Construction Noise (unless these limits have been superseded by any District/Unitary Plan requirements).

The plan should outline the following as a minimum;

a) How construction noise management will be addressed in planning the works;
b) That the construction noise management is in accordance with accepted industry best practice guidelines;
c) How unreasonable noise will be mitigated, especially when working outside normal working hours or at night;
d) An assessment of any sensitive buildings or utility services that may be affected by the vibration of construction plant;
e) Methods to measure vibration and noise during construction;

25.7 Working In and Around Trees

Prior to undertaking any works in the road corridor, a Corridor Access Request (CAR) must be lodged with the Auckland Transport Corridor Manager. The CAR must provide information on the works to be undertaken on or near trees.

As part of the CAR application a plan must be provided outlining how the works in and around the trees are to be undertaken. The plan must identify any scheduled or protected trees under the operational district, city or unitary plans and separate resource consents must be obtained for any works that may directly or indirectly impact on any of these identified trees.

Works in and around trees include works undertaken within the drip line of any tree.

In general all works are to be undertaken in accordance with accepted industry best practice guidelines detailed in the documents produced by the New Zealand Arboricultural Association that set out currently accepted arboricultural practices for Amenity Tree Pruning, Tree Protection Fencing on Development Sites and Safety Requirements for New Zealand Arboricultural Operations.

The nature of the effects of the proposed works on any tree (i.e. pruning, root cutting or tree removal) must be discussed with the Auckland Transport representative. The impact of the works may require the works to be carried out under the supervision of a qualified arborist and this must be identified and allowed for in the work plan.

Where practicable, the works should be planned to avoid damage to the live root structure or above ground structure of any tree.

All personnel that undertake works within the drip line of trees are to be trained in accordance with the accepted industry best practice guidelines detailed in the documents produced by the New Zealand Arboricultural Association.

The developer/designer/contractor must ensure that all personnel carrying out any works within the drip line of any tree are suitably qualified and informed of any conditions of an approved plan and/or resource consent and act in full accordance with these conditions.

Where the input of a qualified arborist is identified the arborist is to be commissioned by the developer/designer/contractor and agreed with the Auckland Transport representative. Prior to any works commencing within the drip line of trees within the road corridor, a site induction meeting is to be convened by the developer/designer/contractor and must include the Auckland Transport representative. At the induction, the developer/designer/contractor must have the arborist explain in detail the tree protection matters that are relevant to the specific sites and work methodologies to all certified personnel who will be implementing the works.

When working in the drip line of trees and where directed by the arborist, work areas must be excavated and/or probed prior to excavation to check for the presence of roots.

If it is necessary to remove part of the live root structure of any tree then this should only occur once the full extent of the roots within the excavation has been exposed. The affected roots must be neatly trimmed back to the edge of the excavation with a sharp pruning tool.

The cut face of the root(s) is to be protected from drying out and kept damp until the excavated area can be backfilled.

Where roots have encroached into pipes, chambers, manholes, meter boxes and other network utility infrastructure, they may be cut to ensure the effective functioning of the infrastructure, but this must be undertaken in accordance with the accepted industry best practice guidelines detailed in the documents produced by the New Zealand Arboricultural Association and instructions given by the arborist.

The arborist is to advise the Auckland Transport representative within 24 hours if any work affecting a tree will have long term significant adverse effects on the tree structure, including loss of visual amenity of the tree.

The preferred method of excavation within the drip line of trees is to be by way of hand digging. Hand digging must be carried out with care to allow tree roots to be identified before

they are damaged. The retained roots should be protected by root protection measures as soon as they are exposed.

When operating in the drip line of trees the compaction method around root structures must be by hand-operated plate compactors only.

Where the pruning of any tree is required, this work is to be undertaken by a qualified arborist. The pruning must be undertaken in accordance with accepted industry best practice guidelines detailed in the documents produced by the New Zealand Arboricultural Association's "Amenity Tree Pruning" guideline.

Pruning involves the removal of up to 20% of the living canopy of a tree, or that involve cutting of limbs up to 100mm in diameter.

All excavation machinery is to operate from outside the drip line of trees unless the machinery used for excavation can operate from and remain fully on top of existing impermeable hard surfaces or appropriate ground protection measures specified by the arborist are followed.

All machinery must be operated with care to avoid contact with the branches, limbs and trunks of trees. Branches that overhang the works area and come in contact with machinery should be pruned or tied back.

No vehicles, machinery, equipment, spoil and/or materials must be positioned, operated, delivered, stored, wheeled or driven within the drip line of trees unless it can be kept within the bounds of an existing hard impermeable surface and does not conflict with any above ground structure of trees.

For all resurfacing activities, the site must be inspected before work commences and all road surfacing plant must be available and suitable for surfacing works under the canopy of any overhanging trees. When working within the canopy or drip line of large trees, appropriate care is to be taken to ensure that there is no damage to the trees root or above ground structure.

All sites where protected trees are identified must be inspected in advance of work commencing with Council's Arborist. If it is considered that the overhanging trees will prevent work from reasonably being undertaken then the Auckland Transport Representative is to be immediately advised.

Care must be taken to avoid damage to roadside trees. If any damage, the Auckland Transport representative is to be immediately notified. For street trees the Auckland Council Parks Department must also be immediately notified of any that remedial work that may be required.

No tree damaged as a result of the surfacing operations is left in a condition that could pose a risk to the public. Any broken branches or other debris must be removed from the site and disposed of in an appropriate manner.

The installation of emulsion, bitumen, Rugasol and all other manufactured products which can cause harm to trees must be undertaken in a manner that ensures that no direct spray or spray drift comes in contact with any portion of any tree. The arborist is to advise on how works using such products are to be undertaken when in close proximity to any tree.

Any washing off of these, or similar, products must be undertaken in a manner that ensures that no water or resulting slurry or waste comes in contact with any portion of any tree.

Where a tree requires removal to facilitate the planned works, the arborist must advise if a specific plan is required for the tree removal. All removal of trees must be carried out in accordance with accepted industry best practice guidelines detailed in the documents produced by the New Zealand Arboricultural Association. Auckland Transport may require a replacement tree to be planted to mitigate the effects of removing the tree. This replacement planting is to be carried out to the satisfaction of Auckland Transport.

25.8 Maintenance Response Times

25.8.1 Definition of Terms

Day

'Day' means 1 calendar day from the time of notification of a service request or reporting of a fault or defect. This 24 hour period includes weekends, e.g. a fault notified at 4.00 pm on Friday must be repaired by 4.00 pm on Saturday. Note that because work is not normally permitted on Sunday or any Public Holiday the 24 hour period excludes these days, e.g. a non-emergency fault notified at 4.00pm on Saturday must be repaired by 4.00pm Monday.

Week

'Week' means a seven calendar day period inclusive of weekends and public holidays.

Emergency

'Emergency' means diverting resources to repair a fault or defect or attend an incident as soon as notification of the fault or incident is received. The onsite response time for both during work hours and after hour emergencies is one hour.

A fault, defect or incident must be authorised as an 'Emergency' by the Auckland Transport Customer Call Centre.

High

'High' means giving priority to diverting resources to repair a fault or defect within the High response time indicated in the table in Section 25.8.2. A High response is required where public safety may be compromised or there is a likelihood of rapid deterioration of the roading

asset but not an immediate danger to the road user. A High response does not constitute an emergency call out.

Routine

'Routine' or 'Non-High' means programming resources to repair a fault within the routine, non-High response time indicated in the table in Section 25.8.2. A routine response applies to all faults or defects where there is no immediate danger to the road user or a likelihood of rapid deterioration of the pavement.

25.8.2 Summary of Maintenance Response Times

Table 97: Call Centre Incident Investigation Times

Service Level	Emergency	High	Routine
SL1, SL2, SL3	1 hr	1 hr	1 day
SL4, SL8	1 hr	2 hr	2 day
SL 5, SL 6, SL 7	1 hr	2 day	3 day

Table 98: Physical Works Response Times

	Road Category					
	SL1, SL2, SL3, SL8		SL4, SL5		SL6, SL7	
	High	Routine	High	Routine	High	Routine
Planned Inspections	N/A	1 week	N/A	2 weeks	N/A	4 weeks
Potholes	4 hours	1 day	1 day	2 days	1 day	2 days
Depressions/wheel path ruts	4 hours	2 weeks	4 hours	2 weeks	4 hours	4 weeks
Edge break	1 day	1 week	1 day	1 week	1 day	4 weeks
Flushing / bleeding / scabbing / cracking	1 week	6 weeks	2 weeks	8 weeks	2 weeks	12 weeks
Digouts	1 week	12 weeks	2 weeks	12 weeks	2 weeks	12 weeks

	Road Category					
	SL1, SL2, SL3, SL8		SL4, SL5		SL6, SL7	
	High	Routine	High	Routine	High	Routine
Unsealed roads – grading	N/A	N/A	N/A	N/A	1 week	2 week
Unsealed shoulders	N/A	1 week	N/A	2 weeks	N/A	4 weeks
Mowing	N/A	1 week	N/A	1 week	N/A	1 week
Vegetation	N/A	1 week	N/A	2 weeks	N/A	2 weeks
Vegetation (mechanical trimming)	N/A	1 week	N/A	1 week	N/A	1 week
Regulatory signs, chevron boards	1 day	1 day	1 day	1 day	1 day	1 day
Street name blades	N/A	2 weeks	N/A	2 weeks	N/A	2 weeks
Permanent warning signs	N/A	2 weeks	N/A	2 weeks	N/A	2 weeks
Destination signs	N/A	4 weeks	N/A	4 weeks	N/A	4 weeks
School patrol, belisha discs, guardrails	1 day	1 day	1 day	1 day	1 day	1 day
Other signs (including advisory)	N/A	2 weeks	N/A	2 weeks	N/A	2 weeks
New signage supply and installation	N/A	2 weeks	N/A	2 weeks	N/A	2 weeks
Graffiti	1 day	1 week	1 day	1 week	1 day	1 week
Bridges High/essential	1 day	4 weeks	1 day	4 weeks	1 day	4 weeks
Bridges routine	N/A	As required	N/A	As required	N/A	As required
Catchpit grate clearing	1 day	2 days	1 day	2 days	1 day	2 days

	Road Category					
	SL1, SL2, SL3, SL8		SL4, SL5		SL6, SL7	
	High	Routine	High	Routine	High	Routine
Catchpit sumps and maintenance	1 day	2 days	1 day	3 days	1 day	4 weeks
Drainage	1 day	2 weeks	1 day	3 weeks	1 day	4 weeks
Footpath and berm	1 week	4 weeks	1 week	4 weeks	1 week	4 weeks
Cobblestones in carriageway	1 day	1 week	1 day	2 weeks	1 day	4 weeks
Sealing works – remedial/maintenance	N/A	2 weeks	N/A	2 weeks	N/A	2 weeks
Reinstatement of roadmarking	1 day	1 week	1 day	1 week	1 day	1 week
Emergency Response	1 hr	1hr	1hr	1hr	1hr	1 hr
Call Centre incident investigation reporting	1 day	2 days	1 day	2 days	1 day	1 week

25.9 Sealed Road Maintenance

25.9.1 General

The work covers all sealed road maintenance on roads, intersections, service lanes, park and ride facilities, cycle lanes and carparks where applicable.

Work's includes all maintenance and repair of the road carriageway, shoulders, on road cycle lanes, bus and transit lanes of the sealed road network assets and includes but is not limited to:

- Repair of potholes, dig-out repairs, mill and fill (AC patches), crack sealing, repair of edge break, flushing and bleeding, pre seal repairs, sand jointing and repairs to interlocking paving, the maintenance and repair of shoulder areas, depressions and rutting, and the maintenance of utility service covers.

25.9.2 Performance Criteria

a) All maintenance activities (routine and programmed) are carried out within the agreed response times and programme timeframes;

b) All repairs remain an integral part of the pavement structure within the specified tolerances;
c) The safety of road users is not impaired by any unrepaired pavement defects;
d) All pre seal repairs are completed to a standard that does not compromise the performance of any subsequent reseal;
e) The texture that exists after the completion of the preseal repairs and prior to the resealing is compliant with the seal design;
f) That chip sealing and repairs do not flush, bleed or strip before the end of the maintenance period and there are no loose chips on the road surface on the completion of the repair;
g) That material used for crack filling and sealing must remain in place, waterproofing the crack, until the end of the maintenance period;
h) That all repairs maintain a smooth riding surface and continue to meet the requirements of the ATCOP within the specified tolerance until the end of the maintenance period;
i) The edge break repairs must be carried out so that upon completion of the work a stable repair which does not weave or creep under the action of compaction equipment or road traffic is produced.
j) The finished surface of all repairs must be a continuation of the adjacent sealed surface and must not hold surface water;
k) That the existing road crossfall is maintained, the deviation when measured with a two metre straightedge must not be greater than 10mm, both along the repair and between the existing pavement and the repair and there must be no sharp ridges;
l) That there must be no flushing, bleeding or scabbing of the sealed surface repairs;
m) The surfacing aggregate remains proud of the binder;
n) The binder is not picked up by tyres;
o) The skid resistance must not deteriorate such that it is significantly lower than that apparent in the same cross section location on the pavement immediately before and after the work;
p) The treatment of flushing, bleeding and scabbing leads to an improvement in road condition;
q) That there is no vegetation growing through the finished repair;
r) That the texture and hardness of the first coat seal is consistent with the seal design, at the intended time of reseal;
s) That after an edgebreak repair there is no seal loss encroaching into the sealed road surface by more than 100mm;
t) That the top of any adjusted service cover must not exceed +10mm or be less than -0mm with respect of the surrounding pavement surface;
u) That any unsealed shoulders, side slopes and surface water channels maintained remain compacted, and shed water from the adjacent sealed carriageway without ponding, channelling of water, or edge rutting;
v) That the unsealed shoulders, side slopes and surface water channels retain their widths and crossfalls;

w) That any shoulder maintenance repairs must have a finished surface such that no water ponds on the sealed carriageway, shoulder or taper edge;
x) That the finished surface, including asphaltic joints, is flush with existing pavement surfaces and utility covers, so as not to create adverse noise and vibration effects;
y) All pothole repairs are to remain intact;
z) Appropriate notification to the Engineer within the response time required, of individual potholes exceeding 1m^2;
aa) Any excavations required for pavement repairs must be carried out in such a manner that the integrity of the adjacent pavement is not disturbed;
bb) That all blockages to drainage systems are cleared within the specified response times;
cc) There is no damage to the existing stormwater structures or adjacent features. Any damage will be remedied at no expense to Auckland Transport.
dd) Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.9.3 Definitions

Pothole - a hole in the pavement, frequently round in shape, resulting from loss of pavement material caused by the action of traffic. As a defect, a pothole is defined as:

Where surface attrition has occurred in areas of pavement over an area greater than 70mm in diameter but not exceeding 1m^2, and the underlying pavement is exposed. (This does not include scabbing and stripping on a chip seal), or,

Where the defect exceeds 50mm depth in asphaltic concrete, including porous asphalt and/or surfacing layers, or 25mm depth in cycle lanes.

Depression - a low area in the road surface which is more than 30mm deep when measured from a 2m straight edge placed across the road or is more than 40mm deep from a 6m line when measured along the road or it is an area that holds water to a depth of 5mm or greater when the surrounding area is dry.

Rutting - a longitudinal groove in the road caused by wheels of traffic where the depth of the groove is more than 30mm when measured from a 2m straight edge placed across the road or where this groove holds water, to a depth of 5mm or greater when the surrounding pavement area is dry.

Edge Break - the fretting or breaking of the edge of a bituminous surface resulting in the seal loss encroaching into the carriageway.

Alligator Cracking - Also known as chicken wire or block cracking. This type of cracking includes all polygon shaped cracking, irrespective of the size of the polygon.

Isolated Cracking - This type of cracking includes all longitudinal transverse and diagonal cracks as well as large rectangular cracks that are to be treated separately. It also includes cracking between the channel and edge of pavement.

Slippage Cracks - Occurs only in thin asphaltic concrete wearing courses. They are usually crescent shaped and point in the direction of the thrust of the wheels on the pavement.

Second Coat Sealing - For the purpose of ATCOP is the application of a seal coat over a previously applied seal coat to pavement repairs to provide both waterproofing and surface texture consistent with the surrounding pavement.

Scabbing - This is the progressive loss of chip from the seal coat and includes loss of chip alongside the kerb and channel.

Stripping - For the purpose of this document stripping means displacement of binder from the chip.

Bleeding - the exudation of bituminous binder onto the road surface. A surface that is bleeding is one on which the binder is being picked up on tyres of the passing traffic.

Flushing - which the binder is approaching or above the mean level of the top of the surfacing aggregate and such that the surface texture is lost, and/or water running on the surface drains over the chips rather than through the interstices between them.

It should be noted that a surface may be flushed to the extent where the binder is above the surfacing aggregate but bleeding does not occur.

Unsealed Shoulders - the metal area from the edge of the seal to the surface water channel including any feather edges and tapers.

Edge Rutting - a deformation of the shoulder such that there is a difference in level between the nominal edge of seal and the adjacent unsealed shoulder.

25.9.4 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken are in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right to add to or remove publications and standards from this list.

ATCOP must be read in conjunction with the following:

- NZTA HM03 – Definitions
- NZTA HM11 – Surfacings
- NZTA HM12 – Digouts
- NZTA HM13 – Depressions
- NZTA HM14 – Edge Break
- NZTA HM15 – Service Covers

- NZTA HM16 – Shoulder Maintenance
- NZTA HM19 – Potholes
- NZTA HM21 – Drainage Systems
- NZTA HM24 – Drainage Improvements
- NZTA MRO9 – Pre-surfacing repairs
- NZTA F7 – Geotextiles
- NZTA P26 – Improvement of Pavement Macrotexture
- NZS 3111 Methods of Test for water and Aggregate for Concrete
- NZS 3112 Methods of Test for Concrete (Parts 1,2 and 4)
- NZS 3121 Water and Aggregate for Concrete
- NZS 3122 Specification for Portland and Blended Cements
- AS/NZS 2350.3: Normal Consistency of Portland and Blended Cement
- ASTM C1074-98 Estimating Concrete Strength by the Maturity Method
- A Manual of Pavement Repairs – Formerly NRB & RRU
- Cement Stabilisation of New Zealand Roads – Formerly NRB & RRU
- Design and Construction of Concrete Road Pavements – Formerly NRB & RRU
- Interlocking Concrete Block Paving – Formerly NRB & RRU
- Lime Stabilisation of New Zealand Roads – Formerly NRB & RRU
- Geomechanics for New Zealand Roads – Formerly NRB & RRU
- AustRoads “Guidelines to Pavement Technology – Part 7: Pavement Maintenance”.

Refer also to Plan No’s. MT001 – MT004.

This section of the ATCOP is to be read in conjunction with *ATCOP Chapter 16 – Road Pavements and Surfacings* and *ATCOP Chapter 17 – Road Drainage* for all relevant material and construction requirements for the applicable sealed pavement maintenance repairs.

Note that the intervention levels and response times are as specified in *Section 25.8.2* rather than those specified in the NZTA specifications.

25.9.5 Pothole Repairs

Permanent repairs to any potholes must be completed in accordance with NZTA Specification HM19.

25.9.6 Depression and Wheel Rut Repairs

Permanent repairs to any pavement surface depressions and/or wheel rutting must be completed in accordance with NZTA Specification HM13.

25.9.7 Edge Break Repairs

Permanent repairs to any pavement seal edge break must be completed in accordance with NZTA Specification HM14.

25.9.8 Sealing Repairs

Sealing repairs/defects must be completed in accordance with NZTA Specification HM11. Minimum requirements include:

- Ensuring all areas are clean, dry and dust free before treatment.
- Ensuring treatments have a tidy appearance of rectangular shape without ragged edges. Isolated cracks that are to be bandaged must upon completion have a tidy appearance of uniform width within the tolerances specified.
- Using an SBS polymer in all sealing treatments other than first coat seals. Either the bitumen or an emulsion approved by Auckland Transport may be used as the binder. The sealing designer and/or contractor is responsible for the choice of sealing binder type and, in the case of binders other than emulsion, optional use of adhesion agent and proportions of kerosene. The quantity of binder must be in accordance with the manufacturer's recommendations.
- Texturising all repairs within 1 month. The selection of chip size must be such that the sand circle of the repair is within ±15% of the sand circle of the surrounding surface.
- For isolated crack filling Polymer modified proprietary materials may be used but such materials must be applied strictly in accordance with the manufacturers' instructions. Crack filling adjacent to the edge of the channel must be left 15mm below the surrounding surface.
- Ensuring that chips, upon completion of the sealing work are (and remain) firmly embedded in and adhering to the binder.
- The area covered by chips in close contact must be more than 98% of the total area being considered. When testing for the take of chip, the minimum area to be considered is a square of 300mm sides.
- Any bald areas exceeding 0.3m2 must be repaired within five days from the day of occurrence or reporting.
- Loss of chip exceeding 5% in any square metre of the sealed area or where the area is less than a square metre of chip loss in excess of 5% of that area must be repaired within one (1) month from date of observation or reporting.
- Binder rise up the chip for grade 4 and large chips must be equivalent to (ALD/2) ±20%. For grade 5 and 6 chip seals the texture depth measured by sand circle diameter must be 300mm and 360mm ±10% respectively.
- Ensuring, where material is to be excavated, that the perimeter of the excavation is either milled or saw cut.
- Mechanically sweeping the road surface to remove surplus chip within 2 days of sealing work been completed. Further sweeping must be carried out to remove additional chip loss generated after that date. Temporary traffic control signs must remain in place until the initial sweeping is completed.
- Burning of excess bitumen is not permitted.

25.9.9 Unsealed Shoulder Maintenance

Unsealed shoulders must be maintained in accordance with industry standards and in accordance with NZTA specification HM16.

25.10 Unsealed Road Maintenance

25.10.1 General

The work includes all maintenance and repair of the road carriageway and shoulders of the unsealed road network assets and includes but is not limited to:

- Regular maintenance grading of the road carriageway, maintaining the road profile and camber, the repair of potholes, the addition of makeup aggregate to the road pavement, the addition and maintenance of running course aggregate to the road surface, dig-out repairs, stabilised patches, the maintenance and repair of shoulder areas, dust suppression and any other repairs necessary to maintain the safe and efficient running surface and pavement of the unsealed roading network.

25.10.2 Performance Criteria

a) All maintenance activities are carried out within the agreed response times and programme timeframes;
b) All potholes are repaired in accordance with the requirements of ATCOP within the response times stated;
c) There are no more than 2 potholes will be permitted per kilometre;
d) Materials used in repair of potholes must have similar characteristics and properties to the surrounding pavement and sufficient fine material to ensure that the repair remains in place;
e) That all digouts, placement of maintenance aggregate and drainage treatments are repaired in accordance with the requirements of ATCOP and within the response times stated;
f) The loose depth of maintenance aggregate does not exceed 20mm, 48 hours following placement of the aggregate;
g) All roadside furniture, signage, drainage facilities and marker posts damaged are to be either replaced or repaired promptly at no expense to Auckland Transport;
h) No corrugations exceeding a maximum of 25mm from crest to trough;
i) No shallow surface ruts greater than 50mm deep, and that in repairing rutting the surface is restored to the general crossfall of the road;
j) Road surface is shaped to shed surface water without ponding or scour;
k) The depth of loose maintenance gravel on the running course does not exceed 30mm loose depth;
l) Where the unsealed carriageway changes to a sealed carriageway, a smooth transition must be maintained between the two surfaces over a 20m section within the unsealed carriageway. The sealed carriageway must be kept free of all maintenance aggregate during surface and shape restoration.

m) Surface water channels must be graded and shaped so the tie in with the existing drainage facilities is smooth and continuous and must not pond water.
n) Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.10.3 Definitions

Running Course - the supply and application of GAP20 or a similar approved maintenance aggregate typically applied to the road surface by loose spreading from a truck to improve the running surface.

Makeup Metal - the supply and application of GAP 40 or GAP 65 maintenance aggregate typically applied to the road surface to shape correct and/or strengthen the pavement.

Corrugations – the formation of parallel ridges (presenting as a wave formation) which lie perpendicular to the direction of traffic.

Loss of Surface Material – depletion of the running course aggregate usually caused through trafficking, aggregate breakdown, dust production, scour and erosion.

Slippery Surface – usually caused by underlying clay subgrade materials or clay/aggregate mixes on the trafficable carriageway surface.

Loose Material – on the road surface is caused when the aggregate size distribution is depleted of fine fractions which bind the aggregate together in place.

25.10.4 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken are in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list. ATCOP must be read in conjunction with the following:

- NZTA HM/23
- ARRB " Unsealed Roads Manual – Guidelines to Good Practice" 3rd Edition (March 2009).
- Austroads "Guidelines to Pavement Technology Part 6: Unsealed Pavements" (2009).

Note that the intervention levels and response times are as specified in the following *ATCOP Sections 25.10.5 and 25.10.6*, rather than those specified in the NZTA specifications.

25.10.5 Intervention Levels

Work will be required where adverse effects are caused to the road users by corrugations, potholes, driveway scour etc.

All unsealed roads should have less than a total length of 100 metres of a combination of any of the following failures over any 1000 metre section:

Corrugations	25mm (crest to trough)
Potholes and depressions	no more than two potholes per km.
Loss of pavement/wearing course	zero pavement cover over a 20m length full width.
Rutting and Longitudinal Scouring	50mm depth for any wheel track.
Loose surface	30mm depth.
Exposed subgrades (any wheel track)	each metre counts.

Any road sections which are found to not meet this standard, or are not within 10% of the required standard, must be programmed for maintenance immediately and Auckland Transport notified.

It is expected that to meet the performance measures and provide a safe and well maintained surface will require a minimum of 3 grading runs per year including the use of a roller to compact the material.

25.10.6 Response Times

All remedial works must be completed as identified in any inspections or otherwise notified as follows:

- Defects that present a danger to the road user or where there is a likelihood of a rapid deterioration of the pavement must be made safe immediately.
- All other defects must be completed within 7 days. When programming repairs, due priority must be given to the safety of road users.

25.10.7 Minimum Repair Requirements

The maintenance strategy and practices found in the ARRB “Unsealed Roads Manual” which provides the recommended practices for the care and upkeep of unsealed roads should be adhered to. Where there is conflict between ATCOP and the above mentioned guideline, ATCOP takes precedence.

Maintenance work should only be undertaken in suitable weather conditions. Under no circumstances is work to be carried out during heavy rain or dry windy conditions.

- The roads must be maintained in accordance with the requirements of the relevant NZTA specifications and to the strategy and principles in the ARRB “Unsealed Roads Manual. Minimum requirements include:
- The road must be graded so that the centre is higher than the edge to let water drain as quickly as possible. The crossfall is to be no flatter than 4% and no steeper than 6% on straights and on curves a maximum of 10% super elevation. A hollow crown or flat across the centre of the road will not be acceptable.
- All crossings must be kept clear so as not to hold water. Care must be taken to avoid ‘drop off’ or ‘jump up’ from the edge of the road at driveways.
- Inlets and outlets of culverts, including driveway crossings, must be kept free from metal and other material.
- All cut-outs must be maintained to ensure free passage of water away from the road surface.
- Running course should typically be applied evenly across the full width of the road at a consistent depth to provide a smooth and skid resistant surface that does not pond water.
- Makeup material should typically be applied to rectify deficiencies with long and cross sectional shape and/or strengthening of the pavement. All makeup material must be watered and compacted in layers to achieve a dense tightly bond pavement. Where makeup material is used the work area must be topped off with a layer of running course.

25.10.8 Maintenance Grading

Maintenance grading of the carriageway must be undertaken to remove corrugations, ruts, longitudinal scouring and other defects within the unsealed road pavement and re-spread and compact loose material and other similar surface defects.

The grading involves cutting the road surface to a depth sufficient to remove the defect(s) and the replacement and compaction of the cut granular material to restore the road cross-fall and profile. The material used should be sufficiently moist to avoid segregation and to enable it to be compacted to a dense and tight condition.

Maintenance grading in sections of road should not exceed 1000 metres in length. The full width of the carriageway should be graded with sufficient (not less than 5) passes to ensure the running course is evenly distributed over the road surface. The depth of loose aggregate on the carriageway after grading must not exceed 25mm (1 stone thickness).

Sufficient running course is to be kept on the road and make best use of the existing aggregate by not extending the windrows wastefully on to areas of plentiful aggregate, or by depositing aggregate off the edge of the carriageway.

The road cross-fall is to be maintained at no less than 4% and no more than 6% on the straight and up to 10% super-elevation on the curves as appropriate. Where two unsealed

roads intersect, the crown should be gradually reduced from approximately 20 metres before the intersection, so that at the point of intersection there is no crown apparent in either road.

The road is to be left in a satisfactory condition with the water tables, culverts and cut-outs clear of excess vegetation and aggregate.

25.10.9 Shape Grading

In general, most unsealed roads will not require shape grading. Shape grading is undertaken to ensure the road cross-fall is maintained at no less than 4% and no more than 6% on the straight and up to 10% super-elevation on the curves as appropriate. Where two unsealed roads intersect, the crown should be gradually reduced from approximately 20 metres before the intersection, so that at the point of intersection there is no crown apparent in either road.

Where the road surface has become unacceptable, but is too dry to be successfully reshaped in its present condition, water should be applied to facilitate the work. Water should be applied in sufficient quantity, in a controlled manner with minimum disturbance of surface fines.

The road is to be left in a satisfactory condition with the water tables, culverts and cut-outs clear of excess vegetation and aggregate.

25.10.10 Pothole Repairs

Potholes must be repaired by using a suitable aggregate that will provide a well compacted and stable repair that is level with the surrounding surface.

25.10.11 Digout Repairs

Digout repairs will be undertaken in accordance with NZTA Specification HM/23 and backfilled using a suitable aggregate that will provide a well compacted and stable repair that is level with the surrounding surface.

25.10.12 Supply and Spread Maintenance Aggregate

Aggregate should be placed/spread using a roller spreader (or similar approved method). Predominantly Type 1 GAP20 or Type 2 GAP40 aggregate, as detailed in NZTA HM/23 will be utilised unless otherwise approved by Auckland Transport. Any road where aggregate is placed/spread must have maintenance grading and compaction carried out within 3 calendar days afterwards.

25.10.13 Stabilisation Repairs

Stabilisation repairs will be undertaken in accordance with NZTA HM/23.

25.11 Road Resurfacing

25.11.1 General

The work covers all resurfacing on roads, intersections, service lanes, on road cycle lanes, park and ride facilities and carparks required for maintenance purposes, including any resealing.

The road resurfacing work includes, AC mix and chip seal designs, manufacture, supply and laying of asphaltic concrete, slurry and chip seal surfacing on road carriageways, shoulders, services lanes, cycle lanes, intersections, park and ride facilities and carparks within the network area and includes but is not limited to:

- All investigation (including FWD testing), inspection and condition rating inputs required to produce annual programmes for all types of resurfacing works required across the road networks. The differing types of resurfacing works may include asphaltic concrete (AC), chip seal, slurry seal, SMA, OGPA, emulsion seal, membrane seals and any other specialist road surfacing material required. The works include all associated preparatory works, milling, sweeping and repairs necessary to achieve successful resurfacing.

25.11.2 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- A Guide to the Safe Handling of Bituminous Materials – Department of Labour/Roading, Roading New Zealand
- NZTA P/3 Specification for First Coat Sealing
- NZTA P/05P Rubber Latex in Reseal Binders
- BCA (now Roading New Zealand) E/2 Specification for the Performance of Bitumen Distributors
- BS 812 Part 114 Polished Stone Value Test
- NZTA M/01 Specification for Roading Bitumens
- NZTA M/11 Specification for Pre-coated Chip
- NZTA M/06 Specification for Sealing Chip
- NZTA M/10 Asphaltic Concrete
- NZTA M/13 Specification for Adhesion Agents

- NZTA P/04 Specification for Resealing
- NZTA P/9 P (Auckland) Construction of Asphaltic Concrete
- NZTA P/11 Open Grade Porous Asphalt
- NZTA P/17 Specification for Performance-Based Bituminous Reseals
- NZTA P/23 Performance Based Specification For Hotmix Asphalt Wearing Course Surfacing
- NZTA T/3 Specification for standard test procedure for measurement of texture by the sand circle method
- NZTA T/4 Standard Procedure for Description of Test Locations on State Highways
- NZTA T/10 Specification for Skid Resistance Investigation and Treatment Selection
- NZTA, RCA Roading NZ "Chipsealing in New Zealand", (NZTA 2005) ISBN 0-478-10562-2
- NZTA Maintenance Guidelines for Local Roads
- Asphalt Institute Publication MS No. 2 'Mix Design Methods for Hot Mix Asphalt'.
- AAPA National Asphalt Specification (NAS) 2nd Edition and NZTA Supplement.
- NZTA MS2 Asphalt Institute Mix Design Methods for Asphalt Concrete and other Mix Types
- Austroads "Guide to Pavement Technology Part 4b: Asphalt"
- Austroads "Guide to Pavement Technology Part 4k: Seals"
- BCA (now Roading New Zealand) E/2 Specification for Performance of Bitumen Distributors
- Roading New Zealand (RNZ) 9806: Specification for Slurry Surfacing's
- ISSA A105 Recommended Performance Guidelines for Emulsified Asphalt Slurry Seal.
- ISSA A143 Recommended Performance Guidelines for Microsurfacing.
- AP – T26 Guidelines and Specifications for Bituminous Slurry Surfacing
- Auckland Transport's Reseal Guidelines

This section of ATCOP is to be read in conjunction with *Chapter 16 – Road Pavements and Surfacings* for all relevant design, material and construction requirements for the applicable road resurfacing maintenance requirements.

25.11.3 Construction Equipment and Care of the Site

All equipment must be in good mechanical condition and no fault that could present a hazard must be permitted. Oil, water or fuel leaks will render a plant item unacceptable.

The site must be inspected before work commences and all road surfacing plant must be available and suitable for surfacing works under the canopy of any overhanging trees. When working within the canopy or drip line of large trees, appropriate care is to be taken to ensure that there is no damage to the trees root structure.

All sites where protected trees are identified must be inspected in advance of work commencing with Council's Arborist. If it is considered that the overhanging trees will prevent

work from reasonably being undertaken then the Auckland Transport Representative is to be immediately advised.

Care must be taken to avoid damage to roadside trees. If any damage, the Auckland Transport representative is to be immediately notified. For street trees the Auckland Council Parks Department must also be immediately notified of any that remedial work that may be required.

No tree damaged as a result of the surfacing operations is left in a condition that could pose a risk to the public. Any broken branches or other debris must be removed from the site and disposed of in an appropriate manner.

25.12 Road Drainage Maintenance

25.12.1 General

The work covers drainage on roads, intersections, service lanes, footpaths, berms, cycle lanes, park and ride facilities and carparks. The work includes maintenance, cleaning, repair and renewal of existing road drainage and includes but is not limited to:

- Road drains and surface water channels (unlined, concrete, rock lined and asphaltic concrete), culverts less than 3.4 square metres in cross sectional area, vehicle crossing culverts, the clearing of cut-outs and culvert inlets and outlets, grated slot drains, and grates, clear and clean all catchpits grates, under channel and subsoil drains, catchpit backing plates, steel plates at pedestrian and vehicle crossings and culvert inlet and outlet structures (rural). The work does not include catchpit sump and soak hole cleaning.

25.12.2 Performance Criteria

a) All maintenance activities are carried out within the agreed response times and programme timeframes;
b) A demonstrated ability to identify and programme repair works in a competent manner;
c) Inspections are completed on time and inspection records are available when requested by the engineer.
d) That all repairs of faults are carried out in accordance with the requirements of the ATCOP by the date shown on the agreed programme, within the response times stated and that all stormwater structures remain clean.
e) That no damage to existing stormwater structures or adjacent roading features is caused.
f) Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.12.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any

ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right to add to or remove publications and standards from this list.

ATCOP must be read in conjunction with the following:

- Auckland Transports Code of Practice for Working in the Road (COPWIR)
- Auckland Transport Drawings Section 7000
- Auckland Council (AC): Auckland Plan
- Auckland Council: Best Management Practice guidelines for Contractors
- Auckland Council: Best Management Practice guidelines for General Utilities Contractors
- Auckland Council: Construction, operations and maintenance guides
- Auckland Council: Development and Connection Standards – Water, Wastewater and Stormwater Design and Policy Manual (WWSDPM)
- Auckland Council: TP10
- Auckland Council: TP108
- Auckland Council: TP90
- New Zealand Transport Agency: Traffic control devices manual, Part 8: Code of Practice for Temporary Traffic Management (COPTTM)
- NZS 3114: Specification for Concrete Surface Finishes
- NZS 3500.3: Plumbing & Drainage Standards - Stormwater drainage
- NZS 3104: Specification for Concrete Production
- NZS 3404: Steel Structures Standard
- AS/NZS 4058: Precast Concrete Pipes (Pressure and Non-Pressure)
- AS/NZS 1554: Structural Steel Welding
- AS/NZS 3725: Design for installation of buried concrete pipes
- NZS 3109: Concrete construction
- AS/NZS 5065: Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
- AS/NZS 1260: PVC-U pipes and fittings for drain, waste and vent application
- AS/NZS 4130: Polyethylene (PE) pipes for pressure applications
- AS/NZS 3725: Design for installation of buried concrete pipes
- AS 1646: Elastomeric Seals for Waterworks Purposes
- AS 1111.1: ISO metric hexagon bolts and screws - Product grade C - Bolts
- AS 3679: Hot-rolled structural steel bars and sections
- NZS/BS 4848.2 Specification for hot-rolled structural steel sections - Hollow sections
- NZS/BS 4848.4: Specification for hot-rolled structural steel sections - Equal and unequal angles

- BS EN 124: Gully tops and manhole tops for vehicular and pedestrian areas - design requirements, type testing, marking, quality control
- 316 SS for stainless steel work
- NZTA F/01: Earthworks construction
- NZTA F/02: Pipe Subsoil Drain Construction
- NZTA F/03: Pipe Culvert Construction
- NZTA F/05: Corrugated Plastic Subsoil Drainage Construction
- NZTA HM/16: Shoulder Maintenance
- NTZA HM/21: Drainage Systems
- NTZA HM/24: Drainage Improvements

Note that the intervention levels and response times are as specified in *Section 25.8.2* rather than those specified in the NZTA specifications.

This section of ATCOP is to be read in conjunction with *ATCOP Chapter 17 Road Drainage* for all relevant design, material and construction requirements for the applicable road resurfacing maintenance requirements.

25.12.4 Culvert, Catchpit, Watertable and Soakhole Maintenance and Repairs

The work includes:

Manhole, Catchpit and Soakhole Repairs

All work must be carried out in accordance with the relevant Auckland Transport Series MT Drawings.

Culverts, Overland Flowpaths and Catchpit Maintenance

During routine inspections or advice from Auckland Transport, all drainage assets found to be blocked or below the requirements of ATCOP must be treated as urgent.

Culvert and Inlet/Outlet Structure Repairs

All repair and maintenance work must be carried out in accordance with WWSDPM and Auckland Transport Series MT Drawings. NZTA F/3 must also apply where relevant.

Catchpits/Scruffy Domes

Not more than 15% of all catchpit grates/back inlets and scruffy domes must be more than 25% covered by detritus and litter at any one time.

Where there is a build-up of detritus and litter on catchpit grates and within catchpit back inlets that cannot be cleaned by mechanical sweeping, appropriate hand tools must be used to clean it at the time of sweeping. The debris must be removed from site.

Catchpit sumps, not more than 10% of all rural catchpit sumps must not have more than 300mm of detritus in the invert or be filled with detritus and litter to within 100mm of the invert of the outlet (whichever is lesser) at any one time.

In addition any sump where detritus or litter or material, is more than 300mm deep or is within 100mm of the invert (whichever is lesser) at any time must be cleaned. The catchpit sumps must be emptied fully at each visit and all waste materials, arisings and liquid disposed of at an approved facility.

Critical Catchpits

Ensuring that not more than 10% of the surface of any catchpit grate or catchpit back inlet is obstructed by any litter and/or detritus. Seasonal variations in the volume of detritus must be allowed for and programmes adjusted accordingly.

Where there is a build-up of detritus and litter on catchpit grates and within catchpit back inlets that cannot be cleaned by mechanical sweeping, appropriate hand tools must be used to clean it at the time of sweeping. The debris must be removed from site.

Soakholes

Soakholes must be regularly cleaned so that there is no more than 300 mm of detritus at the bottom of the soakhole or filled with detritus to within 100 mm of the invert of the outlet (whichever is the lesser) at any time.

Detritus and litter must be removed from soakholes so that the normal water flow is maintained. All wood debris jammed within any soakhole structure must be removed. Care must be taken so that the soakhole structures or its linings are not damaged during cleaning operations.

Surface Water Channel and Water Table Drain Maintenance

The work involves the maintenance of road surface water channels and water tables and cut outs on all roads. The work must be undertaken in accordance with the requirements of the ATCOP and NZTA HM/16. Such maintenance must ensure a stable and free draining channel is formed to direct surface water away from the road carriageway and to the nearest watercourse or drainage structure without ponding.

Surface water channels and water table drains must be cleaned and re-graded if they pond water >50mm depth.

Minimum requirements include:

Ensuring inlets and outlets of culverts and vehicle crossings are kept free from metal and other material.

Maintaining cut-off drains to ensure the free passage of water away from the road surface.

Ensuring unsuitable material, eg clumps of grass, large stones or clay, are removed from the water table drains.

When requested by the Auckland Transport representative a rock lining must be placed in surface water channels, the minimum size rock size must be 150mm. Prior to placement of the rock the existing surface must be sprayed and all residual vegetation removed.

NOTE: In the course of maintaining existing or constructing new road side water table drains, all sediment control requirements as laid out in the Resource Management Act must be met.

This may require the use of sediment ponds, silt fencing, hay bales, filter fabric, vegetative buffer strips, or a combination of any of these to effectively clean the runoff water to the level as specified.

The road shoulder between the edge of seal and the water table must be shaped to ensure effective drainage without losing any existing shoulder aggregate from the shoulder. Sufficient fall must be provided in the water table drain to enable water to dissipate to an appropriate outfall without ponding.

Where there is significant scour, generally some form of scour protection will also be required to be undertaken in conjunction with water table cleaning and/or reconstruction. Earthworks must be carried out in accordance with NZTA F/1.

The batter grades (1 in 4) must be constructed/maintained in all circumstances unless otherwise instructed/approved by the Auckland Transport representative. Steeper batter grades will generally not be acceptable unless there is a benefit achieved for the physical roading asset.

Methodology of construction (including equipment) constraints will not be a valid reason for approval to vary shape of the water table. The shape is a “V” shape. A“U” shape will not be acceptable. One method to achieve this is to work or excavate with the excavator bucket working away from the operator. Alternatively the use of an offset boom with a tilt bucket may achieve the required results.

The minimum longitudinal grades of water tables on completion must be 1 in 100 (1%). Where this may lead to unacceptably deep water tables alternative options must be investigated and agreed with the Auckland Transport representative.

Definition/Extent of Work

Water tabling involves the following:

Surface water channels and Water Table Drain Cleaning

This is the cleaning of vegetation and silt from existing surface water channels and water tables to obtain a depth, shape and width in accordance with the standard specified and on the drawings. Excavation must remove all soft saturated material and sediment that has settled out in the water table and vegetation which is restricting the discharge of storm water

runoff without promoting excessive erosion. An even grade and appropriate flow path to the outlet points must be maintained at all times.

Cleaning of surface water channels and water tables will require the use of plant and/or hand tools to achieve desirable outcomes for the entire network.

Surface Water Channel and Water Table Drain Reconstruction and Construction

This may involve the relocation or regrading of existing surface water channels and water tables to meet the instructed standard. This also includes the construction of new surface water channels and water tables in accordance with the standard drawings.

25.13 Kerb and Channel and Traffic Islands

25.13.1 General

The work covers kerb and channel on roads, intersections, service lanes, footpaths, cycle lanes, park and ride facilities and carparks. The work includes maintenance, repair and renewal of existing kerb and channel and channel maintenance and includes but is not limited to:

- In situ concrete kerb and channel, precast concrete kerb and in situ channel, basalt kerb and in situ channel, concrete kerb and edging (both in situ and precast), edging strips and channels including kerbs associated with roundabouts and traffic islands, realigning precast block on splitter and other islands, re-pointing and patching.

25.13.2 Performance Criteria

- No patch work of various types of kerbing i.e. basalt/bluestone/standard concrete kerb.
- Repairs are undertaken within the specified response times.
- The quality of repair complies with the requirements of ATCOP and industry best practice.
- When a 3 m straight edge is laid parallel to any surface of a cast in-situ kerb and channel there must be no more than 3 mm variation from the straight edge, except at change of grades or curves
- When a 3 m straight edge is laid parallel to any surface of a pre-cast or bluestone kerb and channel there must be no more than 5 mm variation from the straight edge, except at change of grades or curves
- Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.13.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- NZTA F/02 Pipe Subsoil Drain Construction
- NZTA B/02 Construction of Unbound Granular Pavement Layers
- NZTA M/10 Asphalted Concrete
- NZTA P/09/P Construction of Asphaltic Concrete Paving
- Code of Practice for Working in the Road
- National Code of Practice for Utility Operators Access to Transport Corridors
- Auckland Transport Series GD Drawings

Note that the intervention levels and response times are as specified in *ATCOP Section 25.8.2* rather than those specified in the NZTA specifications.

This section of ATCOP is to be read in conjunction with *ATCOP Chapter 17 Road Drainage* and *ATCOP Chapter 8 Traffic Calming/LATM* for all relevant design, material and construction requirements for the applicable kerb and channel and traffic island requirements.

25.13.4 Minimum Repair Requirements

The drainage facilities must be maintained in accordance with the requirements of ATCOP, NZTA Specifications HM21, F2 and F6 and Auckland Transport Drawings.

Minimum requirements for repairs include:

- Maintaining kerb and channel in true lines and grade and water tightness.
- The joints between the precast kerb blocks should be a minimum of 10 mm wide and a maximum of 20 mm wide
- The joints between the bluestone kerb blocks should be approximately 20mm wide with neat square jointing 2 to 4 mm proud. All jointing material should be a suitable mixture of sand and cement
- Expansion joints 20mm wide should be provided at existing structures which may damage, or be damaged by, kerb and channel when expanding, and should be sealed with a bituminous sealant approved by Auckland Transport. Such structures include but are not limited to drainage pits, retaining walls and bridges
- All channels must be laid or repaired so that they direct water towards the nearest catchpit, in such a manner that no ponding of water will occur
- All channels must be formed so that they match the existing road levels. Channels around pit aprons are to be formed as part of the apron
- Catchpit grating must be reset to the new channel levels
- Concrete channel must have control joints at 4m spacing, and on both sides of each vehicle crossing and pram crossing

- Provide haunching where coverage over any service exposed below standard coverage.
- Berms must be reinstated to suit new kerb levels and overlaid with a 100 mm of compacted approved quality topsoil, with good loam structure and free of weeds and stones. After spreading of the topsoil, any remaining large clods, stones larger than 20mm, roots, stumps or other litter must be raked up and disposed of offsite. The berm then should be sown with a grass seed mix.
- Footpaths are to be reinstated to the existing standard or better. This includes but is not limited to the surface colour, texture and structural performance in accordance with the requirements of Auckland Transport Drawing Set FP000.
- Road carriageways are to be reinstated as per the requirements of Auckland Transport Drawings. This includes but is not limited to the structural integrity of the pavement, the surfacing properties, cross sectional grade of the pavement and any related Pavement markings and crack sealing between the existing and new asphalt
- Storm water kerb outlets from adjoining properties are to be reinstated to a suitable standard as per the details in Auckland Transport Drawings; this includes the pipe from the boundary to the kerb and any kerb outlet fittings. The outlet should be neatly trimmed flush with the kerb face and tidily grouted into position.
- The reinstatement of pavement marking must be placed as per existing in accordance with the requirements of MOTSAM.
- All subsoil drains must be constructed as per NZTA Specifications F2 and F/6 and as per the requirements of Auckland Transport Drawings. If requested by Auckland Transport, the finished standard of the drain will be confirmed by undertaking and providing to Auckland Transport a CCTV inspection.
- All channel only replacement must be constructed as per the requirements of Auckland Transport Drawings for kerb and channel replacement, modified with the extent of work starting from the face of the existing kerb.

25.13.5 Underground Utility Services

Prior to the commencement of work, the developer/designer/contractor must:

- Arrange with utility service providers to carry out an on-site mark-up of all existing underground services, and
- Locate the existing underground services with a service locator, and
- Obtain all necessary approvals from utility service providers to carry out the work, and
- Notify Auckland Transport of any areas where existing underground services may obstruct the kerb and channel works.

25.14 Road Signs Maintenance and Renewals

25.14.1 General

The work covers the maintenance and renewal of all signs on roads, intersections, service lanes, footpaths, cycle lanes, park and ride facilities and carparks. The work includes,

maintenance, cleaning, repair and replacement of worn, faded, damaged, graffiti damaged, missing signs, or to construct and/or install new signs. The work includes but is not limited to:

- Traffic signs, poles and fittings, regulatory and advisory signs on roads, bus lanes, pedestrian crossings, belisha discs, school patrol signs and flags, street name blades, sight boards and timber sight rails, parking, edge marker posts, culvert marker posts, road inventory posts, hazard and bridge marker posts, community road safety signs and destination signs including advance destination signs.

Aside from routine inspections of the conditions of each sign and/or post, day and night time inspections are to be carried out at six monthly intervals. The contract works do not include private signs in the road corridor including Nu-Lite Internally Illuminated signs, electronic speed detections, electronic school zone 40 km/hr signs and electronic public transport signs.

25.14.2 Performance Criteria

The following factors must be taken into consideration when assessing performance;

- Repairs are undertaken within the specified response time
- The quality of repair complies with the requirements of ATCOP
- Health and Safety compliance
- Completing and updating the RAMM signs database
- Efficient reuse of materials
- Appropriate liaison with third parties such as schools
- Having RAMM Pocket device with GPS tracking turned on at all times when operating on the network
- Traffic management complies with the requirements of ATCOP
- Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

Visibility

1. Classes 2 and 2A retroreflective sheeting must attain at least 50% of the coefficients of retroreflection that are specified in AS/NZS 1906.1:2007 in Tables 2.4 and 2.3 respectively.
2. Classes 1W and 1 retroreflective sheeting must attain at least 80% of the coefficients of retroreflection that are specified in AS/NZS 1906.1:2007 in Tables 2.1 and 2.2 respectively.
3. When viewed during the night, from a vehicle with headlights clean, aligned, in proper working order and on low beam, individual colours within the sign must have uniform retroreflective properties. Night-time inspections must be made either from a moving vehicle or from a stationary vehicle at a distance of 35 metres from the sign. The vehicle headlights should be clean, aligned, in proper working order and on low beam.
4. A fully reflectorised sign (i.e. one which has white legend on a coloured background) must attain Luminance Contrast Ratios not less than those specified in Appendix B4.1, AS/NZS 1906.1:2007.

5. The sign must meet the colour requirements of Clause 2.2.2 of AS/NZS 1906.1:2007.
6. When viewed under normal daylight conditions, no evidence of cracking, crazing, peeling, lifting from the substrate, delamination, blistering, chalking, or wrinkling must be observed. Day time inspections must be made either from a moving vehicle approaching the sign at a speed which represents normal traffic flow, or from a stationary vehicle at a distance of 25 metres directly in front of the sign.

Durability

1. The intended life of signs with classes 2 and 2A retroreflective sheeting must be 7 years.
2. The intended life of signs with classes 1 and 1W retroreflective sheeting must be 12 years.
3. Fluorescent material must meet the fluorescent requirements of colour (to Section 2.2 of AS/NZS 1906.1:2007) for 5 years but must remain retroreflective for 12 years.
4. The intended life of signs with non-retroreflective properties must be 10 years.

25.14.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP takes precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- New Zealand Transport Agency Manual of Traffic Signs and Markings; (MOTSAM)
- New Zealand Transport Agency Traffic Control Device Manual; (TCD)
- NZTA Specification C/18
- NZTA Specification P/16
- NZTA Specification M/14
- TNZ P/24 Performance Based Specification for Traffic Signs
- Australia and New Zealand Standard AS/NZS 1906.1 and 1906.2
- RSMA Compliance Standard for Traffic Signs
- NZ Building Code, Clause B1 – Structure
- NZS 3404: Steel Structures
- AS 1554, SAA Structural Steel Welding
- AS 1650, SAA Hot Dip Galvanising Code
- Z 450 Galvanising Standard
- NZS 4203: Loading Standard
- ACC Standard Engineering Details
- Auckland Transport Drawings Series SM Drawings

Note that the intervention levels and response times are as specified in *ATCOP Section 25.8.2* rather than those specified in the NZTA specifications.

This section is to be read in conjunction with *ATCOP Chapter 10 Traffic Signs and Road Markings* for all relevant design, material and construction requirements for the applicable traffic signage requirements.

25.15 Road Marking Maintenance and Renewals

25.15.1 General

The work covers road marking on roads, intersections pedestrian crossings, service lanes, cycle lanes, park and ride facilities and carparks. The work includes, maintenance, and renewal of existing road markings and the installation of new road markings and includes but is not limited to:

- Transverse marking, longitudinal marking, long life markings, NSAAT, RRPM's, cycle lanes, regulatory markings, bus and transit lanes anti-skid high friction surfacing, letters and arrows, carpark markings and ancillary and miscellaneous other lines or marks as scheduled.

The work involves both repainting existing markings, removal of substandard markings, reinstating markings removed as a result of routine maintenance (including patch sealing), and the remarking of new markings (if required).

25.15.2 Performance Criteria

- Inspection and fault recording complies with the requirements of ATCOP.
- The paint performance complies with the requirements of requirements of ATCOP.
- The quality of markings complies with the requirements of ATCOP.
- Responsiveness to customer complaints
- Actioning new markings in specified timeframes.
- Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.15.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP must take precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

• NZRF: QAP001	Quality Assurance Programme "Certification Policies"
• NZRF: QAP002	Quality Assurance Programme "Specification and Guidelines"
• NZTA E/4	Certification of Thermoplastic Roadmarking Applicators and Pre-Heating Tanks
• NZTA M/7	Specification for Roadmarking Paints
• NZTA M/12	Specification for Raised Pavement Materials
• NZTA M/20	Specification for Long-Life Roadmarking Materials
• NZTA P/12	Pavement Marking
• NZTA P/14	Raised Pavement Markers
• NZTA P/22	Specification for Reflectorised Pavement Marking
• NZTA P/30	Specification for High Performance Road Marking
• NZTA/NZRFT4:2008	Specification for Roadmarking Paint Application Testing
• NZTA	Manual of Traffic Signs and Marking
• NZTA	Guide to Urban Roadmarking

Note that the intervention levels and response times are as specified in *ATCOP Section 25.8.2* rather than those specified in the NZTA specifications.

This section is to be read in conjunction with *ATCOP Chapter 10 Traffic Signs and Road Markings* for all relevant design, material and construction requirements for the applicable road marking requirements.

25.16 Guardrails

25.16.1 General

The work covers guardrails on roads, intersections, service lanes, bridges, park and ride facilities and carparks. The work includes, maintenance, cleaning, repair and renewal of existing guardrail and crash cushions and the construction of new guardrail and crash cushions. The work includes but is not limited to:

- The replacement of damaged guardrail, crash cushions, bridge guardrail posts, block outs, connections and foundations, tightening of bolts and connections and the cleaning and painting of guardrail components.

25.16.2 Performance Criteria

- Repairs are undertaken within the specified response times.
- The quality of repair complies with the requirements of the ATCOP.
- The area around guardrails and sight rails must be sprayed to ensure that vegetation is controlled before growth reaches a height of 100mm. An area 150mm behind the support posts to 300mm in front of the rail or screen must also be treated.
- Structurally unsound components are to be replaced immediately. If a temporary repair is necessary then the permanent repair must be completed within three weeks.
- All timber site rails, and steel guardrails which also act as sight rails, are to be painted white and must be cleaned and painted as necessary to retain their visibility.

- When faults endanger the public, safety barriers are to be erected immediately and repairs carried out within the specified response time. Permanent repairs will be given priority.
- Where damaged guardrails, barriers or sight rails have to be made safe, they are temporarily made safe in suitable manner up to permanent repair being undertaken.
- Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.16.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP must take precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- NZTA M/23
- NZTA M/17P
- NZTA RTS5
- NZS 3109: 1997
- NZS 3114: 1987
- AUS3: 1997
- AS/NZS 1554.5:1995
- AS/NZS 1554.5:1995 A1
- AS/NZS 3845:1999
- NZTA's Bridge Manual SP/M/022
- NCHRP 350

Note that the intervention levels and response times are as specified in *ATCOP Section 25.8.2* rather than those specified in the NZTA specifications.

This section is to be read in conjunction with *ATCOP Chapter 9 Roadside Restraint Devices* for all relevant design, material and construction requirements for the applicable guardrail requirements.

25.17 Footpaths and Vehicle Crossings

25.17.1 General

The work involves the maintaining, cleaning, or replacing any worn, or damaged footpaths, vehicle crossings, pram crossings, cycle lanes and pedestrian access ways, the reinstatement

of berms and verges on the completion of physical works and to carry out any works needed to ensure damaged berms and verges and pedestrian facilities are safe.

The work includes maintenance, repairs, replacement, renewals and the construction of new footpaths, cycle lanes, vehicle crossings and pedestrian access ways in the network includes but is not limited to:

- Concrete, asphalt, interlocking paving and other specialist paved surfaces for all footpaths, cycle lanes and vehicle crossings, pram crossings, pedestrian access ways, tactile paving.

25.17.2 Performance Criteria

- Repairs are undertaken within the specified response times.
- The quality of repair complies with the requirements of ATCOP.
- Supply of RAMM and as-built information in accordance with *ATCOP Chapter 24 Vesting of Assets and Asset Data*.

25.11.1 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP must take precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- NZS 3124 Specification for Concrete Construction for Minor Works
- NZS/AS 1428.4 Design for Access and Mobility
- Land Transport Safety Authority RTS 14 Guidelines for Installing Pedestrian Facilities for People with Visual Impairment.
- NZS 4121 Design for Access and Mobility
- AS/NZS 4586:2004 Slip resistance classification of new pedestrian surface materials
- Code of practice for working in the road
- National Code of Practice for Utility Operators Access to Transport Corridors
- Auckland Transport Dwg Set FP000 (Refer to *ATCOP Chapter 12*)

Note that the intervention levels and response times are as specified in *ATCOP Section 24.8.2* rather than those specified in the NZTA specifications.

This section is to be read in conjunction with *ATCOP Chapter 12 Footpaths and Pedestrian Facilities* for all relevant design, material and construction requirements for the footpaths and vehicle crossings.

Town Centre Footpaths

All footpaths maintenance within 'Town Centres' must match the existing footpaths, unless instructed by Auckland Transport.

Reinstatement

All footpaths and vehicle crossings must be reinstated to match the adjacent surfaces and their pavement construction according to Auckland Transport Drawing Set FP000 (Refer to Plan No. FP007). This includes, but is not limited to the structural integrity of the pavement, the surfacing properties, cross sectional grade of the pavement and any related line marking.

All berms must be reinstated to suit new surface levels in accordance with the requirements of ATCOP.

Grass Berms

The berm should comprise a 100mm thick layer of compacted approved quality topsoil with a good loam structure. It must be free of weeds and stones. Any large clods, stones larger than 20mm, roots, stumps or other litter that remains after the topsoil has been spread must be raked up and disposed of off-site. The berm should then be sown with a grass seed mix of:

15% Chewings Fescue

7.5% Brown Top

7.5% Crested Dogs tail

70% Perennial Rye Grass

The grass must be maintained until ready for the first cut, the first cut undertaken and any areas of inadequate grass strike re-sown prior to hand over to Auckland Transport.

Stormwater Kerb Outlets

Stormwater kerb outlets from adjoining properties must be reinstated to a suitable standard, this includes the pipe from the boundary to the kerb and any kerb outlet fittings. Care must be taken to prevent or control cracking, over the storm water pipes and associated kerb outlets.

Service Covers and Street Furniture

Service covers must be adjusted to the new surface levels with the footpath and vehicle crossing renewal works. Service covers are not to be damaged.

Footpath construction around street furniture (street lights, chairs, rubbish bins, signs, bus shelters and bus stops, utility cabinets and others) need to ensure no damage occurs to the asset. Special care must be taken to ensure that holding down bolts are not concreted over or damaged. Utility cabinets' doors and hatches must be fully accessible after the construction of the footpath around it.

25.18 Vegetation Control

25.18.1 General

The scope of work is to ensure that all vegetated areas in the road corridor are maintained to the standards set out in this section of ATCOP.

Grass areas within the road corridor are to be maintained to contain and control the spread of any noxious plants and grassed areas are to be regularly mown to maintain a tidy appearance and to preserve safe site distances from intersections and access points.

The work involves the control of vegetation on all roads, footpaths, walkways, cycle lanes, carparks, park and ride facilities, unformed roads, unsealed roads, including noxious weeds as defined by Auckland Council. The work must include the control and/or removal of vegetation in the following areas:

- Shoulders, berms, unsealed shoulders, kerb and channel, water tables, footpaths, traffic islands, median islands, embankments, landscaped areas, culvert entries and exits, landscaped areas, unformed road reserves, areas for sight distance maintenance and improvement, signs, street trees, street furniture, boundary fences and other areas.

Vegetation is defined as any unwanted plant life including but not limited to weeds, grasses, broad leaf grasses, reed, brushes or shrubs, trees and bushes. It includes any feral or self-sown shrubs, bushes or trees. The work also includes attending to private overhanging trees and hedges which are affecting the public use of the road corridor.

25.18.2 Performance Criteria

- Inspection and fault recording includes the identification of overhanging trees, sight lines, vegetation encroaching onto roads, and footpaths/kerbs requiring areas of mechanical removal of vegetation.
- The work is undertaken within the specified response times.
- Ensure that Auckland Transport meets its legal and community obligations for weed management within the roading network corridor, including its requirements under the Biosecurity Act (1993);
- Weed management and vegetation control methods are selected on the basis of the highest benefits attained to the lowest cost incurred whilst minimising risk to the community, the environment and adjacent properties.
- Weed management methods minimise adverse effects on managed environments, ancestral values of Maori, the health and safety of the community, aesthetic and cultural values and economic activity.
- All mown areas meet the requirements of *ATCOP Section 25.18.4* as a minimum.
- The following performance criteria should be met for all chemical weed control:
- Evidence of die back within 21 calendar days of spraying
- Complete die back within 35 calendar days

- 90% coverage on all areas as specified.
- The quality of work complies with the requirements of ATCOP.
- Compliance with Auckland Transport's Vegetation in the Road Corridor Guidelines
- Compliance with Auckland Council's Weed Management Policy

25.18.3 Publications and Standards

In addition to the requirements of this document, the following publications and standard specifications also form part of, but are not reproduced in ATCOP. In the event of any ambiguity or contradiction between ATCOP and any publication or standard specification, ATCOP must take precedence.

The intent is to ensure that all works undertaken as in accordance with best practices and industry standard. The list shown below is indicative but not necessarily complete. Auckland Transport reserves the right of add or remove publications and standards to or from this list.

ATCOP must be read in conjunction with the following:

- NZTA C21
- Biosecurity Act (1993)
- Auckland Transport's Vegetation in the Road Corridor Guidelines
- Auckland Council's Weed Management Policy
- Auckland Council's Regional Pest Management Strategy 2007-2012 (RPMS)

Refer also to Plan No's MT005 – MT008.

Note that the intervention levels and response times are as specified in *ATCOP Section 25.8.2* rather than those specified in the NZTA specifications.

25.18.4 General Maintenance Requirements

Vegetation control should be undertaken on the road network to the required condition, covering the following areas;

- Shoulders, berms, unsealed shoulders, kerb and channel, watertables
- Footpaths
- Traffic islands
- Median islands
- Embankments
- Landscaped areas
- Signs, street trees, street furniture
- Culvert entries and exits
- Boundary Fences
- Areas for sight distance maintenance and improvement
- Other areas, as instructed from time to time by Auckland Transport

- Boundary fences between road reserve and adjoining property (including walkway fencing)
- Unformed road reserves
- Site reinstatement
- Identification, containment and control of noxious plants

Within the above areas bush-cutting and weed trimming should be required in the following typical situations:

- Level or gentle sloped grasses areas such as traffic islands, median strips and grassed shoulders
- Grassed embankments, not steeper that 3:1 (3 horizontal:1 vertical)
- Banks not traversable safely by a mower machine to 2m below and 3m above, the road shoulder.
- Banks/edges of waterways, surface water channels and roadside drains
- Behind guard rail and safety fences
- Rural shoulders, to the boundary (including the boundary fence)
- At the base of signs, utility service poles and street trees.

The supply of all labour, plant and materials needed to identify, contain and control vegetation in the following typical situations (including but is not limited to):

- On the edges and joints of concrete, sealed and cobble-stoned footpaths, metal shoulders, pavement edges (including kerb and channel), construction joints, non-trafficked surfaces such as sealed islands.
- In surface water channels, drainage channels, side drains and surrounding culvert inlets and outlets.
- Below guard-rails, sight rails, headlight screens.
- At the base of roadside marker posts, signs posts, gantry and bridge piers, concrete half-drains, manholes, catchpits, lighting and service poles, bridge end markers and Council street trees.
- On and around structures such as bridges and retaining walls.
- Cobble stoned /paved areas in general – both pedestrian and vehicular areas
- Boundary fences between road reserve and adjoining property (including walkway fencing)

The supply of all labour plant and materials needed to identify, contain and control noxious plants as defined in the Auckland Transport policy documents.

- Cut and fill batters
- Berm areas
- Unformed road reserves as directed by Auckland Transport.

All work is to be carried out within the required response times.

25.18.5 Definitions

Table 99: Definitions

Vegetation	Is any unwanted plant life and includes weeds, grasses, broad leaf grasses, reed, brushes or shrubs and bushes. It includes any feral or self-sown shrubs, bushes or trees that are less than 2 metres high.
Noxious Plants	Are those defined as such by the Auckland Regional Council Auckland Council "Regional Plant Pest Management Strategy 2007-2012" (RPMS).
Spraying	Refers to vegetation control by use of liquid products including chemical herbicides. Organic/'eco-friendly' products (e.g. HITMAN, Interceptor, Biosafe) may be used as agreed with the Engineer. The only permitted chemical herbicides are products such as Roundup or other products containing glyphosate or metasulfuron. Hormonal or arsenic weed killers must not be used.

25.18.6 Intervention Levels

Mowing

Mowing will be required when more than 5% of any grassed area within the road corridor or off street carpark exceeds the requirements of the requirements of ATCOP. Local non-complying areas must not be greater than 10m².

Note: Latest Auckland Council "Weed Management Policy for Parks and Opsu Spaces" promotes a reduction in chemicals and "educating the public to the relative benefits and cost-savings achieved". It acknowledges that a reduction of agrichemical use may require changes to existing levels of services.

RCM is currently based around glysophate as a base and all costs for alternatives (HITMAN, steam, hot water etc.) have been significantly more expensive that the base.

Vegetation

All sealed areas including road carriageway surface, shoulders, pavement edges, kerb and channel, footpaths, walkways, accessways, service lanes, carparks, cycle lanes and cycle paths, and construction joints must be maintained to be near free of vegetation. Shoulders must be re-sprayed within seven days of any visible green coloration due to vegetation.

In areas where the metal shoulder is bounded by a grassed or planted batter or surface water channel, watertable or open drain, the spraying must not affect the vegetation growth protecting the batter or surface water channel, water table and open drain.

Vegetation that is extending over any kerb line, edge, strip, pavement edge, boundary fence or any footpath the grass adjacent to these features must be controlled for a distance of 100mm ±25mm behind the edge. Where these areas are neatly trimmed and maintained by the adjoining owner they must not be sprayed. Only contact sprays must be used for any form of vegetation control requiring spraying.

Where vegetation in the pavement or channel exceeds 50mm in height or the vegetation protrudes over the edge of the footpath of kerb by more than 100mm, then these must be mechanically removed back to the edge of the concrete and trimmings disposed of in an approved manner. These areas must not be sprayed before mechanical trimming. Weed spray may be applied after weed trimming and removal of any debris.

The area around guardrails and sight rails must be sprayed to ensure that vegetation is controlled before growth reaches a height of 100mm. An area 150mm behind the support posts to 300mm in front of the rail or screen must also be treated.

Roadside marker posts, signposts, gantry and bridge piers, concrete half drains, catchpits, manholes, lighting poles, street trees etc. must be treated to restrict height of growth to 50mm for a clearance of 100mm around each item.

The height of vegetation in surface water channels, water tables and open drains must not exceed 100mm.

The height of vegetation around culverts and inside drains must not exceed 100mm in urban areas and 200mm in rural areas

Rank growth and aquatic plants must be removed from surface water channels or side drains, to allow the free flow of water.

Any surface water channel or drainage channels showing signs of erosion must be immediately reported to the Engineer.

The bridge decks, kerbs, channels, footpaths, expansion joints, pier caps and pier bases of all structures and faces, foundations and cap beams of all retaining walls must be kept free of vegetation.

Vegetation such as shrubs, scrub or tree growth encroaching to within 1m of the edge of any formed area such as the road carriageway, footpath, carpark, service lane, accessways, walkway, cycle lane or to within 5m above the surface of the road carriageway, service lane, carpark or to within 3m above pedestrian footpaths, accessways, cycle lanes, and/or walkways must be cut and removed to an approved disposal site.

25.18.7 Response Times

Mowing

All mowing works identified as being outside of the requirements of ATCOP must be completed within one week of being inspected and/or notified.

In programming the works the following points must be taken into consideration:

- Give due priority to the safety of road users
- Coordinate mowing works with the programmed street litter collection Contractors.

Vegetation

All vegetation control works identified as being outside of the requirements of ATCOP and requiring mechanical trimming must be completed within one week of being inspected and/or notified.

Areas identified for spraying must be sprayed within one week.

Mowing General Requirements

All works must be carried out in accordance with the following requirements;

- Avoiding damage to all utility services and service covers such as power and telecommunications, traffic signal poles and controllers, traffic signs or other road side furniture, and trees and shrubs.
- Any damage must be made good at no cost to Auckland Transport.
- Where litter could be spread by the mowing process it must be picked up prior to mowing the affected area and dispose of the litter in the appropriate manner.

All vegetation within the road corridor is maintained to the following requirements tabulated in Table 100 below:

Table 100: Road Corridor Vegetation Maintenance

Type A (75mm height)	Applies to all urban areas within 50m of all town centres and minor shopping centres and small grassed areas such as all traffic islands and roundabouts within 30m of any intersection in the contract area and all carparks and park and ride facilities. Grass height before mowing must not exceed 75mm and when mown must be to within 20mm of the ground surface. Grass clippings must be removed and disposed of but can be mulched on site provided the site was within the requirements of the ATCOP at the time of mowing. (i.e. grass height over the entire site was less than 75mm). No grass is to be left in any open drain, water table, culvert inlet or outlet, or surface water channel, road shoulder

	or sealed surface.
Type B (100mm height)	Applies to all urban berms not maintained by the adjoining resident and where the adjoining property **does not** have legal access rights, all median and traffic islands not covered by Type A and islands in the heads of cul-de-sacs. It also covers all berms in coastal areas and all rest areas grass berm areas outside schools and Housing Corporation properties. Grass height before mowing must not exceed 100mm and when mown must be within 50mm of the ground surface. Grass clippings must be removed and disposed of but can be mulched on site provided the site was within the requirements of ATCOP at the time of mowing (i.e. the grass height over the entire site was less than 100mm). No grass is to be left in any open drain, water table, culvert inlet or outlet, or surface water channel road shoulder or sealed surface road shoulder or sealed surface.
Type C (200mm height)	Applies to all rural roads with a Maintenance Priority grouping of MP1 to MP3 (inclusive) and to all other urban and rural road berms (MP1 to MP7) for sight visibility for road users. This will typically be in the vicinity of intersections and sharp bends and vehicle crossings and in front of guardrails etc. as detailed in Auckland Transport Drawings Plan No's MT005 – MT008. Applies to all urban berms not maintained by the adjoining resident and where the adjoining property does have legal access rights and must also apply to the control of vegetation in walkways, bridle paths, accessways, and service lanes. Type C mowing width must be from the edge of the road shoulder to the boundary/fenceline, where practical, and must include surface water channels and water tables, etc. Whilst the height of grass within this 2m wide strip on either side of the carriageway should not exceed 200mm in height, it should be noted that the height of vegetation within the surface water channels must not exceed 100mm Grass height before mowing must not exceed 200mm and when mown must be to within 75mm of the ground surface. Grass clippings must be removed and disposed of but can be mulched on site provided the site was within the requirements of ATCOP at the time of mowing i.e. grass height over the entire site was less than 75mm. No grass is to be left in any open drain, water table, culvert inlet or outlet, or surface water channel.
Type D (400mm	Applies to all rural roads with a Maintenance Priority grouping of MP4

height)	to MP7 (inclusive). Type D mowing widths are detailed in Auckland Transport Drawings Plan No's MT005 – MT008. Grass height before mowing must not exceed 400mm and when mown must be within 75mm of the ground surface from a point 2m from the edge of the metal shoulder to the boundary/fenceline, where practical. Except for berm areas where the vegetation that may affect sight visibility for road users, such as in the vicinity of intersections and sharp bends and vehicle crossings and in front of guardrails etc. as detailed in Auckland Transport Drawings 15000/002, 15000/003 and 15000/004. Vegetation control in these areas must comply with Type C. Vegetation control will generally be by approved mechanical mowing methods, which may include flail mowing. The grass height in the adjacent surface water channels and water tables, and open drains must not exceed 200 mm It must also include trimming banks and shrubs or trees with a flail mower where meticulous pruning is not necessary. No grass is to be left in any open drain, water table, culvert inlet or outlet, or surface water channel road shoulder or sealed surface.

Note:

- Mowing will be required when more than 5% of any grassed area within the road corridor or off street carpark exceeds the requirements of ATCOP. Local non-complying areas must not be greater than 10m².
- A run of all roadsides should be made every 3-4 weeks during the flowering period.

Mowing Plant – Type C and D mowing

Mowing plant for Type C & D mowing will be a tractor equipped with a mechanical mowing attachment capable with an effective uphill vertical cutting reach of 3.5m from ground level and a horizontal reach of 4.0m or more.

Where flail mowing is required the mowing attachment must have flail cutters and the method of cutting must minimise damage to adjacent trees and shrubs.

All plant must be well maintained, legal for working on the road and used in the way that it was designed for. A high visibility amber flashing light must be fitted on top of the vehicle so that it is clearly visible to approaching vehicles. This light must be used at all mowing times.

A visible RG 34 (“keep right” white arrow on blue background) arrow must be mounted on the right hand rear corner of the mower.

The mowing equipment must be suitably shielded to prevent high velocity debris from flicking around and causing damage or injury.

Auckland Transport is not responsible for damage to machinery from mowing operations.

Weed Hygiene

Good weed hygiene practice is to be carried out for all mowing and vegetation control operations. All operations must not result in the transfer and spreading of any vegetation. All waste material is to be removed from the site. Material must be loaded then carted directly to the waste facility. All operating plant, tools and machinery is to be cleaned of any vegetation prior to relocating to another site.

All equipment must be brushed down at the end of each working day to prevent infestation and spreading of noxious plants.

Litter in the Mowing Areas

Prior to the commencement of any mowing the area must be checked for the presence of rubbish within grass verges. The litter is to be removed from the area prior to commencing any mowing. If there is sufficient rubbish such that it would be impractical to remove it prior to mowing, the area must not be mown until arrangements have been made to remove the rubbish or shift the rubbish onto a mown area.

25.18.8 Vegetation Control General Requirements

The following requirements must be complied with for vegetation control;

- Weeds in the road corridor will typically be controlled by the application of a non-residual low toxicity herbicide.
- Mechanical removal or non-herbicide chemical control alternatives may be considered for specific sites on the basis of cost and environmental efficacy.
- All sealed areas including road carriageway surface, shoulders, pavement edges, kerb and channel, footpaths, walkways, accessways, service lanes, carparks, cycle lanes and cycle paths, and construction joints must be maintained to provide a near vegetation free condition.
- Shoulders must be retreated within seven days of any visible green coloration due to vegetation.
- The use of chemical sprays is to be reported to the Auckland Transport representative one (1) week in advance of the intention to spray. Only contact chemical sprays must be used, residual sprays will not be permitted.
- Although the intervention levels and performance criteria are the principal criteria, spraying is to be undertaken as a minimum, three sprays between October and April and one spray between May and September.

- Where specific areas along the road reserve have been landscaped and planted care is to be taken to ensure that desirable plants are not affected by spraying.
- Work must be carried out in such a way and under such conditions that no spray drift or leaching onto adjacent property occurs.
- If weeds are removed by chipping or mechanical means the trimmings must be removed from the site and disposed of in an appropriate manner.
- No chemical sprays are to be used outside schools or early education centres on days that these institutions are in use.
- No chemical sprays are to be used near shops, bus stops, and walkways after 7.00am.
- No chemical sprays are to be used if the wind speed is more than 10km/hour.
- No spraying must be undertaken from a moving vehicle where the vehicle is travelling against the flow of traffic (i.e. on the wrong side of the road).
- All mature noxious plants up to 2.5m high must be removed or treated with the exception that mature ragwort must be grubbed out.
- Trimming/pruning of trees must be overseen by a suitably qualified arborist where required.
- Feral trees, shrubs or scrub must be removed as soon as they are identified and before they reach 2 metres in height.

25.18.9 Noxious Plant Control

All noxious plants, as itemised in the RPMS, in all areas of road reserve, such as gorse, woolly nightshade, acacia, pampas grass and privet are to be identified and reported. All noxious plants that have been identified and contained are to be inspected and followed up with treatment complying with Auckland Council requirements. A strategy and methodology for the most efficient and environmentally responsible way to control the identified noxious plants must be developed in close consultation with the Auckland Council Biosecurity Team.

All noxious plants that require removal are to be disposed of at an approved dump site.

Where removal of a group of plants leaves areas of bare earth, sufficient grass seed must be spread over these areas to produce a covering sward of grass.

Maintenance of these areas is to be undertaken to prevent regrowth or new growth of any noxious plant species.

25.18.10 Spraying Works

The areas to be sprayed include sealed areas where vegetation is encroaching onto or within the sealed carriageway, surface water channels, culvert inlets and outlets, kerb and channel, metal shoulders, street furniture, bridge abutments or traffic islands.

25.18.11 Approved Operators

All spray operators must be registered with the Pesticides Board as ground chemical applicators. Material application procedures will be as set out on the product label and in

accordance with the draft SANZ document 5854 (or any subsequent updates and/or amendments).

25.18.12 Control Areas

Rural Roads

Vegetation must be controlled as follows:

- All metalled and/or sealed shoulders and road edges.
- All guard rails, slight rails, and other road furnishings required for traffic safety to a distance of 1.8m. Non-traffic related road furniture e.g. power poles, fences etc. are not included in this item.
- A distance of 1.5m at bridge ends from the seal or road edge and for a distance of 10m either side of the bridge.
- All culvert inlet and outlet drains to the adjacent fenceline or to a minimum of five metres from the culvert, whichever is the lesser.
- Around all culvert marker posts there is a distance of 200mm maximum.
- The area of 200mm maximum radius around the base of all traffic signs and edge marker posts.
- A distance of 100mm maximum along footpath and accessway edges, back of kerblines, edge of channels, around poles, signs and trees.
- Bridle trails and cycle paths

Note: In rural areas, over-spraying of metal road shoulders where vegetation growth is encouraged to reduce shoulder maintenance must not exceed 150mm in width.

Urban Roads

Vegetation must be controlled as follows:

- On metalled and/or sealed road shoulders and edges.
- All vegetation growing out of the kerb/channel o the joint between the channel and the seal (islands).
- All vegetation overhanging the kerbs.
- A distance of 100mm maximum immediately behind the kerb where the berm is not being mowed by the adjacent property owner.
- A distance of 100mm maximum around all culvert marker posts, power poles and telephone poles, street light poles, telecom pillars, service boxes, guard rail and sight rail posts, utility cabinets and other fixings regarded as road furniture.
- A distance of 100mm maximum behind the kerb on all traffic islands, kerb extensions and roundabouts unless maintained as lawn or garden.
- The area of 200mm maximum radius around the base of all traffic signs and edge marker posts.

The following performance criteria should be met for all chemical spraying:

- Evidence of die back within 21 calendar days of spraying
- Complete die back within 35 calendar days
- 90% coverage on all areas as specified.

25.18.13 Chemicals

All chemicals used for vegetation control must be approved by the Environmental Risk Management Authority as suitable for the uses as specified in the contract documents.

The preferred herbicides to be used are:

- Glyphosate
- Metsulfuron

Hormonal or arsenic weed killers must not be used. Other chemicals may be used with the approval of Auckland Transport. A penetrate may also be used in conjunction with the above when required.

25.18.14 Spray Times

No chemical vegetation control work must be carried out in urban areas between the hours of 8.00am and 9.00am and between 3.00pm and 4.00pm except during periods when all schools are closed.

Chemical spraying must only be undertaken where and when there are suitable weather conditions. Chemical spraying during windy conditions will not be tolerated.

25.18.15 Non-Herbicide Weed Control

Non-herbicide weed removal can involve any or all of the methods listed below;

- Use of organic/"eco-friendly" liquid spray products (e.g. Hitman, Interceptor, Biosafe etc.) or some other form of coconut palm oil derivative used with an emulsifier;
- Weed eaters/strimmers or other similar devices;
- Hot water spray;
- "Grubbing out" or chipping out weeds;
- Hand removal of weeds.

Physical removal of weeds (non-spray method) may typically be used, but not restricted to, edges around hard surfaces and concrete/paver footpaths, retaining walls etc. or where weeds are flowering or areas that standard mowing may not be able to reach.

25.18.16 Maintained Berms

In urban and rural areas vegetation control **must not** be carried out (beyond kerb or water table) on any berms which are obviously maintained in a tidy condition by adjacent property owners.

25.18.17 Repair and Reinstatement of Damaged Berm

The topsoil must comprise a clean, good quality topsoil material with a good loam structure. It must be free of weeds and stones. Any large clods, stones larger than 20mm, roots, stumps or other litter that remains after the topsoil has been spread must be raked up and disposed of offsite. The berm must then be sown with a grass seed mix of:

- 15% chewing fescue
- 7.5% brown top
- 7.5% crested dogs tail
- 70% perennial rye grass

25.18.18 No Spray Register

A copy of the register of property owners and residents who have requested that no chemical vegetation control be carried out on the road frontages of their properties is available upon request from Auckland Transport. The requirement not to spray on any listed property frontage is to be complied with at all times.

25.18.19 Care of Site and Surrounds

Dust Control/Nuisance

Horticulture crops in the vicinity of the works must be protected from spray drift and dust.

Protection of Flora

Surrounding trees and other significant flora are not to be damaged.

Work Area

Work should be confined to the road reserve.

Natural Water and Pollution of Waterways

Any use of the natural water is subject to the provisions of the Resource Management Act (1991) and any use of natural water must be authorised by the Auckland Council.

In this context, ‘natural water’ means all forms of water other than any water in any reservoir used for the water supply purposes of any public of any public authority, or in any pipe, tank or cistern.

25.19 Street Cleaning

25.19.1 General

The work covers all street cleaning on roads, intersections, service lanes, accessways, park and ride facilities and carparks. The work includes sweeping, removal of loose litter, debris and detritus from roads, cycle lanes and footpaths, accessways and the cleaning and washing of footpaths and bus shelter areas. The work includes but is not limited to:

- Clear and clean all kerbing, channels and catchpits grates within the road corridor, service lanes, carparks, footpaths and cycle lanes.
- Sweep road intersections and special vehicle lanes and industrial areas to remove and dispose of all loose material.
- Sweep cycle lanes.
- Dispose of all material including liquid collected from road sweeping and catchpit grate cleaning to an approved disposal site licensed for such material.

25.19.2 Performance Criteria

- Street cleaning is undertaken within the specified response time.
- Street cleaning complies with the requirements of ATCOP.
- Traffic management at the work site complies with the Contract requirements.
- Not more than 5% of sites inspected must have kerb and channel with more than 5kg of detritus able to be hand swept from 50m of kerb and channel to a distance of 500mm from the kerb line.
- Not more than 5% of carparks inspected must have kerb and channel with more than 1.0kg of detritus able to be hand swept from 50m of kerb and channel to a distance of 500mm from the kerb line.
- Not more than 5% of sites inspected must pond water to a depth of more than 20mm where the cause of ponding is attributable to the build-up of detritus.
- No intersection has more than 0.5kg of debris in any selected $5m^2$ area.
- No Special Vehicle Lane has more than 0.1kg of detritus within any $5m^2$ area.

25.19.3 Definitions

Table 101: Street Cleaning Definitions

Detritus (NZTA C15 : 1993)	Detritus must be defined as any collection of fragments or material on the sealed or paved surface of drainage channels. Detritus must include litter, dead animals, animal remains, glass, metal, wood, soil, slit, sand, root materials, sealing chips, split concrete, debris, dirt, filth, rubble, ballast, stones, earth, moss, slime, chewing gum, or any other waste matter. Detritus also includes all objectionable material such as human or animal bodily fluid such as faeces, vomit, urine, spittle, blood matter, or any other thing of a like nature. Detritus must also include small slips, fretting from cuttings, deposits of windblown sand or grit, deposits of loose aggregates, fallen leaves and the result of the build-up of minor droppings or spillages created from passing traffic or climactic conditions. Small slips are those which accumulate in the surface water channel or shoulder but which do not generally encroach into the traffic lane. Small slips

	are defined as less than $1m^3$ loose volume.
Litter	Litter includes any refuse, rubbish, garbage, , paper, plastic, glass, metal, wood, food matter, cigarette butts , debris, , or waste matter, or any other thing of a like nature.
Special Vehicle Lanes	Special Vehicle lanes are those on road lanes that have vehicle use restrictions placed upon them and include but are not limited to: bus lanes, cycle lanes, high occupancy vehicle lanes.
Catchpit Sump and Soakhole Cleaning	Catchpit sumps and soakholes in rural areas and urban areas which are not maintained by Auckland Council Stormwater (AC SW).
Rural Areas	Rural areas are as defined by the adjacent land usage in the relevant City or District Plan for the contract area, and all other urban areas where there is no piped stormwater system, maintained by Auckland Council Stormwater (AC SW). These are generally urban areas that do not have kerb and channel to collect stormwater from the road carriageway.
Catchpit Grate Clearing	Involves the removal of all litter and detritus on the catch pit grate and in the catch pit back inlet in all rural and urban areas, and the appropriate disposal of waste material.
Channel Sweeping	Involves the sweeping of all channels to a minimum width of 500mm from the kerb face or centre of channel where there is no kerb and up lifting and appropriate disposal of all swept material.
Intersection Sweeping	Involves the sweeping of intersections, including around splitter islands, median islands with particular emphasis on the lightly trafficked areas of intersections where detritus tends to accumulate and the appropriate disposal of swept material.
Town Centres and Carpark Sweeping	Involves the uplifting and appropriate disposal of all litter and detritus from sealed roads, Town Centres, carparks and footpath (including walkways) surfaces. Includes the sweeping of sealed road surfaces using a mechanical sweeper.
CBD Town Centres (Area A+)	Central Business District areas or similar high profile areas as defined in Volume 6: Contract Specific Requirements.

Town Centres (Area A and B)	Are the town centre areas defined within Volume 6: Contract Specific Requirements.
Minor Shopping Centres	Are the areas defined within Volume 6: Contract Specific Requirements.

25.19.4 Cleaning Standards and Performance

Catchpits

Not more than 15% of all catchpit grates/back inlets must be more than 25% covered by detritus at any one time.

Where there is a build-up of detritus and litter on catchpit grates and within catchpit back inlets that cannot be cleaned by mechanical sweeping, appropriate hand tools must be used to clean it at the time of sweeping. The debris must be removed from site.

Not more than 10% of all catchpit sumps must have more than 300mm of detritus in the invert or be filled with detritus to within 100mm of the invert of the outlet (whichever is lesser) at any one time.

In addition any sump where detritus or litter or material, is more than 300mm deep or is within 100mm of the invert (whichever is lesser) at any time must be cleaned. The catchpit sumps must be emptied fully at each visit and all waste materials, arisings and liquid disposed of at an approved facility.

Soakholes

Soakholes must be regularly cleaned so that there is no more than 300 mm of detritus at the bottom of the soakhole or filled with detritus to within 100 mm of the invert of the outlet (whichever is the lesser) at any time.

Detritus and litter must be removed from soakholes so that the normal water flow is maintained. All wood debris jammed within any soakhole structure must be removed. Care must be taken so that the soakhole structures or its linings are not damaged during cleaning operations.

Critical Catchpits

Ensuring that not more than 10% of the surface of any catchpit grate or catchpit back inlet is obstructed by any litter and/or detritus. Seasonal variations in the volume of detritus must be allowed for and programmes adjusted accordingly.

Where there is a build-up of detritus and litter on catchpit grates and within catchpit back inlets that cannot be cleaned by mechanical sweeping, appropriate hand tools must be used to clean it at the time of sweeping. The debris must be removed from site.

Roads and Kerb and Channel

All roads must be regularly swept to ensure that the standards specified are achieved.

Ensuring that any detritus and/or litter that could cause a traffic hazard is cleared within one hour.

Ensuring that intersections must not have more than 0.50kg of detritus within any $5m^2$ area.

Ensuring that Special Vehicle Lanes must not have more than 0.10kg of detritus within any $5m^2$ area.

Ensuring that no single kerb and channel site must have more than 5kg of detritus able to be hand swept from 50m of channel to a distance of 500mm from the kerb line.

Ensuring that no single kerb and channel site must pond water to a depth of more than 20mm where the cause of ponding is attributable to the build-up of detritus.

All detritus and litter is to be effectively removed and that the equipment used should not leave a trail of debris behind. During road sweeping the operator must, at least once every 500m, get out of the truck and check the effectiveness of the sweeper and ensure that the sweeping process does not produce dust which disturbs and affects the environment and public.

Sweeping in channels (including hyvols), traffic island, roundabouts, speed tables, speed humps, chicanes, median strips, dish channels, bus and indented parking bays and splitter islands must be carried out by hand where not carried out by the machine sweeper. Sweepings will not be allowed to enter catchpits.

Cleaning of speed humps, speed tables and precast and insitu traffic islands must be undertaken during sweeping of the road.

Carparks

All carparks must be regularly swept at least monthly to ensure they are free of detritus and litter to ensure that carparks do not have more than 1.0kg of detritus within any 5m2 area.

Vehicular parking and movement areas must be swept to remove any accumulation of detritus and litter. Footpaths and channels within the carpark must be swept. Mechanical sweepers and hand sweeping must be used as necessary to prevent any build-up of detritus and litter.

Street Furniture

Clean all street furniture surfaces, including handrails, seats, parking meters, bicycle stands, bollards and the ground surface within the immediate vicinity of the furniture. Disinfectant must be used to sanitise all surfaces.

Street furniture cleaning activities include but are not limited to:

- Cleaning surfaces of substances likely to mark of cause damage to persons or apparel.
- Removal of all detritus by broom, scrubbing machines or low pressure water blasting, or steam cleaning.
- Removal of chewing gum deposits and associated marks.
- Removal of litter adjacent to street furniture or bus shelter when carrying out street cleaning activities.
- Cleaning and sanitising.
- Control of weeds and vegetation.
- Minor repairs, spot painting and treatment of deteriorating surfaces.

Bus Shelters and bus stops

All bus shelters and bus stops must be cleaned and maintained to the standards specified, including seats in a clean hygienic condition at all times. Walls, glass, seats and the immediate ground around and inside bus shelters and bus stops or within the immediate vicinity of bus stop seats (where no shelter is installed) must be kept thoroughly clean, swept and where required washed. Disinfectant must be used to ensure a pleasant hygienic environment for bus commuters. Works include footpaths adjacent to bus shelters and bus stops.

High pressure clean the concrete base or pad and shelter or seats to remove any detritus, accumulated grime, build-up of fine dirt or silt and chewing gum.

The runoff during the washing will be collected and disposed of at an approved dump site and none must be allowed to enter catchpits.

Remove all litter and detritus adjacent to the bus shelter when carrying out cleaning activities.

Footpaths, Berms and Pedestrian Areas

All footpaths and pedestrian areas must be regularly swept and cleaned to remove all detritus and litter, ensuring that footpaths and paved pedestrian areas must not have more than 0.50kg of detritus within any $5m^2$ area.

Town Centres, Minor Shopping and Pedestrian Areas

Maintenance of town centre, (including CBD areas), minor shopping and pedestrian areas are an extremely important component of the Contract works. The highest standards of cleanliness and service in these areas are sought. The areas to be maintained include:

- Footpath in and around town centres and shopping areas;
- Shop/building entrances;
- Vehicle crossing and property entrances;
- On road and indented car parking areas;

Bus shelters and bus stops;

- Street furniture;
- Covered channels that run through and beside pedestrian areas and which are not considered part of an adjoining carriageway area; and
- Open channels that run through and beside pedestrian areas and which are not considered part of an adjoining carriageway area.

Cleaning must be undertaken utilising appropriate plant, labour and materials in order to remove detritus, litter and other deleterious material including ground-in dirt, chewing gum, stains and spillages.

The target standard for the cleaning of town centres and shopping areas is to ensure assets are functional, safe and free of detritus, litter and other deleterious material, and to ensure that footpaths and paved pedestrian areas do not have more than 0.50kg of detritus within any $5m^2$ area.

The adjacent kerb and channel must be swept at the time of sweeping the footpath and paved pedestrian areas.

Any detritus or litter on the adjacent berm or street garden must also be removed at the time of sweeping the footpath and paved pedestrian areas.

All cleaning in and around town centres and shopping areas must be undertaken as necessary to maintain the required standard but in any event must be undertaken a minimum frequency as tabulated below:

Table 102: Minimum Frequency of Cleaning In and Around Town Centres and Shopping Areas

Sweeping	CBD Town Centres (Area A+)	Daily
	Town Centres (Area A and B)	Once per week
	Minor Shopping Centres	Once per month
Washing	CBD Town Centres (Area A+)	Three times per week
	Town Centres (Area A)	Once per week
	Town Centres (Area B)	Once per month
	Minor Shopping Centres	Once per month
Loose litter (prior to sweeping and washing)	Town Centres (Area A+)	Daily
	Town Centres (Areas A and B)	Once per week

	Minor Shopping Areas	Once per month
Chewing Gum Removal (prior to sweeping and washing	CDB Town Centres (Area A+)	Once per month
	Town Centres (Areas A and B)	Once per month
	Minor Shopping Areas	Once per month
Street Furniture	Daily Town Centres (Area A+)	Three times per week
	Town Centres (Areas A and B)	Once per week
	Minor Shopping Areas	Once per month
Vegetation Control	Major Town Centres	Once per month
	Minor Shopping Areas	Once per month
Lichen and Moss / Slippery Surfaces	Major Town Centres	As required
	Minor Shopping Areas	As required

Cleaning Frequency for Special Events

Special event cleaning must commence within one (1) hour of the scheduled completion of the event and be completed within three (3) hours including street sweeping of the roads adjacent to special event location.

When carrying out additional cleaning for special events and activities, additional road sweeping will be carried out when required.

Cleaning Requirements

Footpaths and Pedestrian areas must be regularly swept, cleaned and washed as necessary to maintain the standards specified. These areas also include associated surfaces such as pedestrian ramps, vehicle ramps, kerbs, and borders around street furniture, bus shelters and bus stops, signs, poles and service covers, kerb and channel within or adjacent to the footpath and pedestrian area.

The requirements for cleaning activities are tabulated below:

Table 103: Cleaning Requirement Activities

Sweeping	Entire area, swept, by mechanical means or by hand. No damage to the asset. All detritus and litter is to be removed. Blowing and sweeping will be undertaken as required. All glass is to be removed. Spot-swept with brooms as required. Sweeping material to be disposed of according to the requirements of ATCOP for contaminated waste. Dead animals are collected and spills cleaned

	up. Accumulation of detritus removed. Potholes, trip hazards or other health and safety issues must be reported to Auckland Transport.
Washing	Footpaths areas are to be regularly washed. Footpaths are grime and stain free after each full service. Entire area, washed, preferably by mechanical means. No damage to the asset. No litter. No staining. All glass is to be removed. No water runoff into stormwater system, use alternative methods of discharge, preferably removing the runoff off site. Extra scrubbing and washing to remove all in ground dirt and stains to achieve a near new appearance for special concrete, brick and stone paving. Removal of staining, residues, grime, algae, moss. Accumulation of detritus removed. Potholes, trip hazards or other health and safety issues must be reported to Auckland Transport.
Litter	All litter to be collected and removed when carrying out sweeping and washing activities. Full litter bins are to be reported to Auckland Council to arrange for emptying.
Vegetation Control	Predominantly free of weeds apart from sporadic minor emergent growth. Manual removal if required. Use approved horticultural methods. Vegetation is cleared back from edge to ensure unobstructed access for cars and pedestrians.
Chewing Gum Removal	Clean footpaths to remove deposits and associated marks from paved and cobbled areas. Clean street furniture to remove deposits and associated marks.
Lichen and moss	Remove all lichen and moss when carrying out footpath washing. Identify hotspots and treat with a moss and lichen remover to prevent the area becoming a safety hazard. Respond to requests for service as required.

Protection of shop frontages must be in place during all cleaning operations. Water, detritus and litter from cleaning operations must not enter private property or be deposited onto fences and/or walls.

A letter drop notifying all businesses when water blasting or leaf blowing will be carried out as part of the routine maintenance so that the business owners are able to take precautions against water or debris entering through non-water tight doors.

Noise levels generated by the cleaning works in the execution of the works and any temporary works must be kept to a minimum. Noise levels (dBA) must not exceed the levels listed in NZS 6803 – Assessment of Environmental Sound.

Cleaning of Special; Paving Materials

In addition to the cleaning requirements of pedestrian areas it is required that special paved surfaces be cleaned to a higher standard to maintain a near new appearance of those pavements.

It is important to note that care should be taken on special paved surfaces not to damage the surface or coatings and underlying substrate. Care must be taken that the cleaning mechanism to be used must not impact on the integrity of special paved areas. This includes subsidence and loosening of blocks due to removal of infill material within the paved area.

Footpath Maintenance

Joints around all paving blocks in block paving areas are to be maintained with a jointing sand, to ensure the blocks are properly restrained to carry their traffic and pedestrian loads without moving. Exposure of these areas to traffic, weather and particularly cleaning can result in the jointing sand being removed.

25.20 Traffic Management

25.20.1 Scope and Intent

The scope and intent of these works is to provide and maintain safe, effective and efficient temporary traffic management measures at all times at road works and other sites where the safe movement of motorists, pedestrians and other road users may be affected.

At all times the safety of all road users, road workers and adjacent property owners and occupiers is of paramount importance.

All activities or works on any road must be planned and undertaken in such a manner as to cause as little disruption, delay or inconvenience to road users and adjoining residents as is possible

This section is to be read in conjunction with *ATCOP Chapter 26 Corridor Access Management* for the full requirements and processes for Corridor Access Requests (CAR) applications and approvals and the temporary traffic management plan requirements.