Operating procedure: bluestone in Melbourne's streets and lanes

City of Melbourne

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1. Introduction

Bluestone is synonymous with the character of Melbourne.

In our role as custodian of the public realm, the City of Melbourne owns and manages many bluestone assets throughout the city, including original bluestone pitcher laneways, kerbs and channels and modern sawn bluestone-paved footpaths.

In managing our assets, we need to strike a balance between the needs of all city users. When working with bluestone roads, streets, lanes and footpaths, we particularly need to consider four important principles: safe access for all, conservation of heritage values, environmental sustainability and maintaining Melbourne's distinctive character.

2. Background

> 'Bluestone is a very distinctive feature of Melbourne's streetscape, part of the daily fabric of life. There are kilometres of bluestone laneways in the city and suburbs; it's in the foundations of many houses and buildings; it's used for kerbs and gutters; and it's the main material for a number of landmark buildings such as Pentridge Prison, the National Gallery of Victoria and St Patrick's Cathedral.'
>
> Professor Stephanie Trigg, Australian Research Council Centre of Excellence for the History of Emotions[1]

What Melbournians call 'bluestone' is olivine basalt, formed by a massive Pleistocene lava flow which covered most of what we now know as south western Victoria.

Almost 8000 years ago, Aboriginal people were using this basalt to build eel traps and stone houses in the Lake Condah region of western Victoria.

English settlers used it to make dry stone walls in the Western District of Victoria that were reminiscent of their homeland.

During the Victorian Gold Rush of the 1850s, bluestone became a preferred building material in Melbourne as it was stronger, more plentiful and easier to work than most other available materials. The term 'bluestone' was coined during this period to distinguish the local stone, quarried in nearby Footscray, from other blander, more greyish basalts.

Many of the earliest buildings in Melbourne, including Melbourne Town Hall, St. Paul's Cathedral and much of the original paving of Collins Street, were made using this 'blue' basalt. Bluestone 'pitchers' earned their name as they were 'pitched', mainly by prison labourers, using a mason's hammer and bolster. Pitchers were used extensively for Melbourne's streets, lanes, kerbs and gutters to recall the cobbles of England. The ubiquitous bluestone pitchers remain throughout much of the city and its inner suburbs.

In the lead up to Melbourne hosting the Olympics in 1956, many bluestone laneways were covered in asphalt in the interests of city presentation (see Figure 1).

By the 1970s, many of these asphalt lanes were cracking (see Figure 2) and there was a growing appreciation of the bluestone pitchers beneath. During this time, some of the bluestone laneways were reinstated with varying success due to the loss of the skills required to pave these lanes originally. Our skills at reconstructing pitcher laneways have improved over the years, but this remains a costly exercise requiring highly skilled personnel to remove, mark and relay each pitcher individually.

In 1970, City of Melbourne installed the very first sawn bluestone lane in Centre Place, in the central city. In the late seventies the footpath around the Town Hall was transformed from slate to a sawn bluestone footpath. This treatment was extended along Collins Street, between Swanston and Elizabeth streets, to replace the 'pebble mix' style pressed tiles which were popular at the time. City Square was paved in sawn bluestone soon after.

[1] https://www.historyofemotions.org.au/research/research-projects/victorian-bluestone-an-affective-cultural-history/

Figure 1: Hosier Lane (photographed c.1972) was resurfaced in asphalt in the lead up to the 1956 Melbourne Olympic Games

Figure 2: Evidence of the original bluestone pitcher laneway beneath the deteriorating asphalt surface

Following the installation of smaller bluestone pavers in Chinatown (which proved less effective as they were installed next to the original kerb and channel) and trials of various construction techniques, the City of Melbourne eventually arrived at its standard 1.0m x 0.5m x 0.04m sawn bluestone paver, laid on a concrete slab with a customised mortar mix, beside a new sawn bluestone kerb and channel, which remains our preferred footpath treatment today.

Today, the bluestone used in our footpaths is sourced locally from Victorian quarries and also from overseas suppliers. We try to ensure that the bluestone used on our city streets has the characteristic ‘vesiculations’ (small holes created by gas bubbles in the cooling lava). These are the imperfections which give each bluestone paver its unique texture and authentic appearance.

Each year City of Melbourne allocates funding to replace a little more asphalt footpath within the central city, Southbank and Docklands with sawn bluestone paving. Priority is given to major streets, areas of high pedestrian usage (especially around transport hubs), streetscape upgrades identified in structure plans or other strategies and infilling gaps between existing sections of bluestone footpath. At current rates, it will take another two decades or so until all footpaths within the central city are sawn bluestone. We plan to then work through the rest of the municipality until the footpaths on all our principal streets and roads are bluestone.

Bluestone pitchers, and more recently sawn bluestone paving, have become synonymous with the character of contemporary Melbourne and its laneway culture. This Operating Procedure guides how we manage these important and much-loved assets into the future.

3. Scope

This Operating Procedure formalises how City of Melbourne manages bluestone assets in three contexts:

1. managing our own maintenance, renewal and improvement works in areas where there are existing, original bluestone pitchers
2. installing new sawn bluestone paving for footpaths and
3. overseeing works on public assets undertaken by private entities.

This document does not apply to City of Melbourne-owned bluestone buildings or to bluestone on private property.

4. Purpose

The purpose of this Operating Procedure is to set principles and formalise procedures for how we manage bluestone assets in the public domain.

5. Vision

Well-designed, well-maintained and cost-effective bluestone laneways, footpaths, kerbs and channels which balance community needs for safe access for all, conservation of heritage values, environmental sustainability and enhancing Melbourne’s distinctive character.

6. Development of this document

An initial draft was compiled from the collective knowledge of the City of Melbourne’s infrastructure engineers in their role as custodians and managers of our city’s streets. This initial draft was then discussed with key City of Melbourne staff with an interest in issues pertaining to bluestone assets (including staff of our Design Branch, Urban Strategy Branch and Social Investment Branch). The internal feedback we received has informed this Operating Procedure.

7. Legislative and policy context

7.1 Works on roads

The City of Melbourne undertakes an ongoing program of works on roads as part of its responsibility to manage and maintain public assets. Works can involve either working around existing bluestone pitcher surfaces or installing new sawn bluestone paving. Our works on roads are directed by the following laws, plans and procedures.

7.1.1 *Local Government Act 1989*

Under this Victorian legislation, the City of Melbourne is responsible for the care and management of public assets such as roads within the municipality. The definition of 'road' includes streets, lanes, roadway surfaces, footpaths, kerbs and channels.

7.1.2 *Road Management Act 2004*

In accordance with this Victorian act, the City of Melbourne has prepared a Road Management Plan to demonstrate that we are responsibly managing all of the road assets within our control. The Plan identifies specific responsibilities, maintenance standards and inspection regimes required to manage civil liability with reference to our roads.

7.1.3 Annual Council Works Program

Each year, the Council Works Program is developed as part of the annual budget process to enable funding to be channelled into projects that contribute to the achievement of actions identified in the Melbourne City Council Plan. Major road and footpath works (with an estimated cost of more than $25,000) form part of the annual Program and may include new works, renewal works and maintenance works involving streetscape improvements (such as new sawn bluestone paving) and compliance with requirements of the Disability Discrimination Act (for example, installing ramps and tactile indicators).

7.1.4 Civil Infrastructure Services contract

Where road and footpath works have an estimated cost of less than $750,000 per project, they are managed as part of the City of Melbourne's Civil Infrastructure Services contract.

7.1.5 Streetscape Framework

The Streetscape Framework guides planning and implementation of new streetscapes, and involves the community in deciding on streetscape design and improvements. Each year the City of Melbourne upgrades a selection of streets as part of the Streetscape Improvements Program, which aims to enhance our streets and laneways through road and footpath works, landscaping and other improvements.

7.1.6 Asset Management Strategy 2015-25

This strategy outlines the City of Melbourne's understanding of the assets we own and manage on behalf of the community. It explains why we need to change the way we manage our assets, what future assets will look like, what we need to do to design, build and manage these assets, and how we intend to deliver this strategy. 'Streetscapes' are identified as one of the three key asset categories which the City of Melbourne manages and are defined as' the things you can see and use on our streets, including bluestone or bitumen footpaths, roads, public seating, waste bins or underground stormwater drains'.

7.1.7 Design standards and standard drawings

The City of Melbourne first began to produce individual Technical Notes from 1986 onwards and they were first compiled into a publication in 1995. Now called design standards, together with standard drawings, they specify how to design, construct or reinstate City of Melbourne assets. A number of these design standards and standards drawings specify our requirements for the treatment of original bluestone pitcher surfaces as well as new sawn bluestone paving.

7.1.8 Parking Levy

The State Government's Long Stay Car Park Levy aims to reduce road congestion, air pollution and greenhouse gas emissions by discouraging unnecessary car trips to the city. The Levy works by imposing a charge on long-stay parking spaces in private and commercial car parks in the CBD, Southbank, Docklands and St Kilda Road. Each year the City of Melbourne is allocated a share of the levy to spend on projects that encourage use of public transport and cycling and improve the pedestrian environment to encourage walking. In recent years we have used parking levy funds on streetscape improvements (including footpath widening, sawn bluestone paving and access improvements in accordance with the Disability Discrimination Act) which strengthen pedestrian routes to and from stations and other public transport hubs. Since its introduction around ten years ago, the Parking Levy funds made available to City of Melbourne have helped to roughly double the amount of sawn bluestone paving we install each year.

7.2 Heritage and planning considerations

Any road works conducted within the City of Melbourne's municipal boundaries must be in accordance with any heritage controls under the Melbourne Planning Scheme or as prescribed by Heritage Victoria. Where existing bluestone pitcher surfaces remain, they are to be treated in a way which respects the heritage values of the area. Roads works must comply with the following planning and heritage legislative framework.

7.2.1 Melbourne Planning Scheme and Heritage Victoria controls

The City of Melbourne has specific planning controls to deal with individual sites and areas with identified heritage significance. Heritage planning controls are detailed in Clause 43.01 Heritage Overlay of the Melbourne Planning Scheme. Heritage controls can apply to a specific building or place, a significant tree, an Aboriginal site, an artefact (such as a horse trough, a lamp post or bluestone) or to a precinct. Within a precinct, heritage controls apply to any streets, roads or laneways (and their footpaths, kerbs and channels) within that precinct. The treatment of bluestone pitcher surfaces within a heritage precinct must be in accordance with the requirements of the Melbourne Planning Scheme and any controls specified by Heritage Victoria.

7.2.2 Heritage Policy Review and Local Heritage Significance

The City of Melbourne is developing new draft Heritage Statements of Significance for Carlton; East Melbourne and Jolimont; North Melbourne; West Melbourne; Parkville; South Yarra; and Kensington and is revising its two Heritage Planning Scheme Policies. Once finalised, the draft Heritage Statements of Significance and Heritage Policies will be used to guide decisions on planning permit applications affecting heritage properties.

The draft Heritage Statements of Significance identify 'historic street materials including bluestone kerbs and channels, and lanes with original or relayed bluestone pitchers and central drains' as a key attribute of heritage significance in a number of heritage precincts (Carlton, East Melbourne & Jolimont, North Melbourne, West Melbourne, Parkville and South Yarra) and 'historic street materials including bluestone kerbs and channels' are identified as a key attribute of heritage significance in Kensington.

While the existing Heritage Planning Scheme policies do not mention bluestone specifically, the draft revised Heritage Policies provide the following guidance when assessing planning applications on properties within a Heritage Overlay (whether an individual heritage property or a heritage precinct):

> '**Street Fabric and Infrastructure**
>
> Street furniture, including shelters, seats, rubbish bins, bicycle racks, drinking fountains and the like, should be designed and sited to avoid:
>
> - impacts on views to significant or contributory places and contributory elements; and
> - physical impacts on bluestone kerbs, channels and gutters, and other historic street infrastructure.'

7.2.3 The City of Melbourne's Heritage Strategy

This document sets out our plan to protect our city's heritage buildings, places and objects over the next 15 years. It has been developed to ensure the city's rich combination of traditions, memories, places and objects are identified and protected. The development of this Operating Procedure responds to Goal 3.6 of the Heritage Strategy: 'Develop internal procedures to ensure heritage values are protected in the course of any works the City of Melbourne undertakes'.

7.2.4 Urban Renewal Areas

City of Melbourne's Municipal Strategic Statement (MSS) identifies Southbank and Docklands as existing urban renewal areas. It also identifies a number of proposed urban renewal areas, including City North, Arden-Macaulay and Fishermens Bend. Streetscape upgrades – including the use of sawn-bluestone paving in priority streets - are an important part of supporting new growth in these areas.

7.2.5 Non-City of Melbourne works in the public domain

The City of Melbourne sets standards for works by non-City of Melbourne entities which affect our assets in the public domain. This may involve works by utility providers, telecommunications companies and private developers. City of Melbourne requires that these entities reinstate any public assets which have been affected by their works. This often includes reinstating the road or footpath to the City of Melbourne's satisfaction (which includes specifying the footpath material – i.e. sawn bluestone or asphalt).

Specific City of Melbourne policies such as the Docklands Public Realm Plan, and its companion document the Docklands Design and Construction Standards, structure plans and/or Developer Contributions Plans for local areas within the municipality may set specific requirements for how assets must be constructed or reinstated within these local areas.

7.3 Accessibility requirements

Any road works conducted by the City of Melbourne must comply with the Disability Discrimination Act.

7.3.1 *Disability Discrimination Act 1992*

The Commonwealth *Disability Discrimination Act 1992* requires that all public places are accessible to people with disabilities (estimated to be about 20 per cent of Victorians). As part of our commitment to ensuring safe access for all, the City of Melbourne regularly installs tactile ground surface indicators, access ramps and other public infrastructure to assist people with disabilities as a usual part of our work in the public domain. Within the CBD we have also implemented a delineation line (Granite inlay "PANDA") to assist persons with vision impairment to distinguish where the ramp is on the opposite side of the road.

7.4 Environmental considerations

As part of our commitment to environmental sustainability, the City of Melbourne's management of our bluestone assets is guided by the following policies.

7.4.1 City of Melbourne's Total Watermark – City as a Catchment

Updated in 2014, this document is the City of Melbourne's plan for integrated water cycle management for the next four years. The 'Climate change adaptation and flood' section of this strategy commits the City of Melbourne to increasing the permeability of the city through installing permeable pavements (including the use of permeable bluestone sets within the footpath), converting asphalt to grass and other initiatives.

7.4.2 City of Melbourne's Urban Forest Strategy

This Strategy seeks to manage climate change and urban growth and protect against future vulnerability by providing a robust strategic framework for the evolution and longevity of Melbourne's urban forest. It identifies the need for a range of of innovative tools to increase permeability of our urban soil structure (such as the use of permeable bluestone sets): to recharge groundwater; to reduce the amount of stormwater flowing into waterways and to improve water quality.

8. Operating Principles

8.1 Safe access for all

Since the introduction of the Disability Discrimination Act in 1992, the City of Melbourne has galvanised its commitment to providing safe access for all in our city streets. This includes, but is not limited to, facilitating access for people with impaired mobility, impaired sight, older people, people using mobility scooters, parents pushing prams as well as other pedestrians, motorcycles, bicycles and other vehicles. We now install or upgrade ramps (to facilitate access particularly for people using a wheelchair or a pram) and tactile ground surface indicators (providing sensory cues for people with vision impairment) as a standard part of our road and footpath works. We have also installed tactile street signs (featuring the street name in braille text) in several locations throughout the city. Within the CBD we have also implemented a delineation line (Granite inlay "PANDA") to assist persons with vision impairment to distinguish where the ramp is on the opposite side of the road.

The City of Melbourne's top priority in making decisions about bluestone road and footpath surfaces is to ensure safe access for people of all abilities.

8.2 Conservation of heritage values

Where heritage controls apply, the City of Melbourne is committed to conserving original bluestone pitcher surfaces and associated features (such as cart tracks, for example), in a way which does not compromise safe access for all city users.

Where safe access requirements dictate that some changes must be made, the City of Melbourne makes the minimum change required to provide safe access, while retaining as much of the heritage material in situ as possible.

Where heritage controls apply, the City of Melbourne retains original bluestone pitchers where this can be done while also providing safe access for street users. Where some pitchers need to be removed or covered over, for safety or access reasons, we retain in situ as many of the original pitchers as possible.

8.3 Melbourne's distinctive character

In areas where heritage controls do not apply, the City of Melbourne is committed to retaining original bluestone pitchers where possible as they contribute to the distinctive character of Melbourne, especially in laneways in the central city.

Our rolling program for installing sawn bluestone footpaths in priority locations throughout the city provides a modern take on a traditional material which has become synonymous with the present day character of Melbourne.

In areas where heritage controls do not apply, the City of Melbourne retains bluestone pitchers where possible and installs sawn bluestone footpaths in recognition of the contribution they make to the distinctive character of Melbourne.

8.4 Environmental sustainability

In recent years, City of Melbourne's commitment to a sustainable city has led us to introduce a number of new paving treatments, based on Water Sensitive Urban Design principles, which are designed to capture rainwater and/or stormwater and to increase the permeability of paving surfaces.

For example, in 2013 an innovative permeable bluestone set paving treatment was installed in Collins Street, between Elizabeth and Queen Streets, providing an aesthetically pleasing bluestone pavement that also allows rainwater to pass through the footpath and water the tree roots below. The bluestone set design improves the growing environment for the trees and has an overall cooling effect on the urban environment.

Other examples include a rainwater harvesting system in Darling Street, East Melbourne, and the use of permeable asphalt road surfaces in Bromby Street, South Yarra, Eades Place, West Melbourne, Harris Street, North Melbourne, Flinders Lane (between King and Spencer streets) and Little Collins Street (between King and Spencer streets).

Where street trees exist or are planned, City of Melbourne investigates installing paving treatments in footpaths and/or roadways which seek to utilise rainwater and/or stormwater to water the trees, to avoid the use of mains water for this purpose.

9. Procedures

9.1 Original bluestone pitcher laneways

Where an intact original bluestone pitcher road surface remains in a laneway, we retain it wherever possible. As this is very costly, this approach applies predominantly where heritage values are high or where other considerations apply, such as urban and streetscape design.

9.1.1 Where heritage controls apply

In areas where heritage controls apply, if safety and access requirements mean we need to provide an even surface (for example for a resident with limited mobility to access their property from the laneway) we make the minimum change necessary to provide safe access while still retaining as much of the heritage material in situ as possible.

Refer to Scenarios 1, 2, 6, 7 and 8 in the Appendix for examples of this approach.

All works in heritage areas must be in accordance with the Melbourne Planning Scheme and any Heritage Victoria controls. For some works a planning permit or a permit from Heritage Victoria may be required.

9.1.2 Where heritage controls do not apply

In an area where heritage controls do not apply, we retain the bluestone pitchers wherever possible but may make more substantial changes to provide safe access for all. For example, where original bluestone pitcher laneways experience high pedestrian numbers (for example because they are important thoroughfares for commuters or they are outdoor dining destinations), City of Melbourne has recently started using an approach where the bluestone pitchers are lifted, sawn flat and re-laid. This technique provides an improved, level walking surface for pedestrians while retaining the character of the bluestone laneway.

Refer to Scenarios 3, 4 and 5 in the Appendix for examples of this approach.

9.2 Bluestone laneways which have been covered in asphalt

Many original bluestone pitcher laneways have been covered in asphalt in the past. This was a particularly widespread practice in the lead up to Melbourne hosting the 1956 Olympic Games.

9.2.1 Where heritage controls apply

In the course of our routine road maintenance works, the City of Melbourne sometimes uncovers original bluestone pitchers beneath an asphalt road surface. When we uncover original bluestone pitchers under an asphalt road surface in an area where heritage controls apply we reinstate the pitchers if we find more than 50 per cent remain in situ. We change our design for the road resurfacing from our usual asphalt treatment and we rebuild the lane in bluestone pitchers. We lift the existing pitchers, clean them of asphalt and re-use them where possible. We may also re-use pitchers from elsewhere if more are needed.

We generally don't rebuild a bluestone laneway where less than 50 per cent of the original pitchers remain unless there is strong community interest or an urban and streetscape design justification agreed to by the Streetscape Coordination Committee.

Refer to Scenario 9 in the Appendix for an example where less than 50 per cent of the original pitchers remained.

All works in heritage areas must be in accordance with the Melbourne Planning Scheme and any Heritage Victoria controls. For some works a planning permit or a permit from Heritage Victoria may be required,

9.2.2 Where heritage controls do not apply

In areas where heritage controls do not apply, we generally do not rebuild bluestone pitcher laneways which have been covered in asphalt unless an urban and streetscape design justification is agreed to by the Streetscape Coordination Committee.

9.3 Kerb and channel

The City of Melbourne undertakes an ongoing program of road and footpath maintenance and upgrade works throughout the municipality. These works include an assessment of the kerb and channel between the footpath and the road and maintenance or upgrade works where required.

In some streets throughout the city, the original bluestone kerb and wide pitcher channel (sometimes up to four or five pitchers wide) remain.

9.3.1 Central city

In the central city, when we are replacing an existing asphalt footpath with new asphalt, if there is an original bluestone kerb and channel abutting the footpath which needs replacing, we use new sawn bluestone and gutterstone.

Refer to Scenario 15 in the Appendix for examples of these treatments.

9.3.2 All other areas

In all other areas of the municipality, if we are replacing an existing asphalt footpath with new asphalt and there is an original bluestone kerb and channel abutting:

- If the kerb and channel is in good condition, we reuse the existing bluestone kerb and pitchers, resetting them straight.
- If the kerb and channel is in poor condition, and we can find a stock of old bluestone kerb and pitchers which are in good condition, we replace existing kerb and pitchers with the kerb and channel from the stock.
- We retain the existing width of the channel (for example, two, three or four pitchers wide) unless
    - there is an existing or planned on street bike lane or
    - there is an adjacent access location and we need to achieve compliance with the Disability Discrimination Act. In the future, we may investigate lifting the pitchers, cutting them flat and re-laying a wide channel to achieve Disability Discrimination Act compliance whilst also retaining the heritage character of the wide pitcher channel.

Refer to Scenario 14 in the Appendix for examples of these treatments.

9.3.3 Radials

On radials (corners), our current practice is to reduce a wide pitcher channel (two, three or four pitchers wide) to a single pitcher in width to achieve compliance with the Disability Discrimination Act (refer to Scenario 16 in the Appendix for an example of this). In the future, we may investigate lifting the pitchers, cutting them flat and re-laying a wide channel to achieve Disability Discrimination Act compliance whilst also retaining the heritage character of the wide pitcher channel.

9.3.4 On-road bicycle lanes

When installing on-road bicycle lanes (in both areas where heritage controls apply and where they do not) where a wide pitcher channel exists, City of Melbourne retains one row of pitcher channel while the remaining rows are removed, reconstructed in asphalt and our standard green pavement for bicycle lanes is then applied. In this way we retain as much of the original material while still providing a safe cycling surface.

Refer to Scenario 10 in the Appendix for examples of these treatments.

9.3.5 Royal Exhibition Building and the Carlton Gardens World Heritage Area

The streets surrounding the Royal Exhibition Building in Carlton are included within the World Heritage listing for this important historic site. Due to these very high heritage values, no change has so far been allowed to the original bluestone kerb and channel in this area, even for disability access reasons. For example, a recent proposal to remove (or reduce in width) the existing wide pitcher channel to achieve a safe, even surface for users of a proposed accessible platform tram stop has so far not obtained heritage approval.

9.4 Medians and tree islands

From time to time existing medians and tree islands throughout the municipality need to be replaced or upgraded and new ones need to be installed.

9.4.1 Central city

Within the central city, the City of Melbourne always constructs medians and tree islands in sawn bluestone.

Refer to Scenario 16 in the Appendix for examples of these treatments.

9.4.2 Other areas

In all other areas of the municipality, the City of Melbourne always constructs medians and tree islands in pre-cast exposed aggregate concrete.

Refer to Scenario 17 in the Appendix for examples of these treatments.

9.5 Crossings

As the access points across roads, streets and laneways and into properties, crossings are important points where the City of Melbourne needs to provide safe, level access for all city users.

9.5.1 Threshold crossings

Where original bluestone pitchers exist at threshold crossings (at the entrance to a bluestone laneway or street) the City of Melbourne has traditionally removed the pitcher pavement and reconstructed the area as asphalt pavement to provide safe access in compliance with the Disability Discrimination Act (Refer to Scenarios 6 and 7 in the Appendix for examples).

The recent innovation of lifting pitchers, cutting them flat and re-laying them provides a new tool which has been used for recent crossing treatments (Refer to Scenario 3 in the Appendix for an example).

The City of Melbourne provides a safe, level surface at threshold crossings in compliance with the requirements of the Disability Discrimination Act. Increasingly, we will investigate achieving this by lifting, cutting flat and relaying the pitchers instead of replacing them with an asphalt surface.

9.5.2 Crossings into private properties

When our works involve vehicle crossings into private properties, we have the discretion to retain original bluestone pitcher crossings or remove the pitcher pavement and reconstruct the area in asphalt.

Within the central city, we remove the pitcher pavement and reconstruct the crossing in asphalt.

In areas where heritage controls apply, if we propose to replace a pitcher crossing with asphalt we seek the property owner's feedback. We only retain a bluestone pitcher crossing if the property owner requests it. In this case we would lift the pitchers and re-lay the crossing more evenly.

We now also have the option of lifting the pitchers, cutting them flat and re-laying them to provide a more even crossing surface, however we have not yet used this technique for a private crossing.

Refer to Scenario 18 in the Appendix for examples of these treatments.

9.6 Sawn bluestone footpaths

9.6.1 Central city

Each year, the City of Melbourne installs sawn bluestone paving within the central city, Southbank and Docklands, according to the funds allocated in that year's budget. Priority is given to:

- Major streets (for example, Collins Street, Elizabeth Street)
- Streetscape upgrades identified in structure plans or other strategies
- Filling gaps between existing areas of sawn bluestone paving (which have been installed previously, either by the City of Melbourne or by private developers) and
- Areas of high pedestrian usage, particularly those which facilitate pedestrian access to transport hubs.

Figure 3 shows how the area of footpath paved in sawn bluestone has increased over time.

Figure 4 shows the current extent of sawn bluestone paved footpaths throughout the City of Melbourne.

Figure 3: The extent of sawn bluestone paved footpaths within the City of Melbourne over time

Figure 3a: Sawn bluestone paving within the central city – mid 1980s

Figure 3b: Sawn bluestone paving within the central city – mid 2000s

Figure 3c: Sawn bluestone paving within the central city and surrounds - 2000s

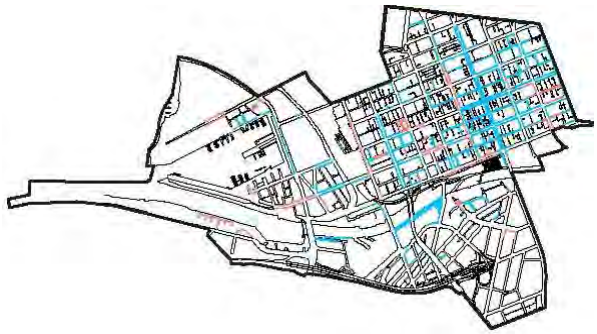
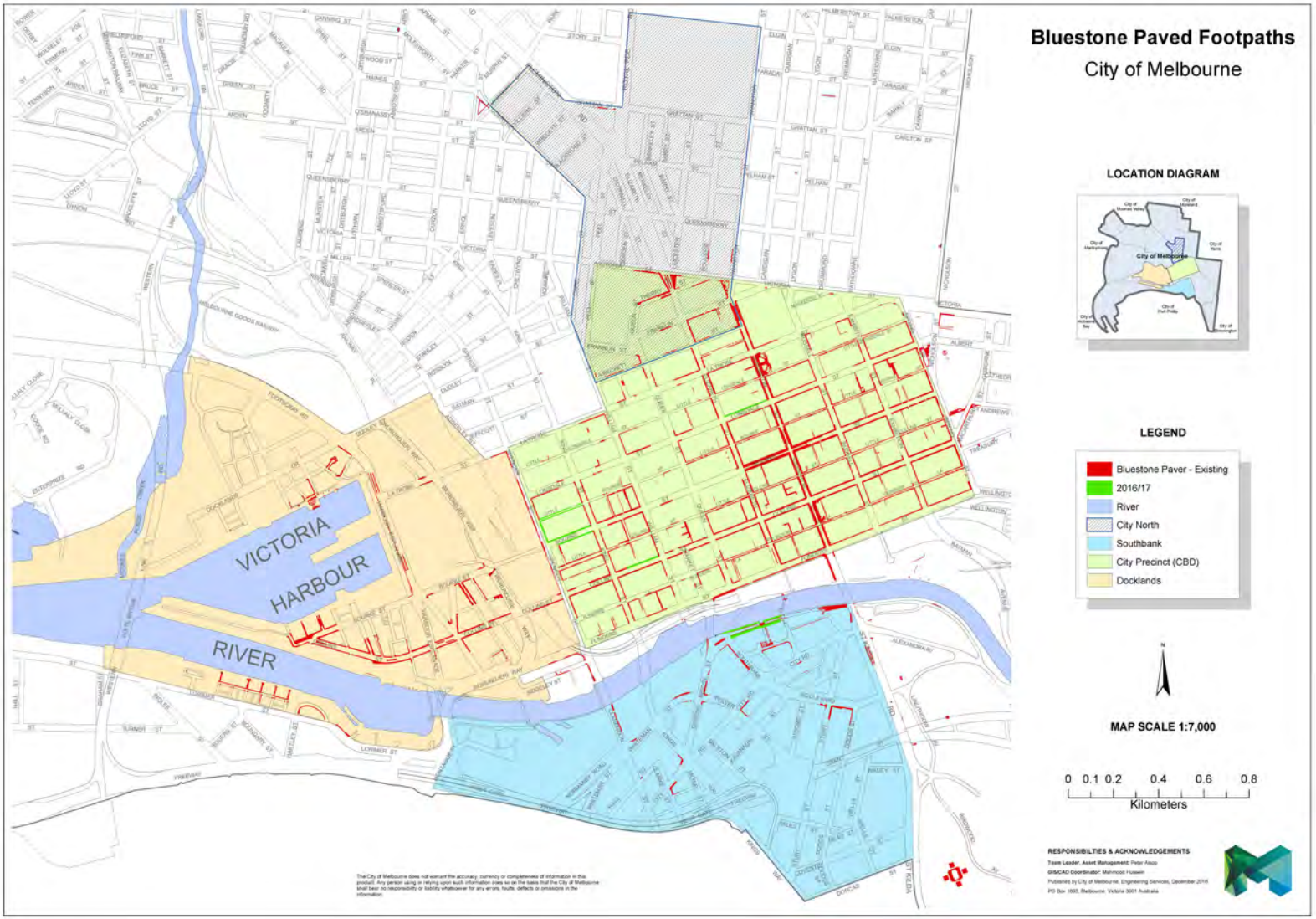


Figure 4: Current extent of sawn bluestone paved footpaths throughout Melbourne's central city - December 2016.



Refer to Scenario 11 in the Appendix for an example of a sawn bluestone paved footpath.

9.6.2 Urban renewal areas

City of Melbourne's Municipal Strategic Statement sets out urban design and strategic planning principles for the coming decades and creates certainty for residents, business and developers by identifying areas that can accommodate growth and those that will be kept much as they are.

Approved by the Planning Minister in August 2013, and legally binding as part of the Melbourne Planning Scheme, the Municipal Strategic Statement identifies Southbank and Docklands as existing urban renewal areas. It also identifies a number of proposed urban renewal areas, including City North, Arden-Macaulay and Fishermans Bend.

Streetscape upgrades are an important part of supporting new growth in these areas. This section specifies where the installation of sawn bluestone footpaths will be prioritised in each of these urban renewal areas. It is anticipated that much of this bluestone paving will be installed by private developers as part of development contributions, with the remainder installed by City of Melbourne according to the funds allocated in each year's budget.

9.6.2.1 Docklands

The Docklands Public Realm Plan provides guidance to public and private sector organisations involved in the facilitation, design and implementation of public space projects in Docklands. The Docklands Public Realm Plan is a companion document to the Docklands Design and Construction Standards[2] publication, which sets out the mandatory technical and documentation requirements for all civil, landscape and infrastructure works occurring in the public realm.

Together these documents specify the principal streets within Docklands where sawn bluestone footpaths are to be provided and how they must be constructed – either through City of Melbourne's own streetscape upgrade works, or by private developers as part of their development contributions.

Both the Docklands Public Realm Plan and the Docklands Design and Construction Standards are available on the City of Melbourne website[3]

9.6.2.2 Southbank

The Southbank Structure Plan 2010 provides a vision and strategy for the future development of Southbank as an integral part of the central city, with the Yarra River at its centre. The Plan is part of the City of Melbourne's commitment to delivering the Southbank Plan (2007).

The Southbank Structure Plan outlines a range of improvements for commercial, retail and community infrastructure, the creation of a better street environment for walking and cycling and new and improved public open spaces.

In the context of creating a better street environment in Southbank, City of Melbourne is committed to providing sawn bluestone footpaths in the following priority locations within Southbank:

- Principal streets: including all streets north of, and including, City Road
- Boulevards: such as Southbank Boulevard, including Dodds Street
- Other priority streets: including Sturt Street.

Both the Southbank Structure Plan 2010 and the Southbank Plan 2007 are available on the City of Melbourne website[4]

[2] Docklands Public Realm Plan - Executive summary, Introduction (melbourne.vic.gov.au)
Docklands Design and Construction Standards - City of Melbourne
[3] www.melbourne.vic.gov.au
[4] www.melbourne.vic.gov.au

9.6.2.3 City North

The City North Structure Plan provides a 30-year vision to guide the renewal of the area and fulfill the precinct's potential as an extension of the central city. Strategies and actions in the structure plan include:

- Activities and land uses to integrate a more diverse mix of activities.
- Urban structure and built form to guide building heights, form and density.
- Transport and access to ensure a high level of connectivity and sustainably manage traffic, car parking, walking, cycling, public transport, private vehicles and freight transport routes.
- Public realm to deliver new and improved open spaces and attractive and safe streetscapes.
- Community infrastructure to deliver community services.
- Sustainable infrastructure to ensure that City North is a self-sustaining and efficient area.

In the context of creating attractive and safe streetscapes, City of Melbourne is committed to providing sawn bluestone footpaths in the following priority locations within the City North urban renewal area:

- Principal streets: including all streets south of, and including, Victoria Street
- Boulevards: such as Elizabeth Street and Royal Parade
- Other priority streets: including Swanston Street, Grattan Street, Queensberry Street, Leicester Street, Pelham Street (between Haymarket Roundabout and Bouverie Street) and Bouverie Street
- Activity centres: any streets included within any activity areas, mixed use areas (or similar) identified in the City North Structure Plan.

The City North Structure Plan is available on the City of Melbourne website[5]

9.6.2.4 Arden-Macaulay

The Arden-Macaulay Structure Plan provides a 30-year vision to guide the area's growth. It includes a series of strategies and actions relating to land use – integrating a more diverse mix of activities, building design and public realm – including the delivery of new and improved open spaces and attractive and safe streetscapes.

In the context of creating attractive and safe streetscapes, City of Melbourne is committed to providing sawn bluestone footpaths in the following priority locations within the Arden-Macaulay urban renewal area:

- Principal streets: Macaulay Road
- Activity centres: any streets included within any activity areas, mixed use areas (or similar) identified in the City North Structure Plan.

The Arden-Macaulay Structure Plan is available on the City of Melbourne website[6]

9.6.2.5 Fishermans Bend (Lorimer Precinct)

The Fishermans Bend Urban Renewal Area is expected to accommodate significant population growth over the next 20 years. The Lorimer precinct is that part of the Fishermans Bend Urban Renewal Area which falls within City of Melbourne's municipal boundary. Located south-west of the central city, Lorimer is currently an industrial precinct which provides vital jobs and services to the inner city region.

City of Melbourne is developing a structure plan for the Lorimer precinct. This plan will provide a comprehensive guide to planning and growth in the area.

City of Melbourne is committed to providing sawn bluestone footpaths in priority locations, such as principal streets (either new or existing) and activity centres, as identified within the Lorimer precinct as part of the development of the future structure plan.

[5] www.melbourne.vic.gov.au
[6] www.melbourne.vic.gov.au

Information about the progress of the development of the Lorimer Precinct Structure Plan is available on the City of Melbourne website[7]

9.6.3 Other areas

Once footpaths within the central city, Southbank and Docklands, as well as the urban renewal areas mentioned above, are all paved in sawn bluestone, the City of Melbourne will start to install sawn bluestone paving in other areas of the municipality. Priority will be given to:

- Filling gaps between sawn bluestone paving already installed by private developers
- High profile shopping strips.

9.7 Non-City of Melbourne works in the public domain

Frequently, non-City of Melbourne entities (such as private developers, utility providers or telecommunications companies) need to undertake works in the public domain. The City of Melbourne requires anyone carrying out works affecting our assets and infrastructure to ensure they are designed, constructed and reinstated according to strict standards.

Examples of City of Melbourne assets and infrastructure include typical features of streets and other public spaces such as roads and footpaths, kerbs and channels, ramps and crossings, tree pits and sawn bluestone paving.

Our standards have been developed to encourage a cohesive character and strong identity for the city. The standards respect the city's heritage, encourage the use of established and proven practices, and meet requirements for accessibility and sustainability. When constructed according to our standards, the structural integrity, lifespan and appearance of our assets are protected.

The City of Melbourne's Design Standards are a reference to guide design and construction in the City of Melbourne's public spaces. They include typical features of streets and other public spaces such as paving, kerbs, tree pits, lighting and furniture. Diagrams with a written description and a photo are provided.

Our Engineering Standard Drawings provide all the detailed information needed to design, construct or reinstate City of Melbourne assets. The drawings include dimensions, cross sections, thicknesses and reinforcement details.

In 1995, City of Melbourne introduced a Technical Specification outlining how sawn bluestone paving must be installed throughout the municipality and what materials must be used. This specification was updated in July 2015, and to ensure a quality outcome for public works, this document is now accompanied by a list of pre-qualified bluestone suppliers.

The Technical Specification, the list of suppliers, our Design Standards and Engineering Standard Drawings can all be found on the City of Melbourne website[8].

10. Emerging ideas and issues

A number of new ideas and issues are starting to arise in our dealings with bluestone. These are likely to become increasingly important over time and may lead to a need to review our approach in future.

10.1 Lifting bluestone pitchers, cutting them flat and re-laying them

This innovative technique has developed in recent years and is offering the City of Melbourne a new way of providing a safe, level pedestrian surface while retaining the heritage character of bluestone pitcher laneways and other surfaces.

[7] www.melbourne.vic.gov.au
[8] http://www.melbourne.vic.gov.au/building-and-development/standards-specifications/Pages/standards-specifications.aspx

Recent examples of the use of this technique on a roadway surface include Literature Lane and Brights Place, both in the central city. This technique has also been used for crossings in the central city. In new streets in Docklands, this treatment has been used where bluestone pitchers have been sourced from other locations, cut flat and laid to provide a safe, smooth roadway or footpath surface.

This technique also offers an exciting new option in situations where asphalting over bluestone pitchers was previously our only option for meeting the requirements of the Disability Discrimination Act (DDA). We could now use this technique to provide a level surface whilst also retaining the original pitchers in wide pitcher channels at corners and where we are installing bicycle lanes. We anticipate this technique will become the new standard in situations where a higher level of DDA compliance needs to be balanced with the retention of a bluestone pitcher surface.

Refer to Scenarios 3, 4 and 5 in the Appendix for examples of this approach.

10.2 Permeability

Increasingly City of Melbourne is looking for new ways to improve our water use through the installation of permeable paving. Several different approaches have already been used throughout the city and there is much interest in trialling new techniques as opportunities arise. In time, permeable paving may become a standard treatment throughout the municipality.

Refer to Scenario 13 in the Appendix for examples of permeable paving treatments.

From an asset management perspective, City of Melbourne needs to be sure that the new techniques being put forward are going to meet community needs into the future.

For example, permeable paving is more expensive to install than conventional asphalt or bluestone paving and is known to have a shorter life span. Therefore, we need to be sure that the benefits of installing permeable paving offset the additional installation and maintenance costs. We need to know whether these treatments are delivering the expected water-saving and tree health benefits and we need to know how long we can expect a permeable paving treatment to remain safe and in good condition before it needs to be maintained or replaced. If our existing treatments are not delivering the expected results, we need to identify and trial new, improved approaches.

City of Melbourne needs to engage in rigorous ongoing monitoring and evaluation of our existing permeable paving treatments to inform a cost benefit analysis of the effectiveness of these works over time. Subject to funding being finalised, City of Melbourne is soon to undertake research to evaluate the success of existing Water Sensitive Urban Design treatments. We anticipate that the evaluation methodology developed as part of this research will be incorporated into this Operating Procedure when it is next reviewed.

11. Ongoing monitoring and review

This Operating Procedure is the subject of ongoing monitoring and will be reviewed every five years to ensure it is up to date with current practices.

12. Conclusion

This Operating Procedure outlines how the City of Melbourne manages its bluestone assets. In seeking to strike a balance between the needs of all city users, this document ensures that the City of Melbourne will continue to conserve and enhance our original bluestone pitcher laneways, our bluestone kerbs and channels and our modern sawn bluestone-paved footpaths which are so central to the character of our city.

13. References

Wikipedia[9]

Melocco website[10]

History of Emotions website[11]

Lake Condah statement of heritage significance[12]

[9] https://en.wikipedia.org/wiki/Bluestone
[10] https://www.melocco.com.au/history
[11] https://www.historyofemotions.org.au/research/research-projects/victorian-bluestone-an-affective-cultural-history/
[12] http://vhd.heritage.vic.gov.au/places/result_detail/52783?print=true

14. Appendix: Scenarios of how operating principles may be applied in practice

Operating Procedure: Bluestone in Melbourne's streets and lanes 2016 - Appendix

Scenario #1: Original bluestone pitcher laneway

Original condition:	Bluestone pitcher laneway pavement in the original state.
Outcome after works:	Full reconstruction of the bluestone pitcher pavement to its original configuration (pitchers removed, cleaned and laid in stretcher bond pattern, with channel matching existing), as detailed in the City of Melbourne 'Engineering Standard Drawings' 1P50407 & 1P50409
Rationale for change:	In time, bluestone laneway has deteriorated to such a condition (disheveled and loose pitchers, depressed or raised sections, uplifting by tree roots, pooling of water, differential settling at the interface between the laneway and private access points to properties, and general wear over the many years), thus requiring general renewal work. Minimal change, to conserve heritage values.
Location:	Heritage Overlay Area (always reinstate 'like for like' an existing bluestone pitcher lane) Outside Central Business Area and NOT within the Heritage Overlay Areas, (normally reinstate 'like for like' however we may consult residents and give consideration to the local community's opinion and the usage of the laneway prior to finalising construction type). Central Business District (usually reconstruction of the laneway in asphalt is preferred, but we may consider lifting the pitchers, sawn cut the surface and re-laying them)
Any other notes:	Munros Lane – Typical laneway prior to reconstruction Wreckyn Place - reconstructed 2015 Mighty Apollo Lane & CI1348 – Reconstructed 2002

Figure 5: Mighty Apollo Lane & CI1348 (Heritage Overlay Area) – Pitcher laneway reconstructed c.2002

Scenario #1: Original bluestone pitcher laneway (cont'd.)

Figure 6: Munros Lane (Heritage Overlay Area) – Typical laneway requiring renewal prior to reconstruction

Figure 7: Wreckyn Place (Heritage Overlay Area) - reconstructed in 2015

Scenario #2: Original bluestone pitcher laneway with original cart tracks

Original condition:	Original bluestone pitcher laneway featuring cart tracks (ruts), formed in the past by 'cart of the night soil collector'.
Outcome after works:	In heritage overlay areas, due consideration is given to preserve this existing layout of the bluestone pitchers so as to preserve this feature of a bygone activity and aspect of Melbourne life.
Rationale for change:	There are only a few of these left in heritage areas. To reinstate these tracks, each pitcher needs to be individually lifted, numbered and re-laid in its exact position. This is very time-consuming and costly and it is very difficult to re-create, so we usually only reinstate a representative sample of the tracks in each laneway (at the rate of approximately 10m of track reinstated for every 50m of laneway)
Location:	Heritage Overlay Area
Any other notes:	Arden Lane – existing cart tracks prior to reconstruction CL0182 – Reconstructed in 2007 (showing a approx. 10m length of 'tracks' reinstated as a sample of tracks that previously existed

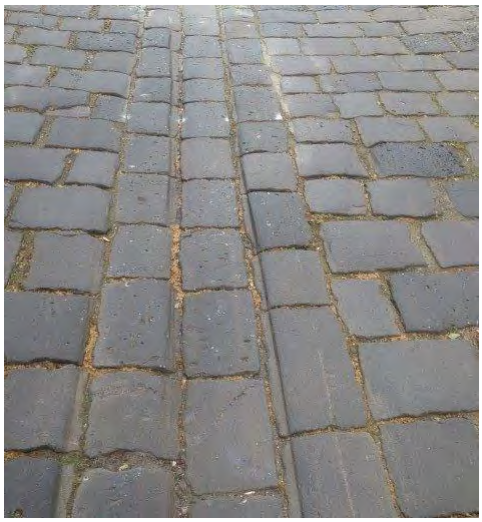


Figure 8: Arden Lane (Heritage Overlay Area) – existing tracks prior to reconstruction

Figure 9: CL0182 (Heritage Overlay Area) – Reconstructed in 2007 (showing an approximately 10m length of 'cart tracks' reinstated as a sample of tracks that previously existed)

Scenario #3: Original bluestone pitcher laneway where pitchers over the crossing have been lifted, sawn surface finish and re-laid

Original condition:	Bluestone pitcher crossing between two sections of asphalt footpath
Outcome after works:	Sawn bluestone pitchers (top face sawn smooth with a min thickness of 250mm) used to form a smooth “pedestrian corridor” at mouth of laneway, as detailed in the City of Melbourne ‘Engineering Standard Drawings’ 1P50410
Rationale for treatment:	To provide safe access for motorised wheelchairs, wheel chairs, prams, elderly and all other pedestrians across the crossing while retaining a heritage feel of bluestone pitchers.
Location:	Docklands (not in a heritage area)
Any other notes:	This treatment can be used in Heritage Area and all other areas. The example below is Sawn Bluestone Pitchers used in the intersection of Merchant Street at Bourke Street Dockland. The crossing was reconstructed to make the crossing wheel chair accessible. Built in 2013. The modification was done in response to a request from a motorised wheel chair user who complained that he was having difficulty travelling on the bluestone pitchers in his motorised wheel chair. (it vibrates and stop)

Figure 10: Sawn bluestone pitchers used at the intersection of Merchant and Bourke streets, Docklands, to make the crossing wheelchair accessible. Built in 2013.

Scenario #4: Original bluestone pitcher laneway where pitchers along half the laneway width have been lifted, sawn surface finish and re-laid

Original condition:	Original bluestone pitcher laneway
Outcome after works:	Half the lane was reconstructed with original pitchers. The other half has been constructed with sawn bluestone pitchers by lifting them, cutting 20mm off the rough surface to make them smooth and then re-laying them to provide a flat surface for access to the North Melbourne Town Hall / Arts House
Rationale for change:	To provide safe and easy access on the laneway surface as there is no footpath wide enough for wheel chairs.
Location:	Heritage Overlay Area
Any other notes:	Lt Errol St - pitcher laneway with half width pitchers sawn (smooth) for Disability Discrimination Act access to The Arts House – North Melbourne Town Hall. Built in 2013.

Figure 11: Little Errol St - pitcher laneway with half width pitchers sawn (smooth) for Disability Discrimination Act access to The Arts House / North Melbourne Town Hall, built in 2013.

Scenario #5: Original bluestone pitcher laneway where pitchers have been lifted, sawn surface finish and re-laid

Original condition:	Original bluestone pitcher laneway
Outcome after works:	Original pitchers lifted, sawn smooth and then re-laid to create a flat roadway surface
Rationale for change:	Road safety initiative. To make the laneway more pedestrian friendly and activation of laneway. To improve an existing link for pedestrian travelling between Flagstaff Station and Bourke Street and encourage walking as a safe method of transport.
Location:	Central City
Any other notes:	Was done as part of connecting laneways project. Brights Place and Healeys Lane– Reconstructed bluestone pitcher laneways with cut bluestone pitchers to make the laneway more pedestrian friendly. Built in 2015.

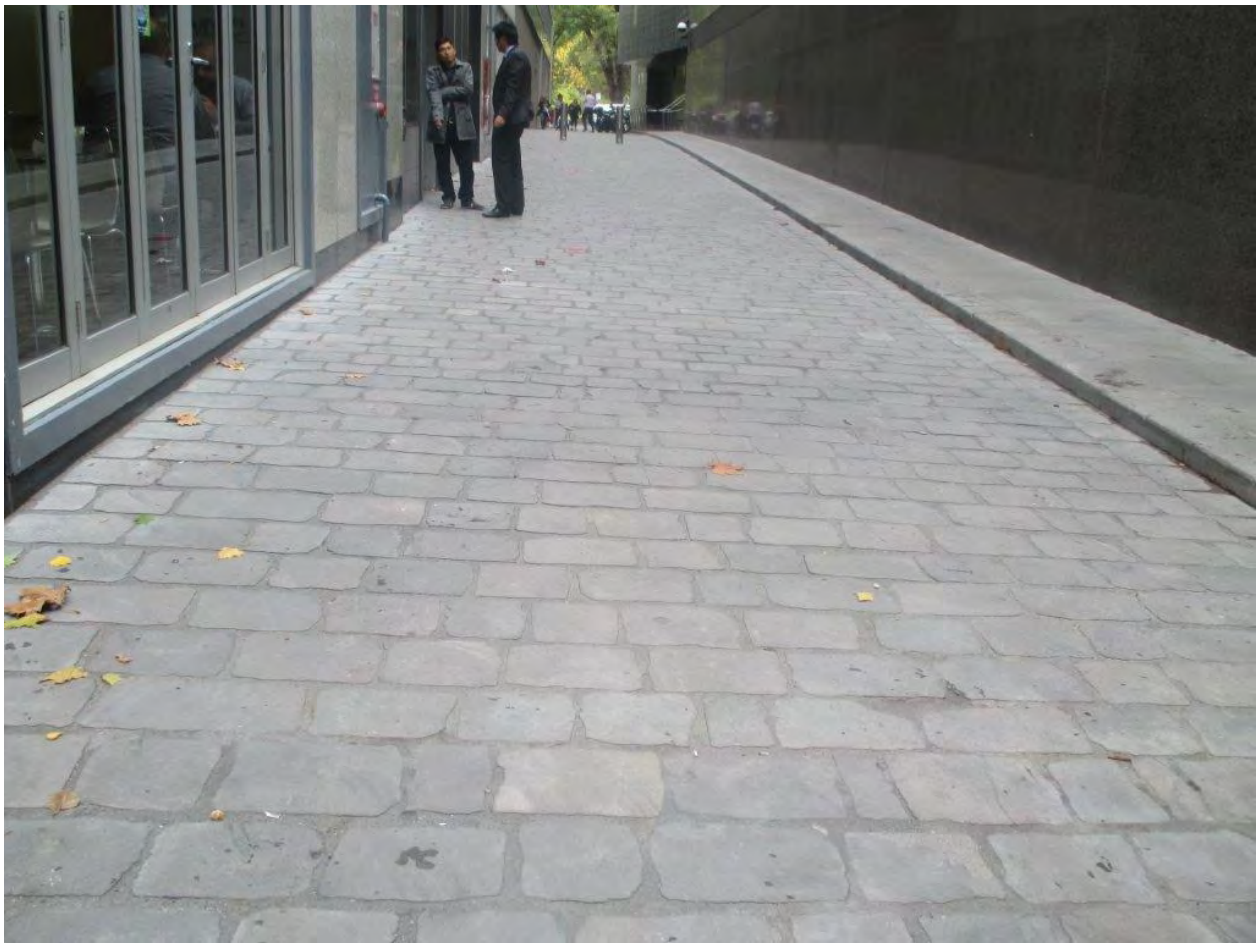


Figure 12: Brights Place– Reconstructed bluestone pitcher laneway with cut bluestone pitchers to make the laneway more pedestrian friendly. Built in 2015.

Scenario #6: Original bluestone pitcher laneway where pitchers over the crossing have been removed and reconstructed in asphalt, central channel and wide pitcher channel retained

Original condition:	Bluestone laneway surface extending across footpath (crossing) to bluestone pitcher channel on roadway
Outcome after works:	Original bluestone pitchers within the crossing removed and laneway reconstructed in asphalt, with central bluestone channel retained for surface drainage, due to the grade and configuration of the laneway/crossing and where no underground stormwater exists.
Rationale for change:	To provide a safe access for pedestrian over the laneway crossing and heritage considerations
Location:	Heritage Overlay Area
Any other notes:	Can be done in any area. The example below is CL144 off Derby St - pitcher laneway with asphalt crossing (Heritage Overlay Area). Built in 2012

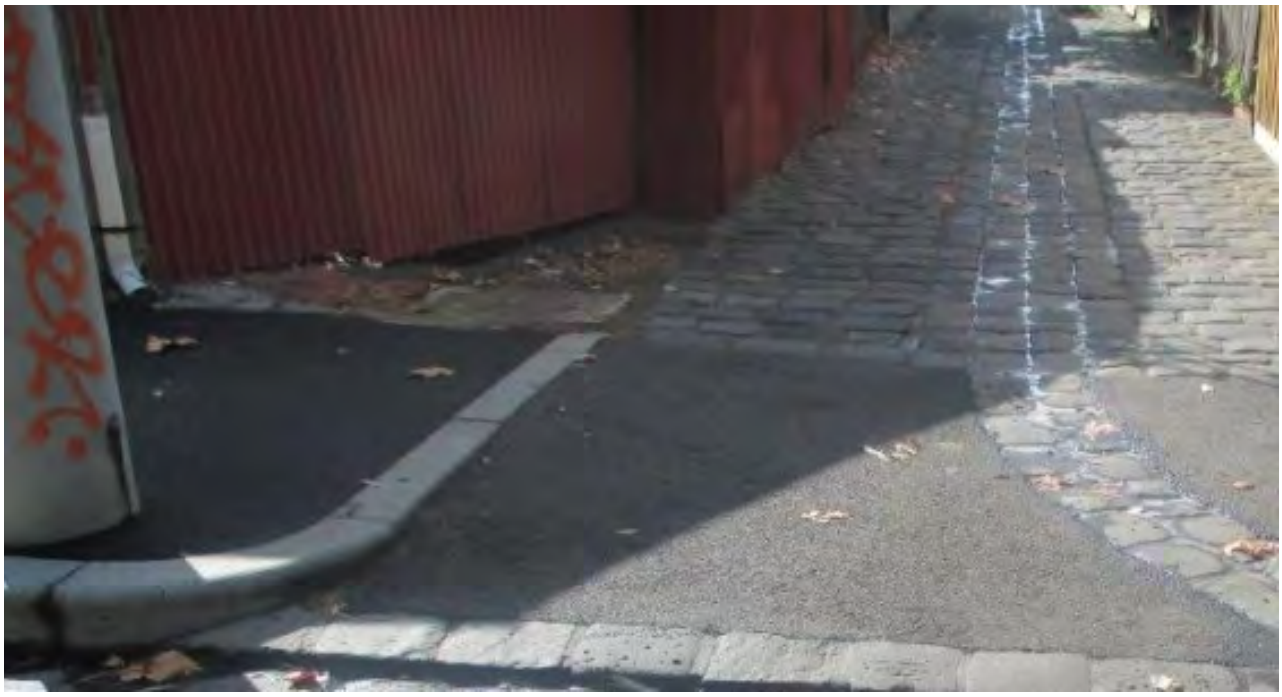


Figure 13: CL144 off Derby St - pitcher laneway with asphalt crossing (Heritage Overlay Area). Built in 2012

Scenario #7: Original bluestone pitcher laneway where pitchers over the crossing have been reconstructed in asphalt

Original condition:	Bluestone laneway surface extending across footpath to bluestone pitcher channel on roadway
Outcome after works:	Asphalt footpath constructed over original bluestone pitchers and requiring no pitcher channel for drainage purpose due to the grades of the laneway/crossing.
Rationale for change:	Disability Discrimination Act access requirements
Location:	Heritage Overlay Area
Any other notes:	Bluestone Pitcher Laneway in Heritage Overlay area – Crossing constructed in asphalt due to Disability Discrimination Act requirements (circa 2000)

Figure 14: Bluestone Pitcher Laneway in Heritage Overlay area – Crossing constructed in asphalt due to Disability Discrimination Act requirements (c.2000)

Scenario #8: Bluestone pitcher laneway reconstructed in asphalt, central channel retained

Original condition:	Original bluestone pitcher laneway
Outcome after works:	Laneway reconstructed in parts in asphalt to provide safe access for wheel chair users and the retention of centre pitcher channel for surface drainage purpose.
Rationale for change:	Request from a resident with a disability to provide access according to Disability Discrimination Act requirements
Location:	Heritage Overlay Area
Any other notes:	We have received a request from a resident to reinstate the laneway to its original bluestone pitcher construction. May have to do community consultation prior to changing it back to bluestone pitchers.

Figure 15: CL 1448 off Domain Road – pitcher laneway reconstructed in asphalt in response to a request by a resident to provide Disability Discrimination Act access (Heritage Overlay area). Built circa 2000.

Scenario #9: Original bluestone pitcher laneway which has been reconstructed with asphalt pavement

Original condition:	Original bluestone pitcher laneway which been reconstructed with asphalt pavement
Outcome after works:	In heritage overlay areas: Lift and remove asphalt from bluestone pitchers then reinstate pitchers (provided that the majority of underlying pitchers are still present and intact) In central city (outside heritage areas): lift and remove original pitchers from laneway and reconstruct in asphalt (the only time we would reinstate a pitcher laneway which has been covered in asphalt outside a heritage area would be in response to community pressure)
Rationale for change:	Heritage values dictate that the pitchers should be reinstated where possible in a heritage area. Outside a heritage area, the cost and complexity of reinstating the pitchers is not warranted and the need for providing a smooth road surface in accordance with Disability Discrimination Act requirements is paramount.
Location:	Heritage Overlay Area Central City
Any other notes:	Example of Westwood Place, 2014 (central city, not in a heritage area): the original pitchers had been overlaid with asphalt, but as there were only about 50 per cent of original pitchers remaining (largely due to service authorities removing them for their works) we removed the pitchers and finished the laneway in asphalt

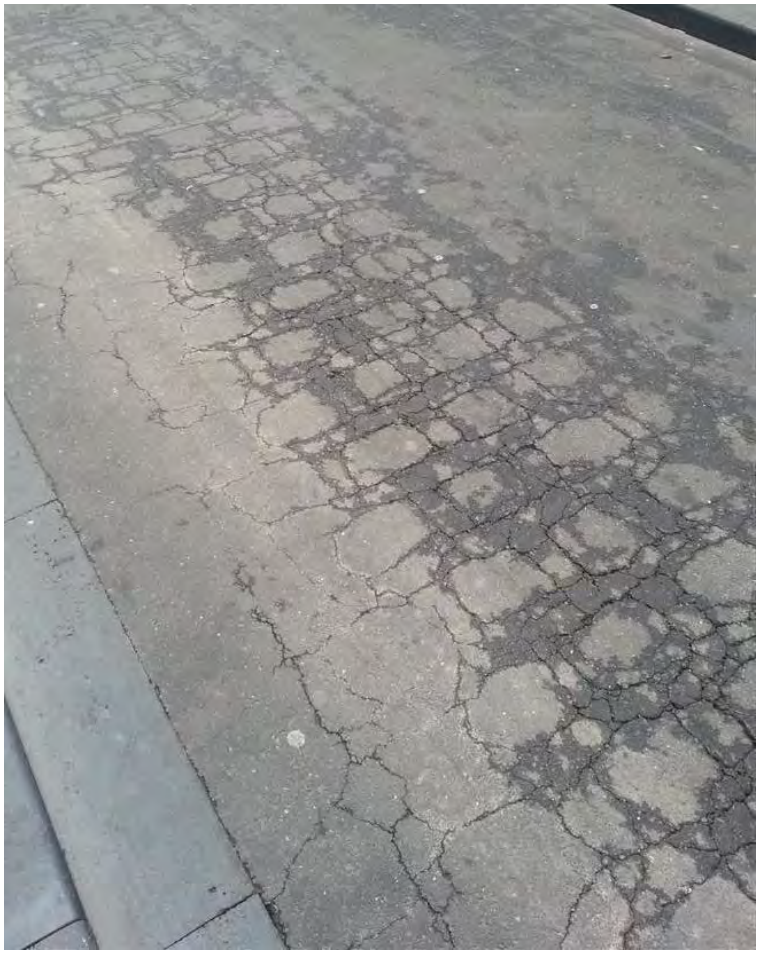


Figure 16: Westwood Place (prior to reconstruction) – Removed original pitchers overlaid with asphalt and reconstructed in asphalt pavement

Scenario #10: Original wide pitcher channel

Original condition:	Wide bluestone pitcher channel: three, four or five pitchers wide or two lines of parallel pitchers (between 0.75m to1.50m apart) with stretcher bond pattern laid pitchers infill.
Outcome after works:	In heritage overlay areas: Wide pitcher channel reinstated in almost all cases in heritage areas to conserve heritage values. The wide pitcher channel and bluestone kerb is retained lifted and reset. Within heritage areas, other priorities such as Disability Discrimination Act requirements and road safety may mean that wide pitcher channels are reduced in width as follows: at access ramps to accommodate a bicycle path to provide access to disabled car parking spaces (according to Disability Discrimination Act requirements). In the central city / not in heritage overlay areas: if the pitchers have previously been buried under asphalt, we would remove them during any future works and reinstate the channel in pitchers or gutter stone if the pitchers are still visible (which is rare in the central city) we often remove/reduce them in width for the following reasons (in addition to those mentioned above): to allow more road space to accommodate bicycle paths where footpath widening requires their removal (recent example Stewart Street, City).
Rationale for change:	In heritage areas, the conservation of heritage values justifies the cost to retain wide pitcher channels and takes priority over other uses of road space. In the central city, competition for other road uses such as bicycle lanes, Disability Discrimination Act requirements, footpath widening takes priority over heritage values.
Location:	Heritage Overlay Area Central City

Figure 17: Arden Street, North Melbourne - Traffic lane with wide pitcher channel / bluestone kerb retained lifted and reset in March 2015 (Heritage Overlay area)

Figure 18: Abbotsford Street North Melbourne – Four row wide pitcher channel reduced to a single row to accommodate an access ramp and bicycle lane (Heritage Overlay Area)

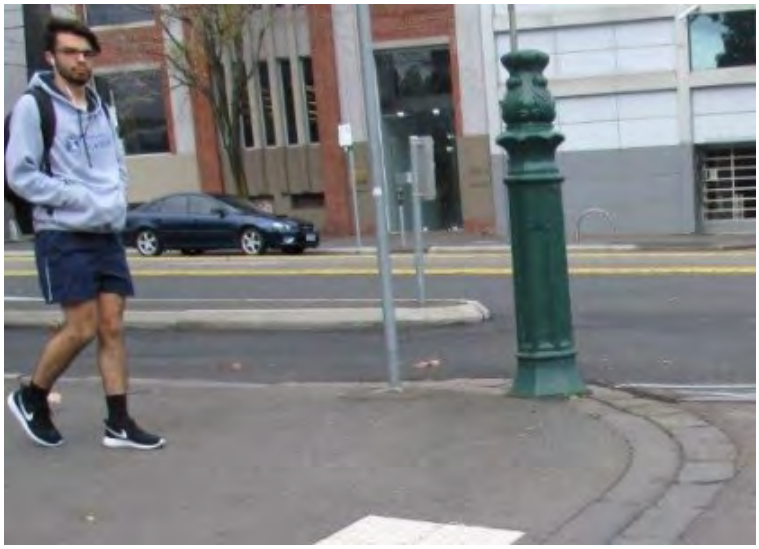


Figure 19: Swanston Street Carlton – Five row wide pitcher channel in side street intersection reduced to a single row to accommodate access ramps

Figure 20: Stewart Street – footpath widening required removal of the wide pitcher channel

Scenario #11: New Sawn bluestone paving on footpaths

Original condition:	Asphalt footpath
Outcome after works:	New sawn bluestone paving as detailed in the City of Melbourne 'Engineering Standard Drawings' 1P50402
Rationale for change:	The aim of the City of Melbourne's bluestone program is to pave the entire footpath network within central business district area. Priority areas are: Major streets Filling gaps between bluestone paving which we have required private developers to install Laneways which are the subject of our Streetscapes Improvement Program Improving walkability, especially around stations and other public transport hubs (funded by parking levy). Once these areas are complete, the aim is to move on to key shopping streets outside the central city as well as infill areas (between private developments where they have been required to pave the footpath adjacent to their developments in sawn bluestone). The City of Melbourne also requires major developers to install sawn bluestone paving on footpaths outside their properties as follows: Everywhere in the central city Docklands and Southbank Outside the central city, only where it's likely there will be other projects upgrading to sawn bluestone paving. CoM itself has only installed sawn bluestone paving in one isolated example outside the central city (Domain Road).
Location:	Central City

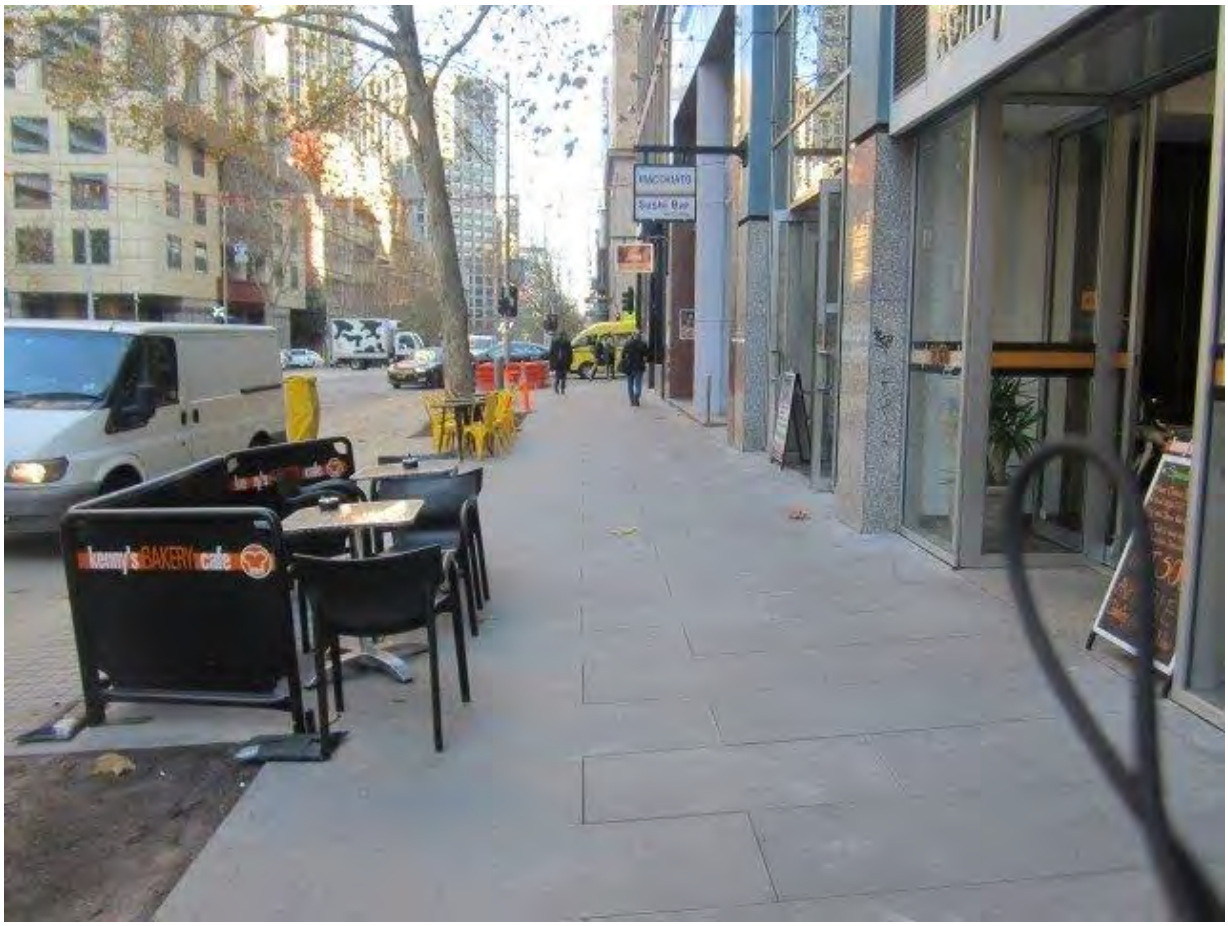


Figure 21: New sawn bluestone paving

Scenario #12: Asphalt Laneways constructed in bluestone

Original condition:	Asphalt or concrete laneway
Outcome after works:	Laneway surface reconstructed in sawn bluestone pavers as per Council design standard
Rationale for change:	Disability Discrimination Act access requirements, facilitate outdoor café areas, streetscape improvements etc.
Location:	Central city
Any other notes:	Mainly done by developers as part of their development works to comply with planning permit requirements. Council only allow bluestone paving in lightly trafficked laneways. Has only been done in Central Business District areas.

Figure 22: Driver Lane – reconstructed in sawn bluestone paving – built 2014

Figure 23: Driver Lane – crossing reconstructed in sawn bluestone paving blocks – built 2014

Scenario #13: Permeable pavement

Original condition:	Non-permeable paving treatment
Outcome after works:	Pavement surface (footpath or road) is constructed in a permeable paving treatment which allows water to penetrate through the paving to water tree roots below
Rationale for change:	Environmental sustainability: to make rainwater and stormwater runoff available for tree roots to reduce the need for main water use and to improve tree health
Location:	Any appropriate area throughout the municipality where trees exits or new trees are being planted
Any other notes:	

Figure 24: Use of permeable 'pebble' style paving in a tree plot

Figure 25: Use of permeable sawn bluestone sets at the edge of a footpath

Scenario #14: Kerb and channel treatment: heritage areas/ outside central city

Original condition:	Bluestone kerb and channel
Outcome after works:	If we are replacing an existing asphalt footpath with new asphalt and there is an original bluestone kerb and channel abutting: If the kerb and channel is in good condition, we reuse the existing bluestone kerb and pitchers, resetting them straight. If the kerb and channel is in poor condition, and we can find a stock of old bluestone kerb and pitchers which are in good condition, we replace existing kerb and pitchers with the kerb and channel from the stock. We retain the existing width of the channel (for example, two, three or four pitchers wide) unless there is an existing or planned on street bike lane or there is an adjacent access location and we need to achieve compliance with the Disability Discrimination Act.
Rationale for change:	Maintaining heritage values Compliance with the Disability Discrimination Act Reuse of bluestone pitchers for environmental sustainability
Location:	All areas outside the central city
Any other notes:	In the future, we may investigate lifting the pitchers, cutting them flat and re-laying a wide channel to achieve Disability Discrimination Act compliance whilst also retaining the heritage character by retaining a wide pitcher channel.

Figure 26: Wide pitcher channel retained

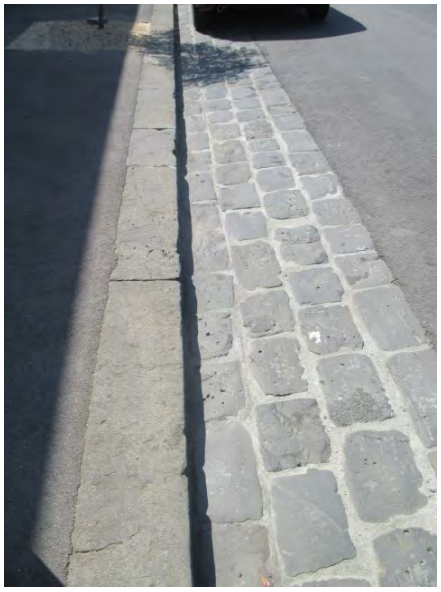


Figure 27: Wide pitcher channel retained

Figure 28: Bluestone retained

Figure 29: Wide pitcher channel retained

Scenario #15: Kerb and channel treatment: central city

Original condition:	Bluestone kerb and channel
Outcome after works:	In the central city, when we are replacing an existing asphalt footpath with new asphalt, if there is an original bluestone kerb and channel abutting the footpath which needs replacing, we use new sawn bluestone and gutter stone.
Rationale for change:	
Location:	Central city
Any other notes:	

Figure 30: New sawn bluestone kerb and channel installed adjacent to asphalt footpath

Figure 31: New sawn bluestone kerb and channel installed adjacent to sawn bluestone paving footpath

Scenario #16: Tree island and median treatments, central city

Original condition:	Tree island or median
Outcome after works:	Within the central city, the City of Melbourne always constructs medians and tree islands in sawn bluestone.
Rationale for change:	Use of sawn bluestone is consistent with footpath treatments within the central city
Location:	Central city
Any other notes:	

Figure 32: Median constructed in sawn bluestone with granitic gravel infill

Figure 33: Bluestone kerb tree island

Scenario #17: Tree island and median treatments, outside central city

Original condition:	Tree island or median
Outcome after works:	Outside the central city, City of Melbourne always constructs medians and tree islands in pre-cast exposed aggregate concrete
Rationale for change:	Use of concrete instead of sawn bluestone is consistent with footpath treatments outside central city
Location:	Outside central city
Any other notes:	

Figure 34: Median constructed in exposed aggregate precast concrete kerb

Figure 35: Median constructed in exposed aggregate precast concrete kerb retaining old bluestone kerb radials

Scenario #18: Crossings into private property

Original condition:	Crossings into private property
Outcome after works:	When our works involve vehicle crossings into private properties, we have the discretion to retain original bluestone pitcher crossings or remove the pitcher pavement and reconstruct the crossing.
Rationale for change:	Balancing the need for safe access to and from private properties with heritage values
Location:	Within the central city, we remove the pitcher pavement and reconstruct the crossing in asphalt. In areas where heritage controls apply, if we propose to replace a pitcher crossing with asphalt we seek the property owner's feedback. We only retain a bluestone pitcher crossing if the property owner requests it. In this case we would lift the pitchers and re-lay the crossing more evenly.
Any other notes:	We now also have the option of lifting the pitchers, cutting them flat and re-laying them to provide a more even crossing surface, however we have not yet used this technique for a private crossing.

Figure 36: Crossing reconstructed in concrete

Figure 37: Crossing reconstructed in asphalt