City of **Perth**

# Essential Services Noise Management Plan 2020

## Waste Collection & Street Cleaning


CITY of PERTH
SCARAB


# Contents

# 1. Introduction

The City of Perth (City) engaged Lloyd George Acoustics to prepare a Noise Management Plan (NMP) for the City's waste collection and street cleaning operations, to minimise the noise impact to noise-sensitive receivers from 'out-of- hours' essential services carried out by the City within its boundaries – see Appendix A for the City of Perth Street Cleaning and Sanitation 'Out-of-Hours Works' Maps. The maps indicate the days of the week that they relate to and the times of day for individual locations where out-of-hours work is required. Updated maps are available on the City's website. Such essential services include:

- Residential, Commercial, Event and Public Place Waste collections, and
- Road, public place and footpath cleaning.

This NMP has been prepared to satisfy regulation 14A of the *Environmental Protection (Noise) Regulations 1997* (the Regulations) with guidance taken from the Department of Environment Regulation Draft Guideline DER2014/001628.

This regulation requires that noise emitted from premises (including the public realm), does not cause or significantly contribute to, a level of noise which exceeds the assigned levels depending upon premise type. In relation to the City's essential waste and street cleaning activities, the City acknowledges that these essential services will exceed assigned levels, particularly affecting residential premises (noise-sensitive premises).

This NMP supersedes the City's Wolf Lane Noise Management Plan.

The regulations prescribe that a noise management plan expires after a maximum of 3 years from the day on which it is approved by the DWER following public consultation.

The NMP will be reviewed annually to ensure better practice noise management techniques are continuing to be used.

Appendix B contains a description of the terminology used throughout this report.

Appendix C contains the Lloyd George Acoustics Original Noise Management Plan. This report shows the source of the technical data, whilst this current report includes feedback from external and internal stakeholders.


Tea Cafe
RS154

# 2. Legislation

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations). Regulation 3, 7, 8 and 14A are relevant to this NMP.

Regulation 14A provides requirements for 'essential services', e.g. the collection of waste, or the cleaning of roads, public places and footpaths, as these activities often exceed assigned levels. It defines these works as class 1 if they take place between 7am and 7pm Monday to Saturday or 9am-7pm on Sundays and public holidays. All works undertaken outside these hours as classified as class 2 works.

Regulation 7, prescribes standards for noise emissions from any premise or public space but does not apply to noise emitted during class 1 works as described under Regulation 14A, if carried out in the quietest reasonable and practicable manner, using better practice equipment.

Class 2 activities can be exempt from having to comply with Regulation 7, as prescribed in Regulation 14A(3) as follows:

> *(3) Regulation 7 does not apply to noise emitted in the course of carrying out class 2 works if the works are carried out in accordance with a noise management plan, excluding any ancillary measure, for class 2 works approved in writing by the CEO.*

The requirements for a noise management plan for class 2 works are defined in Regulation 14A(6) as follows:

> *(6) A noise management plan for class 2 works is to include, but is not limited to —*
>
> *(a) details of vehicle or equipment evaluation and purchase policies adopted to select, on a reasonable and practicable basis, the quietest vehicle or equipment available; and*
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> *(b) measures to be adopted to minimise noise emissions resulting from carrying out the works; and*
>
> *(c) justification for carrying out the works during the times of day to which the class relates; and*
>
> *(d) a description of the specified works to be carried out during the times of day to which the class relates; and*
>
> *(e) operator training programs; and*
>
> *(f) community information on the manner in which the specified works will be carried out; and*
>
> *(g) a complaints response procedure.*

It should be noted that some types of noise emissions are exempt from compliance, and these are listed in regulation 3. Of particular significance to this noise management plan, it is noted that the noise emissions from the propulsion and braking systems of motor vehicles operating on a road are exempt - refer regulation 3(1)(a). There are also further instances where exemptions can be issued, for example but not limited to, directions given under section 56 of the *Emergency Management Act 2005* (WA).

All noise sources, which are emitted from a premises or a public place, that are not exempted, or emitted under an approval under the Regulations, must comply with the assigned levels defined in Regulation 8. The assigned levels are levels set at the receiving premises.

For noise sensitive receivers, such as residential premises, the assigned levels are adjusted by a calculated 'influencing factor' that reflects the background noise expectation of the receiver. For example, premises surrounded by industrial and commercial land and/or major roads would experience higher noise levels (background noise) than more suburban areas, therefore they would have a higher influencing factor.

The assigned level of noise for all premises is detailed in the following table, directly referencing Regulation 8 of the Regulations describing assigned levels.


| TYPE OF PREMISES RECEIVING NOISE | TIME OF DAY | ASSIGNED LEVEL (dB) | | |
|---|---|---|---|---|
| | | $L_{A\,10}$ | $L_{A\,1}$ | $L_{A\,max}$ |
| Noise sensitive premises: highly sensitive area | 0700 to 1900 hours Monday to Saturday | 45 + influencing factor* | 55 + influencing factor | 65 + influencing factor |
| | 0900 to 1900 hours Sunday and public holidays | 40 + influencing factor | 50 + influencing factor | 65 + influencing factor |
| | 1900 to 2200 hours all days | 40 + influencing factor | 50 + influencing factor | 55 + influencing factor |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays | 35 + influencing factor | 45 + influencing factor | 55 + influencing factor |
| Noise sensitive premises: any area other than highly sensitive area | All hours | 60 | 75 | 80 |
| Commercial premises | All hours | 60 | 75 | 80 |

**Calculation of the influencing factor is defined in Schedule 3 of the Environmental Protection (Noise) Regulations 1997*

# 3. Equipment details

## 3.1 WASTE COLLECTION

The equipment used for out-of-hours waste collection consists of 5, 11, 13 and 20 cubic metre rear loading waste vehicles. Noise levels generated by trucks during typical kerbside collection were recorded during an 'out-of-hours' shift, and are in the table below.

It is noted the $L_{Aeq}$ noise emissions from the waste trucks are dominated by the hydraulic power unit for the lifting mechanism since the truck remains at low idle during the loading and compaction cycle. Maximum noise levels will depend on the type of waste in the bins and also, to some degree, how the bins are handled during the loading and unloading cycle. The measurements in the table show that the $L_{Aeq}$ noise levels are similar regardless of the size of the truck. Based on the above a sound power level of 92-93 dB $L_{Aeq}$ is estimated for the waste collection trucks.

## 3.2 STREET CLEANING PLANT AND EQUIPMENT

The cleaning fleet includes a variety of plant, from large road sweepers to small footpath high pressure cleaners, sweepers and hand-held leaf blowers.

Typical equipment types and noise levels are presented in Table 3.1.

| PLANT DESCRIPTION | FLEET NUMBER | NOISE LEVELS AT 5 m | |
|---|---|---|---|
| | | $L_{Aeq,\ 1\ min}$ | $L_{AS\ max}$ |
| 11 cubic metre Isuzu truck | RT157 | 70 dB | N/A |
| 13 cubic metre Hino truck | RT161 | 71 dB | 84 dB |
| 20 cubic metre Isuzu truck | RT204 | 70 dB | 76 dB |

| PLANT DESCRIPTION | FLEET NUMBER | NOISE LEVELS AT 10 m | |
|---|---|---|---|
| | | $L_{Aeq,\ 1min}$ | $L_{AS\ max}$ |
| Road sweeper, Hino Mistral, 14t, Normal Mode | RS356 | 72 dB | 77 dB |
| Road sweeper, Hino Mistral, 14t, Boost Mode | | 73 dB | 79 dB |
| Road sweeper, Isuzu Mistral, 14t, Normal Mode | RS357 | 75 dB | 80 dB |
| Road sweeper, Isuzu Mistral, 14t, Boost Mode | | 79 dB | 86 dB |
| Pavement cleaner, CMAR NC300, 5t, high pressure water pavement cleaning | RS359 | 74 dB | 76 dB |
| Pavement cleaner, CMAR NC300, 5t, manual cleaning using high pressure water handgun | | 79 dB | 81 dB |
| Pavement cleaner, Green Machine 636, 2.8t | RS161 | 72 dB | 78 dB |
| Road sweeper and pavement cleaner, Johnston | RS158 | 66 dB | 71 dB |
| Mobile Cleansing Unit (ute mounted), water pump | TU150 | 75 dB | 77 dB |
| Hand-held leaf blower, Stihl BG86C-E | MA7020 | 71 dB | 74 dB |

"Like most capital cities, in order to promote tourism, attract and support businesses, creating a vibrant and unique sense of place, this requires a healthy and robust 24-hour economy."

# 4. Justification for 'out-of-hours' work

Perth City is the capital of Western Australia, formally recognised in the *City of Perth Act 2016*. Therefore, the City of Perth has a responsibility not only to its ratepayers but plays an important role in representing the broader Perth area and the State of Western Australia on both a national and international level. Like most capital cities, in order to promote tourism, attract and support businesses, creating a vibrant and unique sense of place, this requires a healthy and robust 24-hour economy. This comes with an expectation that the City's streets are well maintained and provide a high level of amenity.

One of the City's core services is to ensure the City is 'business ready' every day of the week as effectively and quickly as possible. High profile focus areas include the entertainment areas on Saturday and Sunday morning. Please note, special events are not addressed under this noise management plan.

Areas of the CBD (Core Business District), West Perth, East Perth, Northbridge and Nedlands/Crawley have a number of businesses commencing trading before 7am, which results in increased pedestrian and vehicular traffic, and reduced parking in the area. Such businesses include cafes and restaurants with outdoor dining areas. The increase in pedestrian and vehicle traffic makes waste collection, road and pavement cleaning during the day impracticable and more dangerous, potentially hampering the flow of traffic causing significant delays, inconvenience and frustration for other road users. Also, parked vehicles including private contractors and delivery vans and trucks are often found to block access to bins, sections of roads and pavement, and this problem becomes more significant after 7am as more vehicles descend on the CBD and dining areas.

As such, conducting the works 'out-of-hours' allows for:

- Significantly reduced pedestrian and vehicle interactions, therefore promoting safety to the public and the City's workforce,
- Improved access to waste collections points resulting in:
    - shorter waste collection cycles and therefore noise exposure
    - improve manual handling for City of Perth personnel, therefore minimising risk of injury
- Improved access on main roads i.e. no obstructing traffic, avoidance of road/construction works

Waste collection and street cleaning services are structured to times that best suit the activity in individual areas, whilst minimising the impact on stakeholders, however a level of disruption is unavoidable.

# 5. Works description and controls

## 5.1 WASTE COLLECTION

The collection of waste includes kerbside collection and within dedicated undercover car park areas. Noise emissions within undercover car parks are well contained and usually do not affect noise-sensitive receivers.

With kerbside collections, bins are located on the kerb, grouped in a specific bin area or moved to the kerbside by City of Perth personnel. Bins are then wheeled to the back of the truck and emptied. Compaction of waste generally occurs immediately to ensure the vehicle is ready for the next waste collection.

To minimise the impact from domestic and commercial rubbish collection to noise-sensitive receivers the following will be implemented:

- Waste collection trucks to be fitted with lifting/compaction system with sound power level not exceeding 95 dB(A).
- All plant fitted with smart broadband reversing alarms.
- Strata management companies or businesses having large volumes of glass will be notified that glass is to be separated from other waste and will be collected during the day where practicable.

## 5.2 CLEANING OF ROADS, FOOTPATHS AND PUBLIC PLACES

Roads, public places and footpaths are cleaned following a specific schedule and use a variety of equipment including road sweepers, footpath sweepers and manual blowers.

Road and footpath sweepers generally travel uninterrupted along their designated route to the next scheduled section. With footpath cleaning, it is sometimes required for a section to be cleaned several times to achieve a suitable outcome. Footpath and road cleaning is also very seasonal in areas with deciduous trees or shrubs.

For public places e.g. Forest Place, cleaning will generally involve several machines at once in the area to maximise cleaning efficiency and minimise cleaning time.

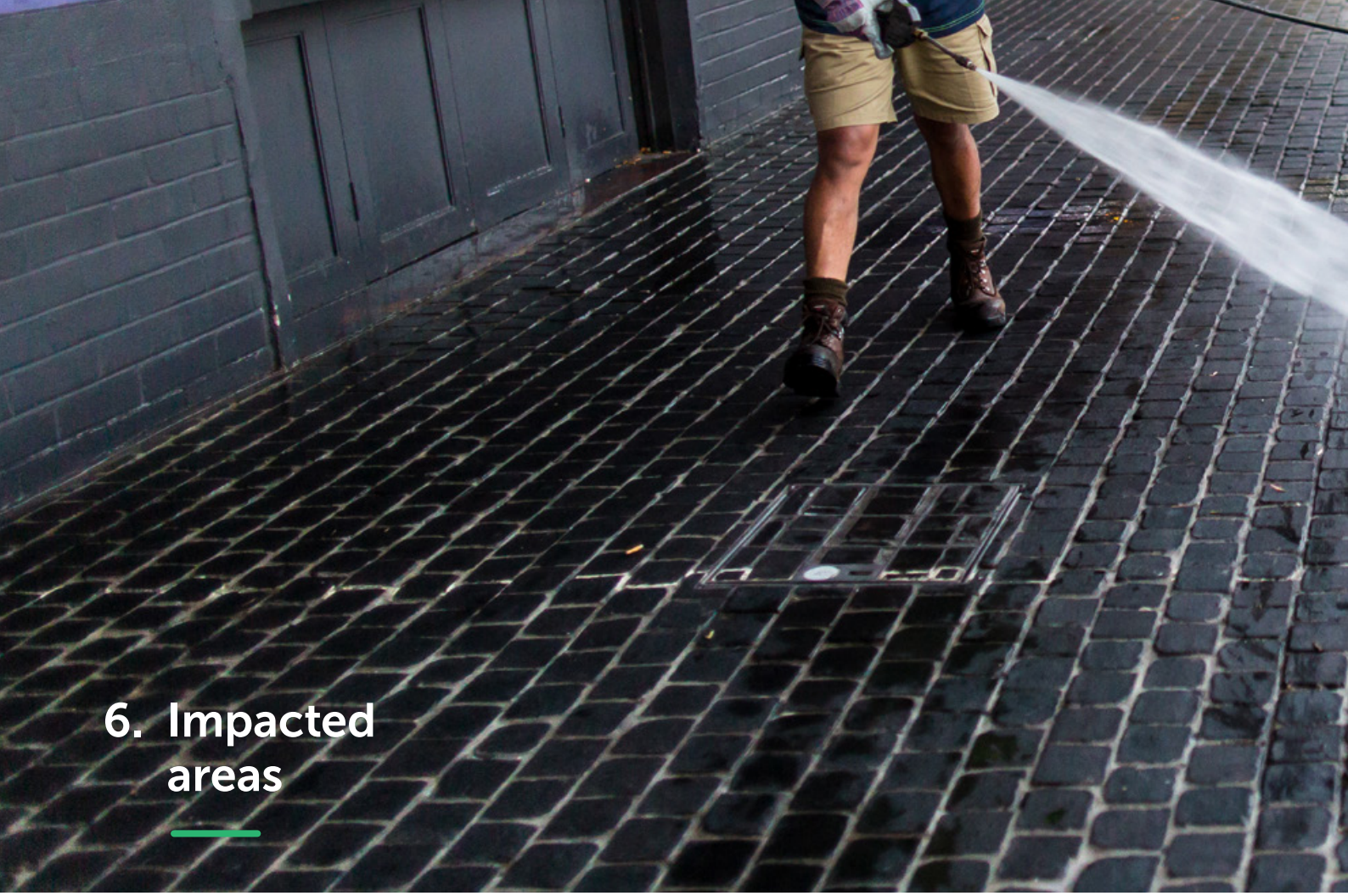
To minimise the impact from the cleaning of roads, footpaths and public places at noise-sensitive receivers, the following will be implemented:

- All plant fitted with smart broadband reversing alarms.
- Where practicable, road sweepers will be operated in standard operating mode and the use of the 'boost mode' will be minimised. In some cases, however, it may be preferable for the road sweeper to be operated in 'boost mode' to prevent having to come back to the same area several times, therefore minimising the overall noise exposure.
- Pavement cleaning using the high-pressure water handgun is minimised near noise-sensitive premises.
- All cleaning activities scheduled so that occurrence of works is minimised at night-time, however, works may be required to occur due to unforeseen circumstances or scheduled public events in specific areas.
- Where practicable, hand-held leaf blowers will be used with 'throttle lock' to provide constant engine speed while cleaning, therefore minimising potentially annoying characteristic of 'modulation' associated with the up/down revving of petrol engine.

## 5.3 CITY OF PERTH POLICIES

City policies are to consider the Capital City environment where noise is generated due to a 24-hour economy. This is captured in the NMP Action Plan in Section 1. For example, policies could consider the following to directly or indirectly assist with addressing the noise impacts from essential services:

- New multi-storey developments to provide for waste collection areas on site, therefore reducing the need for kerbside waste collections.
- New residential developments need to consider ambient noise and therefore include acoustic treatments (such as double/triple glazing) to external facade elements which minimise noise intrusion.
- Property titles to include acknowledge of City living and 24-hour noise levels.
- Purchasing policies to consider Occupational Safety and Health perspectives and Environmental factors. The City will adopt a "buy quiet" approach to the purchase of new equipment, new vehicles and new vehicles incorporating noise sources not covered by ADR83/00. Equipment will be selected on a reasonable and practicable basis to be the quietest available, having regards to the operational requirements of that piece of equipment. Selection will be based on comparison of manufacturer's environmental noise specifications for the equipment, if provided, or on measurements of the equipment made to enable comparison of levels of environmental noise emissions.



# 6. Impacted areas

## AREA CLASSIFICATIONS:

- High Traffic areas- include roads that have a high degree of connectivity with traffic volumes of up to 8000 vehicles per day. Primarily Distributor A and B with minimal local distributor and local access roads.
- Entertainment Areas- These areas include businesses such as small bars, breweries, nightclubs, late night fast food outlets which generate significant activity outside normal operating hours. These businesses can open as early as 6am and close as late as 4am which can indirectly result in high volumes of litter in the surrounding streets.
- Daytime Dining Strips- These areas include multiple businesses along one specified road which often include outdoor dining. These businesses can operate any time from 6am until midnight.
- Medium Traffic Areas- include roads that have a high degree of connectivity with traffic volumes of up to 8000 vehicles per day. Primarily Distributor A and B with numerous connecting local distributor and local access roads.

## WEEKNIGHTS

Where the aforementioned classifications all occur within close proximity, these areas have waste collection and street cleaning conducted by nightshift to ensure minimum impact to businesses, vehicular traffic, pedestrian traffic and staff safety. Areas are scheduled around business operating hours whilst also achieving productivity. These areas primarily include Northbridge and the Perth CBD.

## WEEKDAYS

Outside of Northbridge and the Perth CBD, in certain locations, high and medium traffic occur with restaurant strips or are impacted by clearways. These areas have waste collection and street cleaning conducted by dayshift, where possible, to reduce noise impacts to noise-sensitive receivers. However, to ensure minimum impact to businesses, vehicular traffic, pedestrian traffic and staff safety they are serviced prior to 7am. Again, areas are scheduled around business operating hours whilst also achieving productivity. This includes areas such as Hay Street in West Perth and Adelaide Terrace in East Perth.

## WEEKENDS

Waste collection on the weekend is minimised to primarily public litter bin collection, as well as commercial waste collection where businesses run seven days (hotels, restaurants etc). The majority of these businesses are located in Northbridge and the CBD.

Street cleaning is required to be dynamic across the weekend to ensure litter is removed quickly following businesses closing between midnight and 4am. These businesses can indirectly cause large amounts of litter from their patrons upon entering and leaving venues. To prevent this litter becoming windblown or attracting vermin, these areas must be cleaned immediately, prior to 9am. This also ensures the City is 'business ready' prior to normal weekend operating hours and businesses serving breakfast.

Please note: Up to date maps will be located on the City of Perth website to ensure certainty for all City stakeholders. Please find an example in Appendix A. www.perth.wa.gov.au/live-and-work/residents/rubbish-waste-and-recycling

# 7. Operators training

## 7.1 WASTE COLLECTION

Operator training is required for all operators of waste collection vehicles before commencing specified works under this plan.

In relation to noise minimisation, the City will implement additional training which will focus on noise mitigation and include as a minimum:

- Waste collection routes to minimise noise impacts,
- Compaction zones,
- Reducing accelerating and braking noise,
- Quiet bin lifting techniques,
- Engaging with residents and responding to complaints,
- Inspecting equipment for excessive noise, and
- All operators are required to undergo vehicle and equipment training on commencement followed by annual refresher training.

## 7.2 CLEANING OF ROADS, FOOTPATHS AND PUBLIC PLACES

Operator training is required for all operators of street cleaning vehicles before commencing specified works under this plan.

In relation to noise minimisation, the City will implement additional training which will focus on noise mitigation and include as a minimum:

- Street cleaning routes to minimise noise impacts,
- Engaging with residents and responding to complaints,
- Inspecting equipment for excessive noise, and
- All operators are required to undergo vehicle and equipment training on commencement followed by annual refresher training.

## 8. Community information

Community information regarding the works carried out under this plan will be accessible on the City's website, with its link communicated to all permanent occupiers potentially affected by noise from the works via their rates notices or other City publication.

The information provided will include:

- a brief description of the works
- where the NMP can be accessed
- a schedule of the works
- how to lodge comments or complaints about the works, and
- the duration of the current NMP approval, the date of the next review and how to make a submission.

## 9. Complaints response

All noise complaints regarding 'out-of-hours' waste collection and street cleaning essential services within the City of Perth boundaries carried out under this plan, will be recorded and investigated by the Sanitation Street Cleaning Supervisor or delegate, in accordance with the City's complaint procedure.

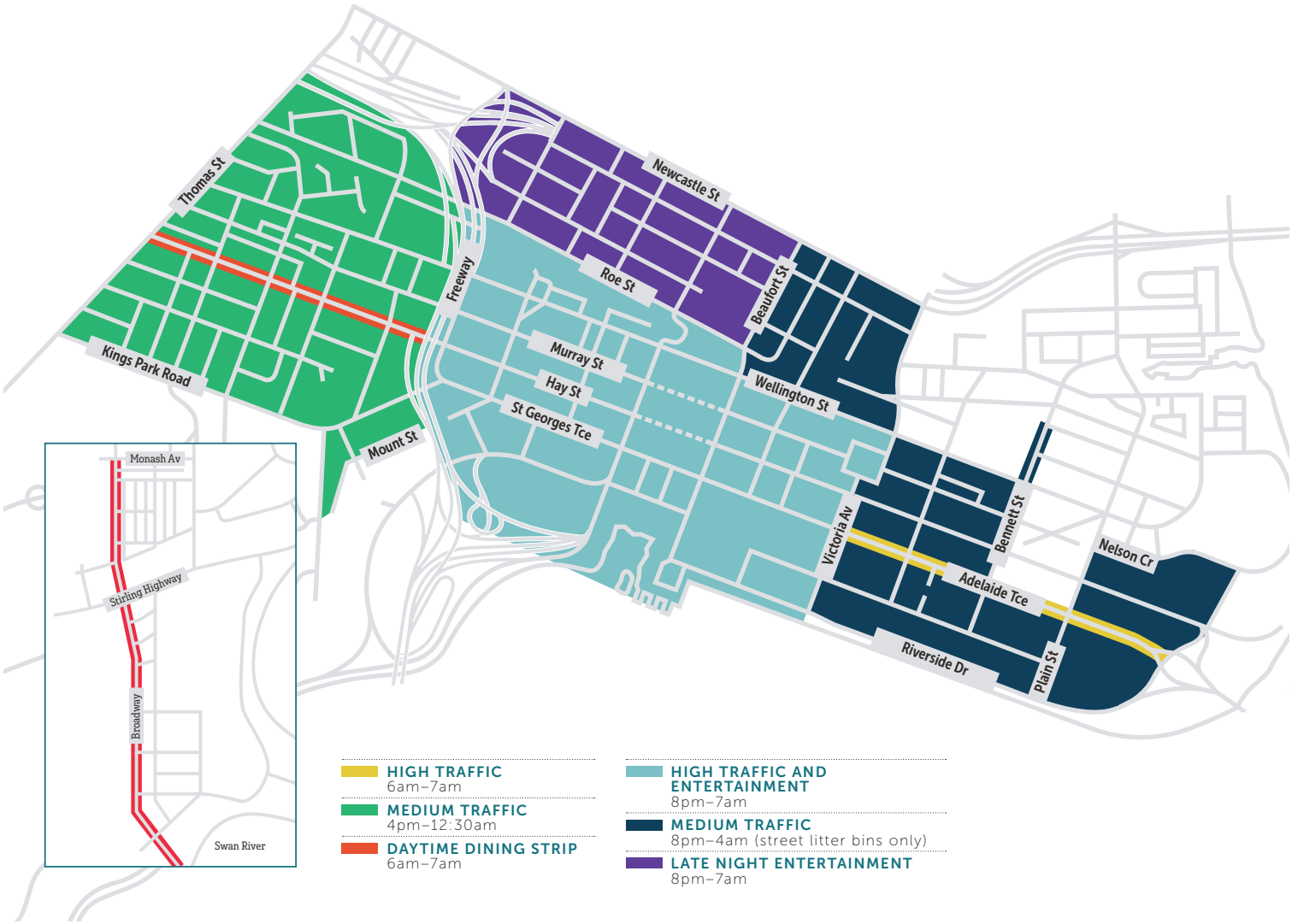
Noise complaints can be lodged with the City in writing, in person, via email or via the online noise complaint form, published on the City's website.

The complainant will be advised in writing of the outcome of an investigation. Wherever practicable, work schedules and routes of travel will be modified/adjusted to minimise any adverse impacts to the amenity for stakeholders.

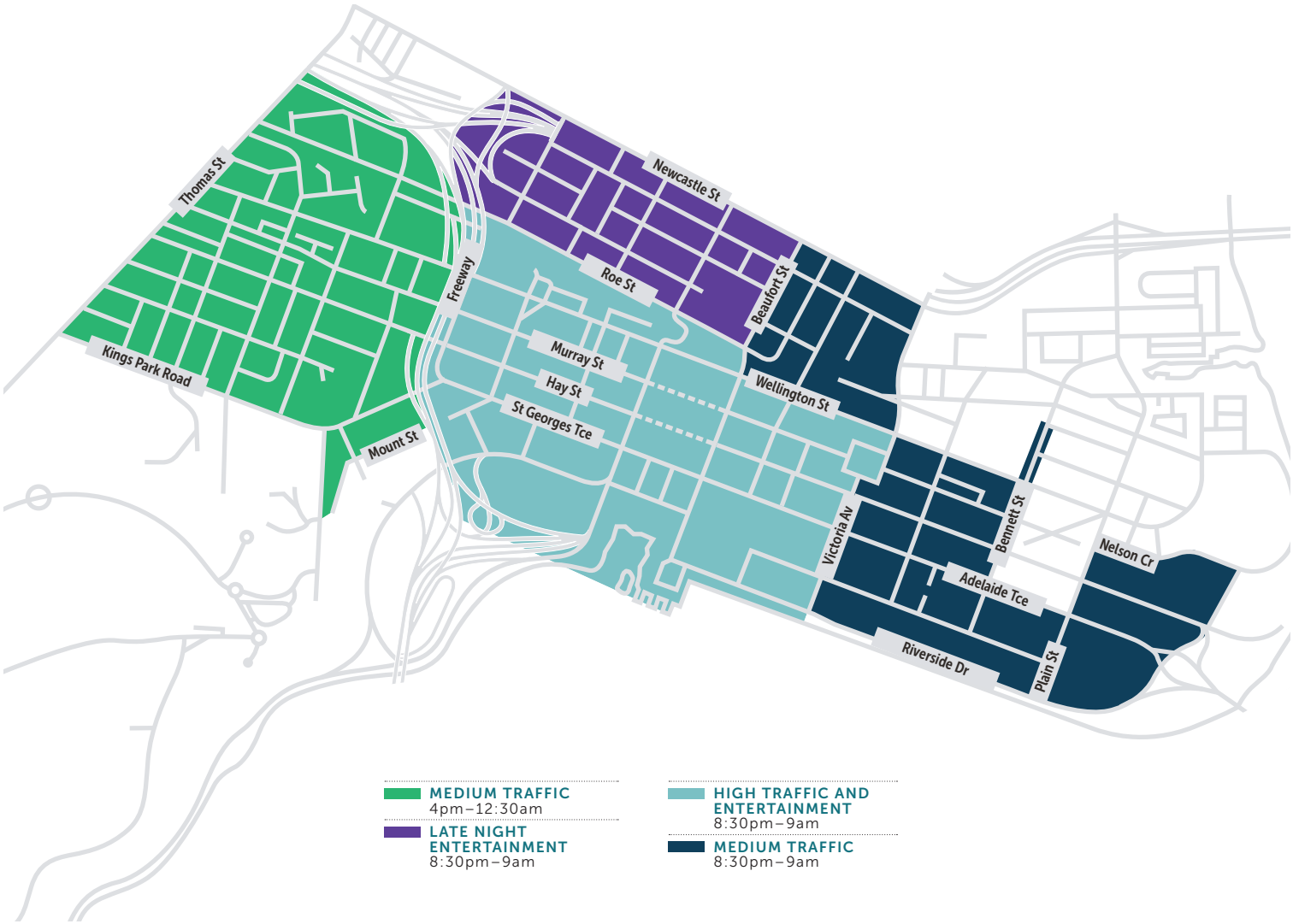
# Appendix A:

# City of Perth Street Cleaning and Sanitation ‘Out-of-Hours Works’ Maps

**WEEKDAYS**
SUNDAY 7PM UNTIL FRIDAY 7AM



## WEEKENDS
FRIDAY 7PM TO SUNDAY 9AM



# Appendix B:

# Terminology

The following is an explanation of the terminology used throughout this report.

### NOISE-SENSITIVE RECEIVER

A noise-sensitive receiver is a premise occupied solely or mainly for residential or accommodation purposes, including hospitals, places of public worship, and aged care.

### SOUND PRESSURE LEVEL

The level of noise measured with a sound level meter at a particular location.

### SOUND POWER LEVEL

A level calculated from measured sound pressure levels that represents the 'intrinsic noisiness' of a source, and is independent of the source location. These values are usually used for predictive purposes.

### DECIBEL (dB)

The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

### A-WEIGHTING

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower and higher frequencies as it is to middle range frequencies. An A-weighted sound level is described as $L_A$ dB.

### $L_{Aeq}$

The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level. The $L_{Aeq}$ value does not directly relate to the $L_{A10}$ statistical parameter. For constant noise sources the values would be the same, as the nature of the source becomes more variable over time the two parameters diverge, with the $L_{A10}$ describing the higher aspects of the variable levels.

### $L_{A\ max}$

An assigned level which, measured as an $L_{A\ Slow}$ value, is not to be exceeded at any time.

### $L_{AS\ max}$

The A-weighted, Slow time weighted, maximum sound pressure level obtained during a particular measurement.

### $L_{A\ 1}$

An assigned level which, measured as an $L_{A\ Slow}$ value, is not to be exceeded for more than 1% of the representative assessment period. This statistical value is generally considered to represent the average of the maximum noise levels.

### $L_{A\ 10}$

An assigned level which, measured as an $L_{A\ Slow}$ value, is not to be exceeded for more than 10% of the representative assessment period. This statistical value is considered to represent an *'intrusive'* level above the background.

### MODULATING NOISE

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

a variation in the emission of noise that —

a. is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
b. is present for at least 10% of the representative assessment period.

### REPRESENTATIVE ASSESSMENT PERIOD

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

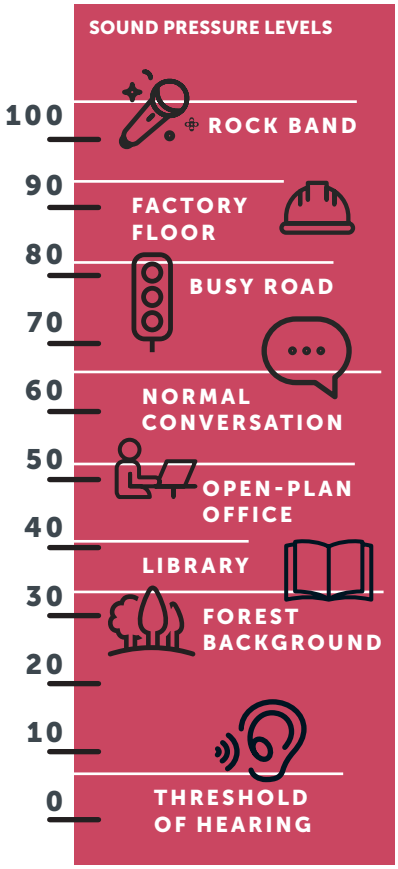
### BACKGROUND NOISE

Background noise or residual noise is the noise level from sources other than the source of concern. When measuring environmental noise, residual sound is often a problem. One reason is that regulations often require that the noise from different types of sources be dealt with separately. This separation, e.g. of traffic noise from industrial noise, is often difficult to accomplish in practice. Another reason is that the measurements are normally carried out outdoors. Wind-induced noise, directly on the microphone and indirectly on trees, buildings, etc., may also affect the result. The character of these noise sources can make it difficult or even impossible to carry out any corrections.

### Ambient Noise

Means the level of noise from all sources, including background noise from near and far and the noise source of interest.

### TYPICAL NOISE LEVELS



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# Essential Services
## Noise Management Plan

**City of Perth**

**Reference: 17104180-01**

**Prepared for:**
City of Perth

# Report: 17104180-01


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|---|---|---|---|---|
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| 27/03/18 | 1 | Minor amendments | Olivier Mallié | - |
| 14/06/21 | 2 | Minor text change | Terry George | - |

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# Appendices

# 1 INTRODUCTION

The City of Perth requested Lloyd George Acoustics to prepare a Noise Management Plan (NMP) for the City's Waste and Cleansing Unit, to minimise the noise impact to sensitive receivers from 'out-of-hours' essential services carried out by the City of Perth within its boundaries – Appendix A for the City of Perth boundary map. Such essential services include:

- Residential and Commercial Waste collections, and
- Road, public places and footpath cleaning.

The Noise Management Plan (NMP) herewith has been prepared to satisfy regulation 14A of the *Environmental Protection (Noise) Regulations 1997* (the Regulations) with guidance taken from the *Department of Environment Regulation Draft Guideline DER2014/001628.*

The NMP will be reviewed periodically to ensure best practice noise management techniques are continuing to be used.

*Appendix B* contains a description of some of the terminology used throughout this report.

# 2 LEGISLATION

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

Regulation 14A provides requirements for 'essential services' e.g. the collection of waste, or the cleaning of roads, public places and foot paths. Such activities can be exempt from having to comply with regulation 7, as prescribed in regulation 14A(3) as follows:

*(3) Regulation 7 does not apply to noise emitted in the course of carrying out class 2 works if the works are carried out in accordance with a noise management plan, excluding any ancillary measure, for class 2 works approved in writing by the CEO.*

The requirements for a noise management plan for class 2 works are defined in regulation 14A(6) as follows:

*(6) A noise management plan for class 2 works is to include, but is not limited to —*

*(a) details of vehicle or equipment evaluation and purchase policies adopted to select, on a reasonable and practicable basis, the quietest vehicle or equipment available; and*

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*(c) justification for carrying out the works during the times of day to which the class relates; and*

*(d) a description of the specified works to be carried out during the times of day to which the class relates; and*

*(e) operator training programmes; and*

*(f) community information on the manner in which the specified works will be carried out; and*

*(g) a complaints response procedure.*

In addition, it is noted that regulation (11) prescribes that a noise management plan expires after a maximum of 3 years from the day on which it is approved by the CEO.

Finally, it must be noted that some type of noise emissions are exempt from compliance, and these are listed in regulation 3. Of particular significance to this noise management plan, it is noted that the noise emissions from the propulsion and braking systems of motor vehicles operating on a road are exempt - refer regulation 3(1)(a).

# 3 EQUIPMENT DETAILS

## 3.1 Waste Collection

The equipment used for out-of-hours waste collection consists of 5, 11, 13 and 20 cubic metre rear loading waste vehicles. Noise levels for the larger trucks from typical kerb side bin collection and compaction cycles were recorded during a standard shift, and are as follows:

- 11 cubic metre Isuzu truck RT157, 70 dB $L_{Aeq,1min}$ at 5 metres.
- 13 cubic metre Hino truck RT161, 71 dB $L_{Aeq,1min}$ and 84 dB $L_{ASmax}$ at 5 metres.
- 20 cubic metre Isuzu truck RT204, 70 dB $L_{Aeq,1min}$ and 76 dB $L_{ASmax}$ at 5 metres.

It is noted the $L_{Aeq}$ noise emissions from the waste trucks are dominated by the hydraulic power unit for the lifting mechanism since the truck remains at low idle during the loading and compaction cycle. Maximum noise levels will depend on the type of waste in the bins and also, to some degree, how the bins are handled during the loading and unloading cycle. The above measurements show that the $L_{Aeq}$ noise levels are similar regardless of the size of the truck. Based on the above a sound power level of 92-93 dB $L_{Aeq}$ is estimated for the waste collection trucks.

## 3.2 Cleaning Mobile Plant

The cleaning fleet includes a variety of plant, from large road sweepers to small foot path high pressure cleaners, sweepers and hand-held leaf blowers.

Typical equipment types and noise levels are presented in *Table 3-1.*

*Table 3-1 Typical Cleaning Plant Noise Levels*

| Plant Description | Fleet Number | Noise Levels at 10m | |
|---|---|---|---|
| | | $L_{Aeq,1min}$ | $L_{ASmax}$ |
| Road sweeper, Hino Mistral, 14t, Normal Mode | RS356 | 72 dB | 77 dB |
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| Pavement cleaner, CMAR NC300, 5t, high pressure water pavement cleaning | RS359 | 74 dB | 76 dB |
| Pavement cleaner, CMAR NC300, 5t, manual cleaning using high pressure water handgun | | 79 dB | 81 dB |
| Pavement cleaner, Green Machine 636, 2.8t | RS161 | 72 dB | 78 dB |
| Road sweeper and pavement cleaner, Johnston | RS158 | 66 dB | 71 dB |
| Mobile Cleansing Unit (ute mounted), water pump | TU150 | 75 dB | 77 dB |
| Hand-held leaf blower, Stihl BG86C-E | MA7020 | 71 dB | 74 dB |

# 4 JUSTIFICATION FOR 'OUT-OF-HOURS' WORK

The Perth CBD and Northbridge experience high pedestrian and vehicular traffic volumes as early as 6am.

One of the City's core services is to ensure the City is 'business ready' every day of the week as effectively and quickly as possible. High profile focus areas include the entertainment precincts on Saturday and Sunday morning, or following events.

Areas of the CBD, Northbridge and Crawley have a number of businesses commencing trading before 7am, which results in increased pedestrian and vehicular traffic, and reduced parking in the area. Such businesses include cafes and restaurants with alfresco areas. The increase in pedestrian and vehicle traffic makes waste collection and pavement cleaning during daytime impracticable and more dangerous, and potentially hampering the flow of traffic causing significant delays, inconvenience and frustration for other road users. Also, parked vehicles including private contractors and delivery vans and trucks are often found to block access to bins, sections of roads and pavement, and this problem becomes more significant after 7am as more vehicles descend on the town centre and dining precincts.

As such, conducting the works 'out-of-hours' would allow to:

- Significantly reduce the number of pedestrian and vehicle interactions therefore promoting safety to the public and the City's workforce
- Improve access to waste collections points resulting in:
  - shorter waste collection cycles and therefore noise exposure
  - improve manual handling for City of Perth personnel, therefore minimising risk of injury
- Improve access on main roads i.e. no obstructing traffic, especially given the current amount of road/construction works in the CBD and Northbridge areas

# 5 WORKS DESCRIPTION AND CONTROLS

## 5.1 Waste Collection

The collection of waste includes kerb side collection and within dedicated undercover car park areas. Noise emissions within undercover car parks are well contained and do not affect sensitive receivers.

With kerb side collections, bins are located on the kerb, grouped in specific bin area or moved to the kerb side by City of Perth personnel. Bins are then wheeled to the back of the truck and emptied. Compaction of waste generally occurs immediately to ensure truck is ready for next waste collection.

To minimise the impact from domestic and commercial rubbish collection at noise-sensitive receivers the following will be implemented:

- Waste collection trucks with lifting/compaction system with sound power level not exceeding 95 dB(A).
- All plant fitted with smart broadband reversing alarms.
- Where practicable, waste bins suspected of containing glass will be emptied into trucks as far as practicable from noise-sensitive premises in order to maximise the source-receiver distance as follows:
  - Garbage truck to park as far as practicable from noise-sensitive premises, ahead of, or past, the garbage collection point. The recyclable rubbish bin(s) is (are) then manually wheeled away from the collection point to be loaded onto the truck, so as to maximise the source-receiver distance, or use other buildings as noise barriers
  - In the event that waste contained glass, the strata management company or business will be notified that glass should be separated from other waste.

## 5.2 Cleaning of Roads, Foot-paths and Public Places

Roads, public places and foot paths are cleaned following a specific schedule and use a variety of equipment including road and footpath sweepers and manual blowers.

Road and footpath sweepers generally travel un-interrupted along their designated route to the next scheduled section. With foot paths cleaning, it is sometimes required for a section to be cleaned several times to achieve a suitable outcome. Footpath and road cleaning is also very seasonal in areas with deciduous trees or shrubs.

For public places e.g. Forest Place, cleaning will generally involve several plant at once in the area to maximise cleaning efficiency and minimise cleaning time.

To minimise the impact from the cleaning of roads, foot paths and public places at noise-sensitive receivers, the following will be implemented:

- All plant fitted with smart broadband reversing alarms.
- Where practicable, road sweepers will be operated in standard operating mode and the use of the 'boost mode' will be minimised. In some cases however, it may be preferable for the road sweeper to be operated in 'boost mode' to prevent having to come back to the same area several times, therefore minimising the overall noise exposure.
- Pavement cleaning using the high pressure water handgun is minimised near sensitive premises.
- All cleaning activities scheduled so that occurrence of works is minimised at night-time however, due to unforeseen circumstances or scheduled public events in specific areas, works may be required to occur.
- Where practicable, hand-held leaf blowers will be used with 'throttle lock' to provide constant engine speed while cleaning, therefore minimising potentially annoying characteristic of 'modulating' noise associated with the up/down revving of petrol engine.
- Where practicable, areas where regular cleaning activities are required will be alternated so as to avoid activities occurring at a similar time on every occasion.

## 5.3 City of Perth Policies

Various policies from the City of Perth will directly or indirectly assist with addressing the noise impacts from essential services as follows:

- New multi-storey developments are generally required to provide for waste collection areas in undercover car parking, therefore mitigating the need for kerb side waste collections.
- New residential developments in the Northbridge area need to consider ambient noise and therefore acoustic treatments to external facade elements would be implemented, therefore minimising noise intrusion from such activities.

# 6 OPERATORS TRAINING

## 6.1 Waste Collection

Operator training with regard to this plan is required for all operators of waste collection vehicles before commencing specified works under this plan. The relevant training is a verification of competency 'Heavy Rigid Sanitation Vehicle'.

In relation to noise minimisation, the City will implement additional training which will focus on noise mitigation and include as a minimum:

- Waste collection routes to minimise noise impacts
- Compaction zones
- Reducing accelerating and braking noise
- Quiet bin lifting techniques
- Engaging with residents and responding to complaints
- Inspecting equipment for excessive noise, and
- All operators are required to undergo annual refresher training.

## 6.2 Cleaning of Roads, Foot-paths and Public Places

Operator training with regard to this plan is required for all operators of street cleaning vehicles before commencing specified works under this plan. The relevant training is a verification of competency 'Heavy Rigid Sanitation Vehicle' with vehicle specific OEM (Original Equipment Manufacturer) training/certification.

In relation to noise minimisation, the City will implement additional training which will focus on noise mitigation and include as a minimum:

- Street cleaning routes to minimise noise impacts
- Engaging with residents and responding to complaints
- Inspecting equipment for excessive noise, and
- All operators are required to undergo annual refresher training.

# 7 COMMUNITY INFORMATION

Community information regarding the works carried out under this plan will be accessible on the City's website, with its link communicated to all permanent occupiers potentially affected by noise from the works via their rates notices or other City publication. The information provided will include:

- a brief description of the works
- where the NMP can be accessed
- a schedule of the works
- how to lodge comments or complaints about the works, and
- the duration of the current NMP approval, the date of the next review and how to make a submission.

# 8 COMPLAINTS RESPONSE

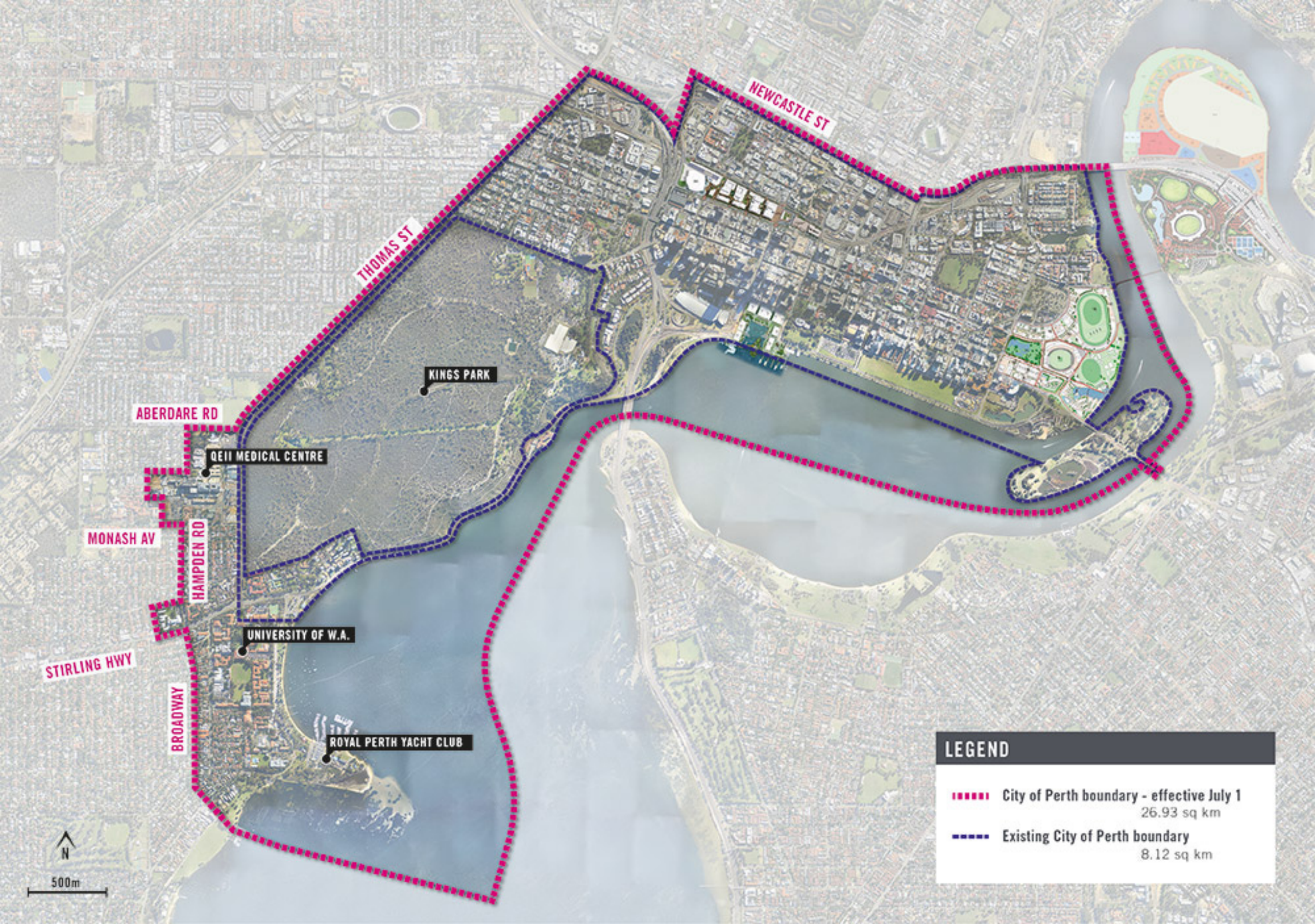
All noise complaints regarding 'out-of-hours' essential services within the City of Perth boundaries carried out under this plan will be recorded and investigated by the Sanitation Street Cleaning Supervisor or delegate.

The investigation will include discussion of the issue with the complainant concerned and an on-site assessment (where necessary) during the works if it is considered appropriate in the circumstances. The complainant will be advised in writing the outcome of the investigation and any alteration that have been or will be made to the operation(s); or alternatively the reason why no alterations are considered reasonable, practicable or necessary.

Complaints are lodged with the City of Perth following current procedure, that is, via telephone, email or website (online noise complaint form).

**Appendix A**

# City of Perth Boundaries


NEWCASTLE ST
THOMAS ST
KINGS PARK
ABERDARE RD
QEII MEDICAL CENTRE
MONASH AV
HAMPDEN RD
UNIVERSITY OF W.A.
STIRLING HWY
BROADWAY
ROYAL PERTH YACHT CLUB
N
500m
LEGEND
City of Perth boundary - effective July 1
26.93 sq km
Existing City of Perth boundary
8.12 sq km

**Appendix B**

# Terminology

The following is an explanation of the terminology used throughout this report.

***Decibel (dB)***
The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

***A-Weighting***
An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as $L_A$ dB.

***$L_{Aeq}$***
The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

***One-Third-Octave Band***
Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20 000 Hz inclusive.

***Modulating Noise***
A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

a variation in the emission of noise that —

(a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;

(b) is present for at least 10% of the representative.

***Representative Assessment Period***
Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

***Background Noise***
Background noise or residual noise is the noise level from sources other than the source of concern. When measuring environmental noise, residual sound is often a problem. One reason is that regulations often require that the noise from different types of sources be dealt with separately. This separation, e.g. of traffic noise from industrial noise, is often difficult to accomplish in practice. Another reason is that the measurements are normally carried out outdoors. Wind-induced noise, directly on the microphone and indirectly on trees, buildings, etc., may also affect the result. The character of these noise sources can make it difficult or even impossible to carry out any corrections.

***Ambient Noise***
Means the level of noise from all sources, including background noise from near and far and the source of interest.

***Typical Noise Levels***