WAVERLEY
COUNCIL

PUBLIC DOMAIN
Technical Manual

Revision G - August 2020

This Public Domain Technical Manual supersedes the Public Domain Technical Manual Bondi Junction Centre (2008), The Local Local Centres Public Domain Technical Manual (2006) and the draft Open Space Technical Manual.

The Public Domain Technical Manual was prepared by Waverley Council, Infrastructure Services, Open Space and Recreation team.

With contributions by Waverley Council Departments: Parks Operations, Urban Planning Policy and Strategic, Environmental Sustainability, Community Programs and Project Waverley.

Drawings and details included in this document are a guide only and not to be issued for construction.

Rev	Date	Name	Initials
A	09/06/15	Shaping Waverley and Creating Waverley	SM /YF
B	27/07/15	Shaping Waverley and Creating Waverley	SM /YF
C	31/08/15	Shaping Waverley	SM
D	20/06/17	Creating Waverley	AC/VH
E	09/01/19	Creating Waverley	AC
F	24/10/19	Infrastructure Services	AC
G	04/08/20	Infrastructure Services	BS/AC

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Contents (continued)

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1 Introduction

Purpose of This Document

Waverley's local government area boasts some of the most remarkable and beautiful urban and natural landscapes in Australia. Nevertheless, there is an opportunity to make them even better. It is important to consider the quality of the whole public domain, not just the special places. People should experience the entire municipality as a 'great place'.

The purpose of this Public Domain Technical Manual (PDTM) is to promote and reinforce a strong sense of place in Waverley's civic spaces. It will help to improve the quality of the public domain and provide a continuity of design across Waverley's diverse urban landscape.

The Technical Manual provides a coordinated, standard palette of materials, finishes and furniture to guide the design and maintenance of Local Centres, parks, open spaces and streets throughout the municipality.

The manual also identifies Waverley's 'special places' in which non-standard elements may be used. These include:

- selected high profile places;
- locations that have a distinctive character where the standard palette would be inappropriate physically or visually; and
- places or features of particular heritage significance that are to be conserved, requiring specific treatment.

The manual sets out considerations and controls for the design of custom elements for these special places.

Who This Document is For

The Public Domain Technical Manual guides Council Designers, Park Supervisors, the Construction and Maintenance Team, external consultants and contractors and Development Application staff on the use of materials, finishes, furniture, design treatments and details.

How to Use This Document

The Technical Manual is organised into 3 sections.

1. The Introduction firstly sets out the document's purpose and guiding principles. The principles form the selection criteria for the materials, finishes, furniture and guide design treatments and details.
2. The second section describes the varying character of Waverley's open spaces and parks across the municipality and sets out the quality standards to be applied. It describes the various characterisations and hierarchies of the spaces throughout the local government area and how these should be treated.
3. The third section comprises the guidelines and provides the necessary information to select, locate and install standard items. It also provides useful information for concept and design development of the public domain and for specific custom design elements.

The Technical Manual is an evolving document. With the consensus of the Project Control Group, pages may be revised to incorporate improvements, items may be discontinued and replaced with better solutions as they arise and when necessary, new items may be included.

Methodology Used

The development of a useful and meaningful Technical Manual requires in-depth knowledge and understanding of the qualities of the place, it's history, uses, the needs of the community and the natural environment.

The first phase of developing this manual involved on the ground and desktop analysis of Waverley's public domain. This included review of the following Strategic Planning documents:

- Local Local Centres - Public Domain Improvement Plan;
- Local Local Centres - Public Domain Technical Manual;
- Bondi Junction Centre - Public Domain Technical Manual;
- Waverley Street Design Manual;
- Looking Good Strategy;
- Tree Management Plan;
- Access and Mobility Policy and Action Plan 2011-2015;
- Waverley Development Control Plan (Amendment No.2) 2012; and
- Bronte Centres policy 2004.

The next phase involved researching currently available materials, finishes and furniture and best practice details, then testing their suitability against the design principles. Where relevant, items were priced by a minimum of 3 suppliers so that the selected supplier could be placed under contract.

The third phase entailed selection. In order to utilise Council's vast knowledge and understanding of Waverley's open spaces, representatives from -
Clean and Attractive Waverley (Maintenance and Construction);
Clean and Attractive Waverley (Parks Operations);
Creating Waverley (Design);
Creating Waverley (Open Space Planning);
Shaping Waverley (Design and Heritage); and
Sustainable Waverley (Green Infrastructure)
were invited to take part in a series of 10 workshops to discuss and select items to be included in the manual. The workshop format included review of what we are currently using, presentation of alternative selections/construction details, analysis of the various options and decision making. Decisions were based on consensus agreement.

Throughout the project, draft revisions of the document were issued so that Council could begin phasing in the new palette of materials, finishes and furniture.

Principles

The following principles form the basis for the criteria used to select the standard palette of materials, finishes, furniture and guide design treatments and details.

Character

Define, reveal and strengthen the distinctive qualities of Waverley's landscape character.

Use a consistent palette of materials, finishes and furniture that reflects Waverley's landscape character.

Conserve Waverley's urban and landscape heritage.

Quality

Provide high quality, attractive and robust materials, finishes and furniture.

Design, selection and Installation

Standardise selection, location and installation of materials, finishes and furniture.

Identify 'special places' that have their own distinctive character and custom design elements and furniture for those places.

Fit for Purpose

Ensure the materials, finishes and furniture palette support the uses of Waverley's public domain.

Make sure the materials, finishes and furniture palette meet universal access requirements.

Ensure the design and positioning of furniture and landscape elements meet Australian Standards requirements and safety best practices.

Sustainability

Select the palette of materials, finishes and furniture based on the following principles of sustainability :

Environmental

- Source materials with low embodied energy
- Source Australia timber that has AFS, FSC,or PEFC certification
- Source energy efficient lighting
- Base plant species selection on: suitability to location, salt, drought, heat and wind tolerance; resistance to pathogens; low water and maintenance requirements; shade provision, life span and habitat embellishment
- Preference porous surface treatments
- Select repairable furniture
- Choose recycled materials
- Select robust and durable materials
- Reduce water use and waste
- Promote water re-use
- Conserve our biodiversity

Social

- Support social enterprises
- Promote comfortable spaces that support social interaction

Economic

- Prioritise value for money
- Source local materials

Design Considerations

The following standard design elements should be considered when designing in the public domain.

General Considerations

- Street furniture, paving and lighting create the detail and quality in the public domain.
- Furnishing in the public domain should respond to the scale, function and location of each place. There should be a limited range of materials used in a variety of ways to promote a uniformity in maintenance practices.
- Consider wider context.
- The design should encourage people to comfortably walk, ride, and access public transport.
- Consider integrating Water Sensitive Urban Design.
- Consider the future users and future character of the place.
- Always de-clutter.
- Protect pedestrians and cyclists from vehicles with fully pedestrian or regulated crossings where possible.
- Maintain desire lines.

Furniture

- Variety of seating options to accommodate a range of users.
- Seating is to be located, approximately every 60m along the street in town and Local Centres, in relation to street trees, and at bus stops, drop off points and near community facilities and public institutions. Furniture is to be set back from primary paths of travel and linked to footpaths with hard surfaces to match existing adjoining hard surfaces.
- Bins are to be located on the kerb side, 1.2m distance from lights at corners, and outside community buildings and food outlets. There should be a maximum of three bins per block.

Planting

- Consider view lines at street corners for placement of street trees and planting.
- Spacing for trees to match surrounding locations.

Universal Access

- Maintain or enhance passive surveillance and public safety.
- Establish a clear line of travel for pedestrians separate from the carriageway.
- Group objects in a logical manner.
- Promote accessibility provision of kerb ramps at all street corners & crossings, and comfort through regular placement of seating.
- Provide a network of linking, continuous, accessible pathways.
- Provide accessible parking and / or drop off areas.
- Provide universally accessible pathways.
- Provide universally accessible facilities.
- Provide safe and frequent pedestrian crossings.
- Provide wayfinding and signage information incorporating universally accessible features.

Lighting

- To illuminate high use areas in the LGA to provide adequate visibility for pedestrian and vehicular traffic. This includes conflict locations where there is safety concerns like: pedestrian crossing, intersections, changes of alignment (on sharp bends) and along vehicular/ pedestrian routes
- Support use of parks
- Activating public spaces
- Showcasing urban features
- Safe walking, cycling, public transport and driving

Surfaces

- Surfaces to meet Australian Standards for slip resistance.
- Appropriate set backs from kerbs, loading zones and universal access parking bays for bins, seats, poles and bike racks.
- Allow a minimum of 2.4m paved passage between property/ building line and any street elements.
- The area between kerb and building line to have a maximum cross fall of 1:40 to the kerb, and to match with existing adjoining levels.

Traffic Calming

- Prioritise pedestrian movement through a tighter kerb radius at corners to slow turning traffic and minimise clutter.
- Measures to control traffic should be balanced with pedestrian comfort and convenience, the existing geometry of streets, and the desired future character of each centre.

Water Sensitive Urban Design (WSUD)

WSUD is an approach to urban planning and design which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply into streetscape design. WSUD has many environmental benefits as well as contributing to the aesthetics and functionality of the public domain.

Given the high recreational and conservation value of Centennial Park ponds, Sydney Harbour, neighbouring beaches and remnant vegetation, Waverley Council is investing in projects that treat and remove pollutants from stormwater discharged into waterways and remnant vegetation.

Council utilises a range of water sensitive urban design and traditional infrastructure to filter or remove stormwater pollutants including bioretention, sediment basins, treatment pits, gross pollutant traps, hydrocon pipes, permeable paving, net tech devices as well as stormwater harvesting and reuse systems.

In Waverley, WSUD principles are followed through:

- Selecting plant species that help to conserve or purify water;
- Implementing passive irrigation methods for planting areas in streets;
- Installing permeable paving in areas with large paving surfaces or where water purification is required for groundwater recharge;
- Bioretention pits and raingardens to filter pollutants from stormwater before recharging the groundwater or discharging to the stormwater drainage system.

WSUD is very important in Waverley and should be considered in the following scenarios:

- Priority for protection of Centennial Park ponds, Sydney Harbour and coastal beaches through removal of stormwater pollutants.
- Aquifer recharge via infiltration to be applied in areas identified for infiltration in the Waverley Water Management Technical Manual.
- Areas where surfaces are being used by pedestrians. In this case under-ground stormwater treatment solutions should be considered such as permeable pipes and sediment basins.

This PDTM provides details of passive irrigation systems and stormwater quality improvement systems using bioretention treatments and passive irrigation treatments, as part of WSUD, under the Planting section. Other systems mentioned here are under development and can be applied in consultation with the Council.

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Waverley's Public Domain, Parks and Open Spaces

2

Strategic, Local and Neighbourhood Centres

The public domain is generally considered to be the land that is in public ownership and freely accessible to the public: the streets, parks and squares of the urban area.

Within the Local Centres, the public domain is generally comprised of streets and small public spaces, with some centres having small local parks and green spaces adjacent.

The public domain may also include the interface between public and private, such as spaces where building setbacks form an extension to streets and open spaces. All these spaces have been considered together for the purposes of the PDTM.

Character

When we think about the character of Waverley's urban centres, the images that comes to mind are ones closely associated with the urban character of Bondi Junction and the 'coastal character' of Bondi Beach. There are however quite distinct character shifts across the municipality. These can be grouped into 3 character types: Strategic Centres, Local Centres and Neighbourhood Centres with Special Places punctuating this streetscape.

Strategic Centres

Bondi Junction

Bondi Junction is one of 13 Major Centres in Sydney as defined by State Government Metropolitan Strategy and is the only Major Centre servicing the eastern sub-region, resulting in a broad catchment area. It has high volume of pedestrians, contains the busiest bike routes in Australia (2011), the bus/ rail transport interchange, Westfield's global flagship shopping centre which receives on average 58,000 visitors per day; and the popular Eastgate Shopping Centre adding to the activity in the Strategic Centre. Coupled with this are a large numbers of buses, loading vehicles and trucks circulating throughout the centre daily.

Bondi Junction is a regionally significant bustling urban environment and its civic spaces should reflect this position through the use of high quality materials and finishes that are timeless, durable, and evoke a strong sense of place.

Local Centres

Throughout Waverley there are a number of local Local Centres. These are smaller centres serving the local community, separate to the regional role of Bondi Junction and Campbell Parade at Bondi Beach.

The centres enjoy a unique position and character. Some of these centres are small but all provide valuable services, facilities and meeting areas to local residents and users. Thus the standard high quality paving, at a finer grain scale to that of Bondi Junction, is required in these areas along with standard furniture, to reinforce Local Centres as a local destination. Special areas may be treated with custom high quality elements to accentuate the role they play for creating interest and diversity.

Bondi Beach Local Centre, Bondi Beach

The Bondi Beach Local Centre includes Hall Street, Glenayr Avenue, Gould Street and parts of O'Brien Street, Curlewis Street and Beach Road. It is the second largest centre after Bondi Junction, serving the large Bondi Basin community and also the large number of visitors to Bondi Beach. The centre generally comprises a mix of commercial and retail uses at ground floor with residential above and has a somewhat Bohemian character combining commercial and coastal influences and is distinctly different from Campbell Parade and the beachfront area.

Bronte Rd, Charing Cross

Charing Cross is located in a heritage conservation zone along a strip of Bronte Road connecting the eastern beaches, Bondi Junction, Centennial Park and the City.

The centre has a diverse range of local shops and services that support the daily needs of local residents, workers and visitors who frequent the area. It has a 'high street' character, supporting the local commercial strip as well a major public transport route to and from the City.

Bondi Road, Bondi

Bondi Road is a significant transport corridor. It runs along the 'spine' connecting Bondi Beach to Bondi Junction and the city, with the existence of numerous bus stops for routes 333, 381, 380, 382 and a constant flow of pedestrians, cyclists, buses and other vehicles.

Rose Bay North and South

Old South Head Road is the local government boundary between the Waverley and Woollahra Councils. Two clusters located along Old South Head Road between Onslow Street and Strickland Street in the vicinity of Oceanview Avenue have been combined and are know as the Rose Bay Local Centres.

As the streetscape is divided between two councils a coordinated approach is required to continue to attain a unified streetscape design. Consultation with Woollahra Council is required prior to commencing any new streetscape works.

Neighbourhood Centres

Small neighbourhood centres are local destinations that create diversity, often with small scale shops that provide a meeting place for community. The use of high quality paving and a standard range of furniture is selected to visually and physically accentuate these centres from the residential surroundings.

Neighbourhood centres include:

- Fletcher Street, Tamarama
- Corner Murray Street and Belgrave Street, Bronte
- Murriverie Road East and West, Bondi
- Flood Street, Bondi
- Blair Street , Bondi
- Blake Street and Military Road, Dover Heights

Some larger Neighbourhood Centres also include:

Bronte Road, Bronte Beach

Bronte Beach centre sits at the lowest point of the Macpherson Street, Bronte Road loop. The terminus for the 378 bus service, which includes bus lay by and loading areas, is located opposite the commercial/ dining strip. The terminus includes a heritage bus stop.

The centre is characterised by the setting of the park and the beach, with a relaxed atmosphere associated with recreation and leisure. The built form is mixed-use with largely shop top housing buildings.

The café strip and beach attract visitors, making a diverse population. Outdoor dining dominates the footpath, restricting pedestrian movement.

Macpherson Street, Bronte

The Macpherson Street local Local Centre provides approximately 60 small commercial premises spread out along the length of the street stretching from Leichhardt Street in the west to St Thomas Street in the east.

Wairoa Avenue, Bondi

The centre comprises of two areas. The first is at the northern end towards Blair Street. The second is at the south end towards Warners Avenue. Both areas provide local cafes and small eateries frequented by local residents and visitors in the summer period. The two areas are fractured by residential dwellings, parklands and the North Bondi Primary school.

Special Places

Special Places punctuate the streetscape. These places are focal points in the street and contribute a special amenity in terms of community use and street character. They are often formed by kerb extensions, street closures or by the particular geometry of street intersections. Laneways are also considered as special places as they offer a finer-grain experience enriching the public domain.

Within these special places, there is an opportunity to create changes in character that will distinguish the focal places from the general streetscape.

Each place can have either individual paving that contrasts with the standard street paving, or the standard paving in an individual pattern. Bespoke furniture can be incorporated and individual lighting projects.

Campbell Parade, Bondi Beach

Campbell Parade is the gateway and urban edge to the world famous Bondi Beach, offering restaurants, cafes, bars, shops, hotels and convenience outlets. More than simply an access point to the beach, Campbell Parade is a crucial part of the Bondi Beach experience.

The arrival, views, architecture, landscape, land uses, the amenities it offers beach users, the movement and accessibility it provides, and the street life and atmosphere it supports, all intrinsically affect the beach experience.

The status of Campbell Parade as a world class destination should be reflected through high quality materials, furniture and fixtures and finishes that are above and beyond the standard palette outlined in this document. Campbell Parade requires a specific design to reinforce its importance as an iconic beach boulevard.

The Campbell Parade area extends from Sandridge Street to Hastings Parade, on both sides of the street.

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Urban Centres Map

The adjacent map locates Waverley's Strategic Centre, Local Centres and Neighbourhood Centres and highlights some important Special Places.

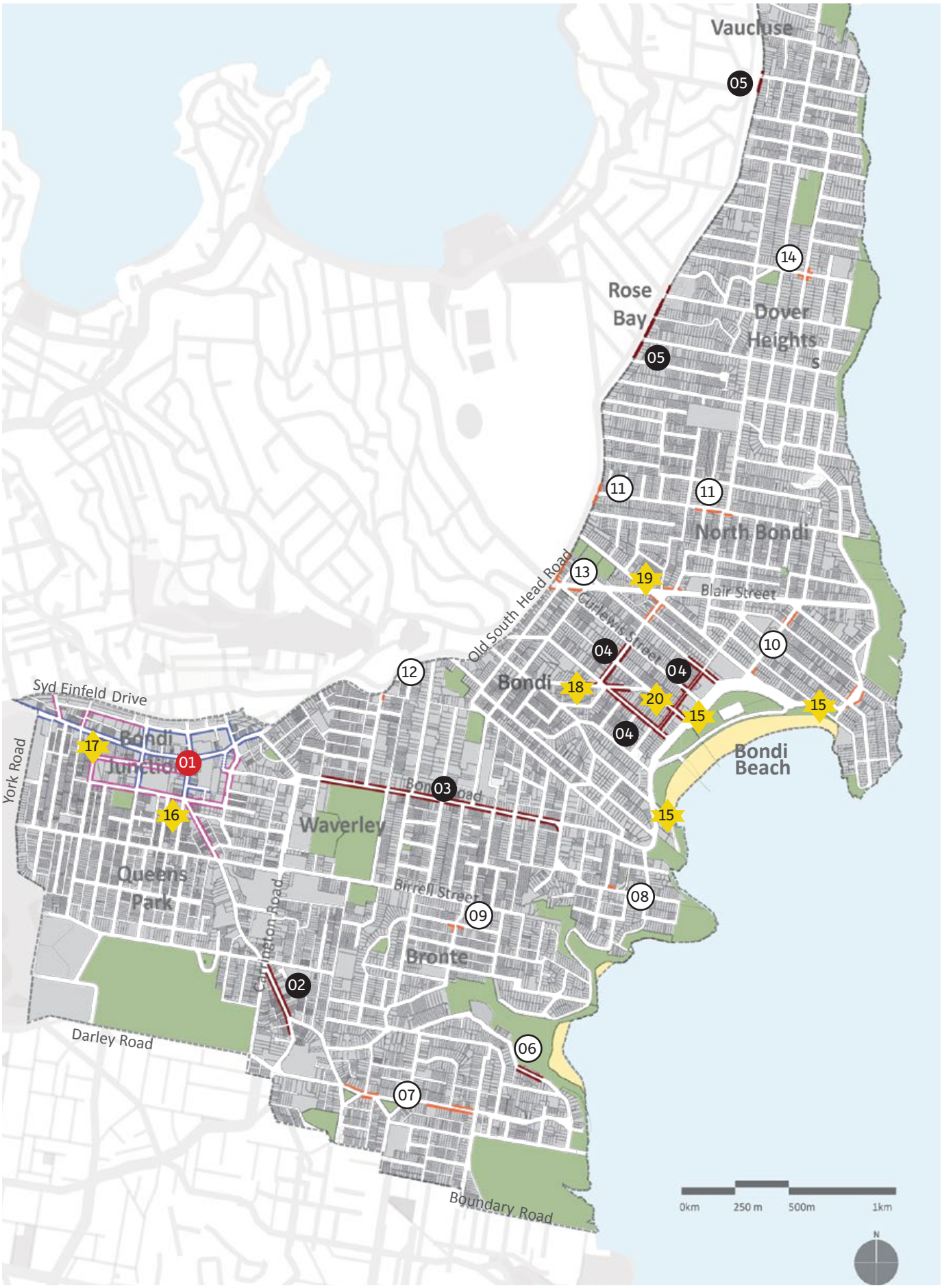
S. No	Strategic Centre
01	Bondi Junction
S. No	**Local Centres**
02	Bronte Rd, Charing Cross
03	Bondi Road, Bondi
04	Bondi Beach Local Centre, Bondi Beach
05	Rose Bay North and South
S. No	**Neighbourhood Centres**
06	Bronte Road, Bronte Beach
07	Macpherson Street, Bronte
08	Fletcher Street, Tamarama
09	Corner Murray Street and Belgrave Street, Bronte

S. No	Neighbourhood Centres
10	Wairoa Ave, North Bondi
11	Murriverie Road East and West, North Bondi
12	Flood Street, Bondi
13	Blair Street, Bondi Beach
14	Blake Street and Military Road, Dover Heights
S. No	**Special Places**
15	Campbell Parade, Bondi Beach
16	Brisbane Plaza, Bondi Junction
17	Waverley Library Forecourt, Bondi Junction
18	Junction of O'Brien Street and Hall Street, Bondi Beach
19	Seven Ways, Bondi Beach
20	Roscoe Mall, Bondi Beach

Legend

- 01 Strategic Centres
- 02 Local Centres
- 11 Neighbourhood Centres
- 15 Special Places

Note. There are more 'special places' than denoted on this map. Consult with Council's Urban Design or Landscape Architecture teams prior to commencement of any work that may involve a bespoke furniture and finishes palette.


Vaucluse
05
14
Rose Bay
Dover Heights
05
11
11
North Bondi
13
19
Blair Street
Old South Head Road
Curlewis Street
10
04
04
12
Bondi
18
20
15
15
04
Bondi Beach
Syd Einfeld Drive
17
Bondi Junction
01
York Road
03
16
Waverley
15
Queens Park
Birrell Street
08
09
Carrington Road
Bronte
02
Darley Road
06
07
Boundary Road
0km
250 m
500m
1km
N

Open Spaces

We have 79 parks and reserves to manage, which service a range of activities and users. When we think about the character of Waverley's open spaces, the image that comes to mind is one closely associated with 'coastal character'. There are however, quite distinct character shifts across the municipality.

Councils draft Open Space and Recreation Strategy introduces a hierarchy and classification system of our parks and reserves. The hierarchy helps Council to prioritise maintenance decisions and improvement activities by providing an understanding of the level of provision and facilities expected for each type of open space. It indicates the catchment size and the extent that people travel to visit a space, and based on this information informs the approach to maintenance and servicing required for each space.

Our classification of spaces by five types:

Bondi Beach and Park Landscape: Unique and high profile destination in Waverley that attracts visitors locally, regionally and internationally and provides access to water-based recreation activities, spaces to socialise and relax, and high quality amenities.

Beach Parks: Provides open green space and space for passive and active recreation and includes access to water-based activities. Provides facilities and a landscape that attracts visitors from beyond the Waverley LGA.

Sports Parks: Provides open green space and space for passive recreation and team and organised sports. Provides sporting facilities that can cater for group and organised sports.

A destination park that services a substantial residential area or at least two local suburb catchments.

Neighbourhood: Provides open green space for primarily passive and casual turn up and play recreation. Provides green spaces to walk through. Caters to the local catchment of residents in the suburb or LGA.

Local: Provides open green space for primarily passive recreation. Provides green spaces to walk through. Includes small parks and parks on street verges and road closures and caters for immediate residents in the area.

Bondi Park and our beach parks and sports parks need to be looked after carefully, through use of high end materials, finishes and custom elements.

Special Places

A number of Waverley's open spaces have been identified as 'special places', where the use of custom design elements and nonstandard finishes are appropriate. These special places were selected base on the following criteria:

- high profile places;
- places that have a distinctive character where the standard palette would be inappropriate physically or visually; and
- places with features of particular heritage significance that are to be conserved, requiring special treatment.

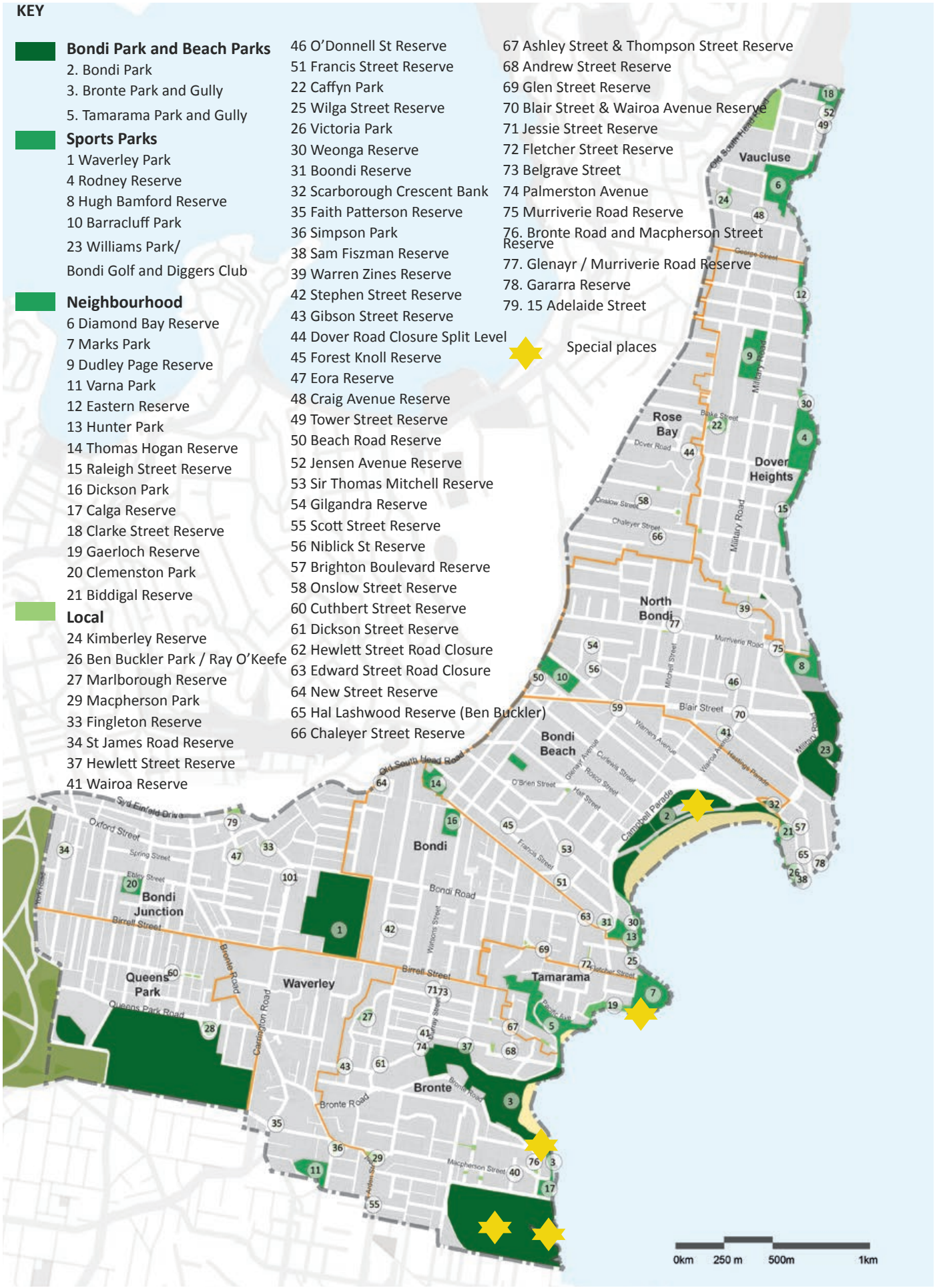
Waverley's special places include:

- Bondi Pavilion and surrounds
- Bronte Pool
- Coast Walk
- Waverley Cemetery

The adjacent map locates Waverley's open spaces and highlights the hierarchy and Special Places.

Playgrounds

The PDTM does not apply to the selection of play elements as these are typically site specific and should cater to wider play needs, as identified in the current version of the Waverley Council Play Space Strategy and draft Inclusive Play Strategy.


KEY
Bondi Park and Beach Parks
2. Bondi Park
3. Bronte Park and Gully
5. Tamarama Park and Gully
Sports Parks
1 Waverley Park
4 Rodney Reserve
8 Hugh Bamford Reserve
10 Barracluff Park
23 Williams Park/
Bondi Golf and Diggers Club
Neighbourhood
6 Diamond Bay Reserve
7 Marks Park
9 Dudley Page Reserve
11 Varna Park
12 Eastern Reserve
13 Hunter Park
14 Thomas Hogan Reserve
15 Raleigh Street Reserve
16 Dickson Park
17 Calga Reserve
18 Clarke Street Reserve
19 Gaerloch Reserve
20 Clemenston Park
21 Biddigal Reserve
Local
24 Kimberley Reserve
26 Ben Buckler Park / Ray O'Keefe
27 Marlborough Reserve
29 Macpherson Park
33 Fingleton Reserve
34 St James Road Reserve
37 Hewlett Street Reserve
41 Wairoa Reserve
46 O'Donnell St Reserve
51 Francis Street Reserve
22 Caffyn Park
25 Wilga Street Reserve
26 Victoria Park
30 Weonga Reserve
31 Boondi Reserve
32 Scarborough Crescent Bank
35 Faith Patterson Reserve
36 Simpson Park
38 Sam Fiszman Reserve
39 Warren Zines Reserve
42 Stephen Street Reserve
43 Gibson Street Reserve
44 Dover Road Closure Split Level
45 Forest Knoll Reserve
47 Eora Reserve
48 Craig Avenue Reserve
49 Tower Street Reserve
50 Beach Road Reserve
52 Jensen Avenue Reserve
53 Sir Thomas Mitchell Reserve
54 Gilgandra Reserve
55 Scott Street Reserve
56 Niblick St Reserve
57 Brighton Boulevard Reserve
58 Onslow Street Reserve
60 Cuthbert Street Reserve
61 Dickson Street Reserve
62 Hewlett Street Road Closure
63 Edward Street Road Closure
64 New Street Reserve
65 Hal Lashwood Reserve (Ben Buckler)
66 Chaleyer Street Reserve
67 Ashley Street & Thompson Street Reserve
68 Andrew Street Reserve
69 Glen Street Reserve
70 Blair Street & Wairoa Avenue Reserve
71 Jessie Street Reserve
72 Fletcher Street Reserve
73 Belgrave Street
74 Palmerston Avenue
75 Murriverie Road Reserve
76. Bronte Road and Macpherson Street Reserve
77. Glenayr / Murriverie Road Reserve
78. Gararra Reserve
79. 15 Adelaide Street
Special places
Vaucluse
Rose Bay
Dover Heights
North Bondi
Bondi Beach
Bondi
Bondi Junction
Queens Park
Waverley
Tamarama
Bronte
Old South Head Road
Oxford Street
Bondi Road
Birrell Street
Bronte Road
Queens Park Road
Carrington Road
Military Road
Campbell Parade
Blair Street
Murriverie Road
Francis Street
Macpherson Street
0km
250 m
500m
1km

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3 Technical Specifications

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Making a Selection

Strategic, Local and Neighbourhood Centres

The Urban Design Team, and Landscape Architects of the Open Space Planning Teams are responsible for the design of Waverley's strategic, local and neighbourhood centres.

When selecting and locating materials, finishes and furniture elements, it is important to consider: the overall layout and use, the desired character, the users' needs, the wider context and long term plan for the space, traffic calming measures and any specific site constraints such as heritage overlays.

Replacement of 'like for like' elements identified through Council's Strategic Asset Management Plan, are to be selected and installed as detailed in this manual.

When an alternative location for a replacement is sought, or a location for a new element is required, consult with a Council Landscape Architect.

Parks and Open Spaces

The Open Space Planning Team is responsible for the design of Waverley's parks and open spaces.

When selecting and locating materials, finishes, furniture and landscape elements, it is important to consider: the overall layout and use, the desired character, the users' needs, the wider context and long term plan for the space, the micro-climate and any specific site constraints such as heritage issues.

Replacement of 'like for like' elements identified through Council's Strategic Asset Management Plan, are to be selected and installed as detailed in this manual.

When an alternative location for a replacement is sought, or a location for a new element is required, consult with the Open Space Planning Team.

A.

Paving and Surface Materials

A.01

Kerbs

Diamond Sawn Basalt (Bluestone)

Function

- Bluestone for kerbs is the standard for significant works in Bondi Junction.

Supplier

Contractor to nominate based on below specifications.

Product

- Kerbs: Straight, transition, lintel, radial length varies x 300 x 150mm
- W 300mm
- All outdoor surfaces must meet Australian Standards for slip resistance in outdoor spaces.
- Australian basalt containing less thank 5% secondary materials

Installation

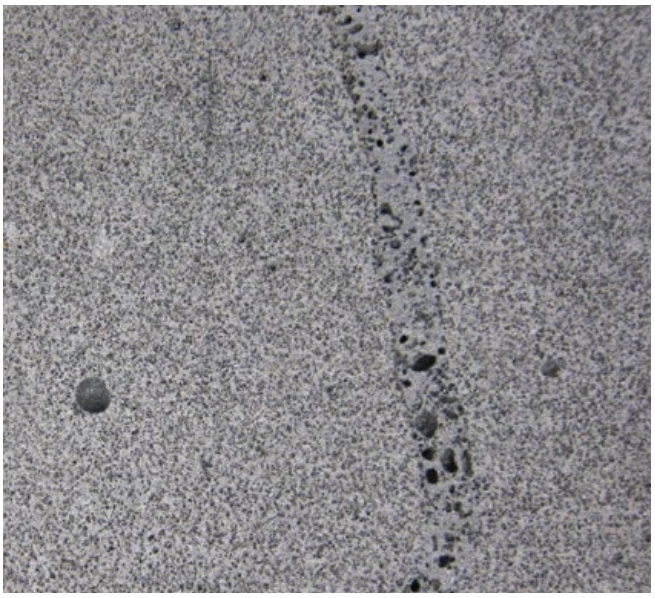
- under review

Maintenance

- under review

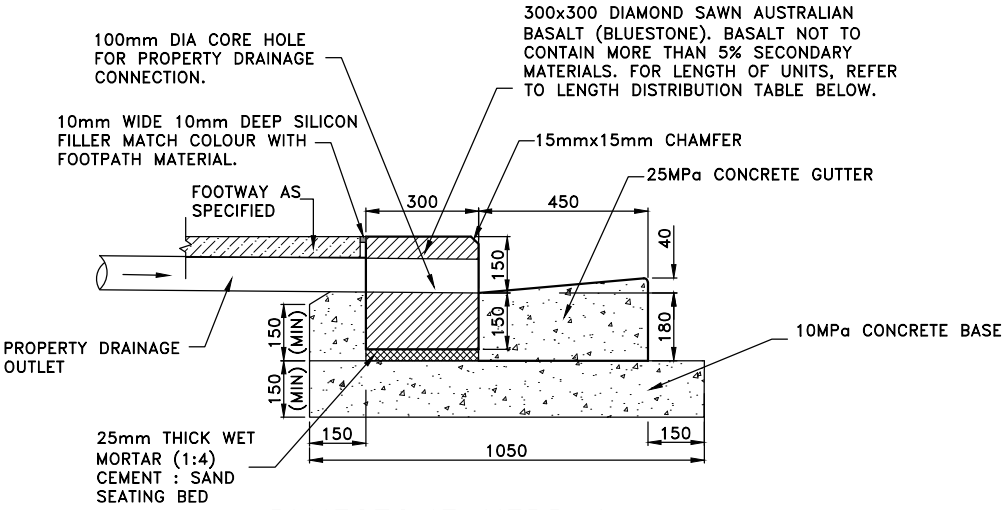
Also refer to

- Waverley Council Standard Road Drawings - R7



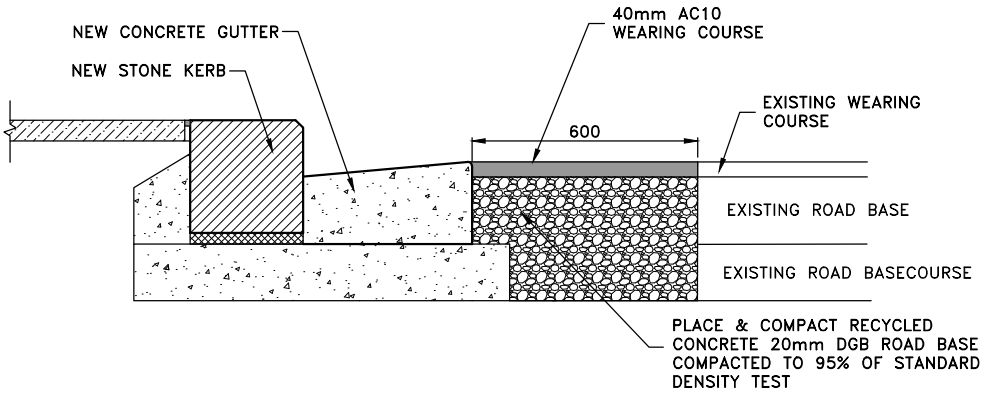
Australian basalt - Bamstone

Basalt kerb and concrete channel - Redfern



01 TYPICAL BLUESTONE KERB & INSTALLATION DETAILS

Scale 1:20



02 ROAD REINSTATEMENT

Scale 1:20

BLUESTONE KERB UNITS LENGTH DISTRIBUTION TABLE

SEGMENT LENGTH	% OF TOTAL LENGTH OF WORK
600 – 800 (mm)	20 MAX
800 – 1000 (mm)	25 MAX
1000 – 1250 (mm)	55 MIN

A.02

Kerb & Gutter

Concrete

Function

- Concrete kerb and Gutter in grey cement is the standard for Local Centres, Neighbourhood Centres and reinstated kerbs in Bondi Junction

Product

- 100mm Depth.
- Sulphate Resisting Cement to AS 3972.
- Synthetic Fibre Reinforcement (SFR)
- Recycled concrete aggregate.
- All outdoor surfaces must meet Australian Standards for slip resistance in outdoor spaces.

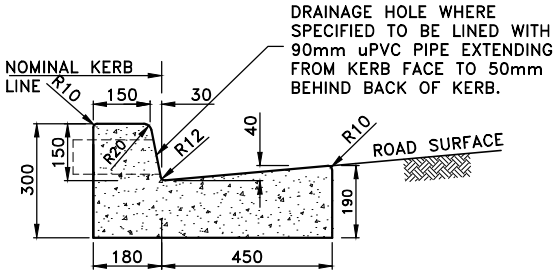
Installation

- Finish in-situ concrete flush with surrounding surface level.

Also refer to

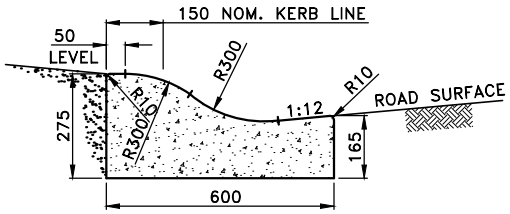
- Waverley Council Standard Road Drawings - R1

Concrete kerb and channel -Oxford Street, Bondi



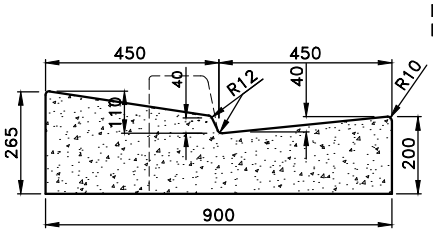
01 TYPICAL INTEGRAL KERB & GUTTER

Scale 1:20



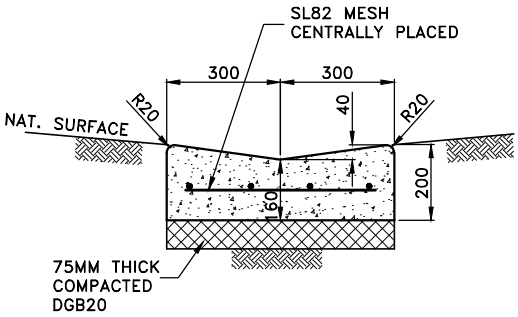
02 TYPICAL ROLL KERB

Scale 1:20



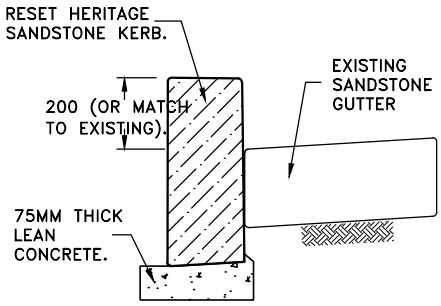
03 TYPICAL DRIVEWAY LAYBACK

Scale 1:20



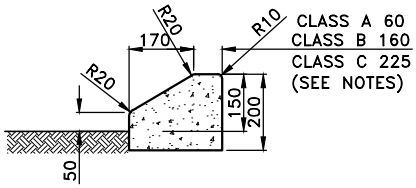
04 TYPICAL REINFORCED DISH CROSSING

Scale 1:20



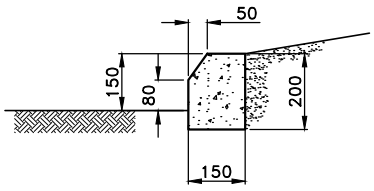
05 TYPICAL SANDSTONE KERB RESETTING DETAIL

Scale 1:20



06 MOUNTABLE KERB

Scale 1:20



07 TYPICAL BULLNOSE KERB

Scale 1:20

Paving Pattern Applications

Paving Pattern A :
Bondi Junction - New Significant works

Paving Pattern B :
Strategic and Neighbourhood Centres - New Significant works

Paving Pattern C :
Rose Bay - Significant works

Paving Pattern D :
Bondi Junction - Maintenance & Reinstatement works

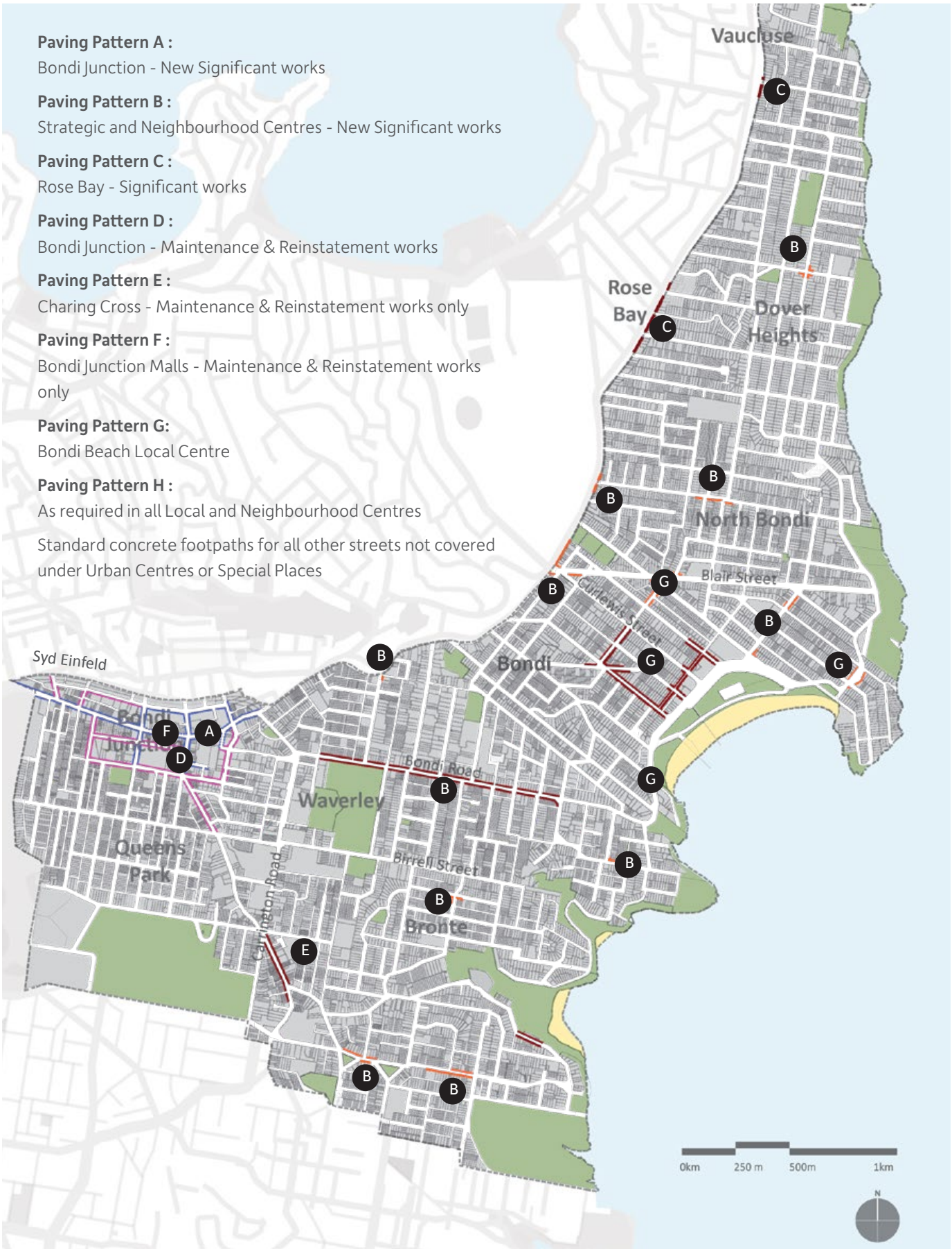
Paving Pattern E :
Charing Cross - Maintenance & Reinstatement works only

Paving Pattern F :
Bondi Junction Malls - Maintenance & Reinstatement works only

Paving Pattern G:
Bondi Beach Local Centre

Paving Pattern H :
As required in all Local and Neighbourhood Centres

Standard concrete footpaths for all other streets not covered under Urban Centres or Special Places



A.03

Paving Pattern A

New Bondi Junction Paving

Function

- For new significant works for footpaths and vehicle crossovers in Bondi Junction, with approval by Council landscape architect.

Supplier

- Urbanstone (Austral Masonry Pty Ltd)[1]
  02 9757 4644

Product

Body Paver

Pedestrian Grade
Product Code: SWIBL634HSP

Vehicular Grade
Product Code: SWIBL637HSP

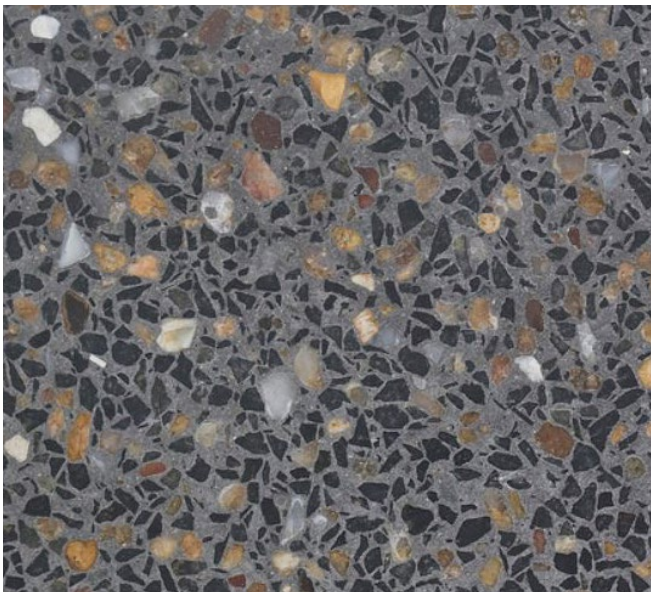
Materials and Dimensions

Body Paver

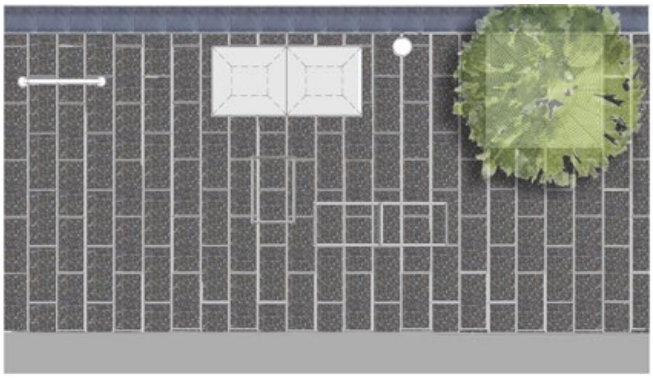
- 300 x 600 x 40mm
- 300 x 600 x 60mm (trafficable for general cross overs)
- 200 x 300 x 70mm (trafficable for high use cross overs
- Paving Pattern: Stretcher bond, no header.

General

- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer. The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.



Paver type 1 - ‘golden gunmetal’



Paving pattern A

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs.
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.

Inspection and Maintenance

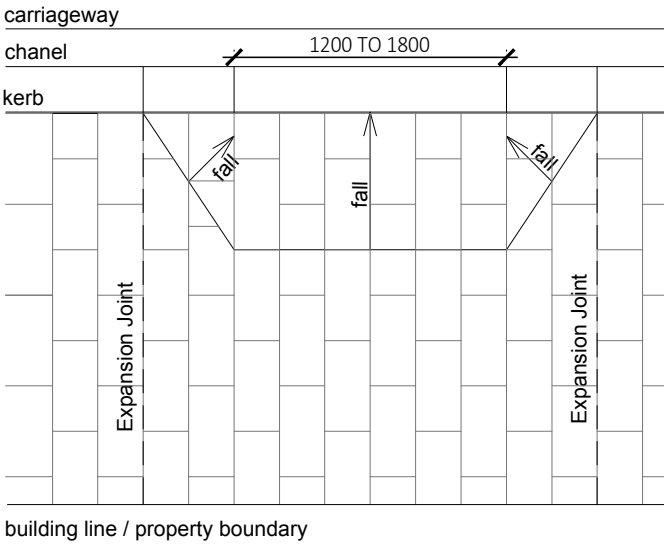
- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



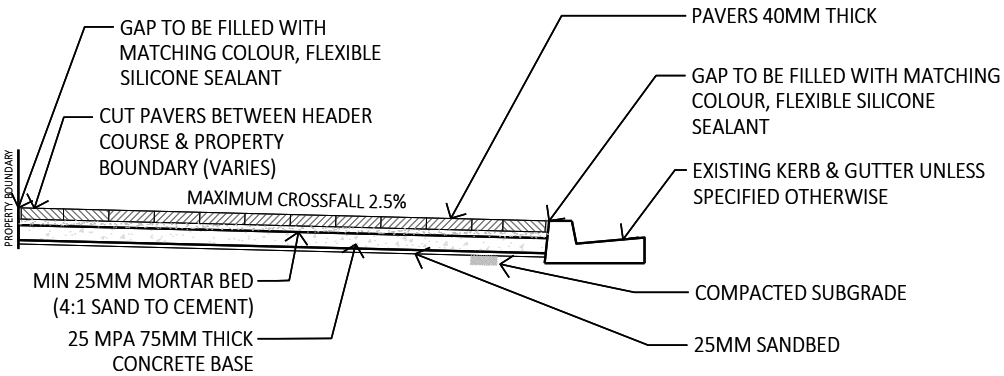
Note : Setout such that full & half pavers sit along roadside. Cut pavers at building line as required. Avoid small cuts.

01 PAVING PATTERN A - TYPICAL LAYOUT

Scale 1:50

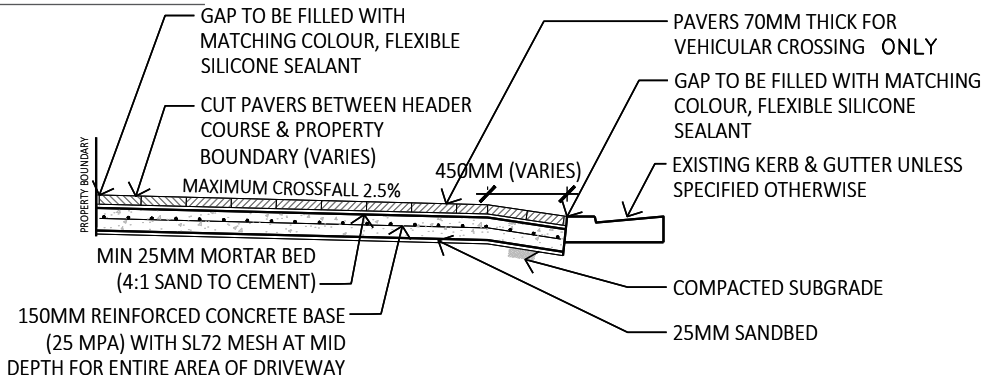
02 PAVING PATTERN A - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50



03 PAVING PATTERN A - TYPICAL DETAIL

Scale 1:50



Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

04 PAVING PATTERN A - TYPICAL CROSSOVER DETAIL

Scale 1:50

A.04

Paving Pattern B

Local and Neighbourhood Paving

Function

- For significant works for footpaths and vehicle cross overs in Local and Neighbourhood Centres excluding Bronte Beach or Special places.

Supplier

- Urbanstone (Austral Masonry Pty Ltd)[1]
  02 9757 4644

Product

Body Paver

Pedestrian Grade
Product Code: GUN334HSP

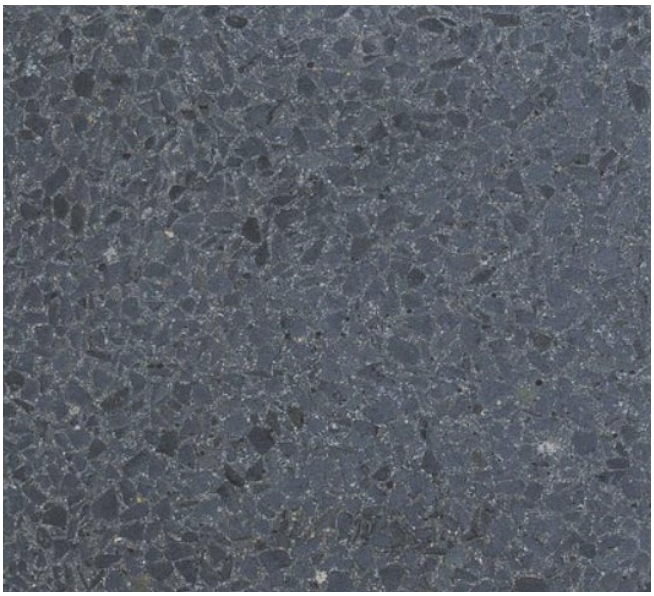
Vehicular Grade
Product Code: GUN337HSP

Materials and Dimensions

- 300 x 300 x 40mm
- 300 x 300 x 60mm (trafficable for cross overs)
- Paving Pattern: Stacked Bond, no header.
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs.
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.



Paver type 2 - ‘gunmetal’

Paving pattern B

Inspection and Maintenance

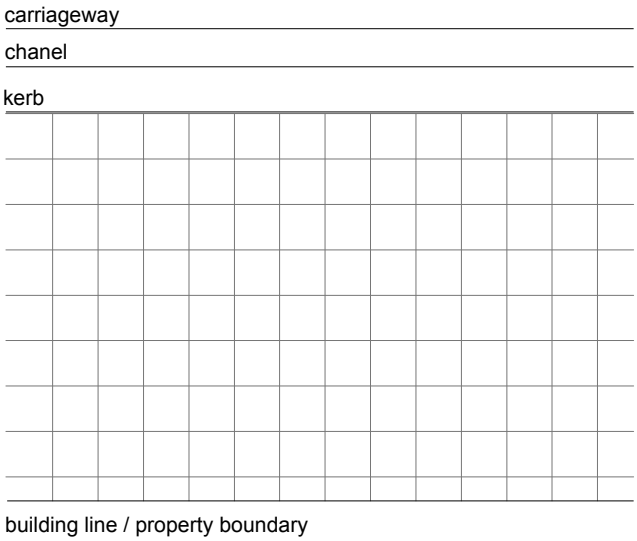
- Inspection Period: 6 months

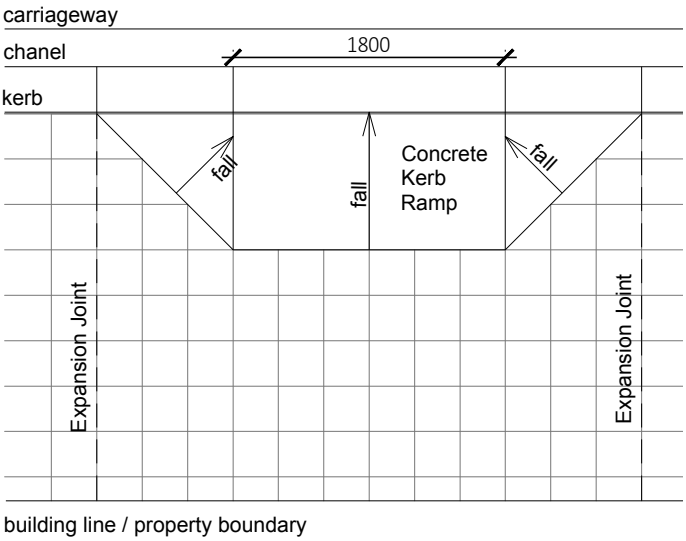
Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*





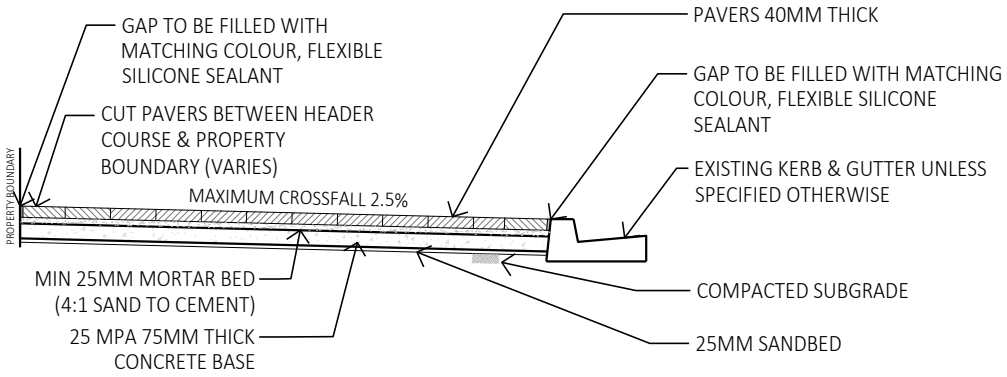
Note : Setout such that full pavers sit along roadside. Cut pavers at building line as required. Avoid small cuts.

01 PAVING PATTERN B - TYPICAL LAYOUT

Scale 1:50

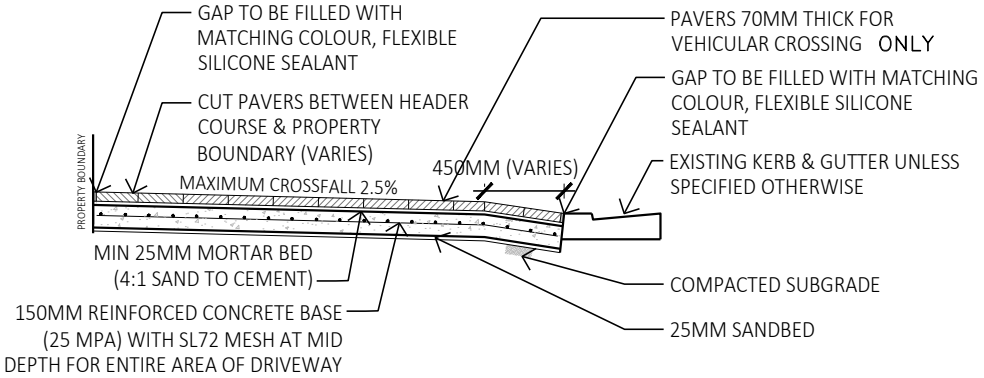
02 PAVING PATTERN B - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50



03 PAVING PATTERN B - TYPICAL DETAIL

Scale 1:50



Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

04 PAVING PATTERN B - TYPICAL CROSSOVER DETAIL

Scale 1:50

A.05

Paving Pattern C

Rose Bay Paving

Function

- For footpaths and vehicle crossovers on Old South Head Road and in Rose Bay Local Centres.

Supplier

- Urbanstone (Austral Masonry Pty Ltd)[1]
  02 9757 4644

Product

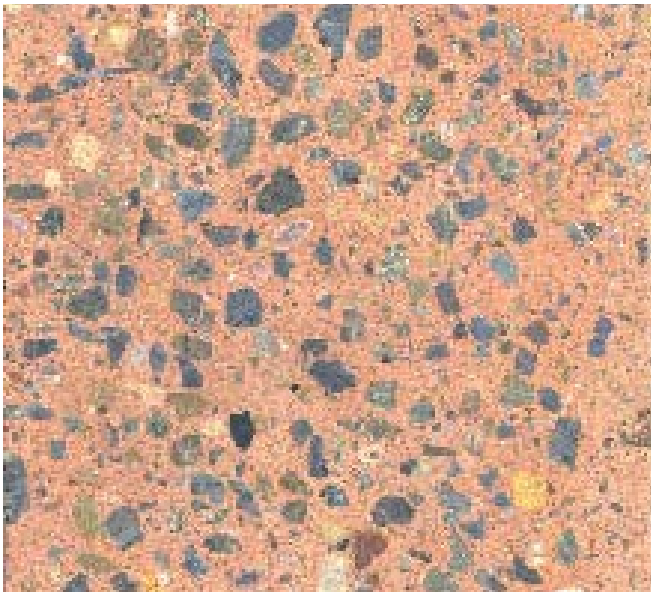
Body and Header Paver

Pedestrian Grade
Product Code: TANGO334HSP

Vehicular Grade
Product Code: TANGO337HSP

Materials and Dimensions

- 300 x 300 x 40mm
- 300 x 300 x 60mm (trafficable for cross overs)
- Paving Pattern: Diamond Pattern, single course stacked bond header back of kerb, minimum single course stacked bond header on building line, additional courses to allow for building articulation.
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.



Paver type 3 - 'Terracotta'

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.

Inspection and Maintenance

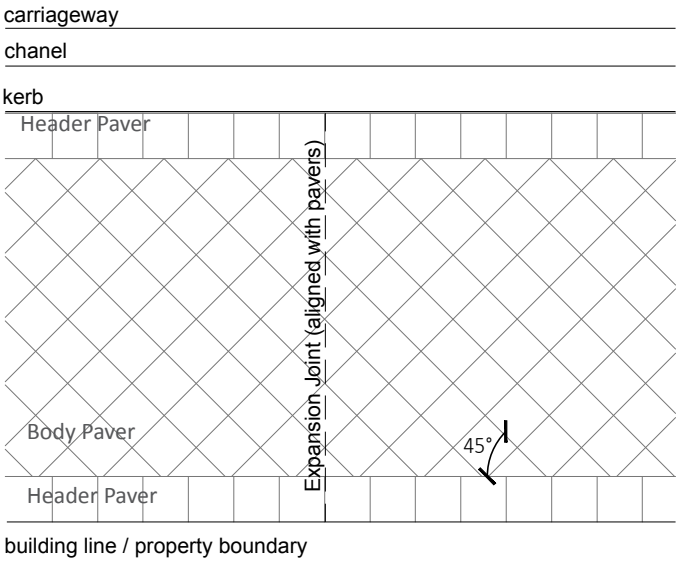
- Inspection Period: 6 months

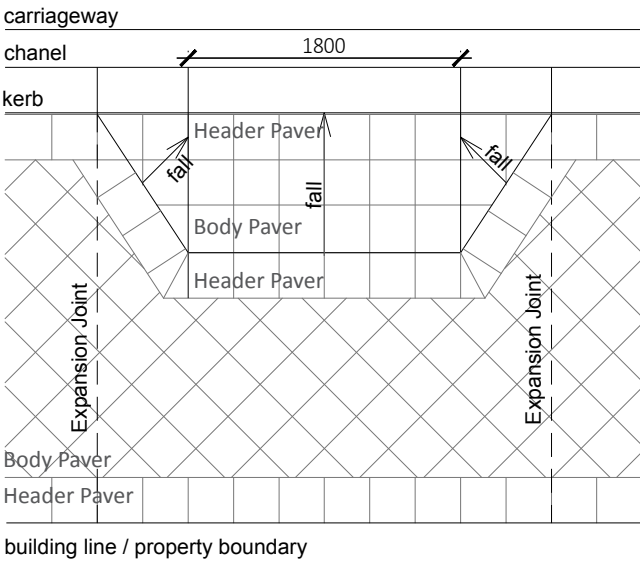
Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*





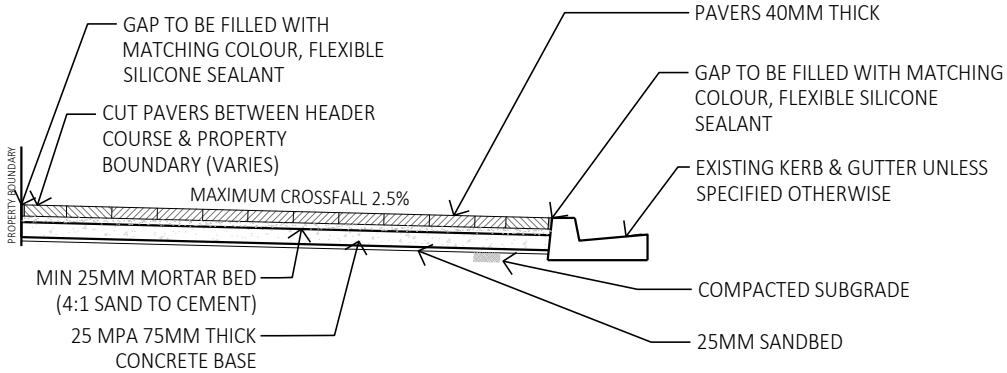
Note : Setout such that there are no small cuts along roadside. Avoid small cuts in general.

01 PAVING PATTERN C - TYPICAL LAYOUT

Scale 1:50

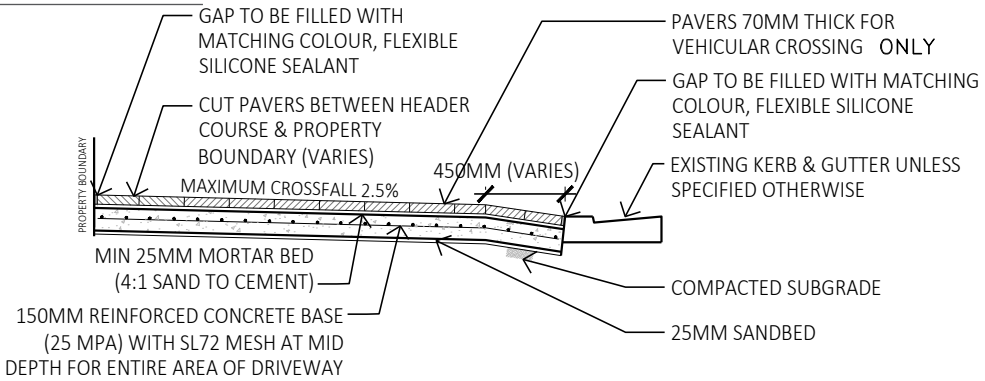
02 PAVING PATTERN C - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50



03 PAVING PATTERN C - TYPICAL DETAIL

Scale 1:50



Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

04 PAVING PATTERN C - TYPICAL CROSSOVER DETAIL

Scale 1:50

A.06

Paving Pattern D

Bondi Junction Centre Paving

Function

- For standard footpaths and vehicle crossovers in Bondi Junction Centre.
- Must obtain approval from Council Landscape Architect

Supplier

- Urbanstone (Austral Masonry Pty Ltd)[1]
  02 9757 4644

Product

Body Paver

Pedestrian Grade
Product Code: SWIBL334HSP

Vehicular Grade
Product Code: SWIBL337HSP

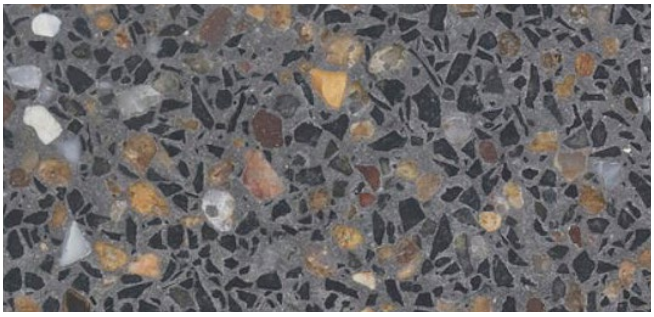
Header Paver

Pedestrian Grade
Product Code: GUN334HSP

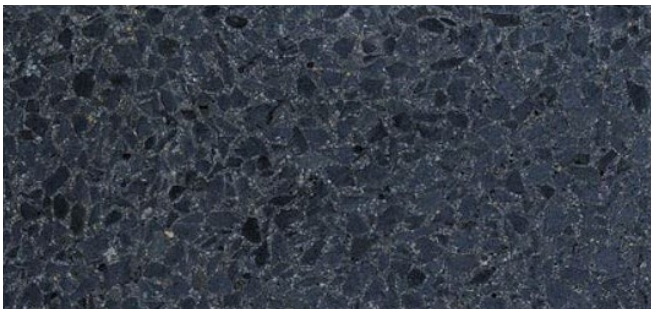
Vehicular Grade
Product Code: GUN337HSP

Materials and Dimensions

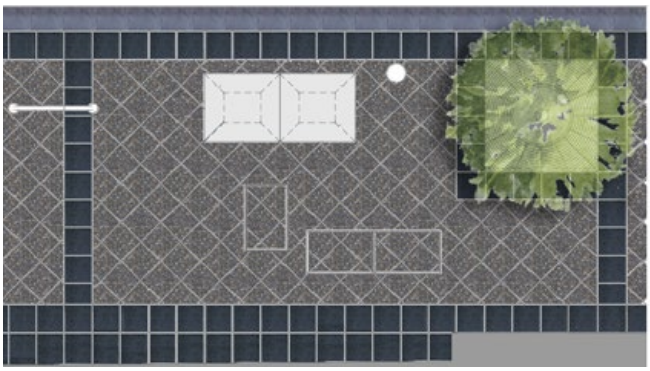
- 300 x 300 x 40mm
- 300 x 300 x 60mm (trafficable for cross overs)
- Paving Pattern:
  Body Paver in Diamond Pattern
  Header Paver in Single course stacked bond back of kerb, minimum single course stacked bond header on building line, additional courses to allow for building articulation.
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.



Paver type 1 'golden gunmetal'



Paver type 2 - 'gunmetal'



Paving pattern D

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.

Inspection and Maintenance

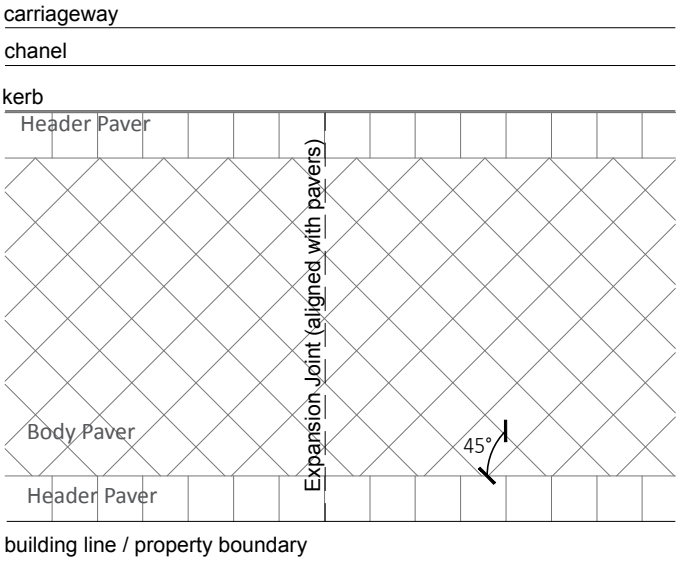
- Inspection Period: 6 months

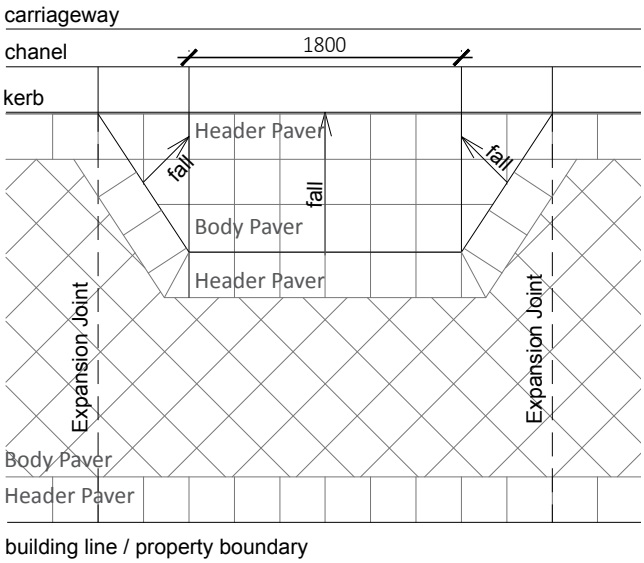
Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council





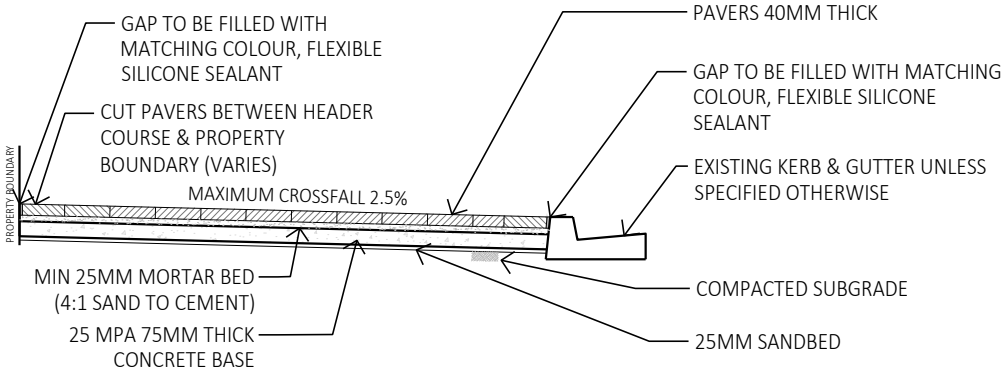
Note : Setout such that there are no small cuts along roadside. Avoid small cuts in general.

01 PAVING PATTERN D - TYPICAL LAYOUT

Scale 1:50

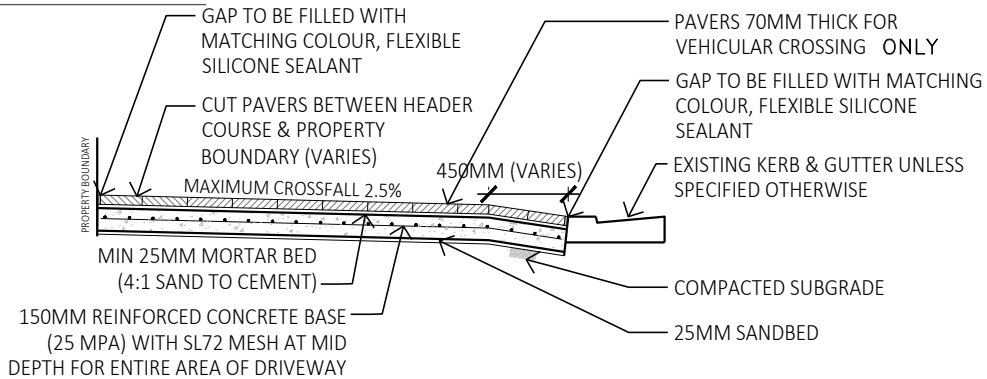
02 PAVING PATTERN D - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50



03 PAVING PATTERN D - TYPICAL DETAIL

Scale 1:50



Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

04 PAVING PATTERN D - TYPICAL CROSSOVER DETAIL

Scale 1:50

A.07

Paving Pattern E

Red Clay Brick Pavers - Charing Cross

Paving type 5 - Brick Paving

Function

- Bronte Road, Charing Cross
- The centre is contained within an existing Heritage Conservation Area. It has an established palette of brick paving which, in some areas, is in poor condition.
- Pattern E to be used for maintenance and reinstatement works only.
- Before commencing new works Council to be consulted for applicable pattern and pavers to be used.
- An assessment and community consultation to retain the brick or apply a new standard palette of pavers needs to be carried out.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- 120 x 240mm
- Paving Pattern: Stretcher bond pattern perpendicular to path of travel, soldier bond header along the back of kerb
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- Finish in-situ flush with surrounding surface level.

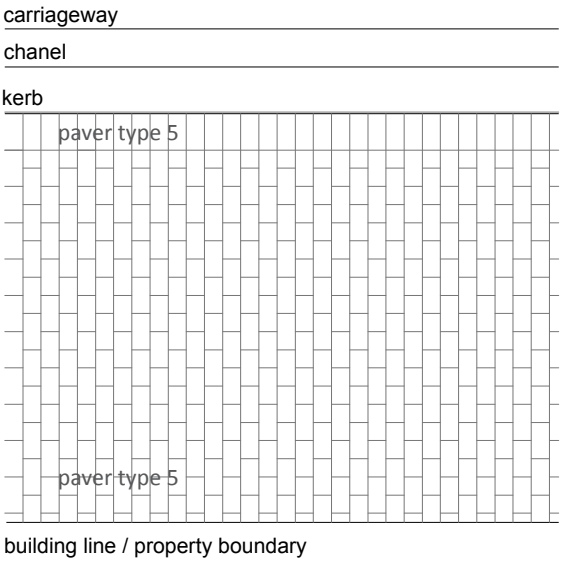
Inspection and Maintenance

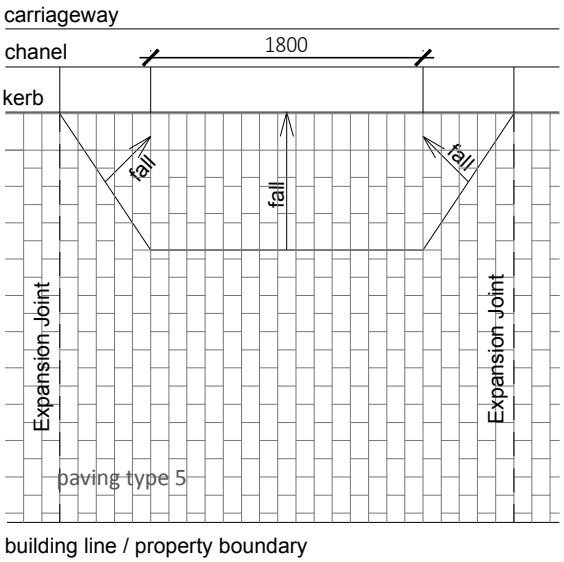
- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.





Note : Avoid small cuts.

01 PAVING PATTERN E - TYPICAL LAYOUT

Scale 1:50

02 PAVING PATTERN E - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50

Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

A.08

Paving Pattern F

Herringbone Paving - Malls

Function

- Paving pattern F with concrete unit pavers types 6 and 7 is the standard for reinstated footpaths In Oxford Street Mall and Waverley Mall, Bondi Junction

Supplier

- Urbanstone (Austral Masonary Pty Ltd)[1]
  02 9757 4644

Product

Body Paver

Product Code: SWIBL237HSP

Header Paver

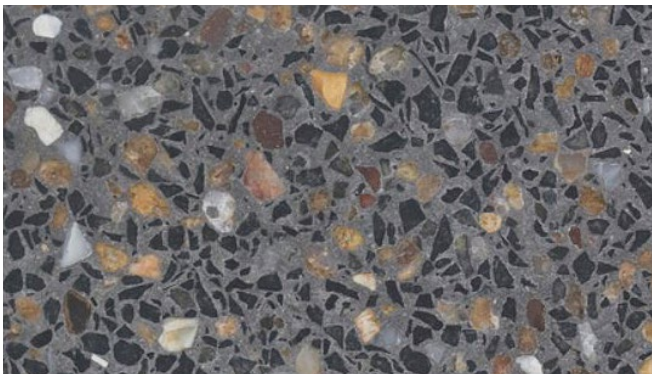
Product Code: FLINT237HSP

Materials and Dimensions

- 200 x 300 x 70mm (trafficable)
- Paving Pattern:
  Body Paver in Herringbone Pattern
  Header Paver in Single course stacked bond back of kerb, minimum single course stacked bond header on building line, additional courses to allow for building articulation.
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.



Paver type 1 - ‘golden gunmetal’

Paver type 3 - ‘Black & white gunmetal’

Paving pattern F

Inspection and Maintenance

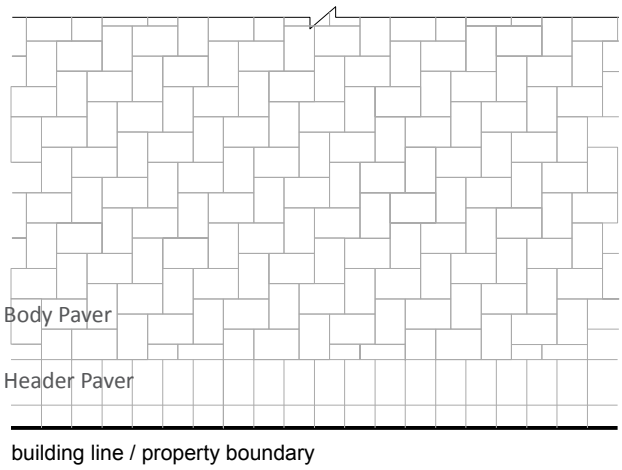
- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*

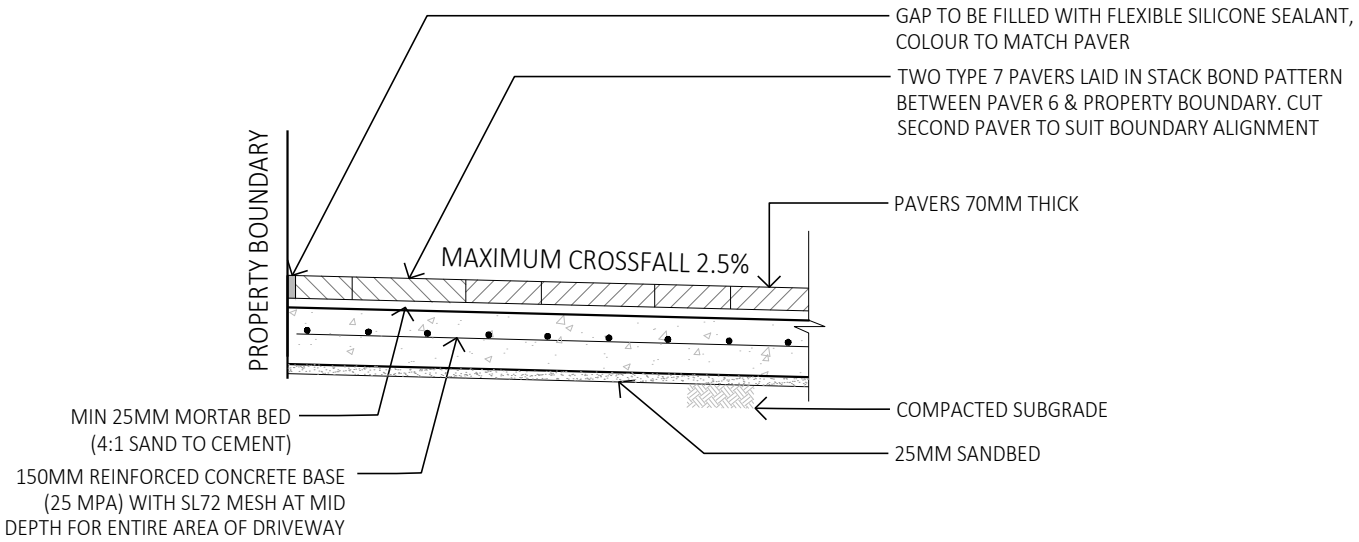


01 PAVING PATTERN F - TYPICAL LAYOUT

Scale 1:50

02 PAVING PATTERN F - Oxford Street Mall Kerb Ramp

Note : No Paver to be cut less than a third.



03 PAVING PATTERN F - TYPICAL DETAIL

Scale 1:20

A.09

Paving Pattern G

Bondi Beach Local Centre Paving

Function

- For new significant works for footpaths and vehicle crossovers in Bondi Beach Local Centre, with approval by Council landscape architect.

Supplier

- Urbanstone (Austral Masonry Pty Ltd)[1]
  02 9757 4644

Product

Body Paver

Pedestrian Grade
600x300x40
Product Code: BDI634MI

Vehicular Grade
600x300x60, or 300x200x70 (high use)
Product Code: BDI636MI or BDI327MI

Paving Pattern: Stretcher Bond, perpindicular to path of travel.

Header Paver

Pedestrian Grade
300x300x40
Product Code: BDI334MI

Vehicular Grade
300x300x60
Product Code: BDI337MI

Paving Pattern: Stacked Bond, 2 Courses minimum on property boundary only.

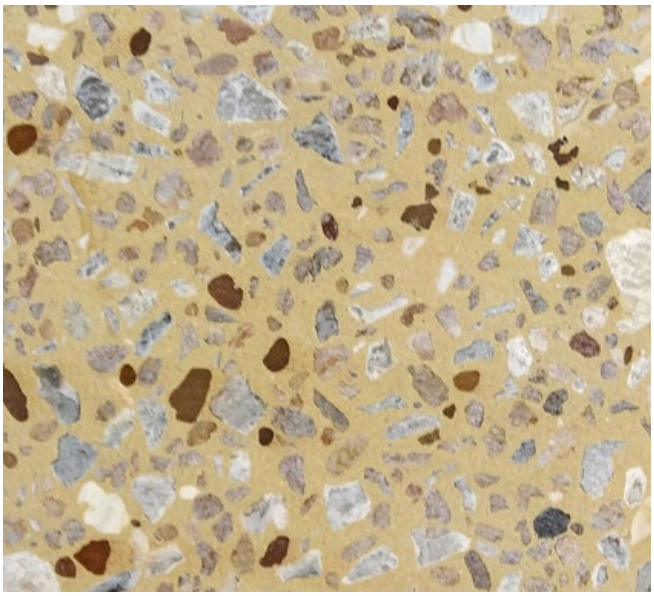
Special Locations
(Approval Required by Council Landscape Architect)

200x300x70
Product Code: BDI334MI
Paving Pattern: Herringbone

Materials and Dimensions

General

- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.



Body Paver - Bondi '2535'

- Paver tolerances to meet AS4456.3:2003 Masonry units and segmental pavers and flags - Methods of test Determining dimensions
- Sealant : silane-siloxane penetrating sealer. The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- Finish in-situ flush with surrounding surface level.
- Continue paving treatment across driveways and vehicle cross overs.
- Expansion Joints to be expressed through to finish level.
- Ensure sealant is not applied on damp or wet surface.

Inspection and Maintenance

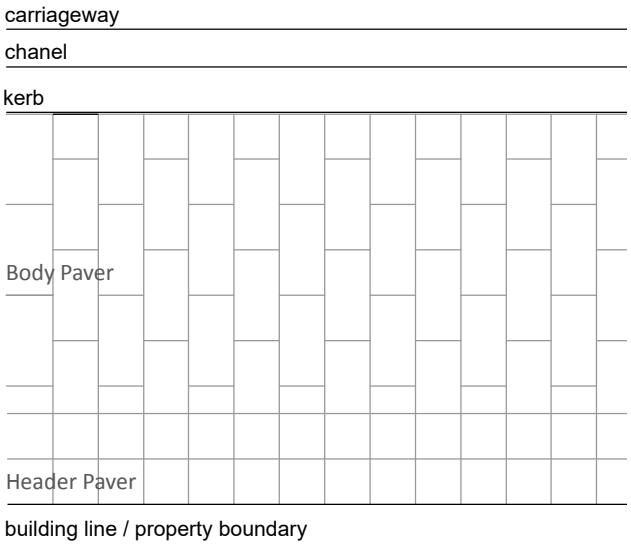
- Inspection Period: 6 months

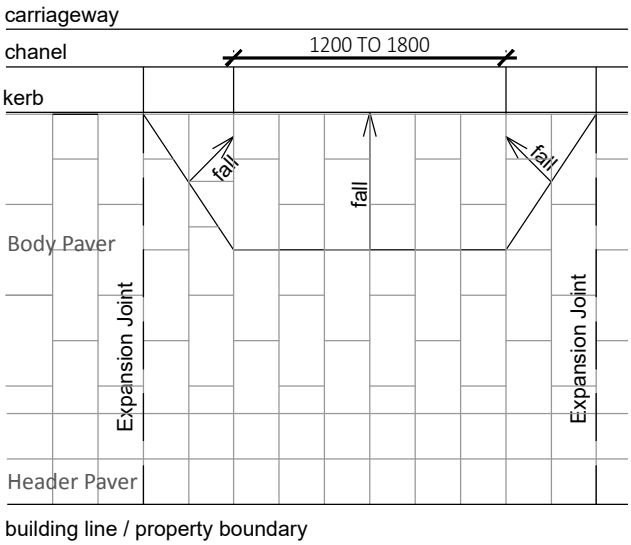
Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.

1 Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council





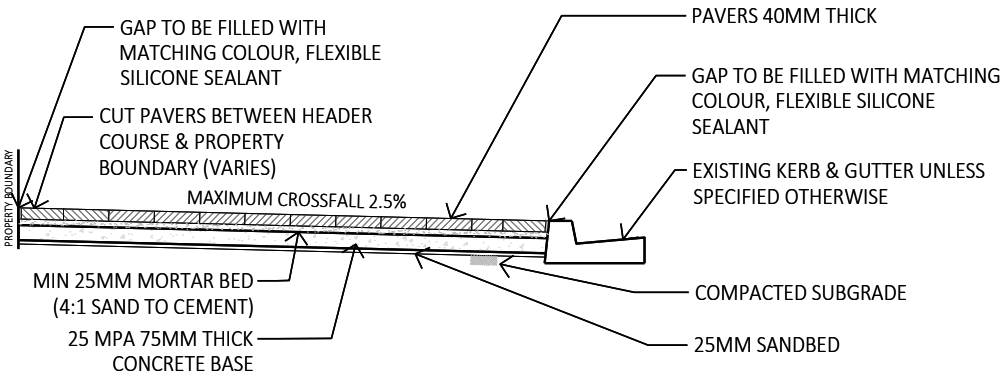
Note : Setout such that full & half pavers sit along roadside. Cut pavers at building line as required. Avoid small cuts.

01 PAVING PATTERN G - TYPICAL LAYOUT

Scale 1:50

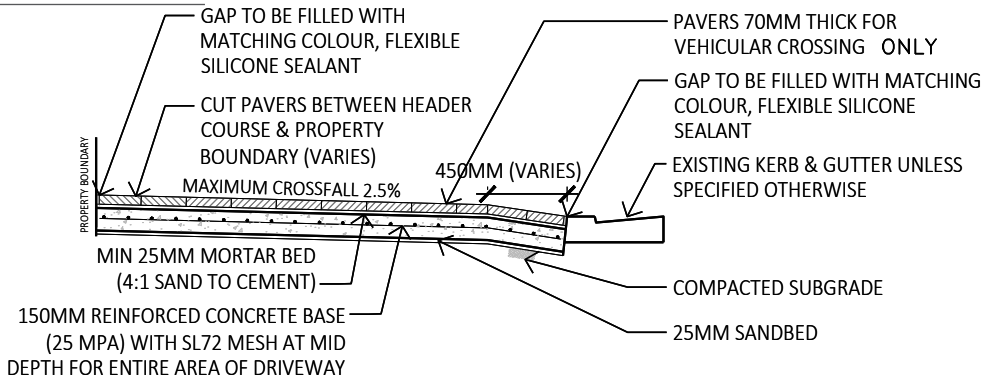
02 PAVING PATTERN G - TYPICAL CROSS OVER (DRIVEWAY) LAYOUT

Scale 1:50



03 PAVING PATTERN G - TYPICAL DETAIL

Scale 1:50



Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application

04 PAVING PATTERN G - TYPICAL CROSSOVER DETAIL

Scale 1:50

A.10

Paving Pattern H

Diamond Grey Granite Cobble Setts with Flamed Finish

paving pattern H - cobble setts with flamed finish

Function

- Paving pattern H defines pedestrian interface with carriageway
- Install in all Local and Neighbourhood Centres as applicable, as specified by Council

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Paver type 9
- 100 x 100x30mm
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- stackbond pattern

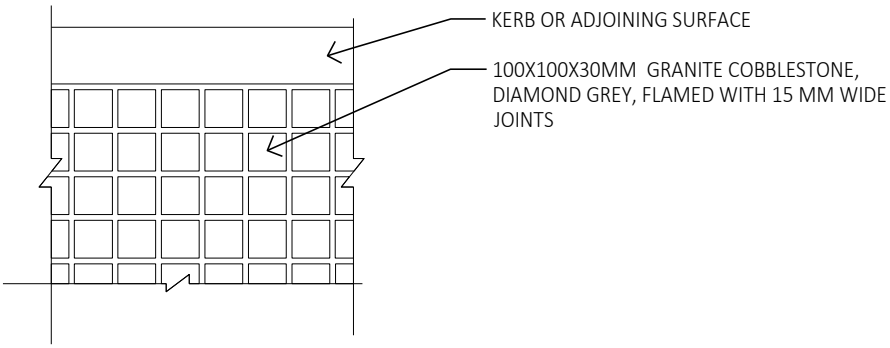
Inspection and Maintenance

- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

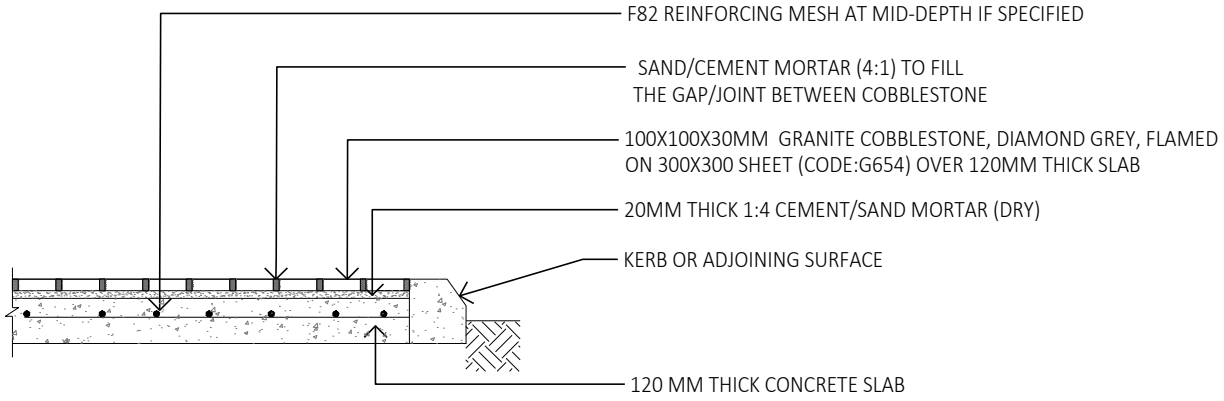
- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.



01 PAVING PATTERN H - TYPICAL LAYOUT

Scale 1:50



02 PAVING PATTERN H - DETAIL

Scale 1:20

A.11

Standard Concrete Footpaths

Function

Standard concrete pavement with decorative saw-cut jointing for footpaths to all other streets throughout the local government area not covered under the urban centres and special places.

Supplier

- Not Applicable

Materials and Dimensions

- 25 Mpa grey cement with recycled aggregate
- Aggregate: To AS 2758.1 recycled gravel graded to 10mm
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Expansion joints to be as per Council's standard drawings F1 and F2
- Pedestrian only - 75 - 100 mm thickness as per Council's standard drawings F1 and F2
- Widths Hierarchy -
  Minor - 1350 - 1500 mm wide
  Major - 2000mm to 2200 mm wide
- For all details including reinforcement requirements refer to Council's standard drawings F1 to F4
- Details vary depending on proximity to verges and trees.
- Kerb ramps to be provided as per Council requirements to Waverley Council Standard drawing F3

Concrete footpaths broom finish

Installation

- Concrete shall be deposited in horizontal layers, without separation of the aggregates and shall be compacted by vibration, tamping, spading or slicing.
- Provide expansion joints as appropriate but spaced no more than 6m and construction joints at 1.5m. The contraction and construction joints shall be straight, continuous and normal to the surface of the concrete pavement.
- Broom finish with 5mm round edge to all sides.

Maintenance

- Nil to Low Maintenance

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A.12

Concrete Pedestrian Paving

Function

Reinforced concrete pavement with decorative saw-cut jointing for footpaths and shared paths within parks.

Supplier

- Not Applicable

Materials and Dimensions

- 32 Mpa grey cement with bluemetal aggregate or similar in accordance with AS3600 and AS1379
- Aggregate: To AS 2758.1 bluemetal gravel or similar graded 10mm to 14mm
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Expansion joints to be key joints allowing expansion. Joint filler to match pavement colour.
- Reinforcement SL82, placed centrally with minimum 50mm cover.
- Where nominated by landscape architect, use integral CCS colour or approved equal.
- All paths to be coated with penetrating concrete sealant
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.
- Subgrade - compacted DGB20 over compacted subgrade
- Pedestrian only - 100 mm thickness
- Widths Hierarchy -
  Minor - 1500 mm wide
  Second - 2000mm to 2500 mm wide
  Major - 3000 mm wide

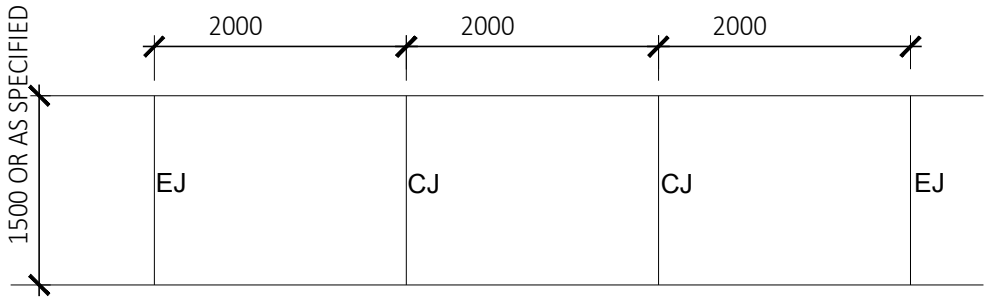
Reinforced concrete paving light sponge finish at Bondi Park

Installation

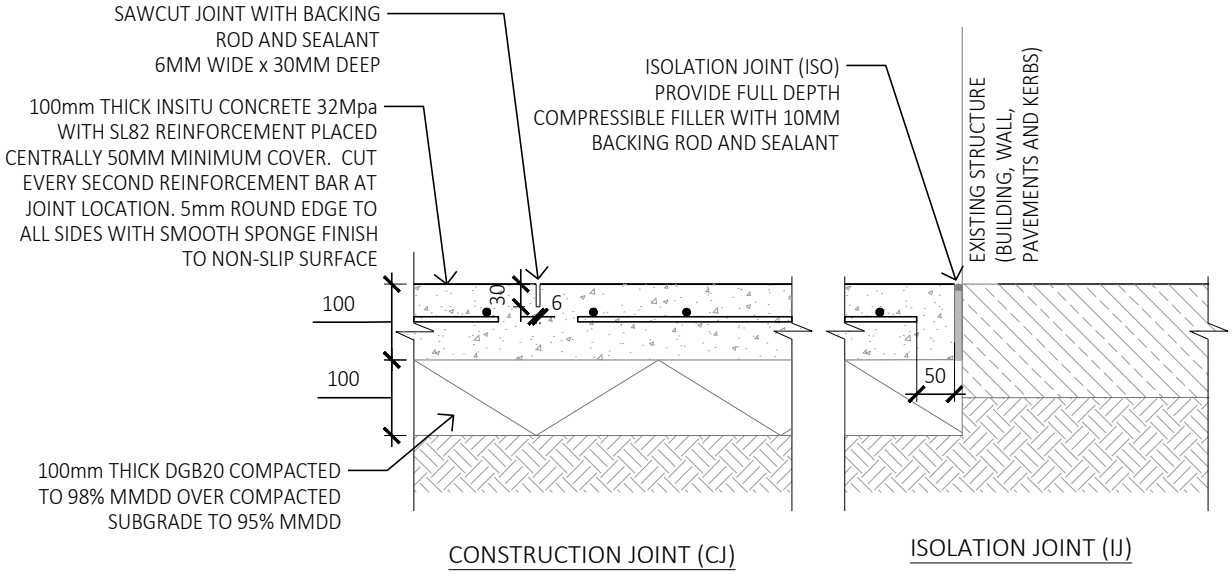
- Concrete shall be deposited in horizontal layers, without separation of the aggregates and shall be compacted by vibration, tamping, spading or slicing.
- Provide expansion joints as appropriate but spaced no more than 6m and construction joints at 2m. The contraction and construction joints shall be straight, continuous and normal to the surface of the concrete pavement.
- Light sponge finish with 5mm round edge to all sides.
- All concrete work to be done in accordance with AS3600
- Ensure sealant is not applied on damp or wet surface.

Maintenance

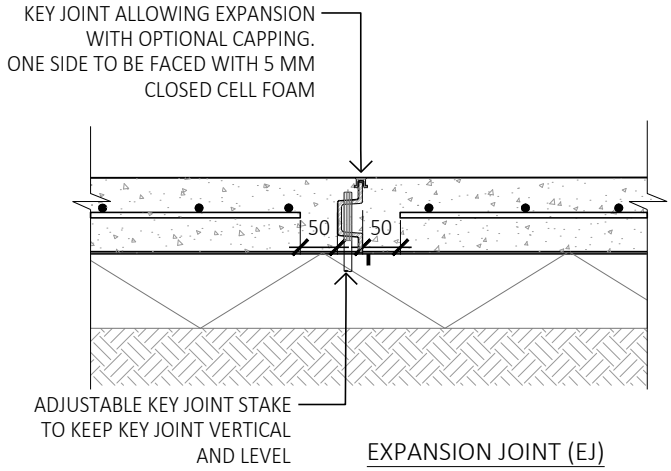
- Nil to Low Maintenance



D01 REINFORCED CONCRETE PAVING - LIGHT SPONGE FINISH - PLAN
SCALE 1:60



D02 REINFORCED CONCRETE PAVING - LIGHT SPONGE FINISH - DETAIL
SCALE 1:10



CONCRETE JOINTING NOTES:

1. FOR LOCATION OF JOINTS AND JOINT TYPES REFER SETOUT PLANS
2. PROVIDE ISOLATION JOINTS WHERE NEW WORKS ARE TO BUTT AGAINST EXISTING STRUCTURES (BUILDINGS, WALLS, PAVEMENTS AND KERBS).
3. SEALANT COLOURS TO MATCH STONE PAVEMENT (SUBMIT FOR APPROVAL)

D02 REINFORCED CONCRETE PAVING - LIGHT SPONGE FINISH - DETAIL
SCALE 1:10

A.13

Concrete Vehicular Paving

Function

Reinforced concrete pavement with decorative saw-cut jointing for vehicular paths within parks.

Supplier

- Not Applicable

Materials and Dimensions

- 32 Mpa grey cement with bluemetal aggregate or similar in accordance with AS3600 and AS1379
- Aggregate: To AS 2758.1 bluemetal gravel or similar graded 10mm to 14mm
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.
- Expansion joints to be key joints allowing expansion. Joint filler to match pavement colour.
- Reinforcement SL82, placed centrally with minimum 50mm cover. Bottom mesh to match top with 50mm min cover.
- Where nominated by landscape architect, use integral CCS colour or approved equal.
- All paths to be coated with penetrating concrete sealant
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.
- Subgrade - compacted DGB20 over compacted subgrade
- Vehicle Accessible - 150 mm thickness
- Width - 2500 to 3000 mm wide as specified

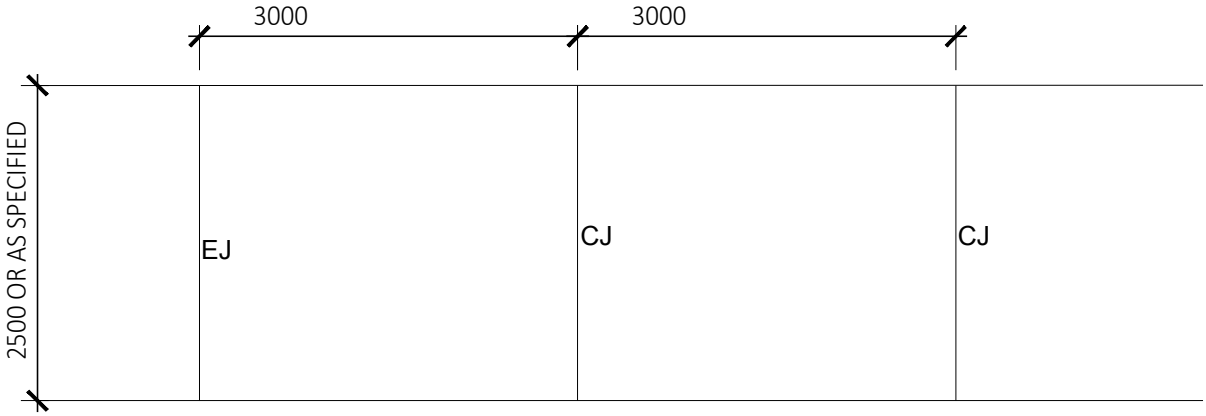
Reinforced concrete paving - Vehicular

Installation

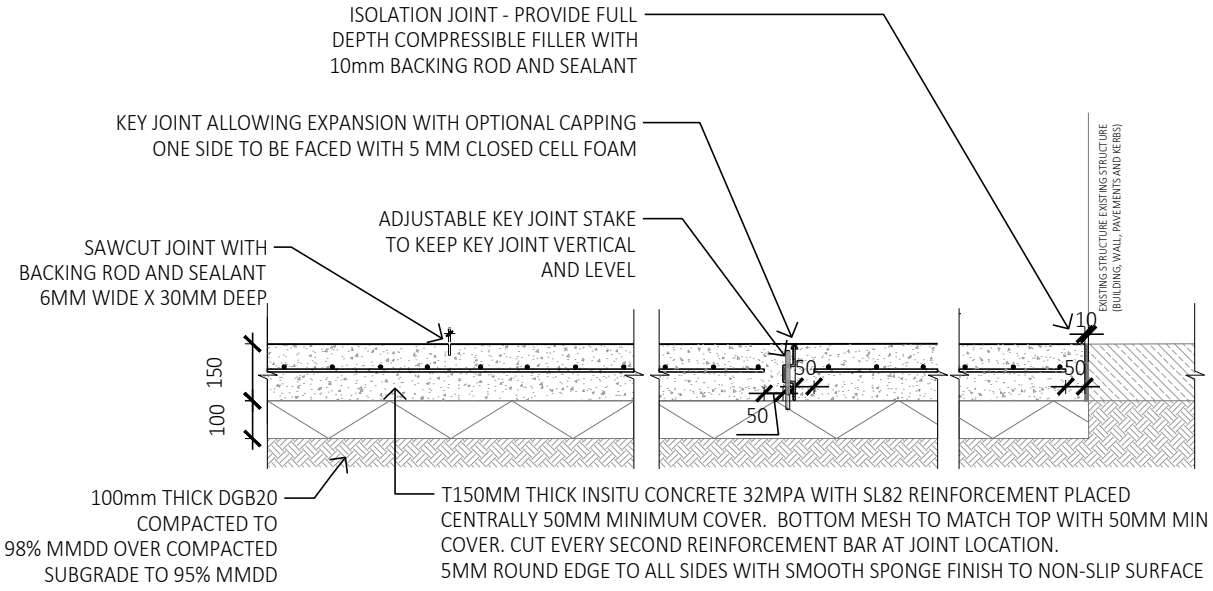
- Concrete shall be deposited in horizontal layers, without separation of the aggregates and shall be compacted by vibration, tamping, spading or slicing.
- Provide expansion joints as appropriate but spaced no more than 9m and construction joints at 3m. The contraction and construction joints shall be straight, continuous and normal to the surface of the concrete pavement.
- Smooth sponge finish with 5mm round edge to all sides.
- All concrete work to be done in accordance with AS3600
- Ensure sealant is not applied on damp or wet surface.

Maintenance

- Nil to Low Maintenance



D01 REINFORCED CONCRETE PAVING - VEHICULAR - PLAN
SCALE 1:60



D02 REINFORCED CONCRETE PAVING - VEHICULAR - DETAIL
SCALE 1:20

CONCRETE JOINTING NOTES:

1. FOR LOCATION OF JOINTS AND JOINT TYPES REFER SETOUT PLANS
2. PROVIDE ISOLATION JOINTS WHERE NEW WORKS ARE TO BUTT AGAINST EXISTING STRUCTURES (BUILDINGS, WALLS, PAVEMENTS AND KERBS).
3. SEALANT COLOURS TO MATCH STONE PAVEMENT (SUBMIT FOR APPROVAL)

A.14

Segmental Paving - Sandstone

Function

To be used as intermediate paving between informal natural settings and formal or urban areas of within a park.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Unit Pavers -
  Product: 'Buff' Quarry / Gang sawn stone
  Pattern: Running (stretcher)
  Joint: Butt joint.
- Flagstone -
  Product: 'Buff' Split face stone sheets.
  Pattern: Crazy / Random.
  Joint: High Strength Mortar, colour to match stone.
- Sealant : silane-siloxane penetrating sealer.The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts. It should have a low VOC content. It should be water repellent such that the water will bead on the surface of the concrete paver. It should not alter the colour of the surface ensuring a natural look is retained.
- Pedestrian - Flexible base
  40mm thick paver
  30mm depth sand
  100mm depth compacted DGB
- Vehicular - Rigid Base
  Min. 60mm thick paver
  30mm depth high strength mortar
  150mm depth reinforced concrete slab
  100mm depth compacted DGB subgrade.
- Laying Patterns
  Unit - Designer's specifications / Butt Joint
  Flagstone - Random / Mortar joint, colour to match
- Edge restrained with concrete haunch, unless otherwise instructed by project landscape architect.
- The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials.

Installation

- Prior to commencement of works, provide prototype to be approved by project landscape architect.
- As per details and specification.
- Ensure sealant is not applied on damp or wet surface.

Sandstone Flagstone Pavers - Dudley Page Reserve

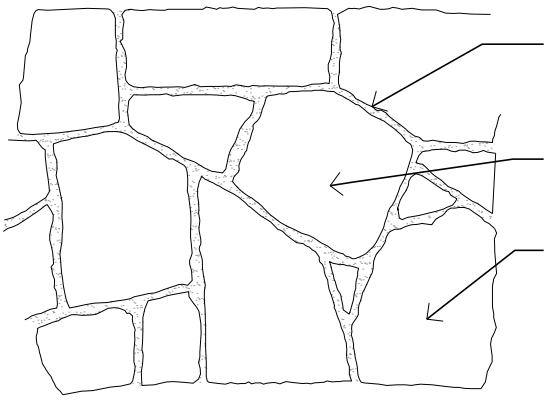
Inspection and Maintenance

- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards. Ensure all paving units are fixed securely to substrate. Replace units as required.

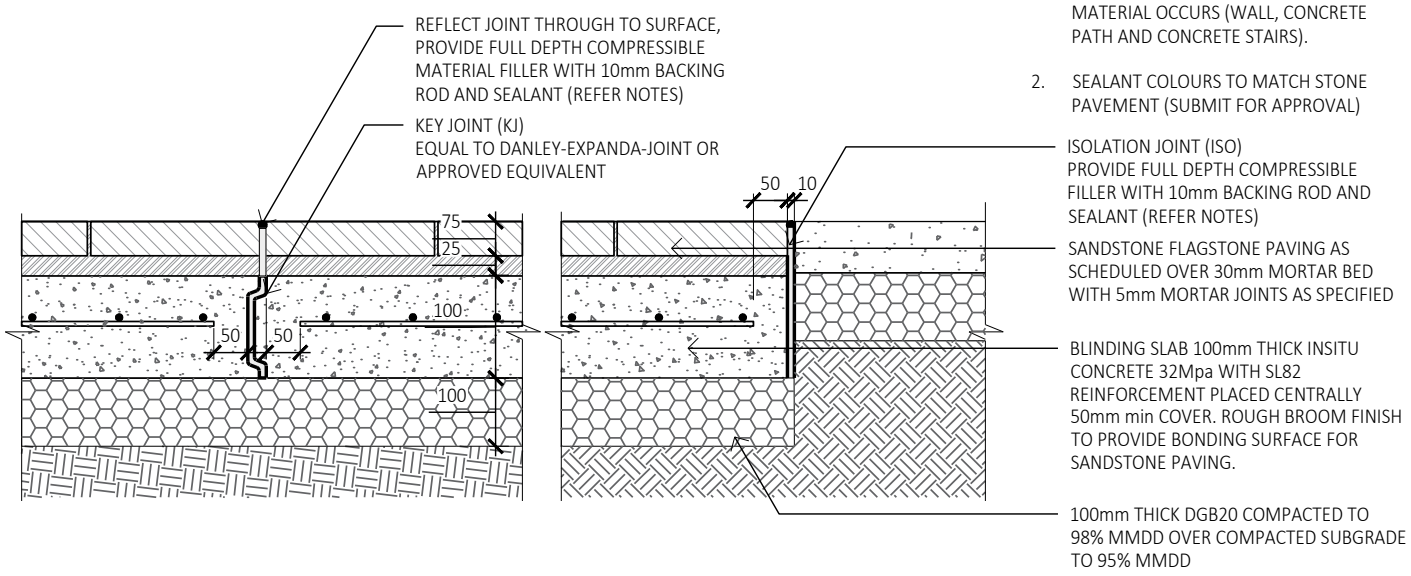
- Maintenance Period: 12 months

1. Remove and replace broken or loose paving units.
2. Steam gum and deleterious material.
3. Pressure wash surface.
4. Apply sealant to dry surface.



01 SANDSTONE SEGMENTAL PAVING - PLAN

Scale 1:20



CONCRETE JOINTING NOTES:

1. PROVIDE ISOLATION JOINTS WHERE NEW WORKS ARE TO BUTT AGAINST EXISTING STRUCTURES (BUILDINGS, WALLS, PAVEMENTS AND KERBS) AND WHERE EVER A CHANGE IN SURFACE MATERIAL OCCURS (WALL, CONCRETE PATH AND CONCRETE STAIRS).
2. SEALANT COLOURS TO MATCH STONE PAVEMENT (SUBMIT FOR APPROVAL)

02 SANDSTONE SEGMENTAL PAVING - DETAIL

NTS

A.15

Gravel Pavement

Function

- Cement stabilised decomposed granite pavement is to be used in natural settings where a concrete path would be obtrusive like parks and reserves.
- Use when a durable, permeable and natural aggregate surface is required.
- Not to be used in drainage corridors or areas susceptible to high stormwater run-off.

Supplier

- Contractor to nominate based on below specifications.

Product

- Decomposed Granite Gold
- Subbase: Compacted DGB to engineer's specification
- Binding: Off-white cement stabilised min. 4%
- Edge: restrained, refer edges section.
- Maximum slope 1:20
- Maximum widths 2.5-3M with surfaces sloping towards both sides and the high point being in the centre.

Installation

- Use non-toxic, non-staining water activated stabaliser binder. The cement should be mixed on site, in small batches and mix applied immediately.
- Apply as per manufacturer's instructions
- Finish gravel paving flush with surrounding surface level.
- To comply with:
  AS/NZS 3661 Slip Resistance of Pedestrian Surfaces
  AS 4586 Slip resistance classifications of new pedestrian surface materials
  AS 1657 Fixed platforms, walkways, stairways and ladders

Inspection and Maintenance

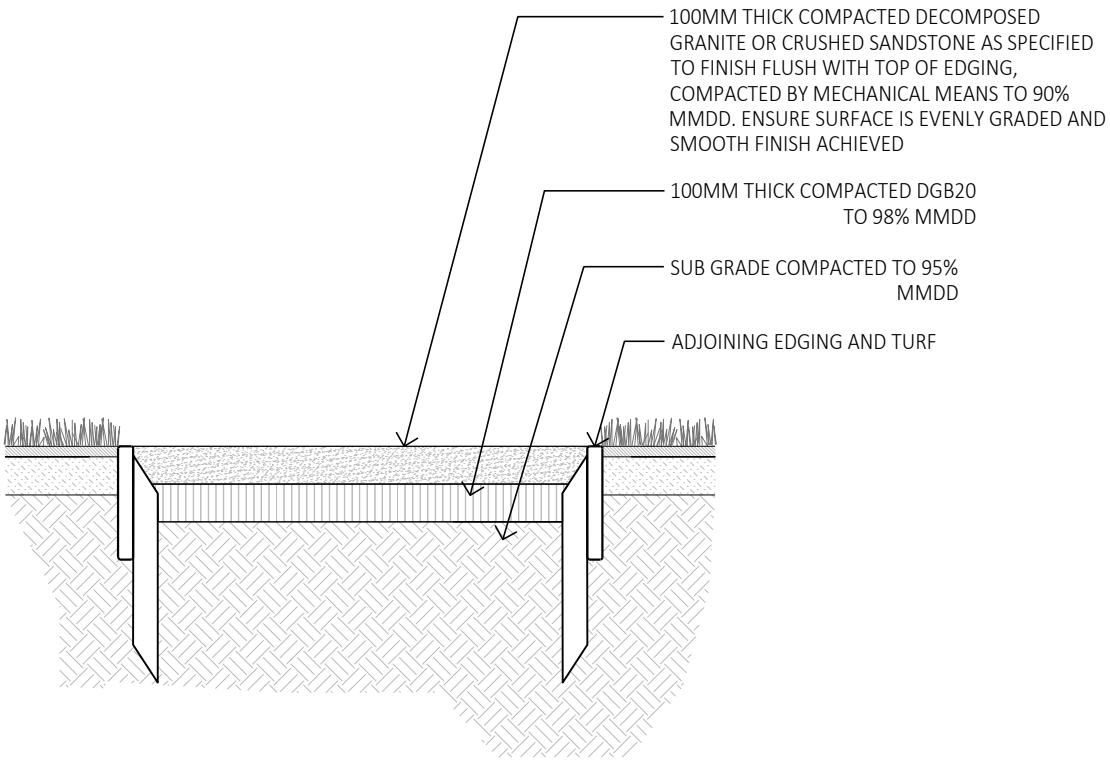
- Inspection Period: 6 months

Inspect surface to ensure an even and defect free finish to comply with the relevant Australian Standards.

- Maintenance Period: 12 months

Top up and level finish surface of pavement, repair or replace edge restraints.

Crushed Granite Pavement - Image is for representational purposes only



D01 DECOMPOSED GRANITE PATHWAY - DETAIL
SCALE 1:20

A.16

Permeable Paving

under review

A.17

Wet Pour Rubber

Function

For use in playgrounds, playspaces, and fitness stations only.

Supplier

- Contractor to nominate based on below specifications.

Finish

Colour: To project landscape architect's specification or match existing.

Materials and Dimensions

- Depth: Varies, to AS 4422
- Subgrade: To engineers specification and to meet AS 4422
- Drainage: Subsurface drainage.

Installation

- Joints are to be 'welded' as detailed.
- All edges are be square and flush with edge material (concrete, recycled plastic board, timber or steel edge).
- Refer to manufacturers instructions.

Inspection and Maintenance

- Inspection Period: 12 months

Inspect for rips or tears, replace as required with matching colour mix. Test for compliance with AS 4422, lift and replace as required to comply with AS 4422.

- General Maintenance Period: 1 month

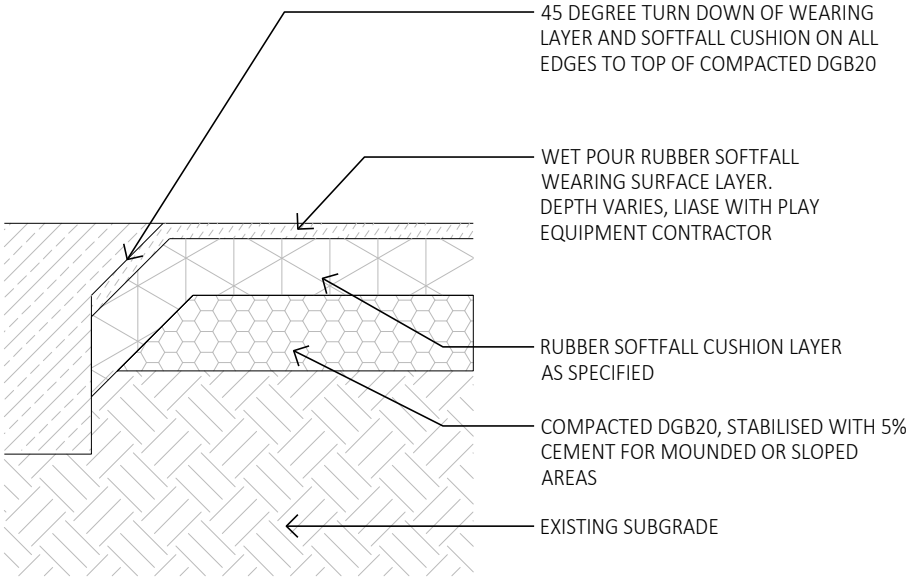
Regular vacuuming or sweeping (or water pressure cleaner on low setting) to remove excess rubber granules and build-up of dirt and grime.

- Deep Maintenance Period: 12 months

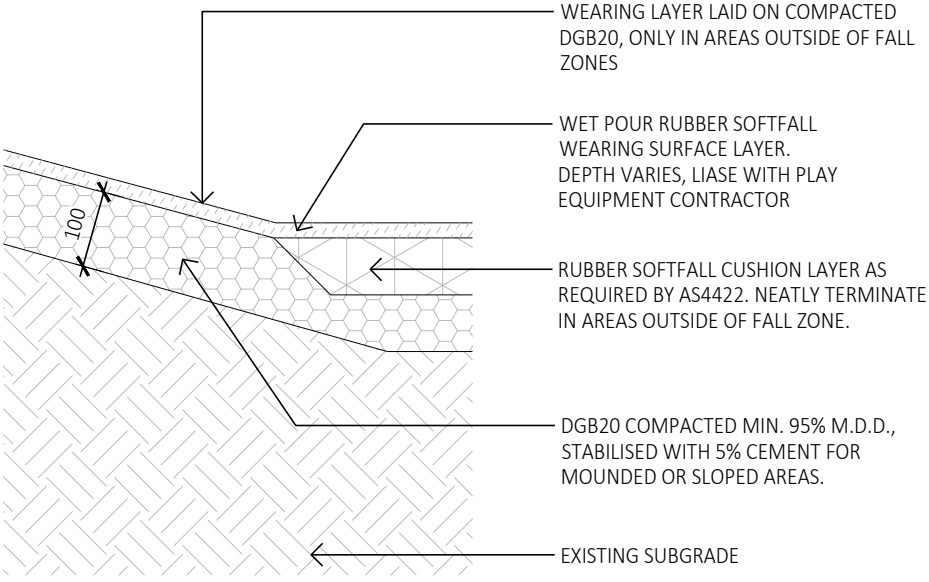
Wash surface with low sud detergent and scrub with soft bristled broom, low pressure water cleaner to rinse.

Do not use shovels, chemical cleaning, harsh detergents, petroleum, solvents, bleach or mechanical brushing.

Wet Pour Rubber - Clarke Reserve



D01 WET POUR RUBBER - DETAIL
Scale 1:10



D02 WET POUR RUBBER TO NON FALL ZONE - DETAIL
Scale 1:10

A.18

Timber Decking

Function

To be used on elevated decks, boardwalks and associated stairs.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Species: Australian Spotted Gum or other approved Australian hardwood. Must meet AFS, FSC, PEFC, or come from recycled source.
- Tmber must be seasoned to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- Fixings: 316 Stainless Steel counter sunk security timber decking screws. Guage to suit design.
- Deck Board: 86 x 32mm or 135 x 32mm

Installation

- As detailed and specified by project landscape architect, and project structural engineer.

Maintenance

- Maintenance Period: Bi-annually for first year of installation, then at 12 month intervals thereafter.

1. Pressure wash
2. Pre-treatment: Apply Intergrain Reviva or similar approved water based
3. Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.

Timber Decking Detail - Tamarama

Timber Decking Context - Tamarama

A.19

Alternative Decking

Function

Fibreglass mini mesh grating is to be used on elevated decks, boardwalks and associated stairs where water spray and/or water submersion are an issue.

Grating may also be used where sufficient light penetration for vegetation growth is required.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- FRP mini mesh 30 or 38mm
- Colour: Dark grey
- Surface Type: Anti-Slip
- Panel Sizes: 1247 x 1527, 1807, 2407, 3007mm.
- Openings/Apertures: 13 x 13mm
  Open area 42% approximately

Installation

As per manufacturer's details

Inspection and Maintenance

- Inspection Period: 12 months

Inspection of mini mesh grating for secure fixing into substructure. Tighten nuts and bolts as required and replace fixing clips if damaged or lost.

Clip Frequency: Minimum 4 per panel. Approximately 4 per m^2 where total area is greater than $1m^2$

Inspection of stair nosings for secure fixing into decking. Tighten nuts and bolts as required and replace fixing if damaged or lost. Replace nosing if broken, damaged, or lost.

Fibreglass Grating on elevated decking - detail

A.20

TGSI

Tactile Ground Surface Indicators

Function

- TGSIs provide cues, which, when combined with other environmental information, assist people who are blind or vision-impaired with their orientation. A person's orientation, through processing all available environmental cues, make the information provided by the TGSIs meaningful.
- Warning (domed button) TGSIs indicate an approaching hazard, for example at the top and bottom of stairs and ramps, car park exits and driveways where sight lines are poor, and at road crossings where kerbs are not provided.
- The nature of the hazard is not indicated by the TGSIs.
- Directional TGSIs (elongated tile) are provided to give directional orientation in open spaces where there are insufficient tactile directional cues.
- The need for TGSIs can be minimised by making use of other environmental cues.
- Consistent installation of TGSIs will promote familiarity, legibility and distinctiveness.
- Correct installation of TGSIs will promote safety.

Supplier and Products

Unit Paved areas:

Urbanstone
White Cream dots (WESCR334DOT)
White Cream directional (WESCR334SLOT)

or

Gunmetal dots (GUN334DOT)
Gunmetal directional (GUN334SLOT)

Insitu Concrete Paved areas:

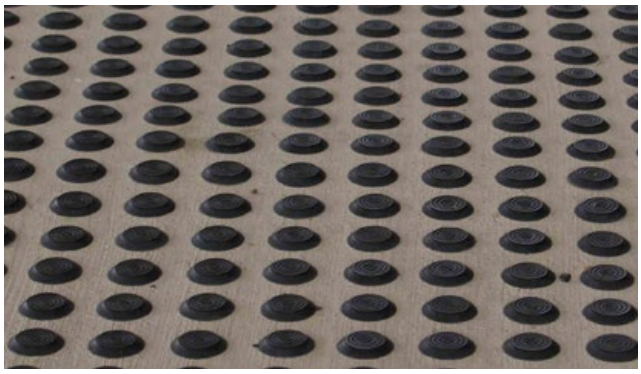
Black PVC 'blade' style tactiles, contractor to nominate.

Timber or recycled plastic deck areas:

Stainless steel individual button style tactiles, contractor to nominate.

Materials and Dimensions

- Warning and Directional Tactile - Black with 2 year warranty
- Warning and Directional Tactile - 316 Stainless Steel - 10 warranty
- Colour must contrast with surrounding surface treatment



Warning Tactile (Buttons) - Black

Warning Tactile (Buttons) - 316 Stainless Steel

Installation

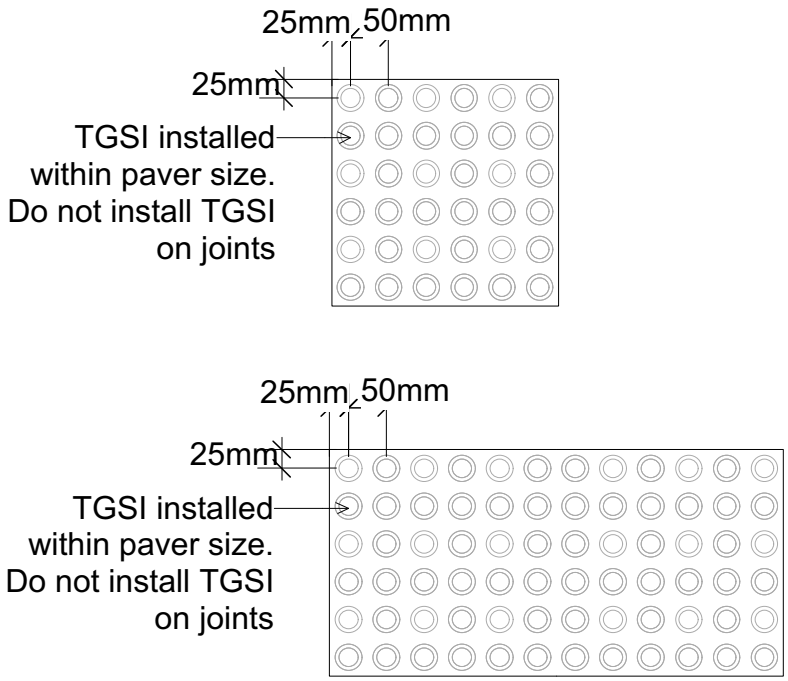
- TGSIs to be installed according to the suppliers instructions to minimise the likelihood of failure
- Avoid installing TGSIs on a steep slope and on service/ utility pits
- Regular maintenance checks to be carried out and include replacement of missing / lifting domes and measuring the height and replacing units where this falls below
- Install warning TGSIs at stairs, ramps, median cut through, shallow kerb ramps, overhead hazards, at-grade pedestrian crossings and bus stops
- Refer to and install TGSIs in accordance with Australian Standard 1428.4.1
- TGSIs are to meet AS1428.4.1 and include a slip resistant surface.

Inspection and Maintenance

- Inspection Period: 12 months

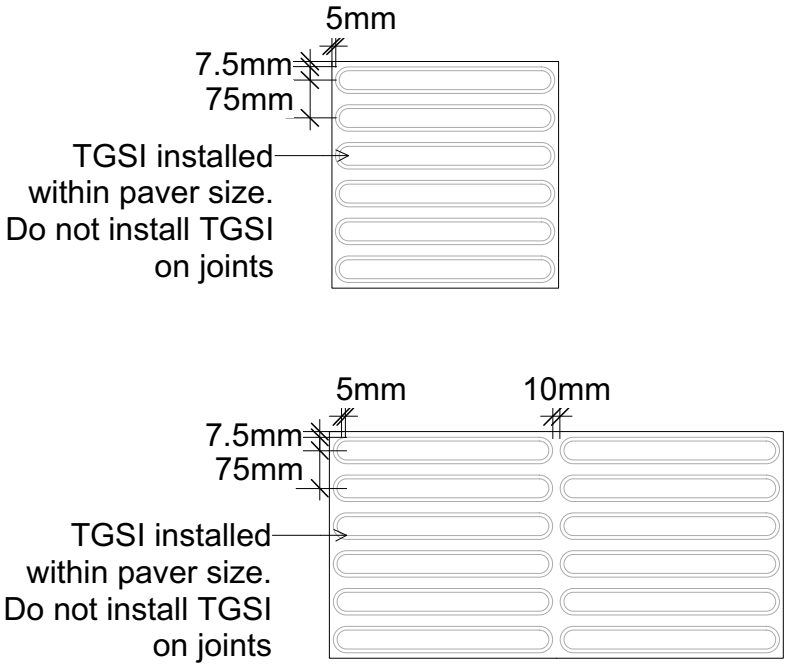
Inspection of tactiles for secure fixing into substrate material. If loose, remove and replace.

Inspection of tactiles for trip hazard where the height of tactile exceeds nominated dimensions in Australian Standard 1428.4.1



01 TGSI 'WARNING' TACTILE (BUTTONS) SETOUT DETAIL

Scale 1:10



02 TGSI 'DIRECTIONAL' TACTILE SETOUT DETAIL

Scale 1:10

TGSI Configuration and Layout

- Before installation, consult Council's Landscape Architect or Urban Design Team to ensure layout is consistent and in line with Waverley Councils TGSI strategy. This is a 'whole of area' approach which:
  - Ensures a consistent approach to the application of TGSIs
  - Avoids creating confusion when confronted with a physical hazard
  - Builds confidence and reliability in the use of TGSIs for people who need them
  - Avoids incorrect and non-standard configurations which is meaningless to users
  - Reduces unnecessary mistakes in installation due to the impact of site conditions
  - Reduces cost in re-installing TGSIs, if installed incorrectly
  - Indicates the need for when further advice may be required from an Access Consultant for more complex conditions and atypical scenarios

General Condition	Required	Not Required
At top and bottom of a stairway	X	
At the top and bottom of a 1 in 14 ramp	X	
Midway landings of stairs and ramps with continuous handrails on both sides		X
At median cut through at same grade as road	X	
At grade carriageways ie. raised pedestrian crossings	X	
Driveways with limited sight lines in retail and commercial areas	X	
Overhead hazards on pathways less than 2m high	X	
Kerb ramp grade between 1 in 8 to 1 in 8.5		X
Kerb ramp grade shallower than 1 in 8.5	X	
Kerb ramp grade steeper than 1 in 8.5	Assess on a case by case basis	
Distance between the property / building line and top of kerb ramp is less than 3000mm		X
Distance between the property / building line and top of kerb ramp is more than 3000mm	Assess on a case by case basis	
Kerb ramp is aligned with building line and in direction of travel across the carriage way		X
Kerb ramp not aligned with building line and in direction of travel across the carriage way	Assess on a case by case basis	
Bus stop boarding points	X	

Scenarios of Use

Stairs and Ramps

- Install warning TGSIs at top and bottom of stairs
- Install warning TGSIs at top and bottom of ramps
- Warning TGSIs are required at midway landings of ramps and stairs if handrails are not continuous or are not provided on both sides of stairs or ramps.

Kerb Ramps

- Warning TGSIs are not generally recommended to be installed on the face of kerb ramps with a compliant gradient of 1:8-1:8.5.
  However, where the gradient of the kerb ramp is shallower than 1:8-1:8.5, install warning TGSIs on the face of the kerb ramp.
- It may be appropriate to retain pre-existing TGSIs on the face of some existing kerb ramps. This should be assessed on a case by case basis.

To minimise the need for TGSIs, where possible, kerb ramps should meet AS1428.4.1 to include the following:

- Maximum gradient of the kerb ramp 1:8 - 1:8.5
- Kerb ramp aligned with the building line and in the direction of travel across the carriageway
- Top of kerb ramp located less than 3000mm from the property / building line
- Kerb ramps must be aligned with opposite kerb ramps to provide clear wayfinding when crossing a road. If they are not aligned, they should be re-installed so that they do align.
- Directional TGSIs are not recommended to be installed leading to kerb ramps, due to the significant length of directional indicators that would be required to link the building line with the majority of kerb ramps, as well as minimising potential confusion and discomfort for a range of users including older people, parents with prams, shopping trolley users and wheelchair users. As an alternative, a range of standardised environmental cues for crossings will be outlined in the forthcoming Local Local Centres Public Improvement Plan. Until these cues are further developed, each situation should be assessed on a case by case basis.

At Grade Crossings

Install warning TGSIs where a pedestrian area joins a carriageway at grade (i.e. on the same level) or to delineate the pedestrian area from the carriageway. For example at raised pedestrian crossings and driveways on both sides of crossings.

Bus Stops

- Bus Stops are required to have warning and directional TGSIs installed in accordance with The Disability Standards for Accessible Public Transport and AS1428.4.1.
- Directional TGSIs are required to be installed across the direction of travel, extending 600-800mm
- A 600-800mm x 600-800mm pad of warning TGSIs, located 300mm from the kerb edge, indicates the location of the bus boarding point. This pad links to the directional TGSIs.

B.

Footpaths & Crossings

Typical Arrangements

B.01

Pedestrian Ramps

Function

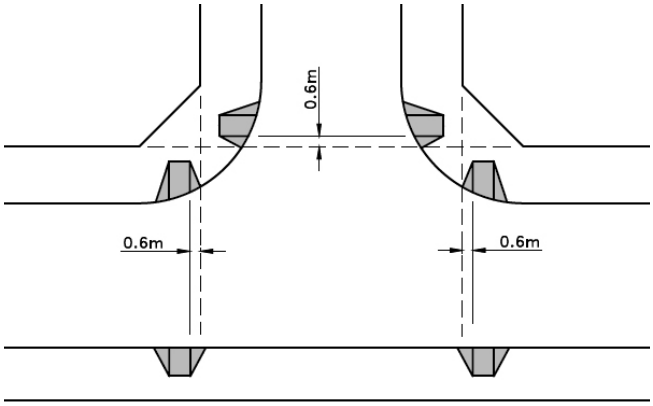
- To maximise pedestrian safety for all users, particularly at crossing points and intersections, and to integrate the design of crossings into the general street geometry
- Kerb ramps must be aligned with opposite kerb ramps to provide clear wayfinding when crossing a road

Materials and Dimensions

- Minimum width of 1000mm on the path of travel
- Maximum rise of 190mm
- Length no greater than 1520mm
- Maximum gradient 1:8 - 1:8.5

Installation

- Where possible all new kerb ramps should meet AS 1428.1 2009 clause 10.7 to include the following:
  - Top of pedestrian ramp located less than 3000mm from the property / building line
  - Align kerb ramp with line of travel and with building line if possible. Kerb ramps on opposite sides should align with each other.
- 5mm construction tolerance of abutting surface (edges bevelled)
- The angle at the base of kerb ramps is a minimum of 166 degrees
- Provide a ramp at all points where pedestrians need to cross the road and at accessible drop off points, bus zones and taxi standards
- TGSIs are not recommended to be installed on the face of kerb ramps with a gradient of 1:8-1:8.5, as some people using mobility aids may have difficulty negotiating TGSIs on a slope
- Provide upper landings that are 1:40, preferably minimum 1500 x 1500mm



Plan showing kerb ramp crossings - guide only

Pedestrian ramp pattern A, Bondi Junction

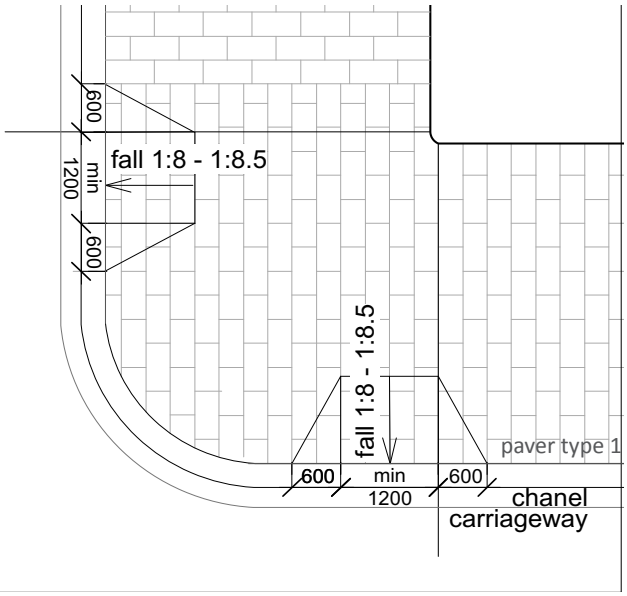
Pedestrian ramp pattern B, Bondi Road

Pedestrian ramp pattern C, Bondi Junction

Notes:

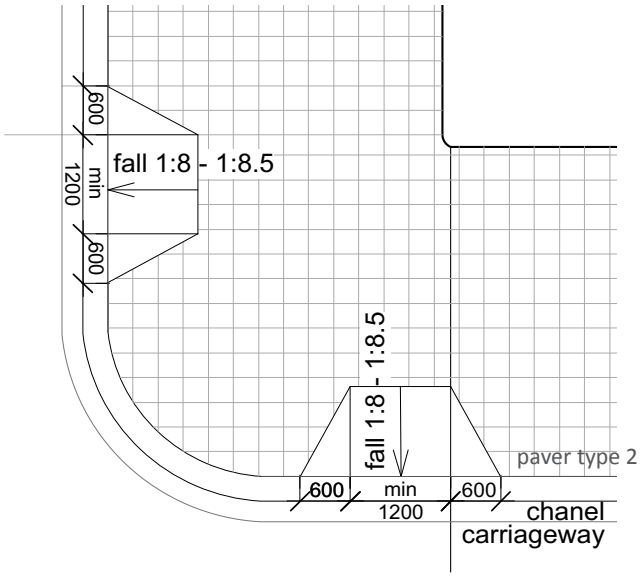
1. Guide only. Pedestrian ramps to be designed case by case

2. Refer the Tactile Ground Surface Indicators' section for TGSI application



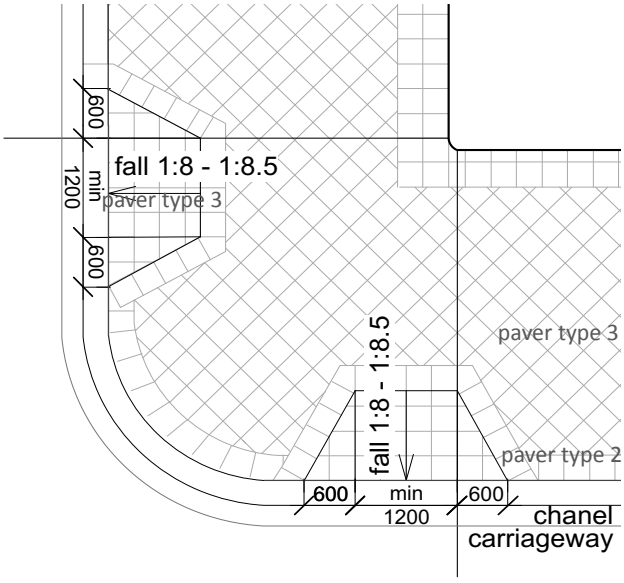
01 TYPICAL PEDESTRIAN RAMP - PAVING PATTERN A LAYOUT

Scale 1:100



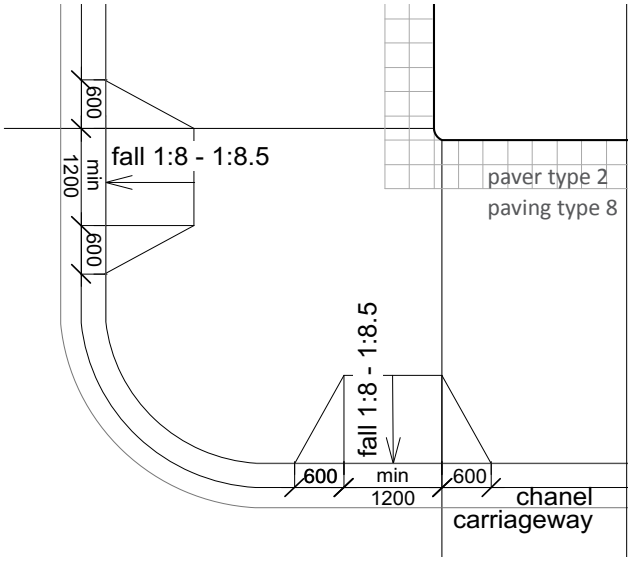
02 TYPICAL PEDESTRIAN RAMP - PAVING PATTERN B LAYOUT

Scale 1:100



03 TYPICAL PEDESTRIAN RAMP - PAVING PATTERN C LAYOUT

Scale 1:100



04 TYPICAL PEDESTRIAN RAMP - PAVING PATTERN G LAYOUT

Scale 1:100

B.02

Paving Junction

Function

- Paving and kerb junctions typically to occur at street corners when one type of paving pattern intersects with another.

Materials and Dimensions

- Paving patterns as per occurence

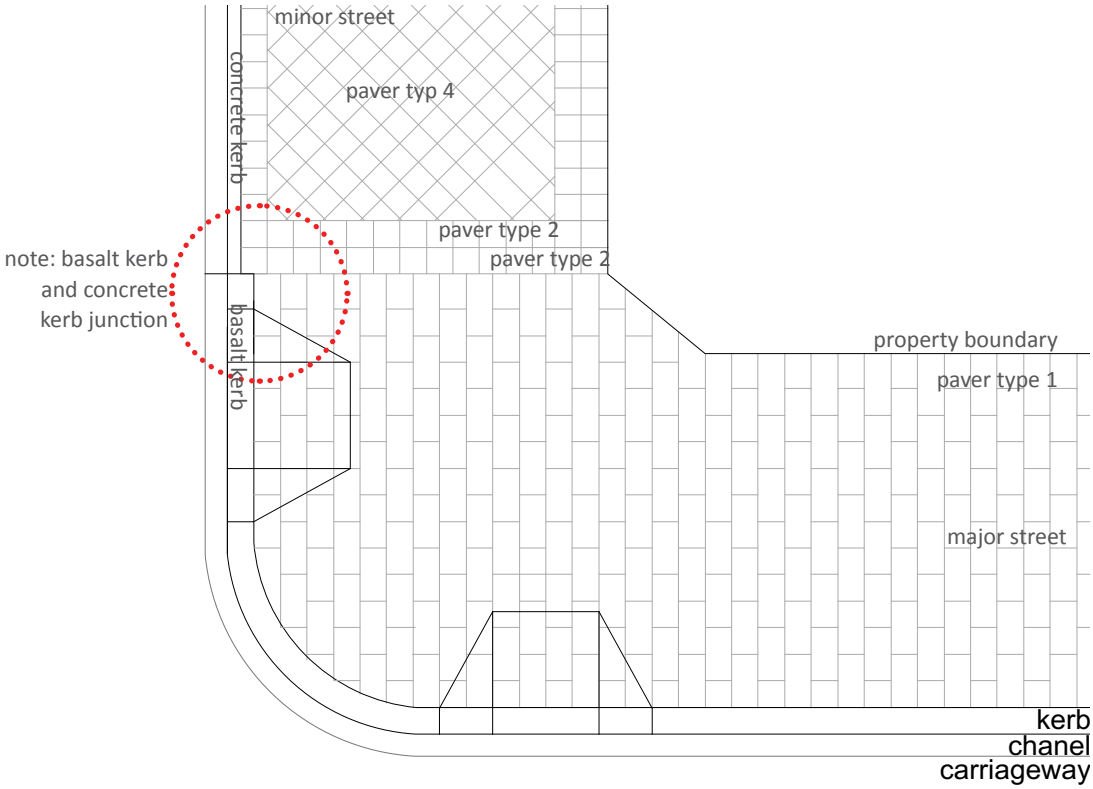
Installation

- Major streets take precedent to minor streets meaning the paving treatment on the major street should be continued past the property boundary to the kerb to reinforce a continuity and a seamless transition for paving junctions
- Paver type 2 as a double header to indicate transition of paving
- Major street paving to continue perpendicular to building line to meet the back of kerb
- Change in kerb width junctions – align kerbs perpendicular and set out paving from back of kerb

Paving Junction - Corner of Spring and Newland Street

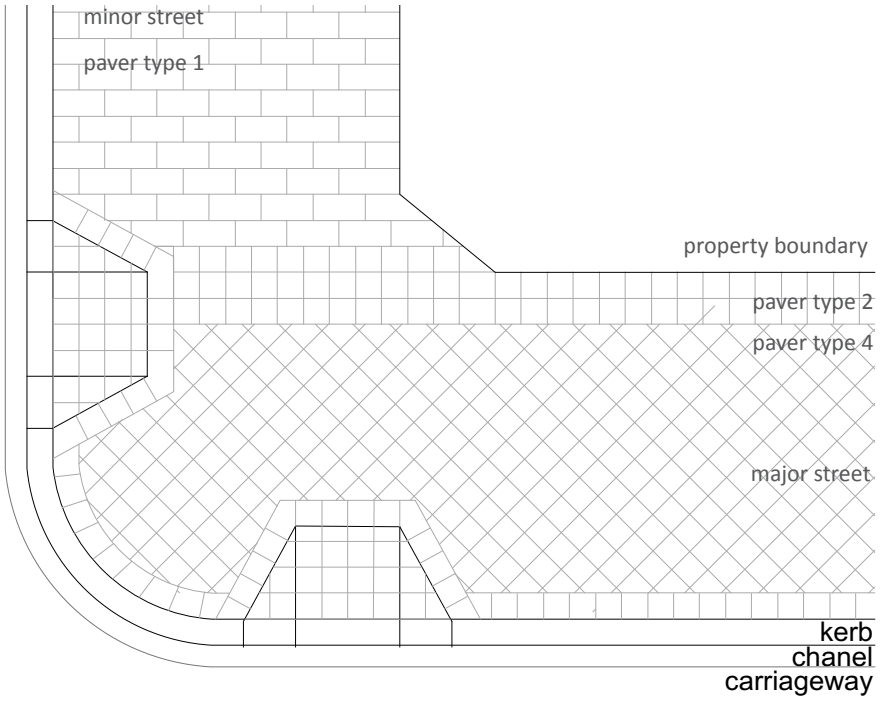
Note:

1. Refer the Tactile Ground Surface Indicators' section for TGSI application



01 TYPICAL PAVING JUNCTION
PAVING PATTERNS A AND D

Scale 1:100



02 TYPICAL PAVING JUNCTION
PAVING patterns D and A

Scale 1:100

B.03

Kerb Extensions

Function

- Traffic calming by creating safer streets for pedestrians, cyclist and vehicles alike through raised pedestrian crossings and kerb extensions.
- Kerb extensions are the standard for traffic calming and should be applied over pedestrian refugee islands.
- Kerb extensions allow shorter crossing times for pedestrians and allow an integrated approach to the streetscape design.

Materials and Dimensions

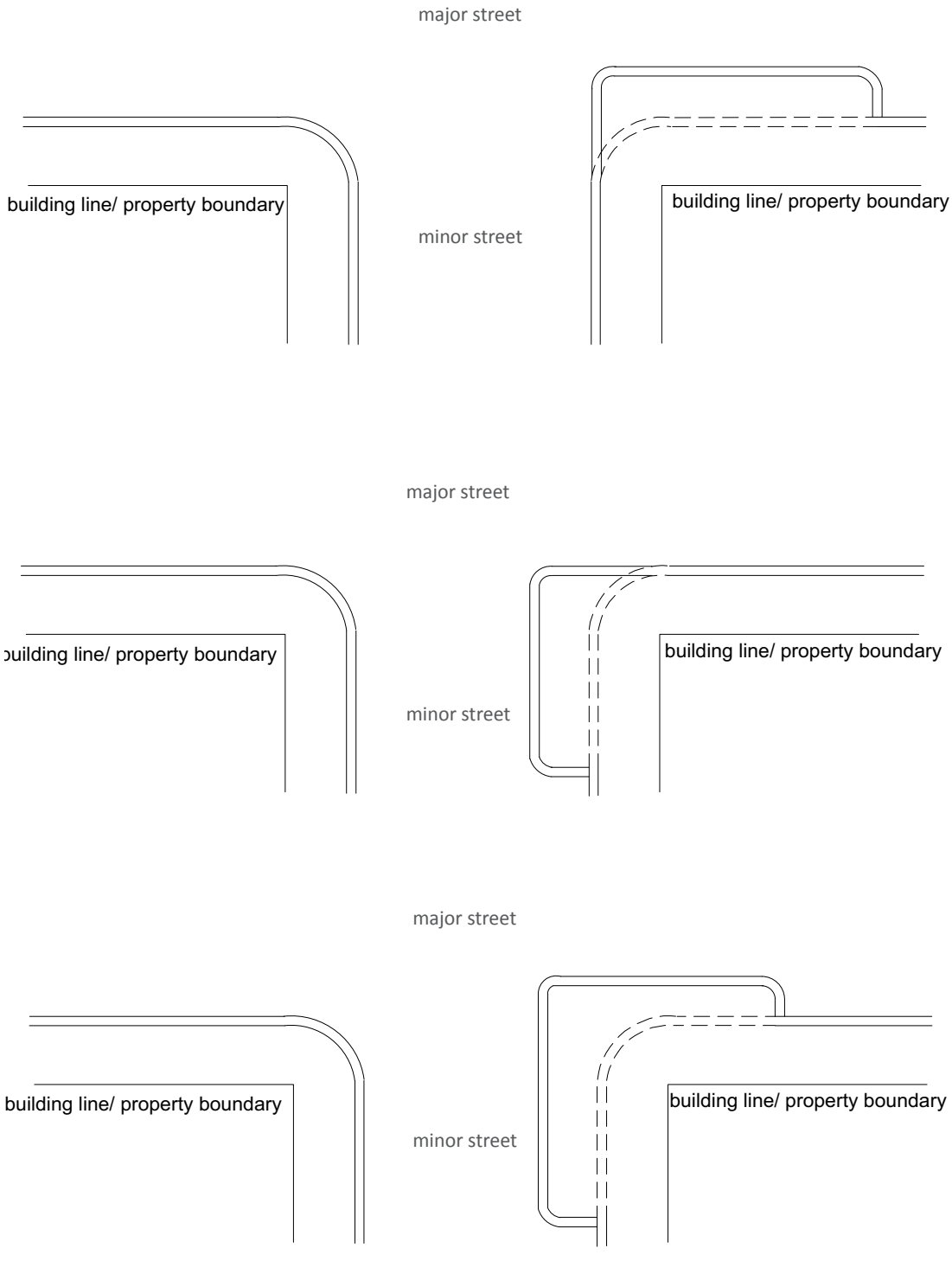
- Dimensions will vary depending on site conditions, services, sight lines, traffic conditions and parking conditions
- Match the dominant surrounding paving and kerb type/s
- Assess suitability for enhancing kerb nibs with low level planting or trees

Installation

- Kerbs should provide a clear separation between the pedestrian space and traffic
- Design corners and intersections to suit pedestrian comfort and safety. Use of minimum radii at corners will enhance pedestrian convenience
- Avoid creating isolated islands at corners. Extend the footpath width to consolidate the potential pedestrian zone. Alter drainage to suit this condition
- Layout footpath kerbs extensions with a simple alignment of elements and edges, ideally parallel to the predominant built edge
- When required raised islands in crossings should be cut through level with the street or have kerb ramps at both sides and a level area at least 1200 mm long in the part of the island intersected by the crossings. It is recommended median cut through at the same grade as the road have warning TGSIs installed on both sides of the cut though in accordance with AS4128.4.1.

Integrated kerb extension- Hall Street, Bondi

Integrated kerb extension- Ebley Street, Bondi Junction



01 GUIDE ONLY - KERB EXTENSION SCENARIOS

Scale 1:500

B.04

Pedestrian Priority Crossings

Function

- Traffic calming by creating safer streets for pedestrians, cyclist and vehicles alike through raised pedestrian crossings and kerb extensions
- Pedestrian crossings are the standard for improving pedestrian safety and an integrated streetscape design

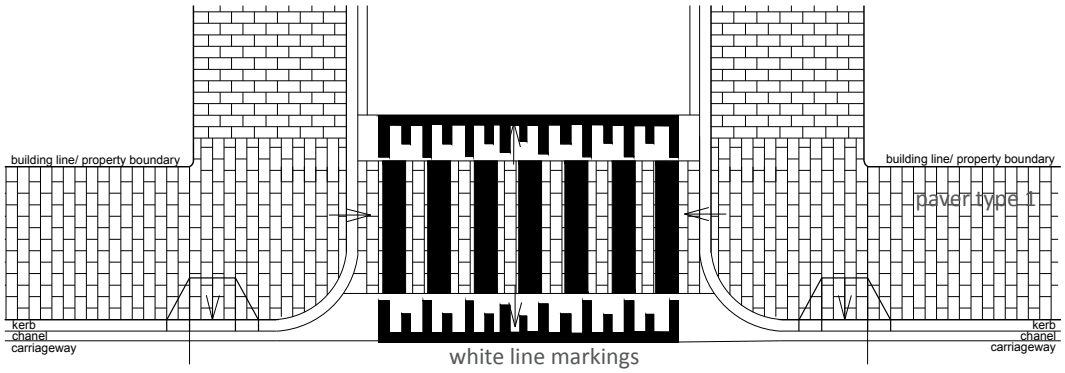
Materials and Dimensions

- For Bondi Junction and high profile areas match the dominant surrounding paving with painted white line markings
- For all other areas asphalt with white line markings may be applied
- Dimensions will vary depending on site conditions, services, sight lines, traffic conditions and parking conditions
- Crossings are to be designed case by case depending on location requirements

Installation

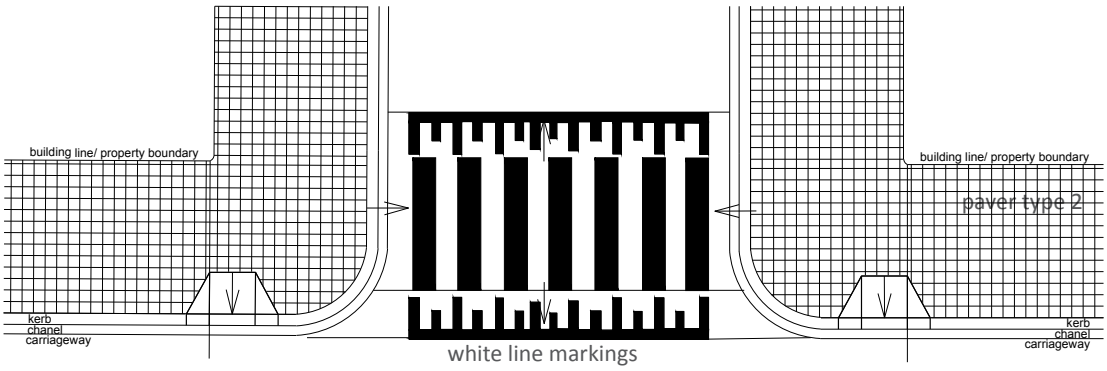
- Pedestrian priority crossings should provide a clear separation between the pedestrian space and traffic
- Design corners and intersections to suit pedestrian comfort and safety.
- Where drainage is required install grates to suite

Pedestrian Priority Crossing Ebley street, Bondi Junction



01 TYPICAL PEDESTRIAN PRIORITY CROSSING
BONDI JUNCTION

Scale 1:150



02 TYPICAL PEDESTRIAN PRIORITY CROSSING
OTHER AREAS

Scale 1:150

Notes:

1. Guide only. Pedestrian priority crossings to be designed case by case
2. Refer the Tactile Ground Surface Indicators' section for TGSI application

B.05

Service Pit Lid Infill

Function

- Reduce the intrusion of service covers in the pavement as far as possible by infill paving surfaces of larger covers to match surrounding paving, and by minimising or avoiding concrete surrounds to covers.

Product

- Recessed pit lids in cast aluminium, paving to match set into lid. Paving pattern within the lid to match that surrounding.
- Single and multi- part access covers with heavy gauge steel frames and other suitable service cover infill lids as required and specified by the various authorities. Seek further advice from relevant service authority.

Materials and Dimensions

- Service pit lid Infill to match surrounding paver type

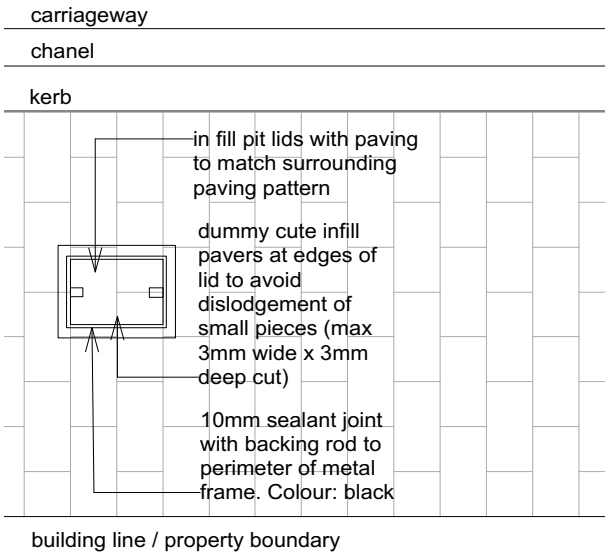
Installation

- The provision of services has the potential for impact on the quality of streetscapes, through the location and materiality of service covers and the provision of overhead services. Consideration of service provision is essential in the design of the street.
- Liaise with service authorities to determine future service requirements over whole blocks
- Consider undergrounding of overhead wires as part of streetscape upgrades
- Use infill pit lids for all sevices including electrical and Telstra pits, to allow continuity of paving. Liaise with service authorities for their requirements.
- Use lids and frames that allow for paving to finish flush with frames.
- Pit lids and grates covers are to be flush with the surrounding surface. Openings in the surface of pathways such as grates are proposed to be no greater than 13mm to meet AS 1428.1 Clause 7
- Ensure pit lids and grates are aligned with the surrounding paving pattern. Infill paving pattern to merge and match with surrounding paving pattern.

Maintenance

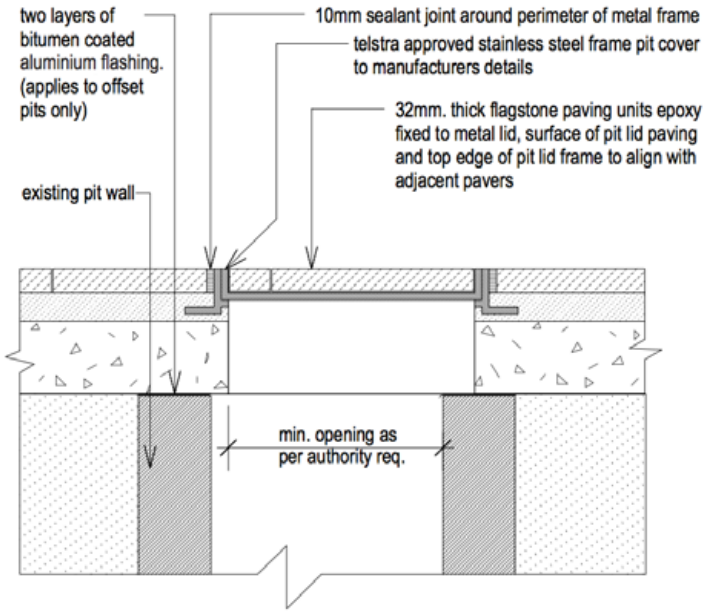
- under review

Service pit infill Bondi Junction



01 TYPICAL PIT LID LAYOUT

Scale 1:50



02 TYPICAL PIT LID DETAIL

Scale 1:10

C.

Stairs

C.01

Concrete Stairs

Function / Location

- Concrete stairs are typically used adjacent to concrete paths, with the finish of the concrete to match the adjacent concrete finish.
- Stairs are to comply with the Building Code of Australia and typically have a 150mm riser and a 300mm tread.
- A flight of stairs is minimum 2 risers, or a maximum of 18 risers. If more than 18 risers are required, a landing of minimum 750mm width must be installed. The staircase shall not have more than 36 risers without a change in direction.
- Stair nosings are to be cast into the concrete when installing new stairs, using Stair Type A. Nosing Type B is to be rebated into existing stair treads. Refer to Stair Nosing Section.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- **Stair Type A - Concrete:** Stairs are to include nosing profiles which include 50mm wide solid slip resistant highlighting strips on the tread at the nosing with a minimum luminance contrast of 30% with the tread to comply with AS1428.1. Nosings are to be set back 15mm from edge of tread.
- Stairs are to have Tactile Ground Surface Indicators (TGSI's) installed to comply with AS1428.4.1.
- TGSI's shall be used at the top and bottom of stairways and ramps and intermediate landings that have entrances from that level to the landing. They should not be installed at intermediate landings that have continuous handrails on both sides of the stairway or ramp.
- Set stairs back a minimum of 900mm from adjacent pathways so handrails and TGSI's do not encroach on the path.

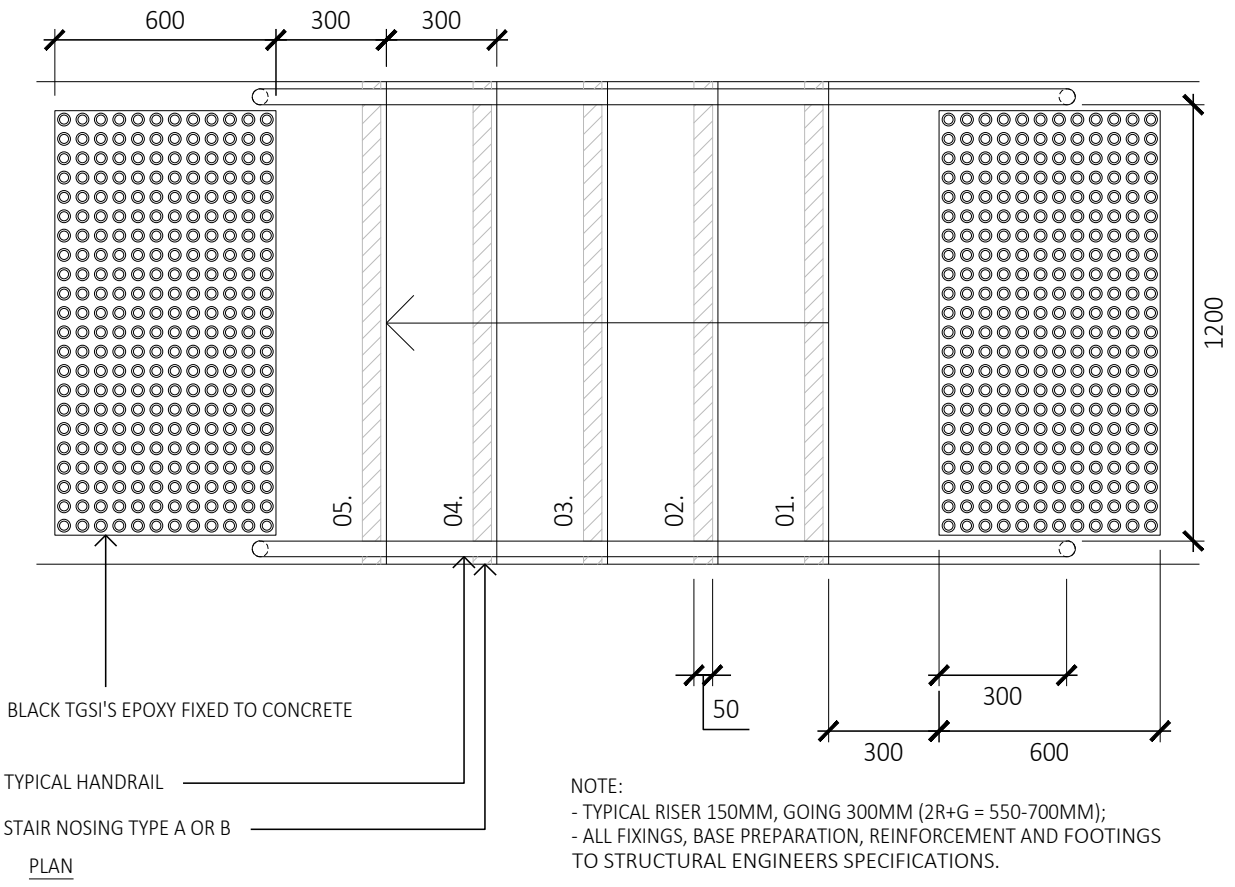
Stair Type A - Concrete

Installation

- Surface finish to match adjoining pavements.
- Obtain structural design drawings and specification prior to installation. These must be certified by a Registered Engineer.
- Stairs are to have TGSI's and Nosings installed to comply with AS1428.4.1.
- Refer to Handrails, Balustrades, TGSI's and Stair Nosing sections for more information.

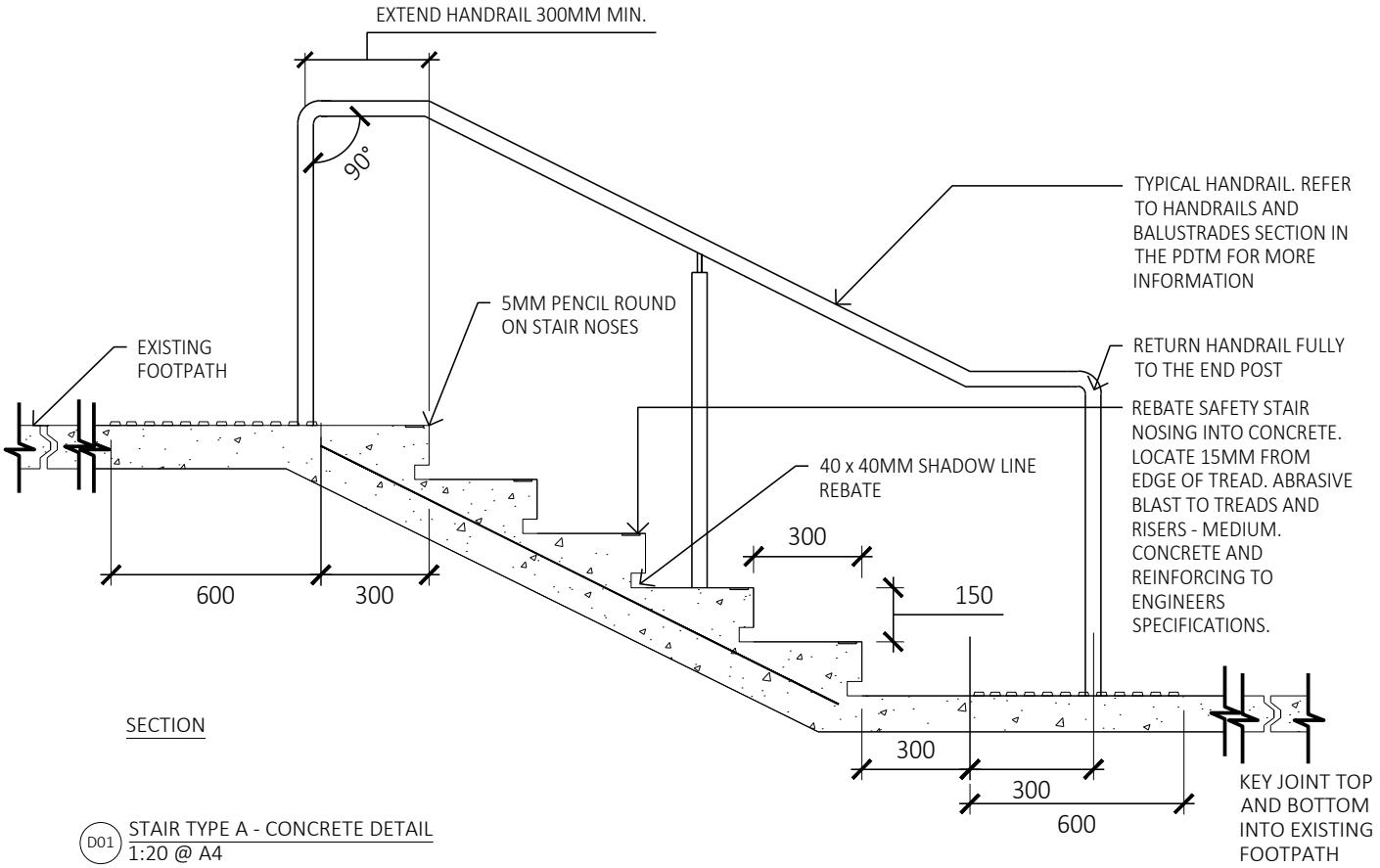
Maintenance

- Refer to HB 84-2006 - Guide to Concrete Repair and Protection, a joint publication of ACRA, CSIRO and Standards Ausralia, available at SAI Global publication, for more information.
- Use of a high-pressure water hose to remove superficial dirt.



PLAN

NOTE:
- TYPICAL RISER 150MM, GOING 300MM (2R+G = 550-700MM);
- ALL FIXINGS, BASE PREPARATION, REINFORCEMENT AND FOOTINGS TO STRUCTURAL ENGINEERS SPECIFICATIONS.



SECTION

D01 STAIR TYPE A - CONCRETE DETAIL
1:20 @ A4

C.02

Sandstone Stairs

Function / Location

- Sandstone stairs are to be used adjacent to: sandstone paths - either sandstone flagstone paving (crazy paving) or sandstone unit pavers; Crushed Sandstone Pavement (stabilised) or natural ground.
- Sandstone stairs shall be used in special places as directed by council.
- Stairs are to comply with the Building Code of Australia and typically have a 150mm riser and a 300mm tread.
- Stair nosings are to be rebated into the sandstone, using Stair Nosing Type B. Refer to Stair Nosing Section.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- **Stair Type B - Sandstone:**
  Unit Pavers: 'Buff'. 40 x 600 x 300mm' Risers and Treads to be Sawn Stone
  Flagstone - Split stone sheets to risers, Sawn to treads, 'Buff'. Sizes vary.
  Finish - Hydrasplit

Installation

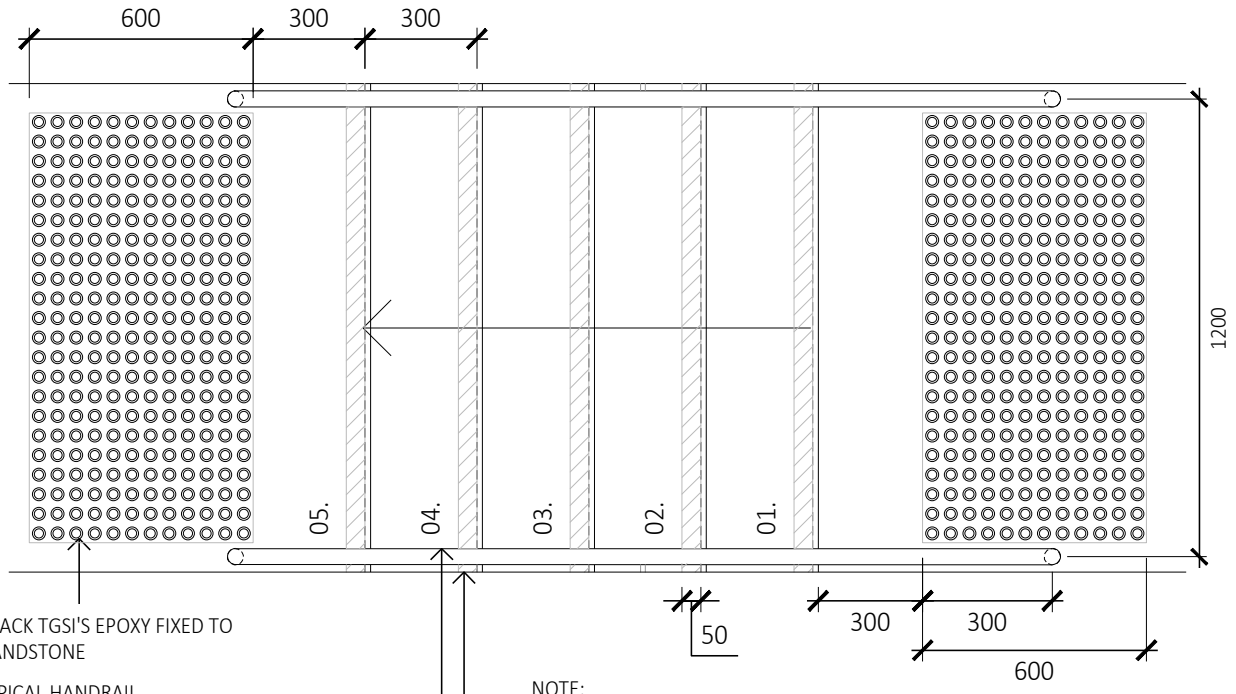
- Mortar to base and all joints.
- Sub-base as per Structural Engineers Specifications.
- Obtain structural design drawings and specification prior to installation. These must be certified by a Registered Engineer.
- Stairs are to have TGSI's installed to comply with AS1428.4.1.
- Refer to Handrails, Balustrades, TGSI's and Stair Nosings for more information.
- Apply sealant to sandstone pavers as per manufacturers recommendation.

Maintenance

- Use of a high-pressure water hose to remove superficial dirt.

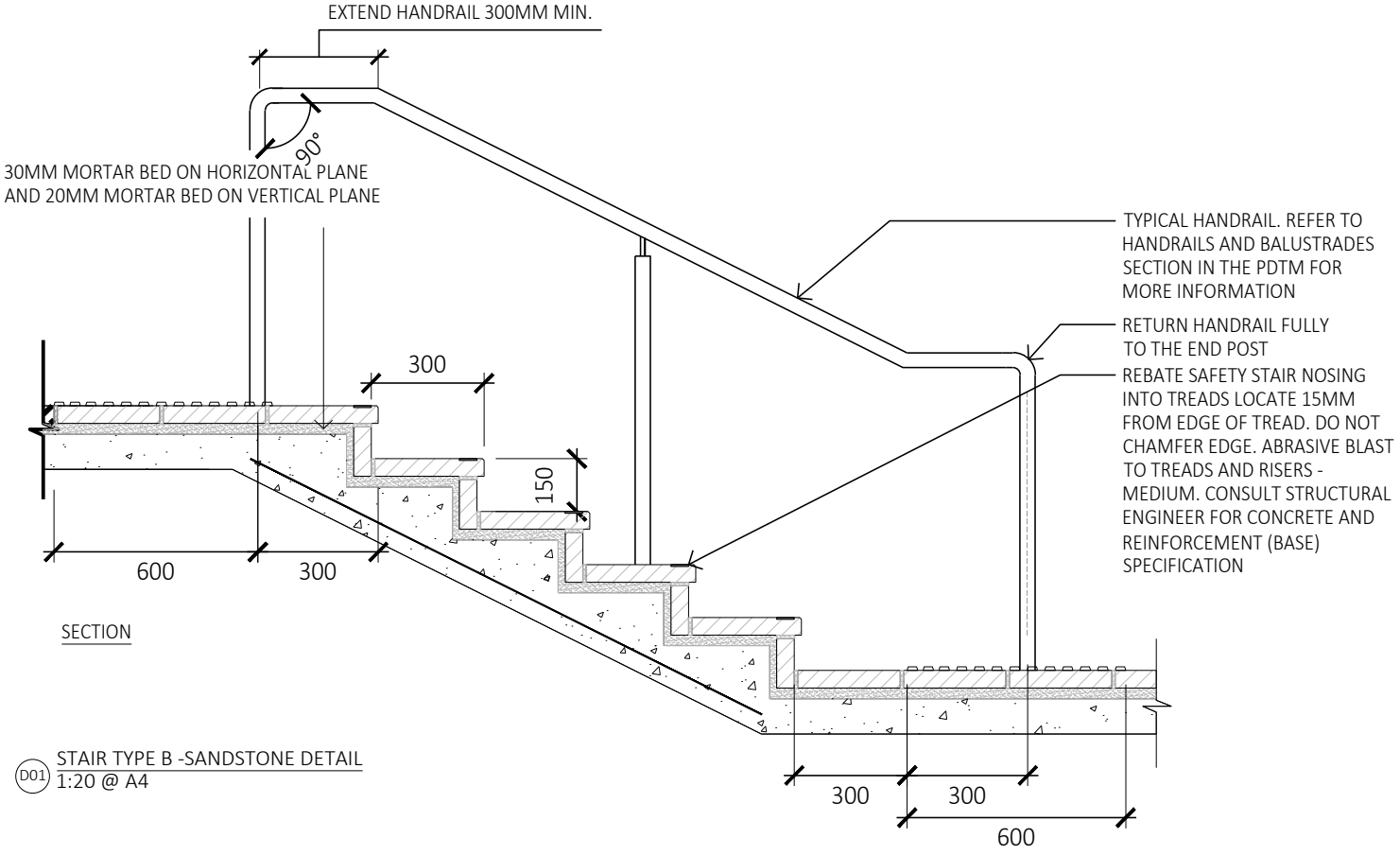
Stair Type B - Sandstone

Buff Sandstone Colour Range



PLAN

NOTE:
- TYPICAL RISER 150MM, GOING 300MM (2R+G);
- TREAD OVERHANG MIN 15MM MAX 25MM;
- 300 X 600 X 40MM SPLIT FACED, SANDSTONE PAVER GOINGS AND 140 X 600 X 40MM SPLIT FACED SANDSTONE PAVER RISERS;
- ALL FIXINGS, BASE PREPARATION, REINFORCEMENT AND FOOTINGS TO STRUCTURAL ENGINEERS SPECIFICATIONS.



SECTION

D01 STAIR TYPE B -SANDSTONE DETAIL
1:20 @ A4

C.03

Brick Stairs

Function / Location

- Brick stairs are typically used adjacent to brick or concrete paths.
- Stairs are to comply with the Building Code of Australia and typically have a 150mm riser and a 300mm tread.
- Stair nosings are to be rebated into the brick, using Stair Nosing Type B. Refer to Stair Nosing Section.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Stair Type C - Brick. 230 x 110 x 76cm, <10% Cold Water Absorption, Exposure Grade Durability Class, Slight Lime Pitting Liability, Dark Solar Absorptance Rating, Colour Light Brown
- Brick format and colour to be determined on a job specific basis. This information will be provided by Council representative.
- Set stairs back a minimum of 900mm from adjacent pathways so handrails and TGSI's do not encroach on the path.

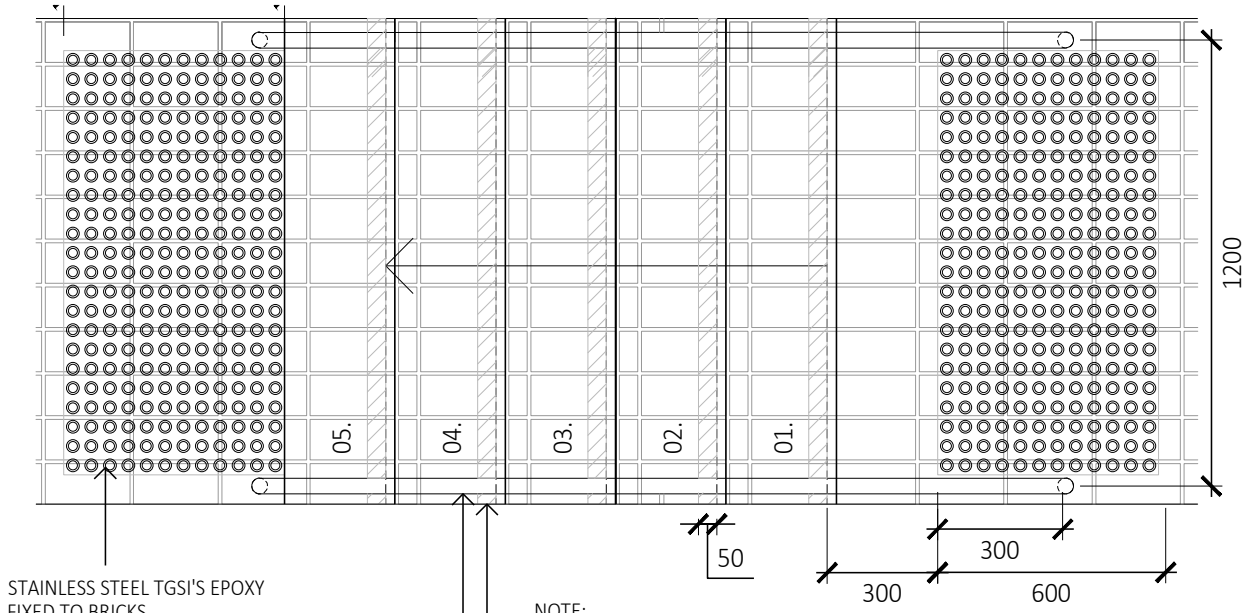
Installation

- Brick on concrete substrate to Engineers Specifications.
- Mortar on base and joints.
- If possible match in with adjacent brick pattern or use 'stacked bond' pattern.
- Obtain structural design drawings and specification prior to installation. These must be certified by a registered engineer.
- Stairs are to have TGSI's and Nosings installed to comply with AS1428.4.1.
- Refer to Handrails, Balustrades, TGSI's and Stair Nosings for more information.
- Apply Sealant to bricks as per manufacturers recommendations.

Maintenance

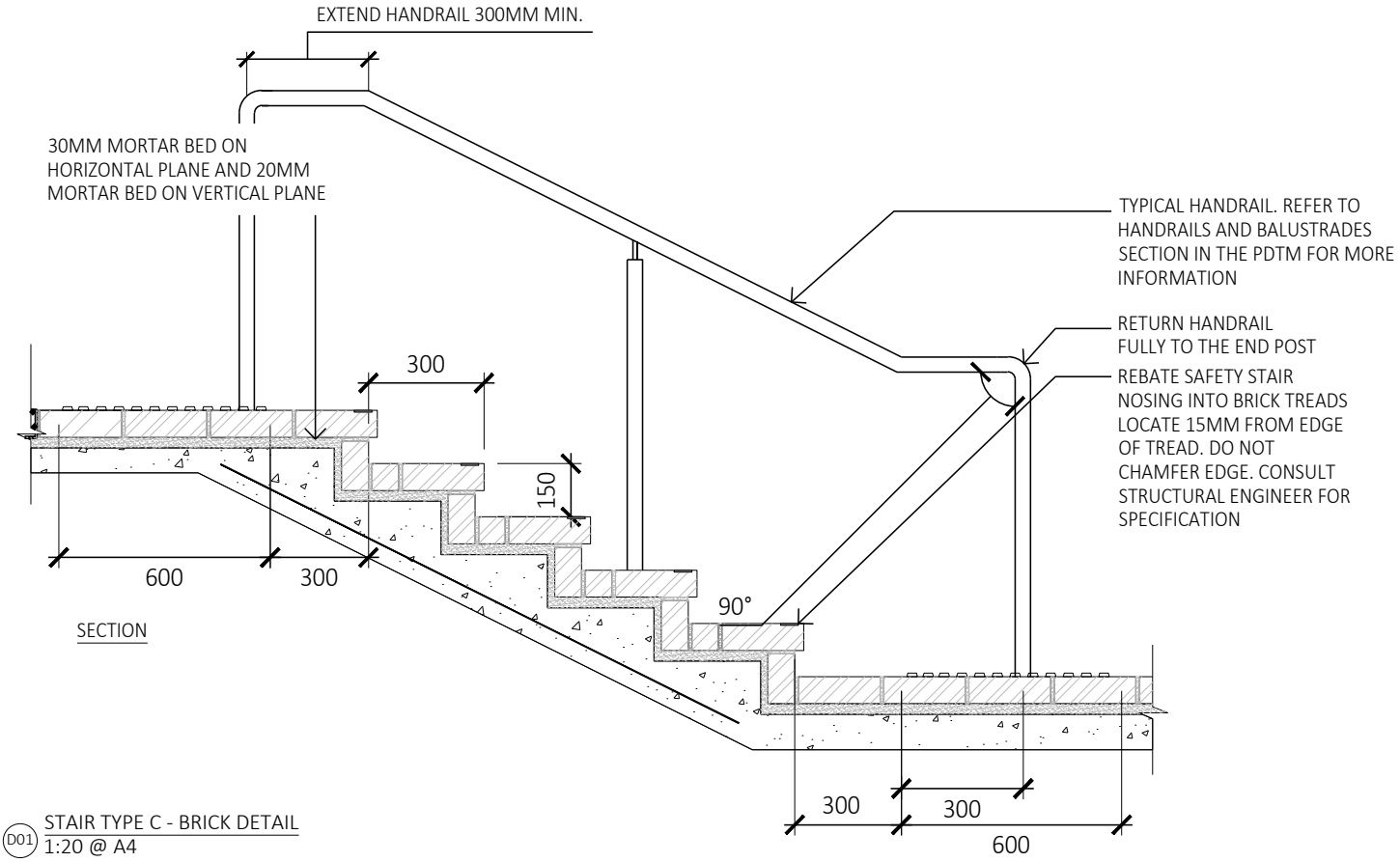
- Use of a high-pressure water hose to remove superficial dirt.

Stair Type C - Brick



PLAN

NOTE:
- TYPICAL RISER 150MM, GOING 300MM (2R+G);
- TREAD OVERHANG MIN 15MM MAX 25MM;
- ALL FIXINGS, BASE PREPARATION, REINFORCEMENT AND FOOTINGS TO STRUCTURAL ENGINEERS SPECIFICATIONS.



SECTION

D01 STAIR TYPE C - BRICK DETAIL
1:20 @ A4

C.04

Timber Stairs

Function / Location

- Timber stairs are typically used adjacent to timber decks and boardwalks.
- Timber stairs may be used in a natural setting or difficult to access site where a lightweight stair is required.
- Stairs are to comply with the Building Code of Australia and typically have a 150mm riser and a 300mm tread.
- Stair nosings are to be rebated into the timber tread, using Stair Nosing Type B. Refer to Stair Nosing Section.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Australian hardwood timber slats (sustainably sourced timber AFS, FSC, PEFC Certified or recycled), with preference for Spotted Gum.
- Timber must be seasonsed to prevent leaching of tannins.
- Stairs are to have TGSI's installed to comply with AS1428.4.1.
- Stairs are to include nosing profiles which include 50-75mm wide solid slip resistant highlighting strips on the tread at the nosing with a minimum luminance contrast of 30% with the tread to comply with AS1428.1.
- Set stairs back a minimum of 900mm from adjacent pathways so handrails and TGSI's do not encroach on the path.

Installation

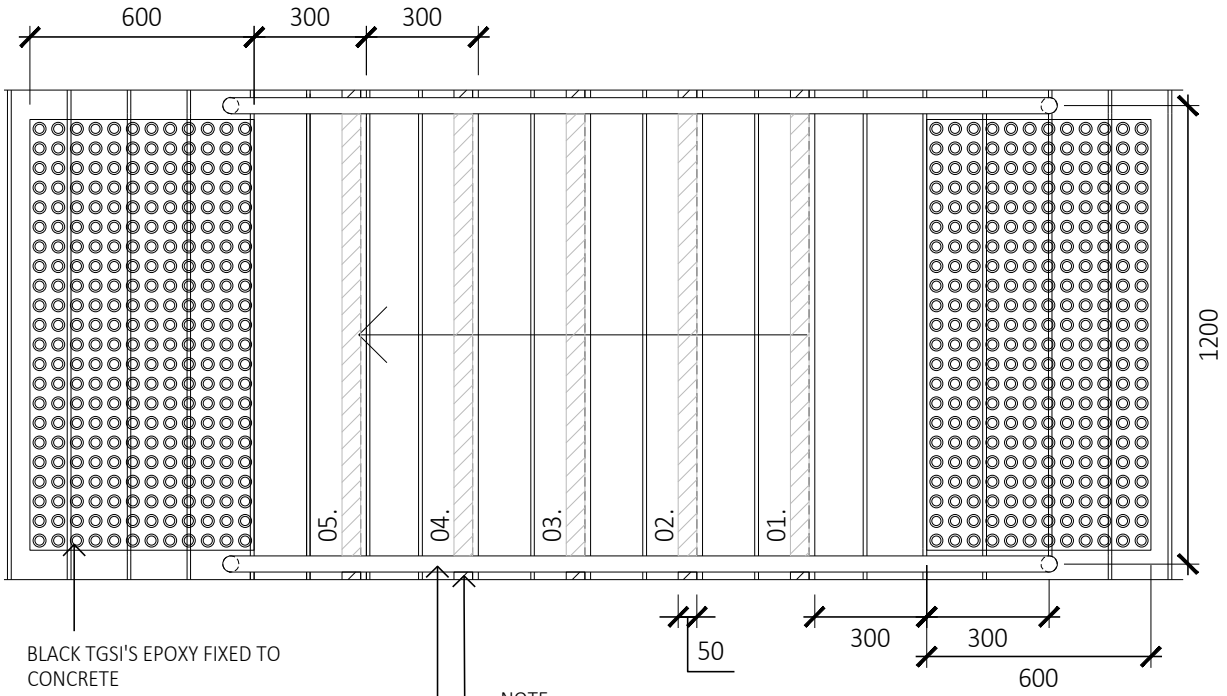
- Sub-structure to Engineers Specifications.
- Consult with a structural engineer regarding the specific site and design conditions.
- Obtain structural design drawings and specification prior to installation. These must be certified by a registered engineer.
- Refer to Handrails, Balustrades, TGSI's and Stair Nosings for more information.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.

Stair Type D - Timber

Natural Exterior Oil on Spotted Gum

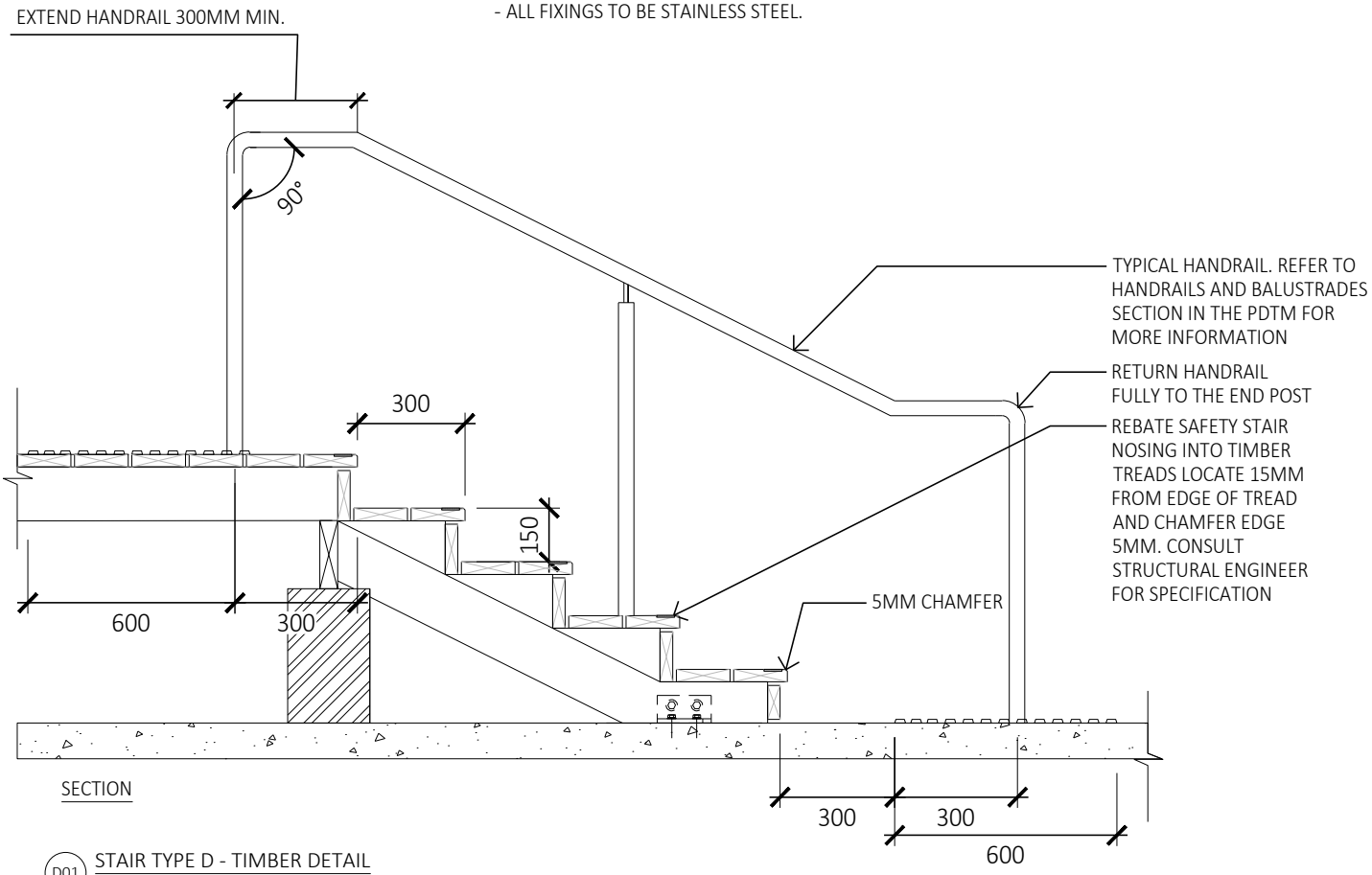
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Oil Application: 3-6 months after the installation.
- Second Onsite Oil Application: 6-9 months after first onsite application.
- Ongoing Oil Application: Every 12 months.



PLAN

NOTE:
- TYPICAL RISER 150MM, GOING 300MM (2R+G);
- TREAD OVERHANG MIN 15MM MAX 25MM;
- 150 X 35 DAR HARDWOOD TIMBER BOARDS;
- HARDWOOD TIMBER BOARD FIXING PLATE AND STRINGERS;
- REBATE SAFETY STAIR NOSING INTO TIMBER TREADS (ABRALOY 493 S BLACK) LOCATE 15MM FROM STAIR NOSING;
- ALL FIXINGS, BASE PREPARATION, REINFORCEMENT AND FOOTINGS TO STRUCTURAL ENGINEERS SPECIFICATIONS;
- ALL FIXINGS TO BE STAINLESS STEEL.



SECTION

D01 STAIR TYPE D - TIMBER DETAIL
1:20 @ A4

C.05

Stair Nosings

Function / Location

- To provide a slip resistant nosing to stairs and to provide guidance for visually impaired users.
- Stair Nosings to be installed on all stairs in accordance with AS1428.1.
- Stair nosings must be used on all new high use stairs or stairs that pose a potential hazard to the visually impaired. Stair treads must be rebated to suit aluminium strip using Stair Nosing Type B or C, unless the nosing is to be installed in wet concrete. In this instance, Stair Nosing Type A shall be used.
- Stair nosing strips, cut to fit, combined with a heavy duty slip resistant resin abrasive granule compound infill, may be used to retrofit existing stairs. This nosing type may also be used for new sandstone or brick stairs.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Stair Nosing Type A - Set in Wet Concrete treads
- Stair Nosing Type B - Set in rebated Set (Hard) Concrete treads
- Stair Nosing Type C - Set in rebated Timber, Sandstone & Brick treads
- Surface finish to be Slip -Resistant Infill, colour Black, equivalent to “Sparkling Black”
- 50mm wide x 10mm depth
- Install Stair Nosings to a Maximum 15mm from edge of tread.
- Stair nosing profiles to include 50mm wide solid slip resistant highlighting strips on the tread at the nosing with a minimum luminance contrast of 30% with the tread to comply with AS1428.1.

Installation

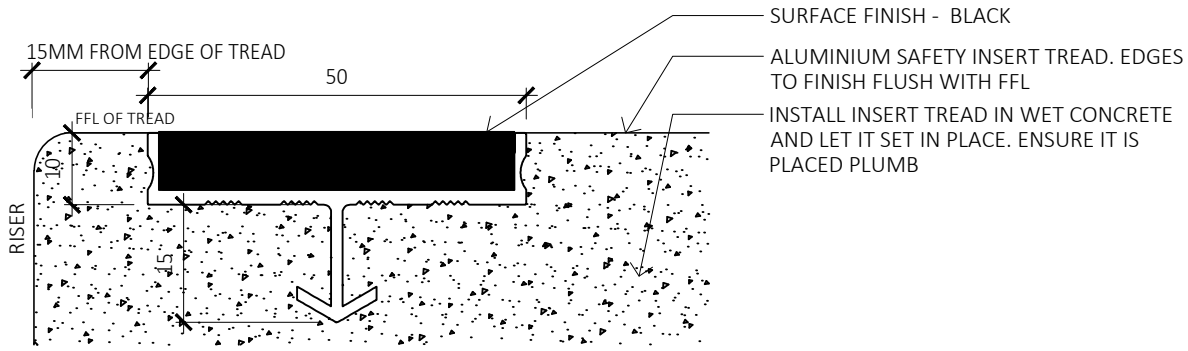
- Refer to manufacturers instructions.
- Refer to Australian Standard 1428.1- 2009 Designator Access and Mobility -General Requirements for access - New Building Work.

Maintenance

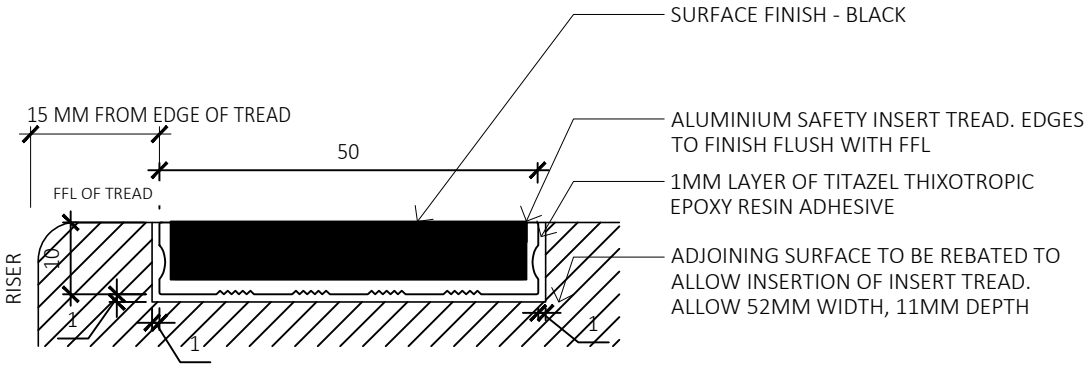
- Use of a high-pressure water hose to remove superficial dirt.

Aluminium Stair Nosings with Black Infill

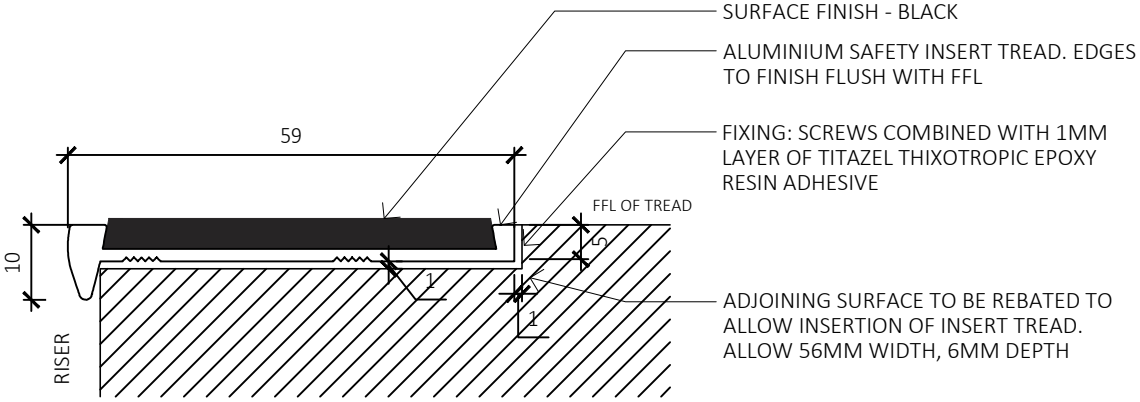
NOTE:
1. HOLES TO BE PROVIDED IN THE TREADS TO SUIT 8 GAUGE STAINLESS STEEL OR BRASS SCREWS AT 250MM CENTRES
2. COLOUR OF SLIP-RESISTANT INFILL IS TO BE BLACK STANDARD INFILL EQUIVALENT TO "SPARKLING BLACK"



D01 STAIR NOSING TYPE A
Scale 1:1 @ A4



D02 STAIR NOSING TYPE B
Scale 1:1 @ A4



D03 STAIR NOSING TYPE C
Scale 1:1 @ A4

D.

Edges & Walls

D.01

Spade Edge

Function / Location

- Edges are to be used to separate grassed areas from planted areas, and to provide a mowing edge.
- Spade Edge is to be used in areas where tree plantings sit in grassed areas, particularly in parks and reserves.

Supplier

- Not Applicable.

Materials and Dimensions

- Ensure the spade edging has a radius of 1,000mm around the tree trunk.
- Spade edge to have a maximum width of 150mm, and a maximum depth of 150mm.

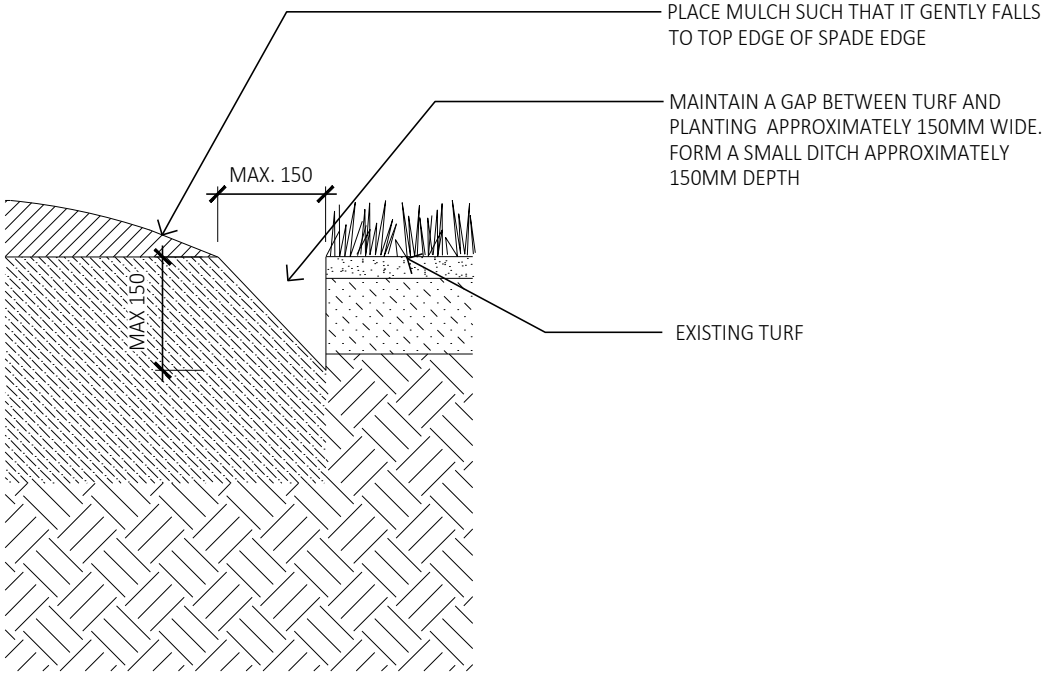
Installation

- Use a sharpened spade edge to form a small ditch with a maximum width of 150mm, and a maximum depth of 150mm.
- Spade edge to have a radius of 1,000mm around the tree trunk.
- Ensure that the finished level of the planting bed and turf are flush.
- Form the spade edge in smooth continuous curves, with no obvious flat spots or kinks when viewed along the line of curve.

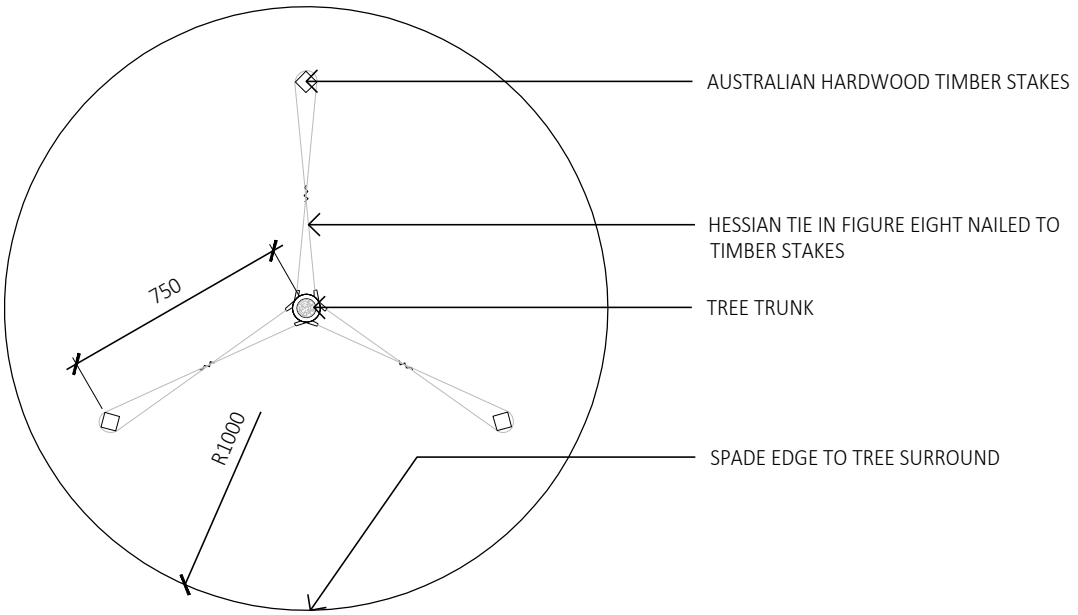
Maintenance

- Using a spade, trace around the existing spade edger cut into the turf, and in doing so, remove any encroaching turf rhizomes.
- Maintain turf edges every three months year round. During spring and in high growth periods, this should be increased to once per month.
- Keep water levels high, especially during the warmer months.
- If the lawn crumbles/dies back at the edges, cut out a 400x400mm section. Rotate it 180 degrees, placing the healthy section of lawn on the edge. Rake, topdress and reseed the damaged area. Keep the replaced turf well watered until it takes, especially during the warmer months.

Spade Edge



D01 TYPICAL SPADE EDGE DETAIL
Scale 1:10



D02 TREE WITH SPADE EDGE - PLAN
Scale 1:25

D.02

Recycled Plastic Edge

Function / Location

- Edges are to be used to separate grassed areas from planted areas, and to provide a mowing edge.
- Recycled Plastic Edge is to be used in parks and reserves, as a surround to playground softfall zones, turf and garden beds.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Recycled Plastic Edge Type A 200x20mm.
- Recycled Plastic Edge Type B 300x40mm.

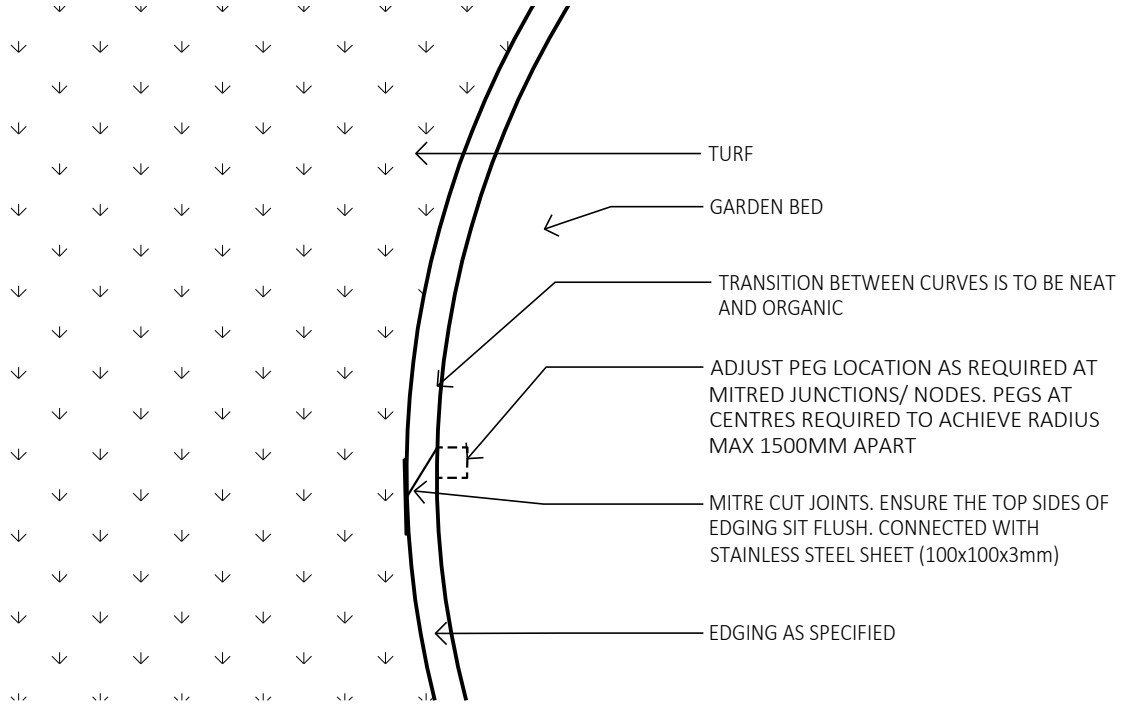
Installation

- Lay the edging in smooth continuous curves with no obvious flat spots or kinks when viewed along the line of the curve
- Ensure that the finished level of the turf is flush and a 25 mm strip depth below on the planting edge before transitioning to the finished level of planting
- Steel Stakes to be installed at 450-600mm centres and attached to edging with 2no M8 steel screws.
- Where joining of edging is required, ensure the two ends are mitre-joined, sit flush and that they are joined using a stainless steel sheet (100mm x100mm x 3mm), which overlaps the two edging pieces and is held in place with stainless steel screws. Ensure it sits at least 50mm below the top of edging.
- Ensure the edging lines are organic and flow with ease. Maximum bending radius for type A is 1500 mm. type B cannot be bent. Avoid joining edging in tight curve transitions.
- Ensure lengths of edging are kept to a minimum of 3m lengths unless unachievable.

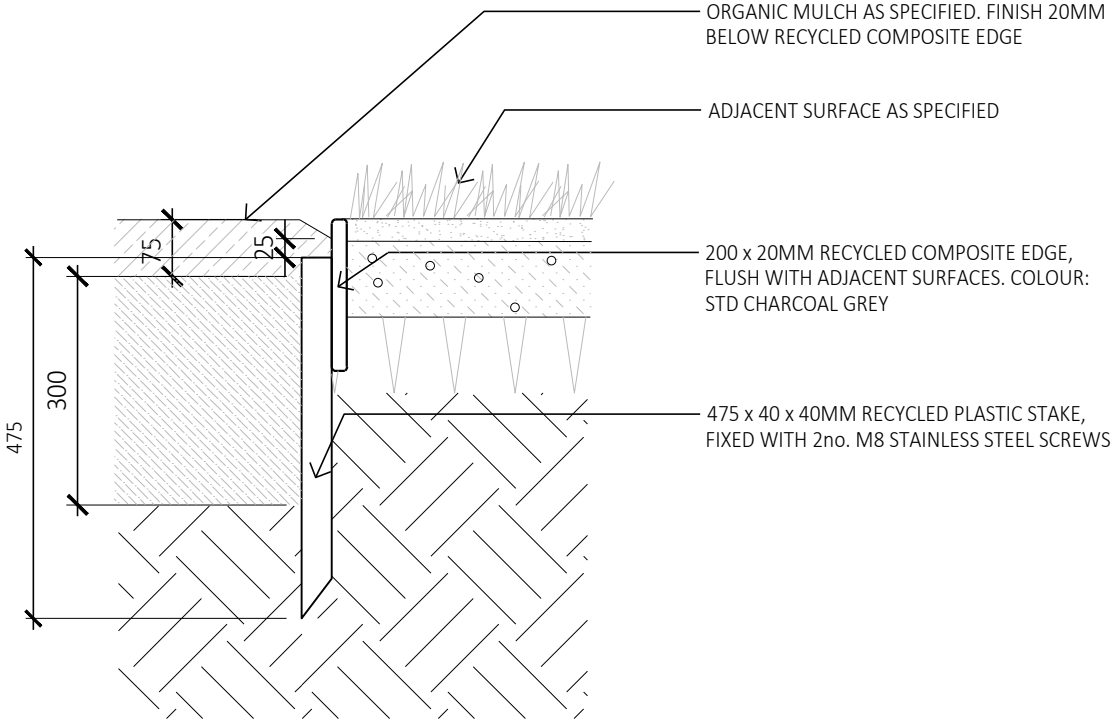
Maintenance

- Nil to Low Maintenance

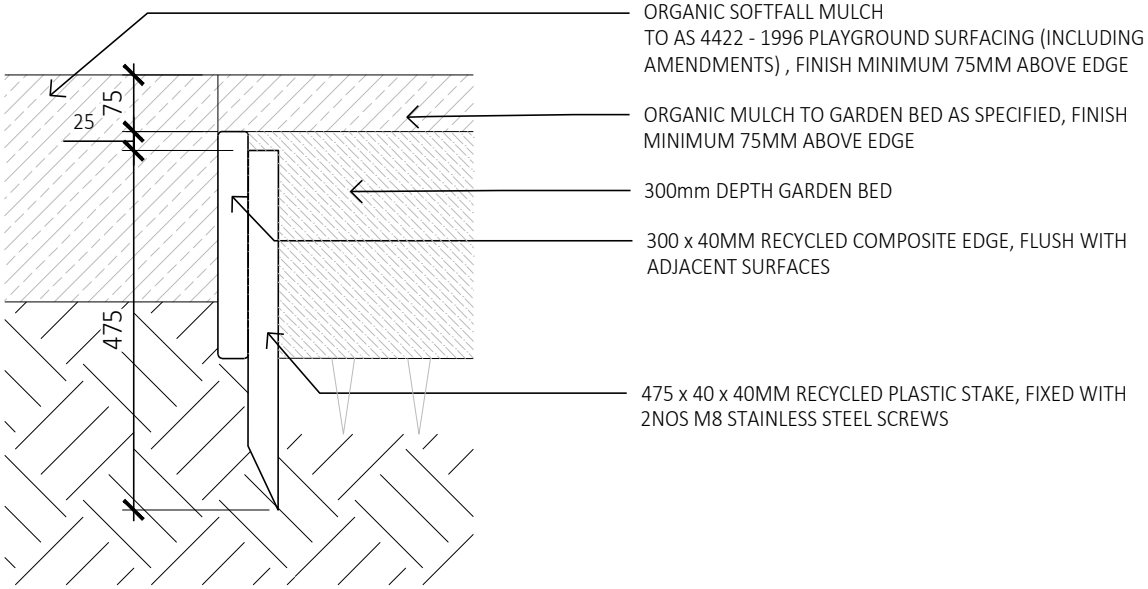
Recycled Plastic Edge



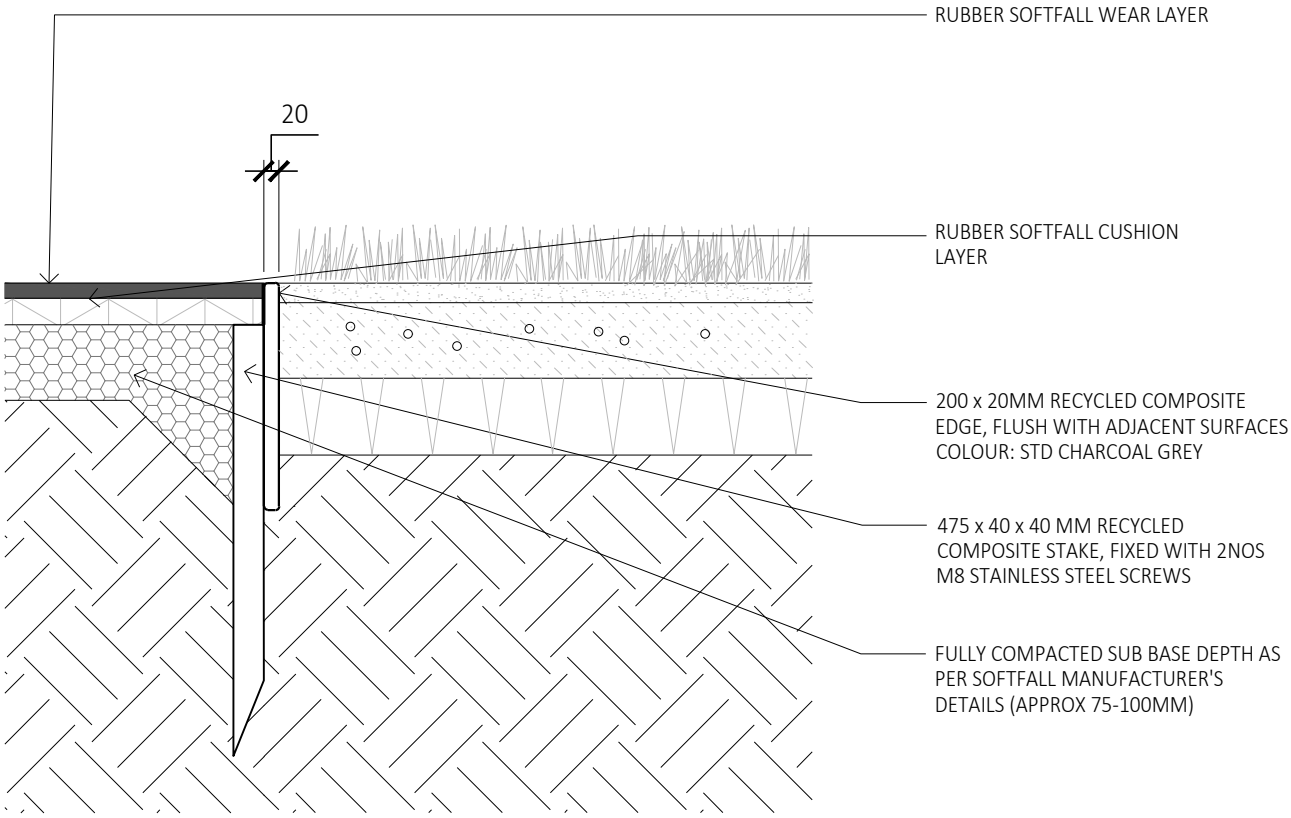
D01 RECYCLED PLASTIC EDGE : PLAN
Scale 1:10



D02 RECYCLED PLASTIC EDGE - DETAIL FOR TURF GARDEN BED INTERFACE
Scale 1:10



D01 RECYCLED PLASTIC EDGE - DETAIL FOR ORGANIC SOFTFALL MULCH AND ORGANIC MULCH INTERFACE
Scale 1:10



D02 RECYCLED PLASTIC EDGE - DETAIL FOR RUBBER SOFTFALL AND TURF INTERFACE
Scale 1:10

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D.03

Steel Edge

Function / Location

- Steel edges are to be used to separate planted or turf areas from other surfaces to maintain a clean edge.
- Steel edge is to be used where a high-end finish is required.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- 304 Stainless Steel - 150mm x 6mm thick
- 304 Stainless Steel - 250mm long x 10mm diameter round anchor bars
- 304 Stainless Steel unequal angles - 125mm x 75mm x 6mm thick to be used for straight runs

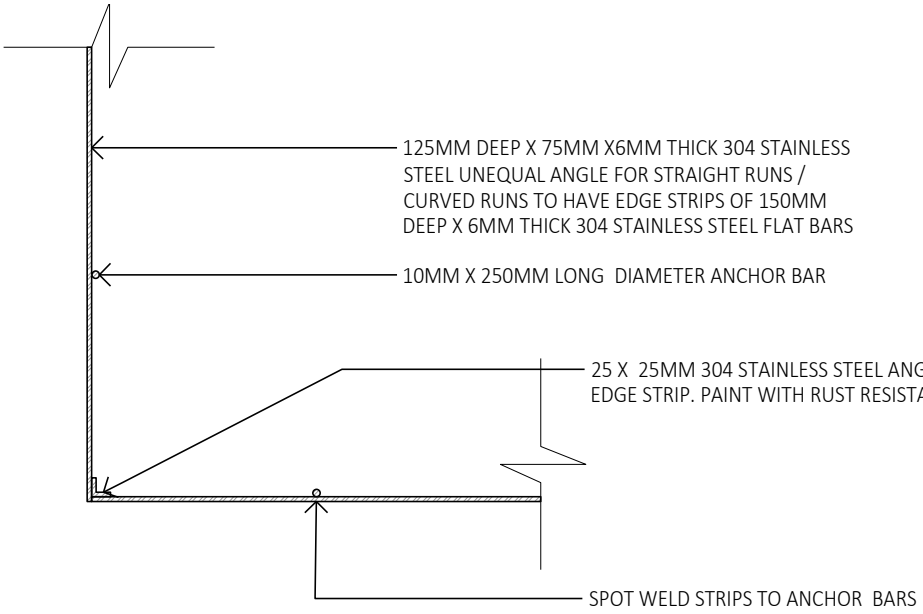
Installation

- Position steel edging vertically in ground with top edge flush with finished levels.
- Lay the edging in smooth continuous curves with no obvious flat spots or kinks when viewed along the line of the curve.
- Use unequal angles for straight runs to get a firm rigid edge.
- Ensure that joins occur in straight sections of edging. Allow 200 mm overlaps between strips.
- Anchor bars at minimum 500mm centres
- Increase thickness to 10mm if used as an edge to wetpour rubber softfall.

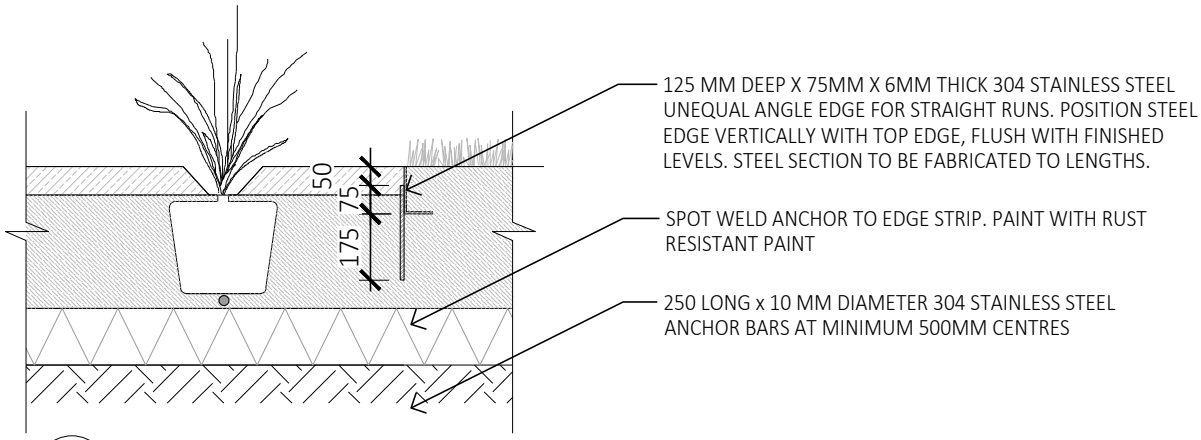
Maintenance

- Nil to Low Maintenance

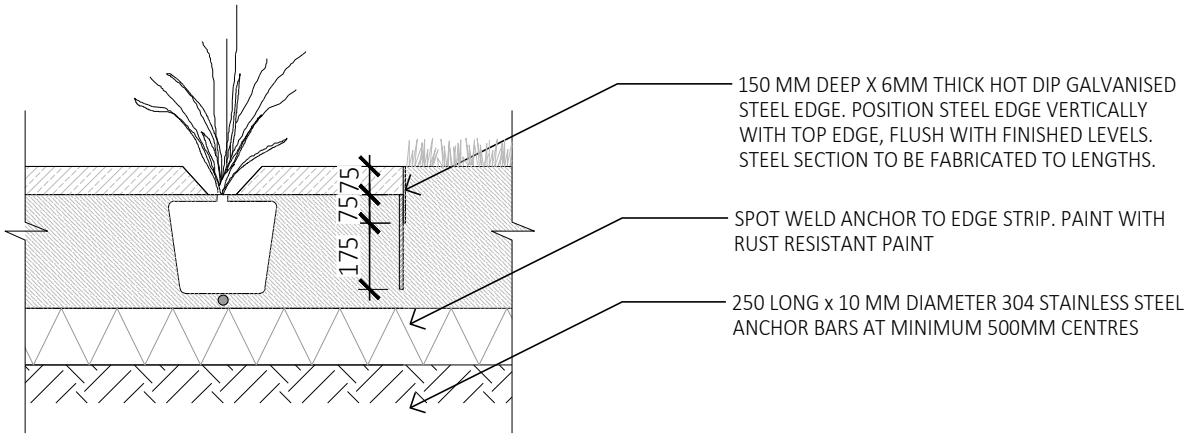
Steel Edge



D01 STEEL EDGE : TYPICAL CORNER PLAN
Scale 1:10



D02 STEEL EDGE - STRAIGHT : DETAIL
Scale 1:20



D03 STEEL EDGE - CURVED : DETAIL
Scale 1:20

D.04

Concrete Edge

Function / Location

- Concrete edges are to be used to separate planted or turf areas from other surfaces to maintain a clean edge.
- Concrete edge is to be used where a low maintenance durable edge is required in high pedestrian-traffic areas.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Standard to AS 1379 - Grade N20
- 150 mm x 200 mm with 10mm champhers to exposed edges
- Where adjacent to wetpour rubber softfall, edges to be squared with max 5 mm pencil round status. Conctrete to be rebated 30mmx30mm to secure an protect rubber edge.

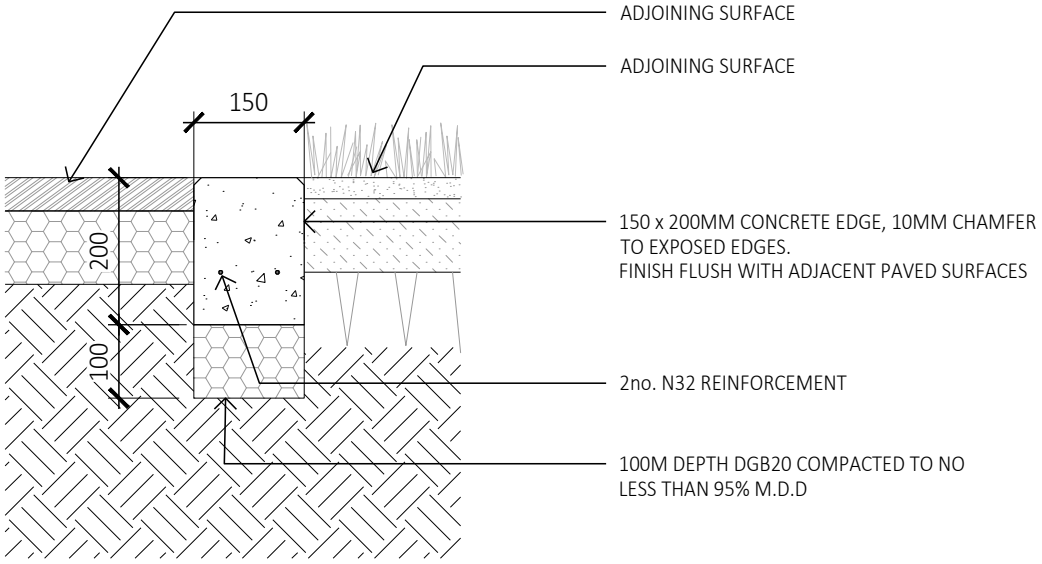
Installation

- Place in a shallow trench between timber forms. Wood float finish flush with the adjacent finished grass level.
- Provide control joints, filled with resilient bituminous material, at 3 m maximum centres.

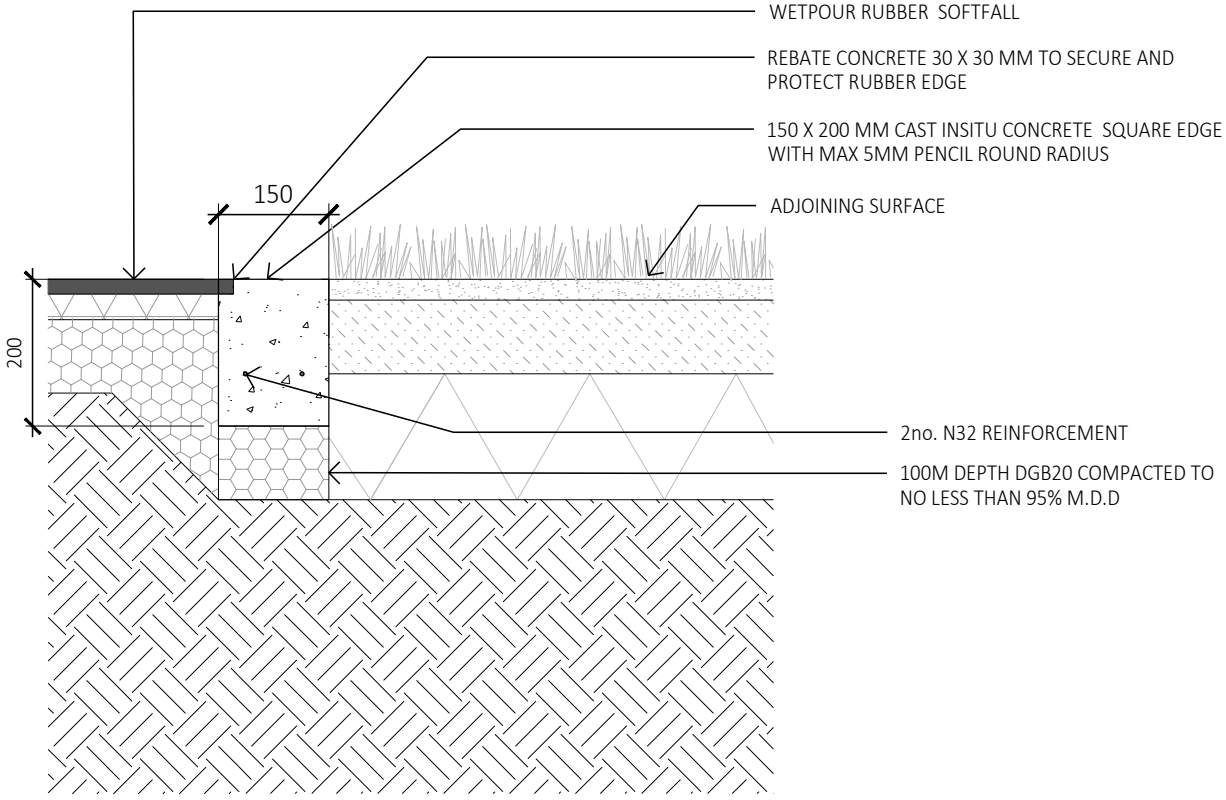
Maintenance

- Nil to Low Maintenance

Concrete Edge



D01 CONCRETE EDGE 150 MM WIDE : DETAIL
Scale 1:10



D02 CONCRETE EDGE 150 MM WIDE : DETAIL FOR TURF/ ADJOINING SURFACE & RUBBER SOFTFALL INTERFACE
Scale 1:10

D.05

Sandstone Edge

Function

- Sandstone Edging - to be used as feature edging, to retain soil for heights of 300mm minimum to 600 mm maximum
- Slabs may be used to prevent vehicle access into parks

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Appin Sandstone slabs
- Width - 200mm, Height - 450mm to 750mm, Length - 500 to 1000 mm max
- Split Face Finish to top and exposed edges

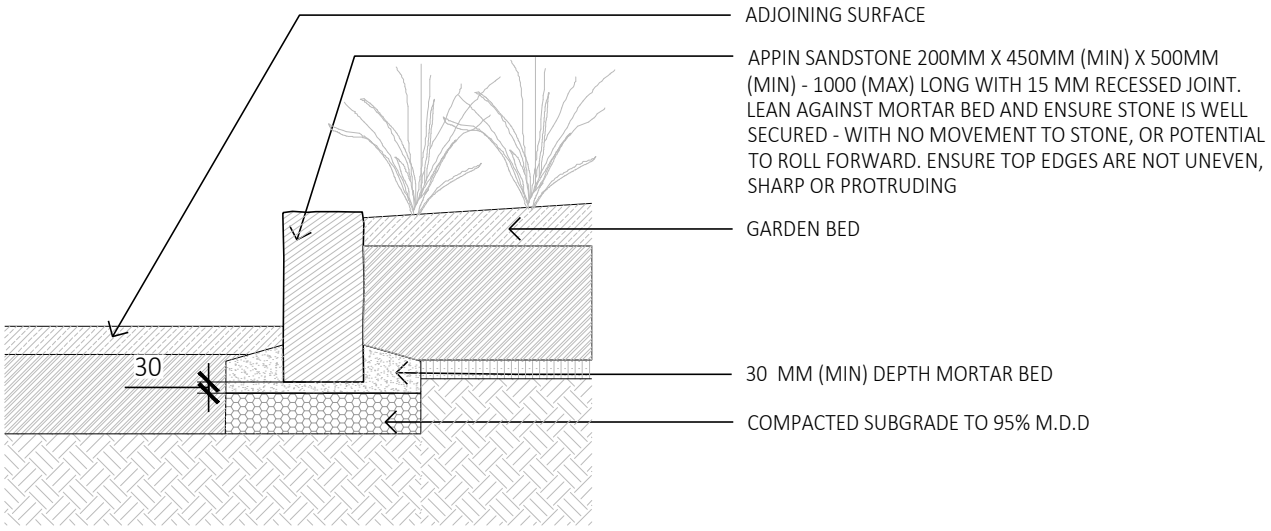
Installation

- Sandstone: Select stones and allow to reshape to ensure top faces are level and free of protrusions greater than 10mm and exposed edges are no sharper than 90 degrees. Confirm setout with Council's project manager prior to fixing stones in place.
- Compacted Subgrade: Remove deleterious and loose material and the like and leave the surface clean and dust-free. Moisten and thoroughly plate compact to 95% MDD.
- Bedding Mortar: Elect proportions from the range of 1 cement: 3 sand to obtain satisfactory adhesion. Provide minimum water. Mixing: to AS 3958.1. Gauging: site gauged by volume.

Maintenance

- under review

Sandstone Edge Example



D01 SANDSTONE EDGE - RETAINING - DETAIL
Scale 1:20

D.06

Walls

under review

Image to be provided

E.

Furniture And Fixtures

E.01

Barbeque

Function

- Typically use is limited to picnic areas in Regional and District parks only.
- Locate barbeques close to shelters or picnic settings so that the barbeque can be equally shared.
- Wherever possible, locate barbeques off accessible paths and in shaded areas.
- Barbecues should be located where they can be easily surveilled to reduce the risk of vandalism.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- 2 x Electric Stainless Steel cooktops.
- Safety Push Button Start Timing Control.
- 2 x Baffled Fat Collection Trays.
- Fascia Panels - CFC with #4 Brushed Stainless Steel.
- Frame - Aluminium powdercoated with Dulux N43 'Pipeline Grey'.
- No signage / branding (manufacturer or Council) to be on furniture.

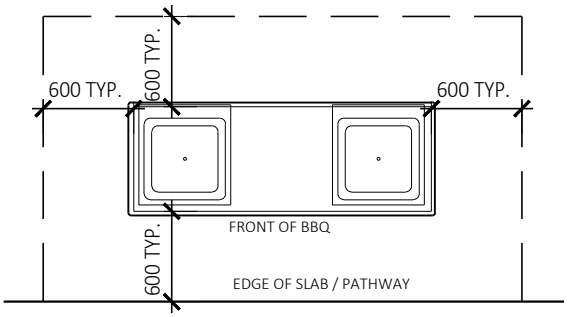
Installation

- Install as per manufacturers recommendations.
- Surface mount on concrete slab.
- NOTE: Ensure Power source and switch board/meter capacity are available. If not, ensure appropriate measures are undertaken to provide a source of power to operate the BBQ, which will involve seeking approval for power connection and switch board from service provider.

Maintenance

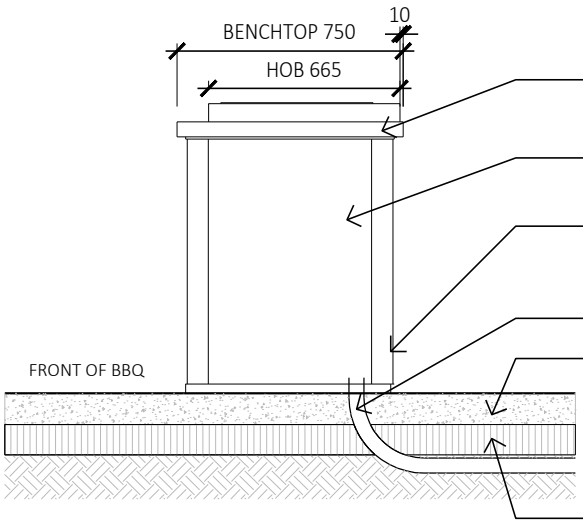
- Powdercoated. External surfaces, including the underside and sheltered areas, should be washed down regularly, especially in corrosive conditions (eg. salt or chemical deposits). Surfaces that have become dull through prolonged exposure to sunlight can usually be revived by polishing. Automotive polish (non-cutting) can be used to restore a surface that has become scratched or abraded.
- Stainless steel. Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. Refer to manufacturers website for more information.

Barbeque - Tamarama beachfront

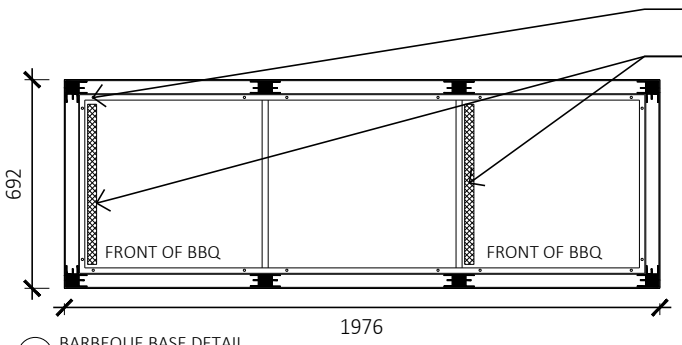


D01 BARBEQUE SETOUT PLAN
Scale 1:50

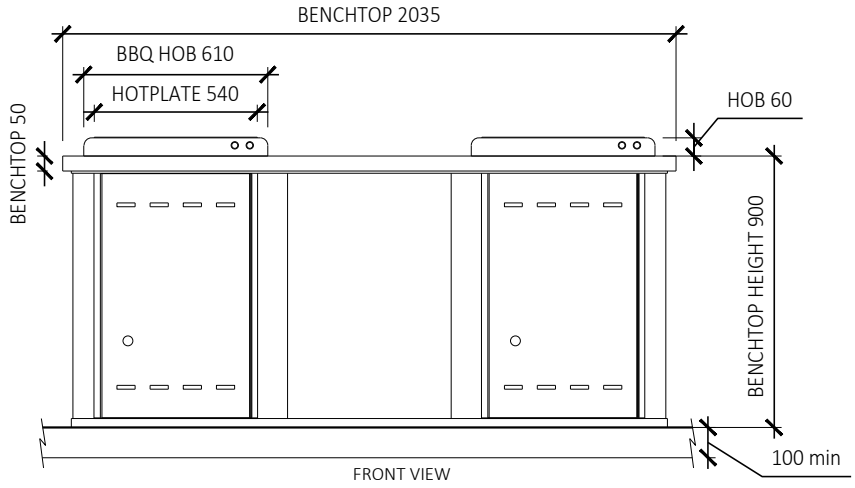
NOTE:
- NOMINAL EXTENT OF PAVING / AREA TO BE KEPT CLEAR OF OBSTACLES
- PROVIDE ADEQUATE CIRCULATION ALL ROUND
- CONCRETE SLAB TO BE EXTENDED TYPICALLY 600MM FROM EDGES



D02 BARBEQUE SIDE ELEVATION
Scale 1:25



D03 BARBEQUE BASE DETAIL
Scale 1:25



D04 BARBEQUE FRONT DETAIL
Scale 1:25

E.02

Street Seat

Function / Location

- Seats are to be installed in streets, plazas and malls (for Park Seats, refer to the 'Park Seat' section following).
- The seating is selected with central armrests to assist mobility impaired.
- Surface Mounted to be installed on concrete.
- Sub-surface Mounted to be installed on segmental pavers and decomposed granite paving.

Supplier

- Tom Stoddart Pty Ltd (Town and Park)1
  Ph: 1300 782 101

Product

- Town and Park 'City Seat'
- **Street Seat Type A**: Surface Mount
  - SPTP.SSE.T5.SP.400.2000.PC
- **Street Seat Type B**: Sub-surface Mount
  - SPTP.SSE.T5.SS.400.2000.PC

Material Specification

- Marine grade aluminium frame and post leg powdercoated with Dulux N43 'Pipeline Grey'.
- Australian hardwood timber slats complying with one or all of the following:
  - Australian Forest Certification Scheme (AFS);
  - Forest Stewardship Council (FSC),or
  - Program for the Endorsement of Forest Certification (PEFC).
- Minimum 2 armrests as per manufacturers recommendations.
- Slats 2,000mm length.
- Use Stainless Steel 316 Marine grade bolts and fixings.
- Timber must be seasonsed to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- No signage / branding (manufacturer or Council) to be on furniture

Installation

- Install as per manufacturers recommendations.
- Street Seat Type A: Surface mounted seats shall be installed on flat concrete surfaces with a slope less than 2%.

Street Seat Type A - Surface mount Bondi Junction

- Street Seat Type B (sub-surface) shall be used on segmented paving and decomposed granite paving, in areas with a slope greater than 2%, ensuring they are installed plumb. All fixing bolts are to be stainless steel 316 Marine grade.
- Ensure the concrete slab matches the adjacent surrounds in colour and finish.
- Set seats back from path of travel.
- In areas that have pavers, install Street Seat Type B onto a sub-surface concrete footing. Ensure pavers are cut and installed to conceal fixings.
- Seats are to be installed level and square to adjacent elements, such as kerbs, buildings, walls, and concrete footpaths, with a height between the ranges of 425mm and 435mm, unless otherwise specified.
- Face seats towards dominant view or pedestrian thoroughfare, unless otherwise directed by Council representative.

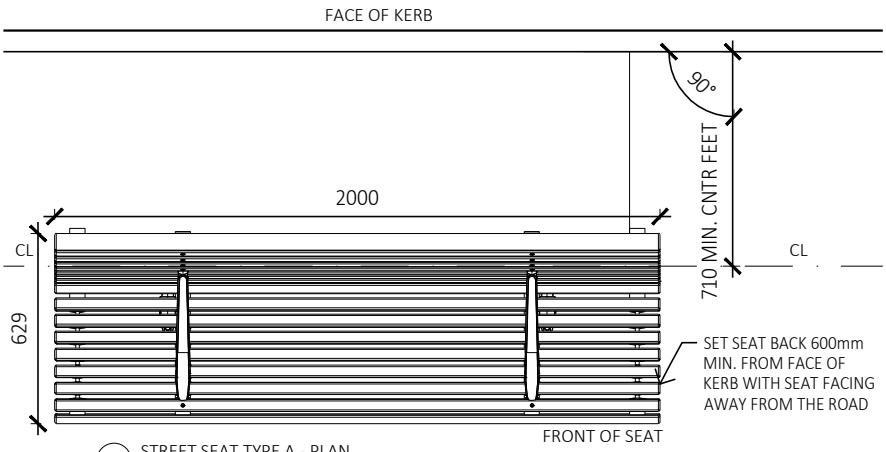
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Application: 3-6 months after the installation.
- Second Onsite Application: 6-9 months after first onsite application.
- Ongoing Maintenance: Every 12 months.
- Grafitti removal as required.

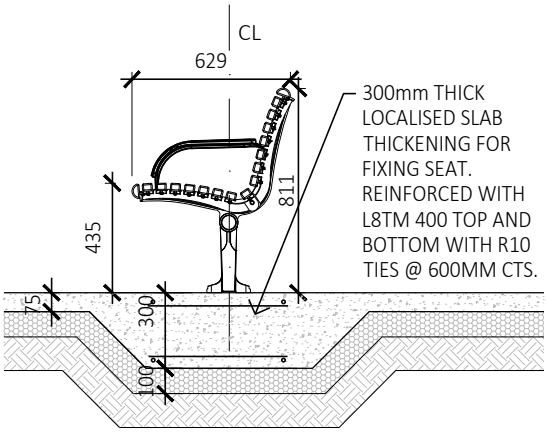
Spare Parts

- Arm Rest - SPTP.AR.CITY
- Skate Stop - SPTP.EG.CITY

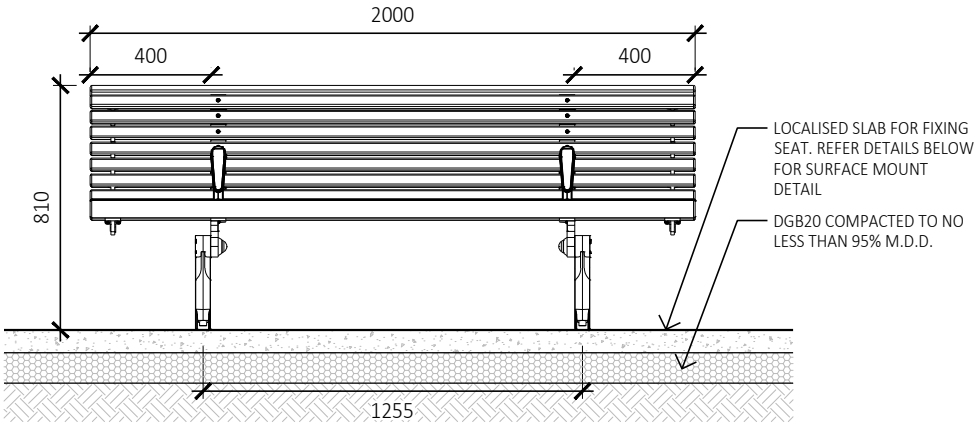
1 Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council



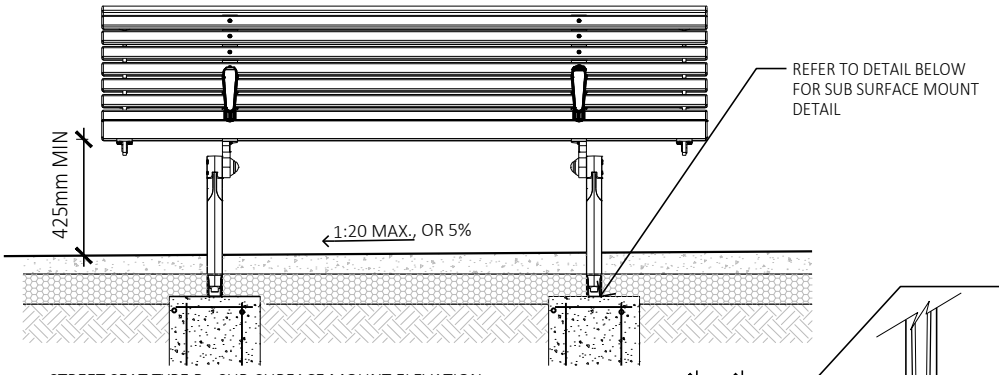
D01 STREET SEAT TYPE A - PLAN
Scale 1:25



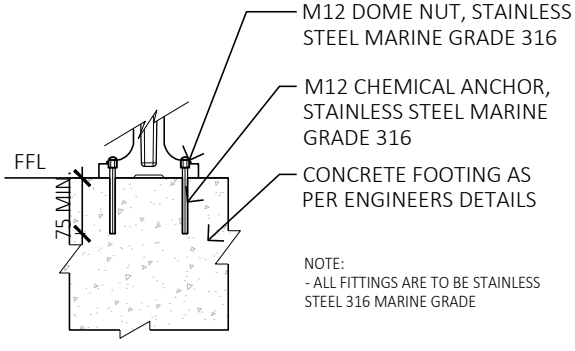
D02 STREET SEAT TYPE A - SIDE ELEVATION
Scale 1:30



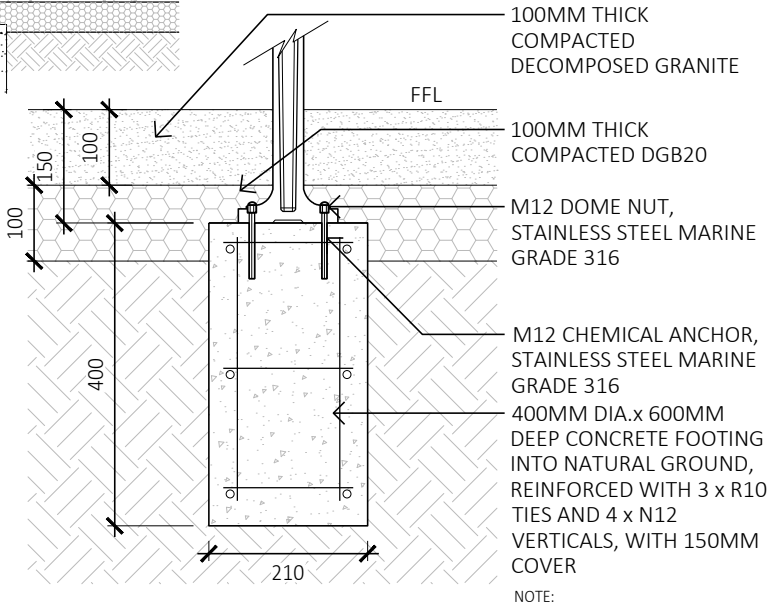
D03 STREET SEAT TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D04 STREET SEAT TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D05 STREET SEAT TYPE A SURFACE MOUNT
Scale 1:10



D06 STREET SEAT TYPE B SUB-SURFACE MOUNT
Scale 1:10

E.03

Park Seat

Function

- The Park Seat is to be used for all parks, reserves and open spaces only.
- The Park Seat shall be positioned in areas aimed at providing people an opportunity to rest and take advantage of prominent views; or as support facilities to areas such as picnic areas and playgrounds.

Supplier

- Tom Stoddart Pty Ltd (Town and Park)[1]
  1300 782 101

Product

- **Park Seat Type A**: Surface Mount
  - SPTP.SSD2.T5.SP.AR2.EG2.2000
- **Park Seat Type B**: Sub-surface Mount.
  - SPTP.SSD2.T5.SS.AR2.EG2.2000

Material Specification

- Marine grade aluminium frame and post leg.
- Australian hardwood timber slats complying with one or all of the following:
  - Australian Forest Certification Scheme (AFS);
  - Forest Stewardship Council (FSC),or
  - Program for the Endorsement of Forest Certification (PEFC).
- Minimum 2 armrests, positioned one on each end.
- Slats 2,000mm length.
- Use Stainless Steel 316 Marine grade bolts and fixings.
- Timber must be seasoned to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

- Install as per manufacturers recommendations.
- Park Seat Type A: Surface mounted seats shall be installed on flat concrete surfaces only.
- Park Seat Type B: Sub-surface mounted seats shall be installed on segmented pavements and concrete surfaces with a gradient greater than 1:50, or 2%, as well as wetpour rubber and decomposed granite surfaces.
- Ensure the concrete slab matches the adjacent surrounds in colour and finish.

Park Seat Type A - Surface mount (Fingleton Reserve)

- Set seats back from path of travel, and ensure seat faces towards dominant view.
- Seats are to be installed level and square to adjacent elements, such as kerbs, buildings, walls, and concrete footpaths, with a height between the ranges of 425mm and 435mm, unless otherwise specified

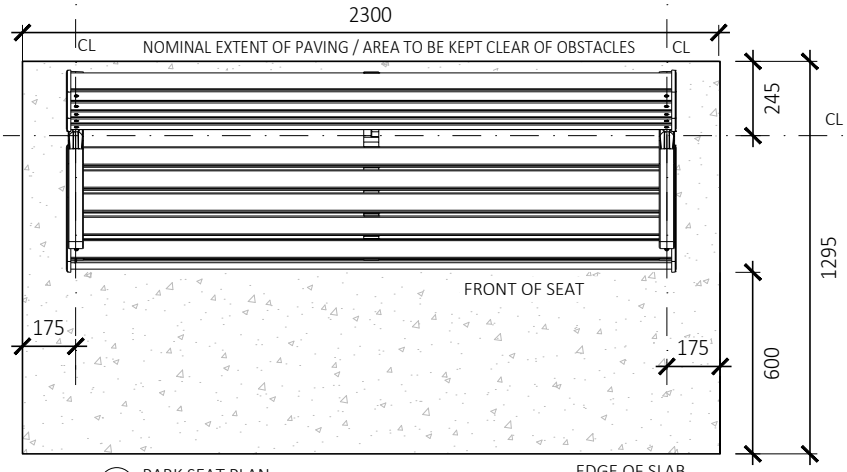
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Application: 3-6 months after the installation.
- Second Onsite Application: 6-9 months after first onsite application.
- Ongoing Maintenance: Every 12 months.
- Grafitti removal as required.

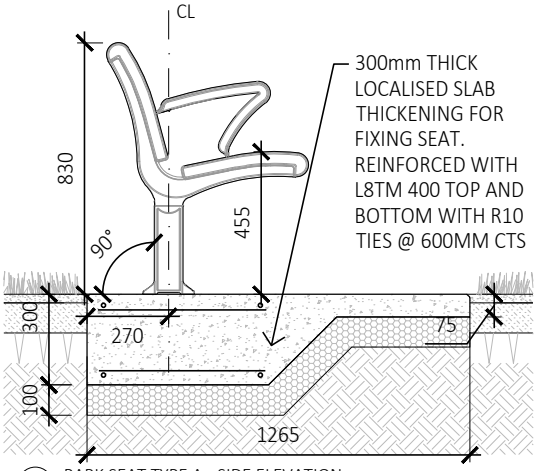
Spare Parts

- Arm Rest - SPTP.AR.METRO
- Skate Stop - SPTP.EG.METRO

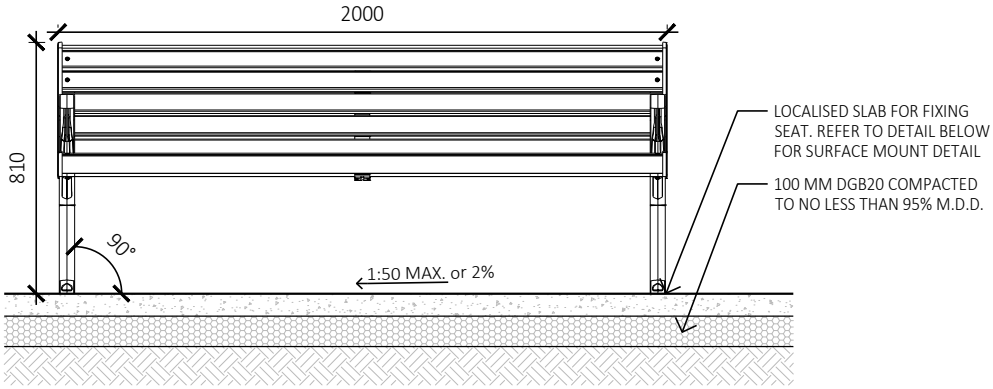
1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



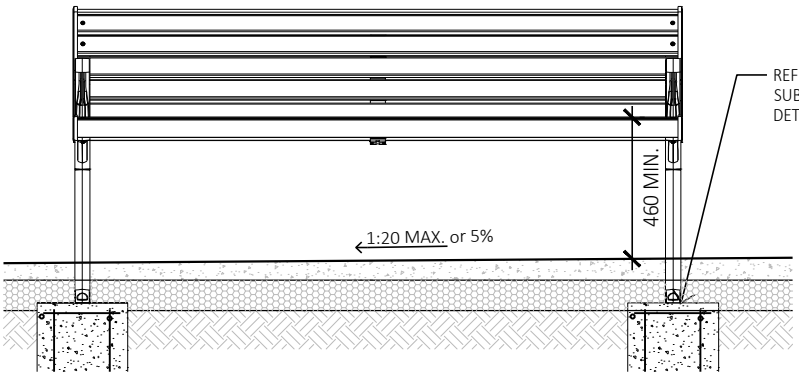
D01 PARK SEAT PLAN
Scale 1:25



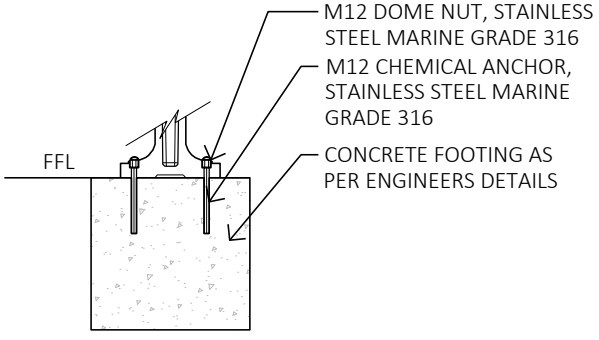
D02 PARK SEAT TYPE A - SIDE ELEVATION
Scale 1:25



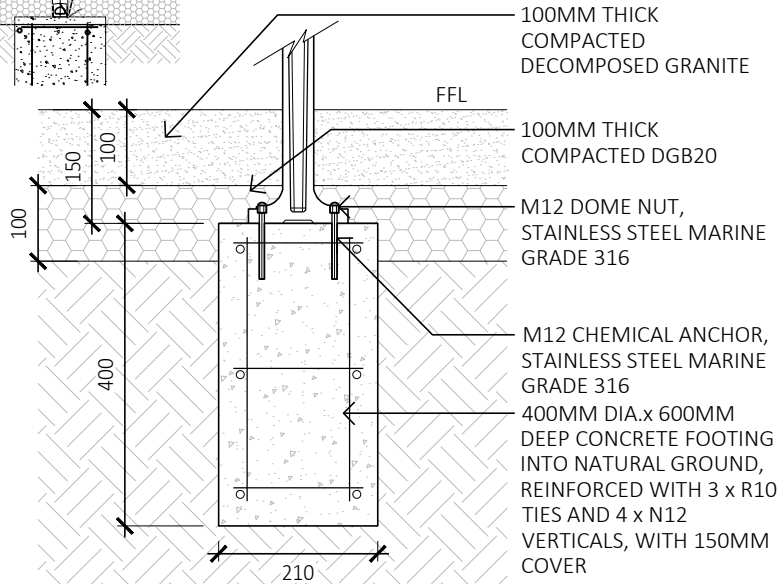
D03 PARK SEAT TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D04 PARK SEAT TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D05 DETAIL 05 - TYPE A SURFACE MOUNT
Scale 1:10



D06 DETAIL 06 - TYPE B SUB-SURFACE MOUNT
Scale 1:10

E.04

Park Bench

Function

- The Park Bench shall be positioned in areas aimed at providing people an opportunity to rest for short periods of time, such as along walkways.
- It can also be used to view in both directions and would be suitable in areas of tourist activity, such as elevated lookouts.
- The wide Park Bench (670mm wide) is suitable for use where carers and small children frequent as it can be used as a change table.

Supplier

- Tom Stoddart Pty Ltd (Town and Park)[1]
  1300 782 101

Product

- **Park Bench Type A1**: Surface Mount.
  - SPTP.BTD.T5.SP.2000
- **Park Bench Type B1**: Sub-surface Mount.
  - SPTP.BTD.T5.SS.2000
- **Park Bench Wide Type A2**: Surface Mount.
- **Park Bench Wide Type B2**: Sub-surface Mount.

Material Specification

- Marine grade aluminium frame and post leg.
- Australian hardwood timber slats complying with one or all of the following:
  - Australian Forest Certification Scheme (AFS);
  - Forest Stewardship Council (FSC),or
  - Program for the Endorsement of Forest Certification (PEFC).
- Slats 2,000mm length.
- All bolts and fixings to be 316 Marine Grade Stainless Steel.
- Timber must be seasonsed to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

- Install as per manufacturers recommendations.
- Park Bench Type A: Surface mounted seats shall be installed on flat concrete surfaces only.
- Park Bench Type B: Sub-surface mounted seats shall be installed on segmented pavements, decomposed granite and concrete surfaces with a gradient greater than 1:50 or 2%.
- Ensure the concrete slab matches the adjacent surrounds in colour and finish.
- Set seats back from path of travel.
- Ensure a distance of 600mm is maintained to the front and back of the bench as a clear-zone in order to provide access.
- Seats are to be installed level and square to edge of concrete pad or adjoining elements such as buildings, walls and kerbs.

Park Bench Type B1 - Sub-surface mount

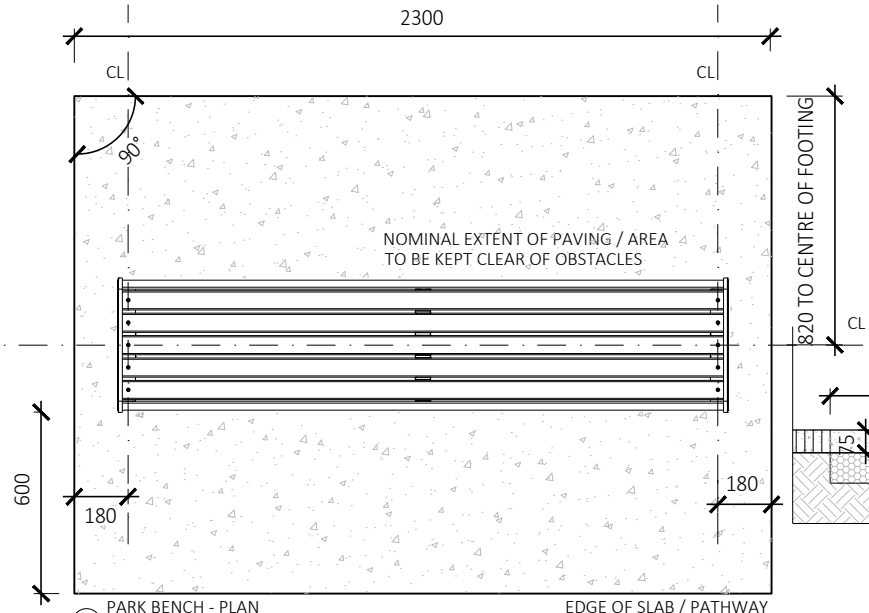
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Application: 3-6 months after the installation.
- Second Onsite Application: 6-9 months after first onsite application.
- Ongoing Maintenance: Every 12 months.
- Grafitti removal as required.

Spare Parts

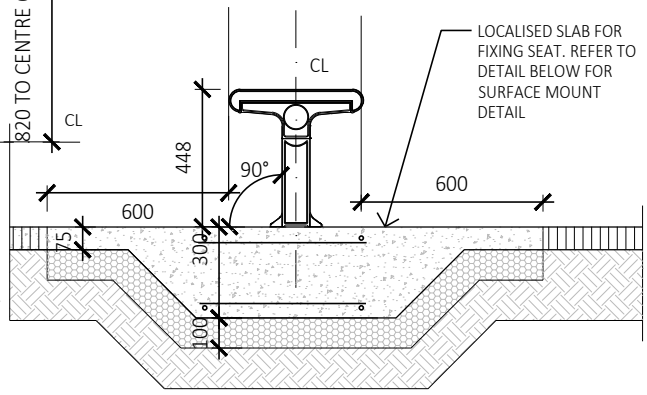
- Skate Stop - SPTP.EG.METRO

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*

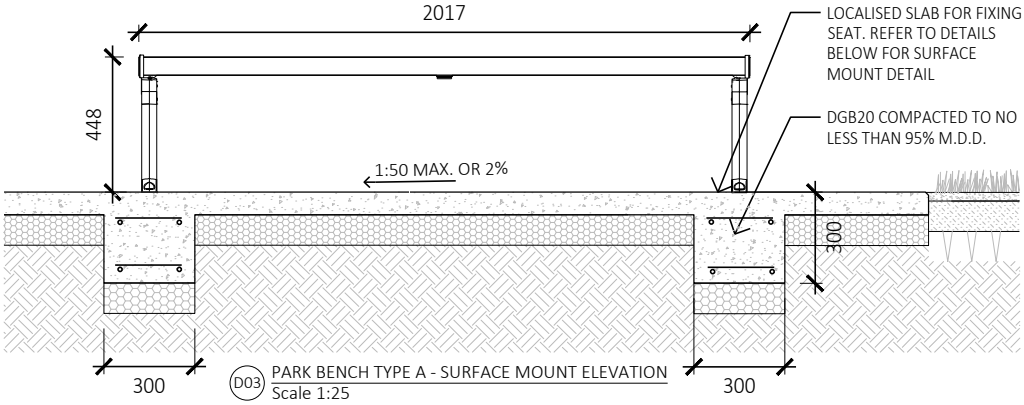


D01 PARK BENCH - PLAN
Scale 1:25

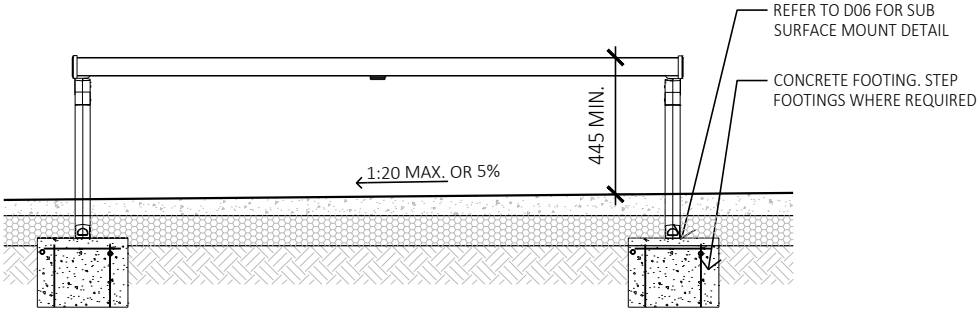
NOTE:
- WHERE PARK BENCH IS ADJACENT TO GARDEN BED OR OTHER STRUCTURE, OFFSET BENCH BY 300mm FROM GARDEN EDGE;
- WHERE PARK BENCH IS ADJACENT TO BUILDINGS, WALLS OR KERBS, OFFSET BACK OF BENCH BY 1423MM FROM CENTRELINE OF LEGS.



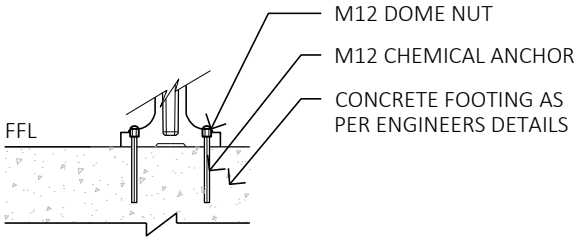
D02 PARK BENCH TYPE A - SIDE ELEVATION
Scale 1:25



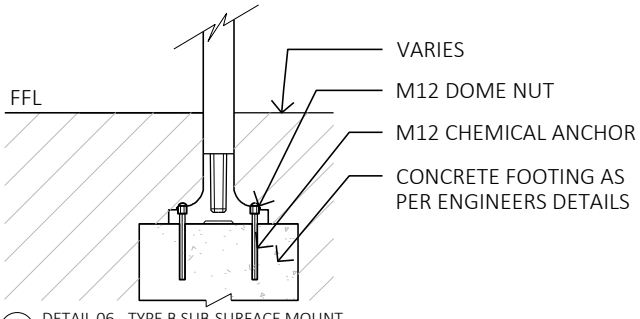
D03 PARK BENCH TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D04 PARK BENCH TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D05 DETAIL 05 - TYPE A SURFACE MOUNT
Scale 1:10



D06 DETAIL 06 - TYPE B SUB-SURFACE MOUNT
Scale 1:10

E.05

Park Seat Table

Function

- Locate the Park Seat Table in playgrounds and areas where children frequent as it can be used as a picnic table, social gathering node and as a change table.
- Locate to receive ample shade in summer and partial shade in winter.

Supplier

- Tom Stoddart Pty Ltd (Town and Park)[1]
  1300 782 101

Product

- **Park Seat Table Type A**: Surface Mount.
  - SPTP.TSSD.T5.SP.1800
- **Park Seat Table Type B**: Sub-surface Mount.
  - SPTP.TSSD.T5.SS.1800

Material Specification

- Marine grade aluminium frame and post leg.
- Australian hardwood timber slats complying with one or all of the following:
  - Australian Forest Certification Scheme (AFS);
  - Forest Stewardship Council (FSC),or
  - Program for the Endorsement of Forest Certification (PEFC).
- Slats 1,800mm length.
- All bolts and fixings to be 316 Marine Grade Stainless Steel.
- Timber must be seasonsed to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

- Install as per manufacturers recommendations.
- Park Seat Table Type A: Surface mounted seats shall be installed on flat concrete surfaces only.
- Park Seat Table Type B: Sub-surface mounted seat tables shall be installed on segmented pavements, decomposed granite and concrete surfaces with a gradient greater than 1:50 or 2%.
- Set seats back from path of travel.
- Ensure a distance of 600mm is maintained as a clear-zone in order to provide access from all sides of the Park Seat Table.

Park Seat table Type A - Surface Mount

- Set seats back from path of travel. Accommodate wheelchair and pram users by extending the slab width 1000mm and connecting with a path to match existing surrounding colour and finish.
- Park Seat Table to be installed level and square to concrete pad or adjoining surfaces.

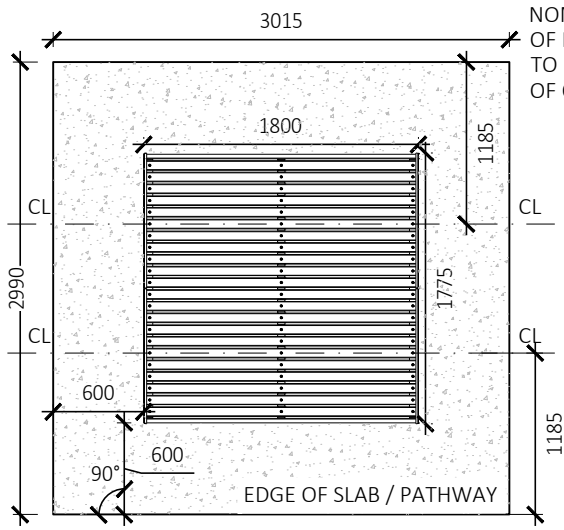
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Application: 3-6 months after the installation.
- Second Onsite Application: 6-9 months after first onsite application.
- Ongoing Maintenance: Every 12 months.
- Grafitti removal as required.

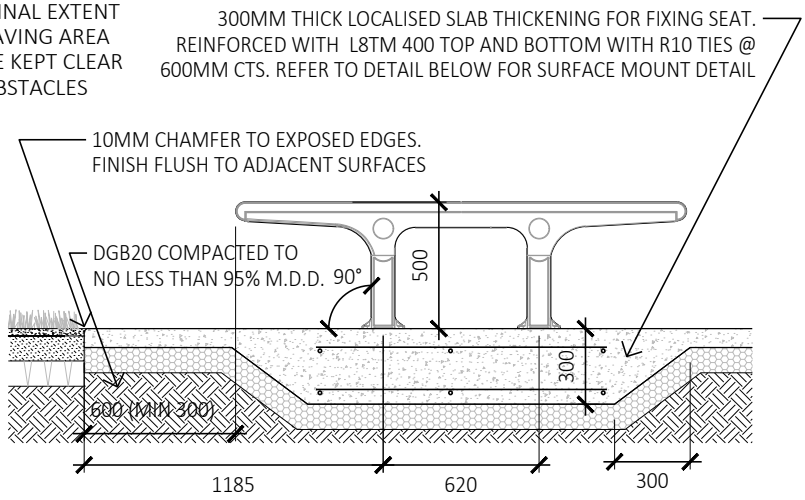
Spare Parts

- Skate Stop - SPTP.EG.METRO

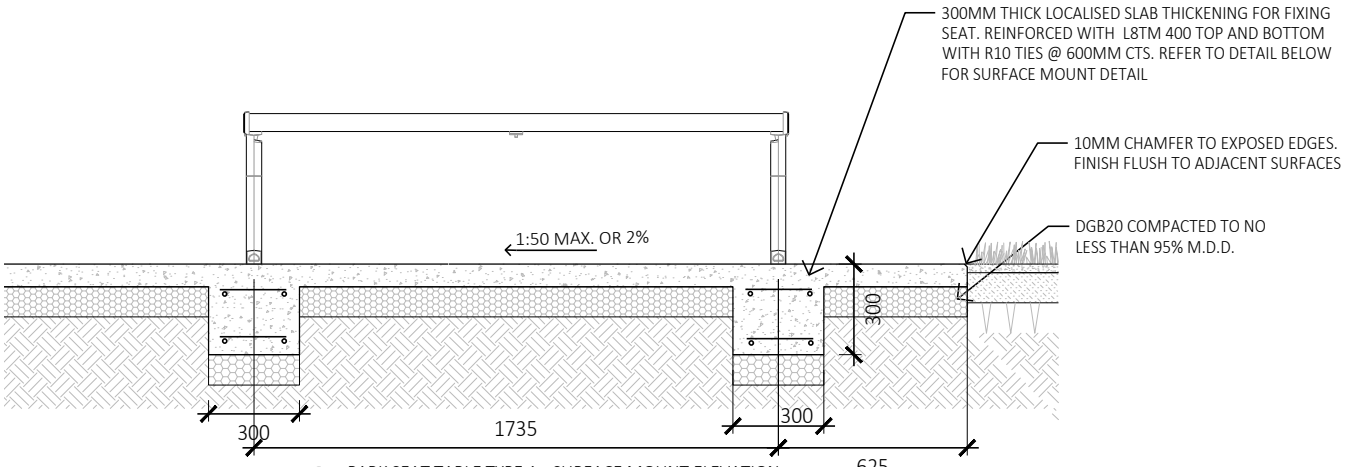
1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



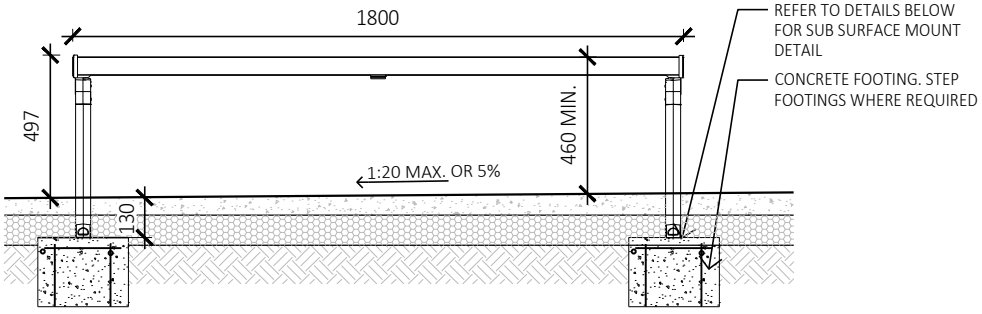
D01 PARK SEAT TABLE - PLAN
Scale 1:50



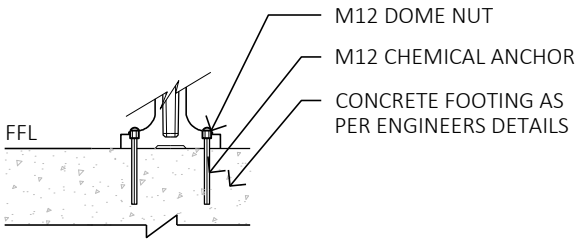
D02 PARK SEAT TABLE TYPE A - SIDE ELEVATION
Scale 1:30



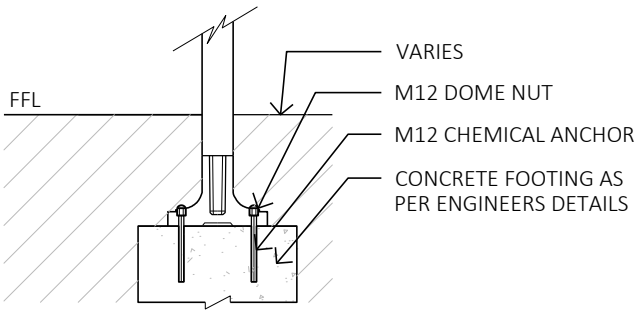
D03 PARK SEAT TABLE TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D04 PARK SEAT TABLE TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D05 DETAIL 05 - TYPE A SURFACE MOUNT
Scale 1:10



D06 DETAIL 06 - TYPE B SUB-SURFACE MOUNT
Scale 1:10

E.06

Park Picnic Setting

Function

- The Park Picnic Setting shall be positioned in parks and open space zones or areas.
- Ensure a location is chosen which provides ample shade in summer and partial shade in winter.
- Primary purpose is for eating, but can be used as an area of rest/study.

Supplier

- Tom Stoddart Pty Ltd (Town and Park)[1]
  Ph: 1300 782 101

Product

- **Park Picnic Setting Type A**: Surface Mount.
  - SPTP.TSD.T5.SP.1800
- **Park Picnic Setting Type B**: Sub-surface Mount.
  - SPTP.TSD.T5.SS.1800

Material Specification

- Marine grade aluminium frame and post leg.
- Australian hardwood timber slats complying with one or all of the following:
  - Australian Forest Certification Scheme (AFS);
  - Forest Stewardship Council (FSC),or
  - Program for the Endorsement of Forest Certification (PEFC).
- Slats 2,000mm length.
- All bolts and fixings to be 316 Marine Grade Stainless Steel.
- Timber must be seasonsed to prevent leaching of tannins.
- Coat with a commercial grade outdoor furniture oil which will not change the colour of the timber, and which is UV stable. Product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- Umbrella Sleeve required when not under a shade structure.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

- Install as per manufacturers recommendations.
- Park Picnic Setting Type A: Surface mounted seats shall be installed on flat concrete surfaces only.
- Park Picnic Setting Type B: Sub-surface mounted picnic settings shall be installed on segmented pavements, decomposed granite and concrete surfaces with a gradient greater than 1:50 or 2%.
- Set seats back from path of travel.

Park Picnic Setting Type A - Surface Mount

- Ensure a distance of 600mm is maintained as a clear-zone in order to provide access from all sides of the bench.
- Accommodate wheelchair and pram users by extending the slab width 1000mm and connecting with a path to match existing surrounding colour and finish.
- Where access is provided for wheelchair and pram users, ensure that 1 end of the table is left clear of obstacles or reduce 1 seat length by 800mm.
- Setting to be installed level and square to concrete pad or adjoining elements

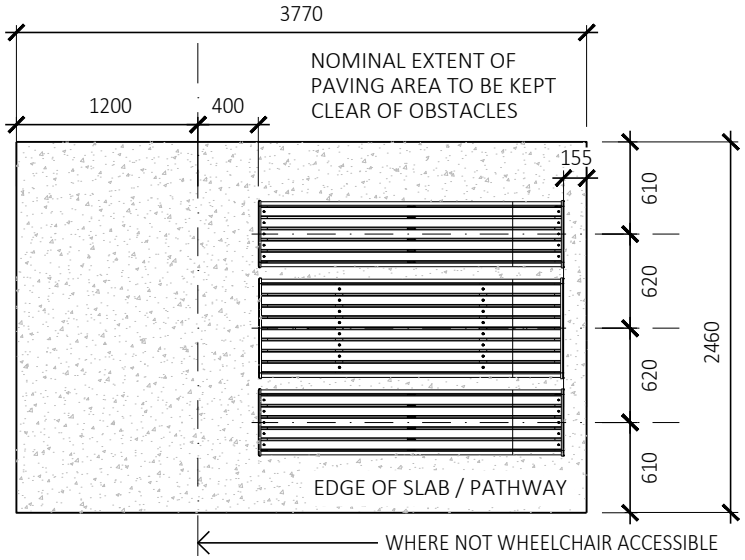
Maintenance

- Pressure wash
- Pre-treatment: Apply Intergrain Reviva or similar approved water based
- Finisher : Coat with product equivalent to Dulux – Intergrain Nature's Timber Oil. Apply as per manufacturers recommendation.
- First Onsite Application: 3-6 months after the installation.
- Second Onsite Application: 6-9 months after first onsite application.
- Ongoing Maintenance: Every 12 months.
- Grafitti removal as required.

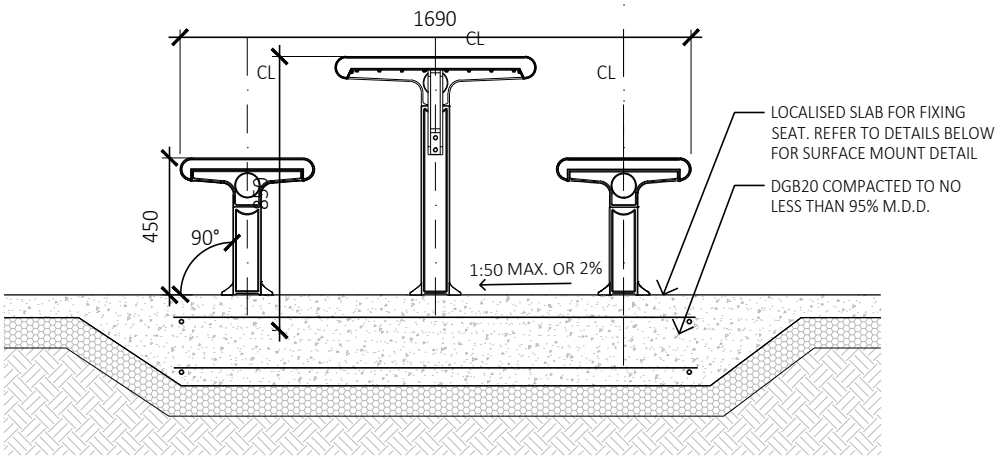
Spare Parts

- Skate Stop - SPTP.EG.METRO

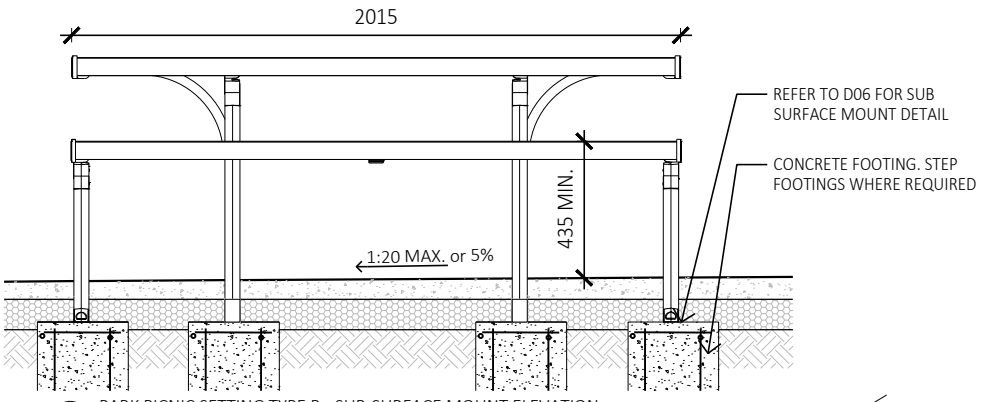
1 Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council



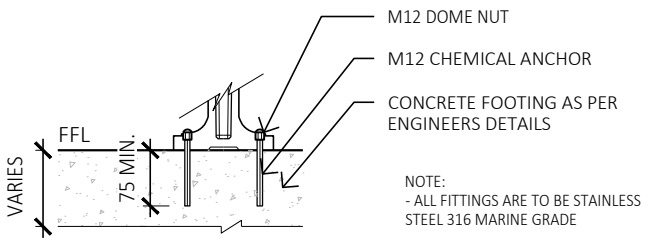
D01 PARK PICNIC SETTING - PLAN
Scale 1:50



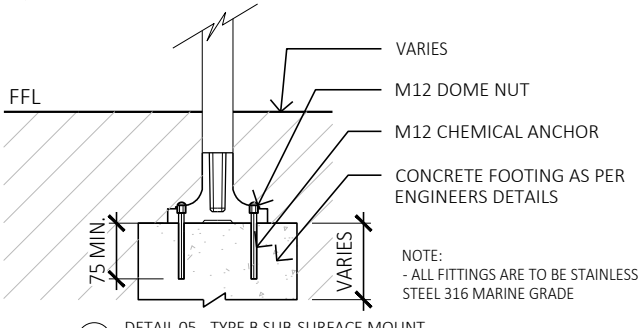
D02 PARK PICNIC SETTING TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D03 PARK PICNIC SETTING TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D04 DETAIL 04 - TYPE A SURFACE MOUNT
Scale 1:10



D05 DETAIL 05 - TYPE B SUB-SURFACE MOUNT
Scale 1:10

E.07

Standard Bicycle Rack

Function

- The Standard Bicycle Rack shall be positioned along cycle routes and at destination points such as public transport zones, beaches, playgrounds, shopping strips, commercial precincts and recreation precincts.
- All new car parks associated with parks and open spaces shall have provision for bicycle parking located close to the park entry/exit where there is adequate active or passive surveillance.
- One Standard Bicycle Rack is capable of accomodating two bicycles.
- All Standard Bicycle Racks are to be installed in accordance with AS2890.3: 2015 Bicycle Parking.

Supplier

- CIviq (Agwill Pty Ltd)[1]
  02 9737 0022

Product

- **Standard Bicycle Rack Type A**: Surface Mount.
  - CY-STHO-SM 316SS
- **Standard Bicycle Rack Type B**: Sub-surface Mount.
  - CY-STHO-BG 316SS

Material Specification

- Stainless Steel Marine Grade 316. Electro polished 600 grit MIN.
- All bolts and fixings to be 316 Marine Grade Stainless Steel.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

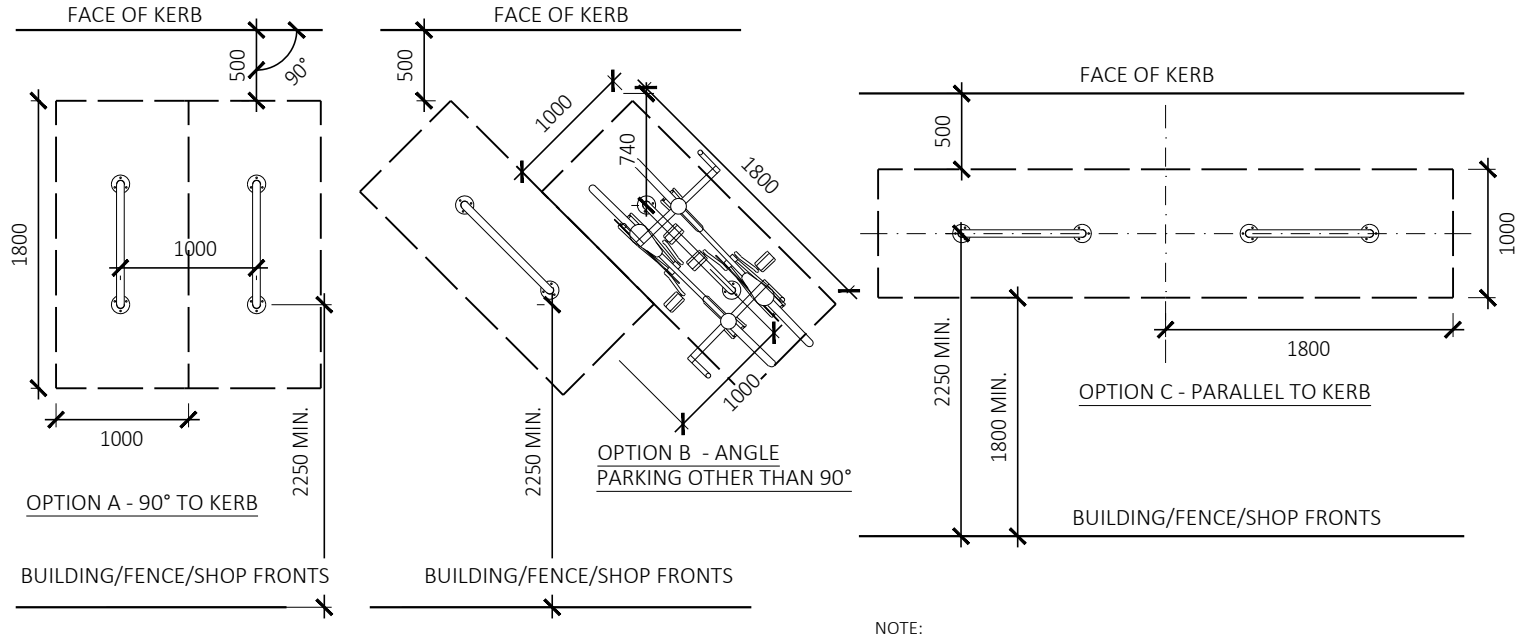
- Install as per manufacturers recommendations.
- Standard Bicycle Rack Type B: Sub-surface mounted bike racks to be installed in areas with segmented pavers on a sub-surface concrete footing. Cut pavers to fit neatly around base and conceal fixings.
- The Standard Bicycle Rack is to be used in pairs or in groups and can be set perpendicular, angled or parallel to the kerb or footpath to maintain a clear pedestrian path of travel. The positioning of the Standard Bicycle Rack depends on the available space and layout of other elements nearby. Standard Bicycle Racks shall be installed in such a way that the bicycle does not encroach into a walkway.

Standard Bicycle Rack Type B - Sub-surface Mount

Maintenance

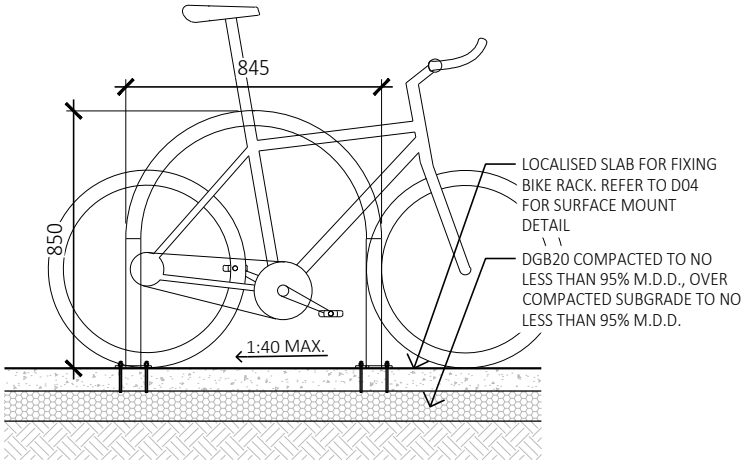
- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Refer to manufacturers website for more info.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*

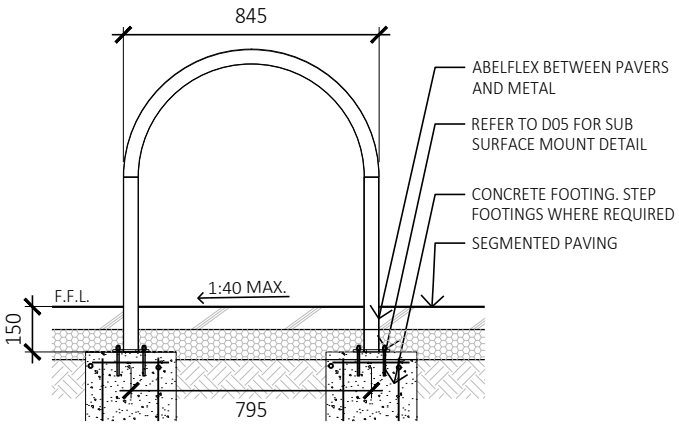


D01 STANDARD BICYCLE RACK - SETOUT PLAN WITH ALTERNATE LAYOUTS
Scale 1:50

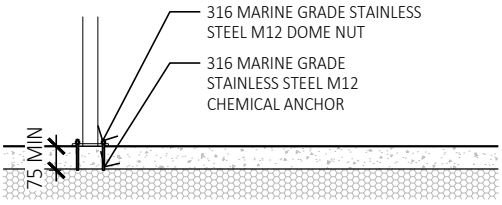
NOTE:
- ALL FIXTURES AND FITTINGS TO BE 316 MARINE GRADE STAINLESS STEEL



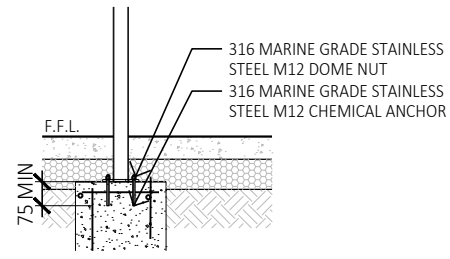
D02 STANDARD BICYCLE RACK TYPE A - SURFACE MOUNT ELEVATION
Scale 1:25



D03 STANDARD BICYCLE RACK TYPE B - SUB-SURFACE MOUNT ELEVATION
Scale 1:25



D04 SURFACE MOUNT DETAIL
Scale 1:25



D05 SUB-SURFACE MOUNT DETAIL
Scale 1:25

E.08

Bicycle Hoop

Function

- The Bicycle Hoop shall be located in situations where bicycle racks do not fit the physical constraints of the site, or where opportunities exist to increase bike parking.
- Located along cycle routes and at cycle destination points such as public transport, beaches, playgrounds and recreation facilities.
- Used in Bondi Junction, Bondi Beach, local centre streetscapes, plazas and malls.
- All Bicycle Hoops are to be installed in accordance with AS2890.3: 2015 Bicycle Parking.

Supplier

- CIviq (Agwill Pty Ltd)[1]
  02 9737 0022

Product

- O-Ring Pole Mounted Bike Rail
  - CY-PMRF

Material Specification

- 650x650mm with Galvanised Mild Steel finish.
- 48.3mm O.D pipe x 2.7mm wall (constructions).

Installation

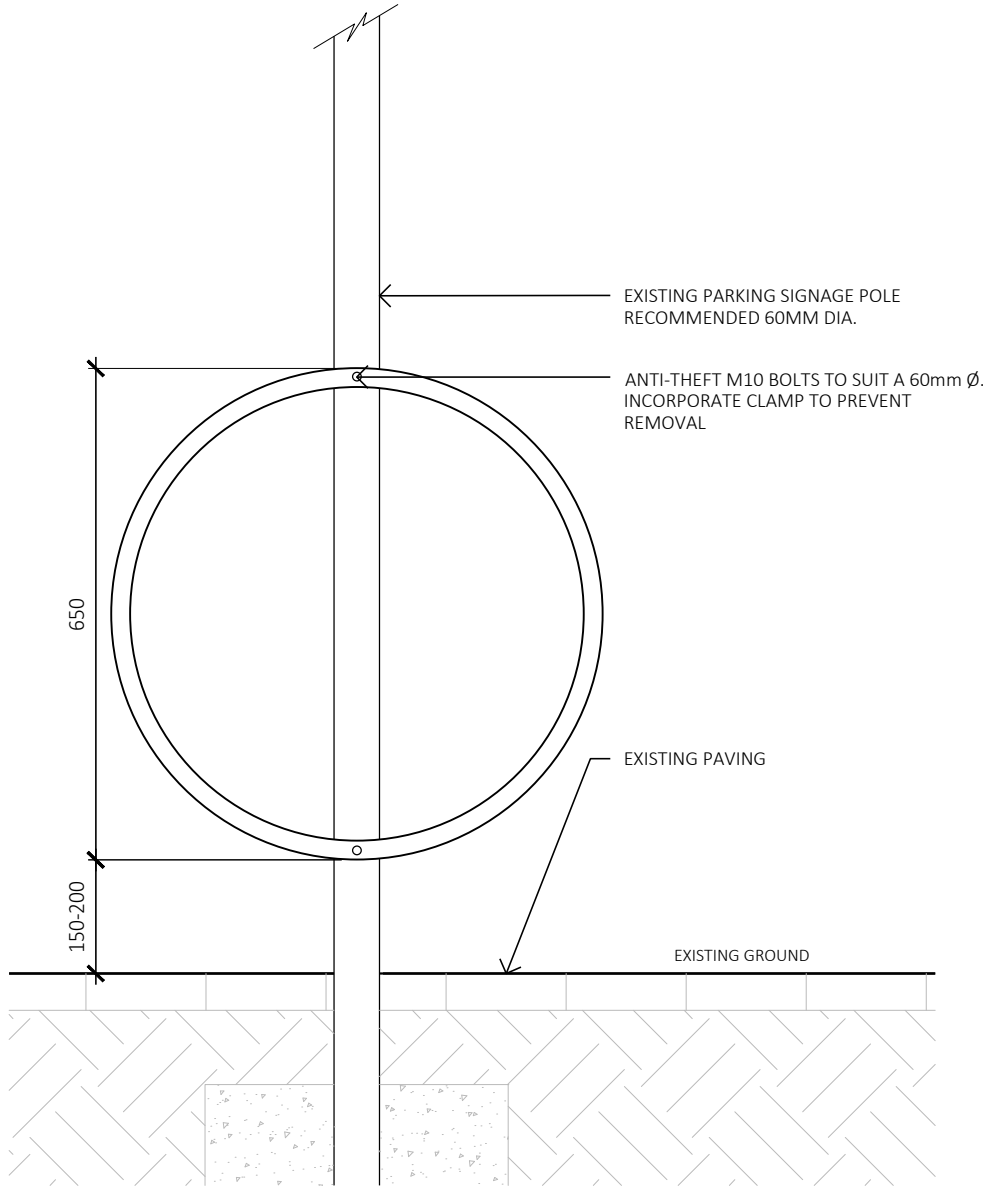
- Install as per manufacturers recommendation.
- Secure to existing parking signage pole using 316 Marine Grade Stainless Steel anti-theft M10 bolts.
- Will suit a 60mm Dia. pole.
- Install on building side of pole.
- No signage / branding (manufacturer or Council) to be on furniture.

Maintenance

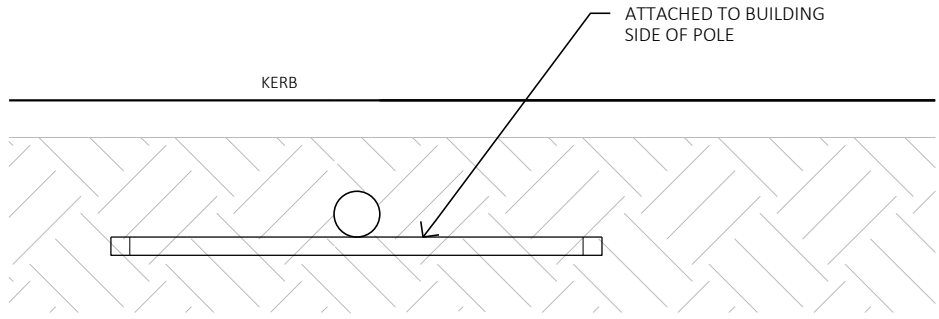
- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Check and tightern bolts every 3 months.
- Refer to manufacturers website for more information.

Bicycle Hoop attached to street signage pole

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



D01 BICYCLE HOOP POLE MOUNT DETAIL
Scale 1:10



D02 BICYCLE HOOP POLE MOUNT PLAN
Scale 1:10

E.09

Bin Enclosure

Function

- The 240L Bin Enclosure is to be the standard bin used across the LGA.
- Stainless steel bins shall be used in coastal areas; Powdercoated bins shall be used in non-coastal areas.

Supplier

- E.P Draffin Manufacturing Pty Ltd[1]
  03 9720 1033

Product

- **Bin Enclosure Type A - Coastal:**
  - Single: 856/1F/1R/SS/WAV
  - Double: 866/1F/1R/SS/WAV
  - Triple: 876/2F/1R/SS/WAV
  - Quad Row: 886/2F/2R/SS/WAV
  - Quad Cluster:886/2F/2R/SS/Q/WAV
- **Bin Enclosure Type B - Non-Coastal:**
  - Single: 856/1F/0R/WAV
  - Double: 866/1F/1R/WAV
  - Triple: 876/2F/1R/WAV

Material Specification

- **Bin Enclosure Type A - Coastal**:
  316 Marine Grade Stainless Steel custom perforated panels to match Waverley Council bin theme.
- **Bin Enclosure Type B - Non-coastal**:
  304 Stainless Steel custom perforated panels to match Waverley Council bin theme and to be powdercoated with Dulux N43 'Pipeline Grey'.
- Standard Features:
- 316 Marine Grade Stainless Steel Frames
- 316 Marine Grade Stainless Steel curved roof
- Magnetic locking strip on door/frame
- 316 stainless steel spring on door/frame
- Door closing options - to be specified when ordering:
- Option 1: Pull handle
- Option 2: Keyless slam closure latch handle
- Option 3: Keyed slam closure latch handle
- Optional Extras - requirement to be confirmed with Council based on project:
- Ash tray
- Garbage/Recycle Signage
- Dog Waste Dispenser attachments

Installation

- Install on a concrete pad footing as detailed. Consider surface or sub-surface mounting as directed by Council.
- Ensure door is easily accessible and does not obstruct pedestrian thoroughfare or car parking.
- Bins should be located near a road or path (close to park entrances), that is easily accessible by rubbish trucks. They should be located in clear view and not where they are visually obtrusive to car/pedestrian/bike view lines, and should be set back from paths and not encroach on the path of travel.
- No signage / branding (manufacturer or Council) to be on furniture unless specified.

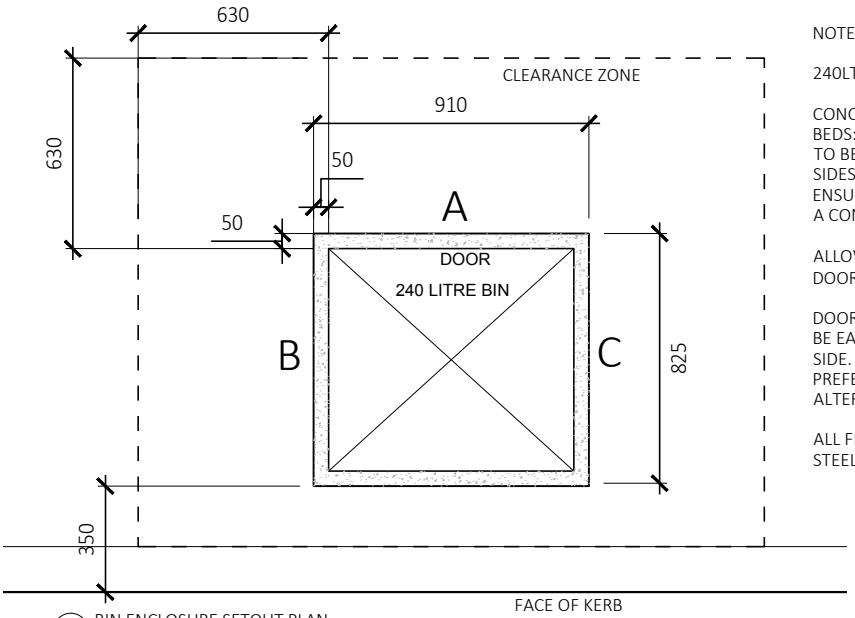
Maintenance

- Powdercoated - External surfaces, including the underside and sheltered areas, should be washed down regularly, especially in corrosive conditions (eg. salt or chemical deposits). Surfaces that have become dull through prolonged exposure to sunlight can usually be revived by polishing. Automotive polish (non-cutting) can be used to restore a surface that has become scratched or abraded.
- Stainless steel - Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. Refer to manufacturers website for more information.

Spare Parts

- TBC

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



D01 BIN ENCLOSURE SETOUT PLAN
Scale 1:25

NOTES:

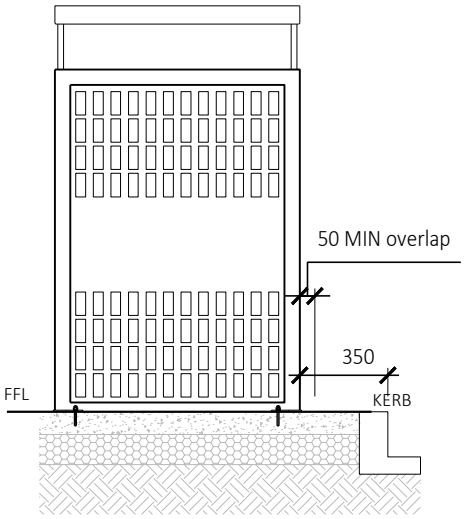
240LT BIN SIZE : 735X810MM

CONCRETE PAD DIMENSIONS FOR BINS IN VERGES AND GARDEN BEDS:
TO BE 910MM X 825 MM CONSIDERING 50MM OVERLAPS ON ALL SIDES
ENSURE THE BIN ENCLOSURE IS POSITIONED CENTRALLY IN CASE OF A CONCRETE PAD.

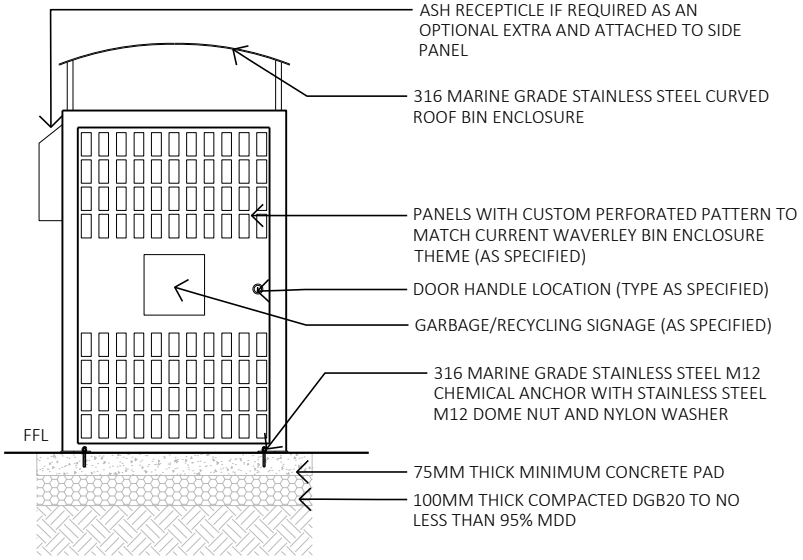
ALLOW MIN. 630MM CLEARANCE FROM ANY OBSTACLES (ON THE DOOR SIDE) AND OFFSET MIN. 350MM FROM FACE OF KERB.

DOORS MUST NOT OPEN TOWARDS THE ROAD. ENSURE DOORS CAN BE EASILY ACCESSED AND OPEN TOWARDS THE LEAST TRAFFICABLE SIDE.
PREFERENCE FOR DOOR POSITION - A.
ALTERNATIVE POSITION - B OR C.

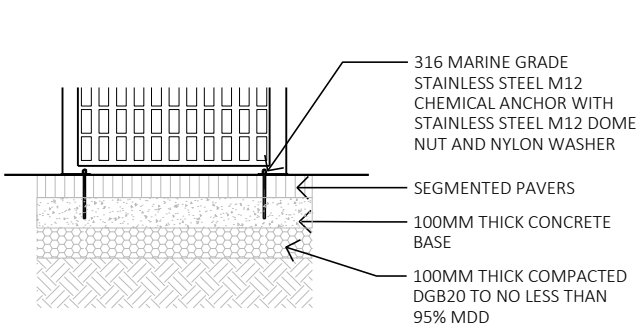
ALL FITTINGS AND FIXTURES TO BE 316 MARINE GRADE STAINLESS STEEL. ATTACH USING M12 DOME NUTS AND CHEMICAL ANCHORS.



D02 BIN ENCLOSURE - SUB-SURFACE MOUNTED - SIDE ELEVATION
Scale 1:25

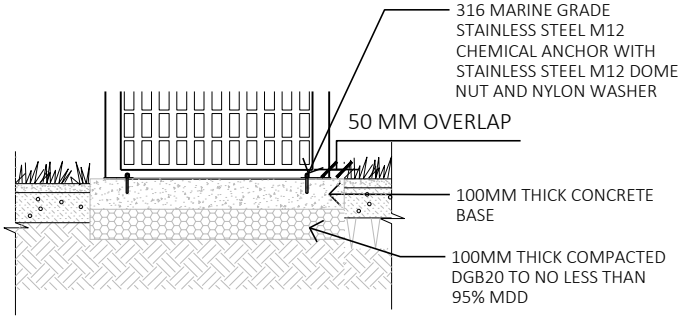


D03 BIN ENCLOSURE - SUB-SURFACE MOUNTED - FRONT ELEVATION
Scale 1:25



NOTE:
- DRILL PILOT HOLE INTO SEGMENTED PAVERS TO PREVENT CRACKING.

D04 BIN ENCLOSURE - SUB-SURFACE MOUNTED - SEGMENTED PAVING DETAIL
Scale 1:25



D05 BIN ENCLOSURE ON A CONCRETE PAD IN VERGE OR GARDEN BED DETAIL
Scale 1:25

E.10

Enviropoles

Function

- Enviropoles cigarette butt units are to be installed in areas across the LGA where there is cigarette butt litter or areas where there is a desire to direct smokers to a designated area.

Supplier

- Envirocorp Group Pty Ltd
  T: 1300 428 887
  E: info@enviropoles.com.au
  W: www.enviropoles.com
  47 Rodeo Drive, Dandenong South VIC 3175

Product

- Enviropoles cigarette butt units asset mounted and ground mounted models
- Asset Mounted - Compact 500 : 316 grade Stainless Steel, length 505mm, diameter 125mm, capacity 2000 butts.
- Ground Mounted - Bollard 500 : 316 grade Stainless Steel, length 910mm, diameter 125mm, capacity 3000 butts.
- These are designed to hold fluid that extinguishes any lit cigarettes.
- Sticker artwork with evidence based messaging required to be obtained from Council's graphic designer in the Communications Team. Stickers and/ or decals include:
- - Promotion that the butts are recycled.
- - Floor decals with a message similar to "A clean space is a beautiful place".
- - Stickers to go on the face of the enviropole that says 'just drop it in' or 'place lit cigarette inside' as users often butt out their cigarettes on the surface of these units with such enthusiasm that holes get plugged, and to avoid misperception that cigarettes need to be extinguished prior to depositing them inside the enviropole.
- Cigarette waste is collected by Envirocorp who remove contaminants and liquid before recycling the waste material via Terracycle.
- Locating Enviropoles:
- Consultation with key stakeholders required for selecting enviropole locations as people tend to congregate and smoke at those locations which may impact people using or residing in the immediate area.
- Locations selected must exclude smoke-free zones and comply with the NSW Smoke-Free Environment Act outlining the following "no smoking areas" :
- a. 10 m from children playgrounds
- b. 4 m from doorways
- c. Spectator areas or sporting grounds
- d. Bus stops, ferries, taxi ranks
- e. Commercial outdoor dining areas

Enviropole - Asset Mounted


Enviropole - Ground Mounted

- Refer http://www.health.nsw.gov.au/tobacco/Pages/smoke-free-laws.aspx for more details.

Installation

- Asset mounted enviropole is supplied with 2 piece bracket with nyloc nuts for attachment to bin enclosures or a branded bracket for attachment to a pole.
- Installation by the supplier is optional and is included in contract price.
- Recommendations for installation of ground mounted bollard:
- - If installed on pavers, ensure pavers are set in concrete/cement. If not, set pavers using cement with black oxide. In absence of pavers, core hole the bollards and set into the ground.
- - Choose a site that is flat with concrete/cement deep enough to use large bolts to secure infrastructure to ground surface.
- Avoid installation in smoking exclusion zones

Maintenance

- Ongoing maintenance may include collection and recycling of cigarette butt waste by EnviroCorp.
- Data regarding enviropole fullness and equivalent number of cigarette butts collected is provided by the contractor via dropbox.

E.11

Stainless Steel Bollard

Function

- Used to separate pedestrians and vehicles and to prevent vehicle access onto footpaths, parks/reserves and pedestrian malls.
- To be located in Bondi Junction, all local and neighbourhood centres and particular urban parks (where nominated by council representative).
- The removable version is to be used where vehicle access is required. Ensure they are installed near vehicular access points.
- Where visibility is an issue, a band of red or contrasting reflector tape can be applied (only where nominated by council representative).
- A light can be incorporated into the bollard where pedestrian safety and/or visibility is an issue only when nominated by council representative.
- Do not clutter spaces - use the minimum amount required to create an effective vehicular barrier. Look for opportunities to combine with other elements to create effective vehicular barriers such as other furniture, trees and garden beds.

Supplier

- Unisite Group Pty Ltd[1]
  03 9720 1033

Product

- **Stainless Steel Bollard Type A - Fixed:**
  - 127BOLSM-SS
- **Stainless Steel Bollard Type B - Removable:**
  - 127BOLRMV

Material Specification

- **Stainless Steel Bollard Type A - Fixed:** 316 stainless steel electro-polished without propriety branding. 150mm DIA. 1000mm high above the ground.
- **Stainless Steel Bollard Type B - Removable:** 316 stainless steel electro polished without propriety branding. 150mm DIA. 1000mm high above the ground.
- 5mm sleeve with hinged cover.
- KAP (keyed alike assembly). KAP code to be specified with code # GB2830.
- Optional storage sleeve to be included only at request by council. Single or Double Sleeve.
- No signage / branding (manufacturer or Council) to be on bollards.

Installation

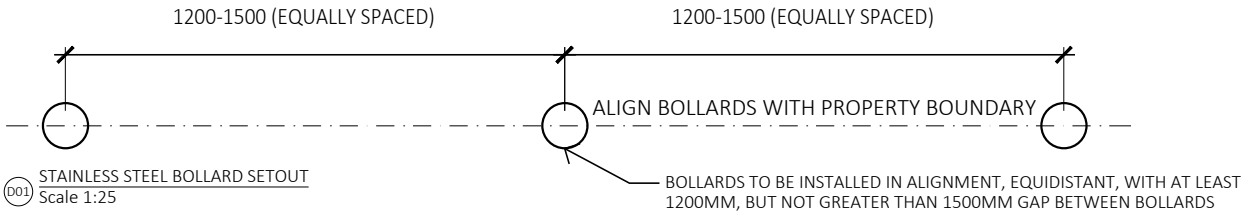
- Stainless Steel Bollard Type A - Fixed, and Stainless Steel Bollard Type B - Removable to manufacturer's recommendation.
- Unless otherwise noted, align bollards with property boundary / building line.
- Do not use removable post for at least 2 days after installation.
- Install vertical and plumb and in a constant alignment.

Stainless Steel Bollard Type B - Removable

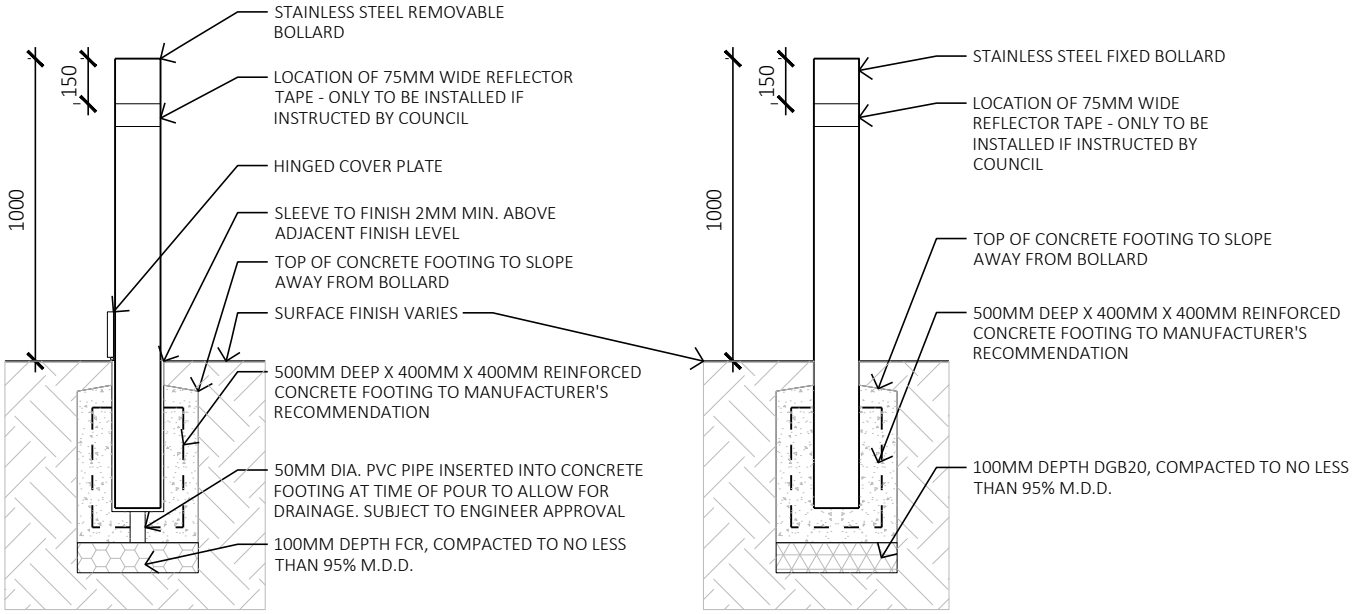
Maintenance

- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- To maintain Removable bollards, it is recommended that the core holes be vacuumed out and kept as clean as possible.
- Refer to manufacturers website for more information.

1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



D01 STAINLESS STEEL BOLLARD SETOUT
Scale 1:25



D02 STAINLESS STEEL REMOVABLE BOLLARD - DETAIL
Scale 1:25

D03 STAINLESS STEEL FIXED BOLLARD - DETAIL
Scale 1:25

E.12

Recycled Plastic Bollard

Function

- The Recycled Plastic Bollard is to be used across parks, reserves and open spaces.
- Recycled Plastic Bollards shall be used to separate pedestrians and vehicles, to prevent vehicle access into parks and (where appropriate), to protect planting.
- The removable version is to be used where vehicle access is required (ensure they are installed near vehicular access points).
- Do not clutter spaces - use the minimum amount required. Look for opportunities to combine with other elements to create effective vehicular barriers such as other furniture, trees and garden beds.
- Stainless steel wire can be incorporated between Recycled Plastic Bollards to form a fence barrier to vegetation areas that require protection such as Bush Care sites - refer to Fences and Barriers.

Supplier

- Contractor to nominate based on below specifications.
  Product
- Recycled Plastic Bollard Type A - Fixed: Bollard cast inground concrete footing.
- Recycled Plastic Bollard Type B - Removable: Bollard slotted in inground socket with pad lock bracket.
- No signage / branding (manufacturer or Council) to be on furniture.

Installation

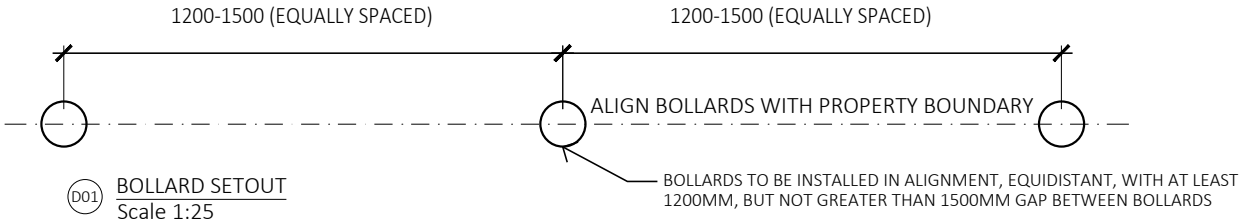
- Recycled Plastic Bollard Type A - Fixed to be installed in concrete footing.
- Recycled Plastic Bollard Type B - Removable to be installed in WC Removable socket with padlockable plate cover (must be ordered separately).
- Unless otherwise noted, align bollards with property boundary / building line.
- Do not use removable post for at least 2 days after installation.
- Install vertical and plumb and in a constant alignment.

Maintenance

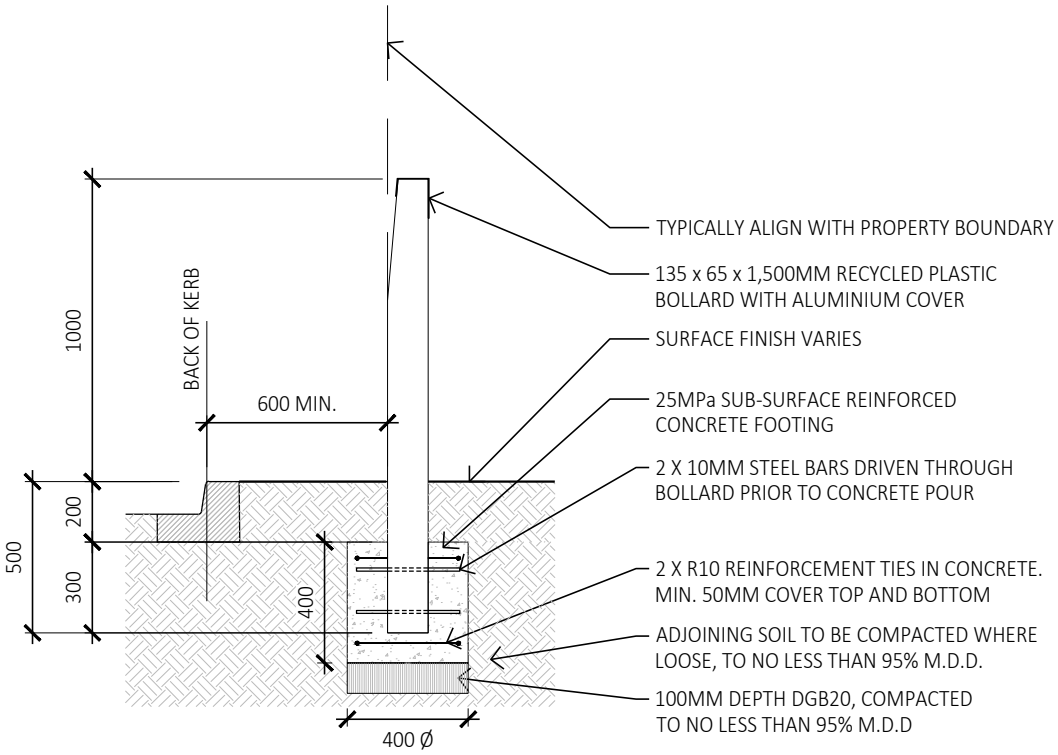
- No special maintenance is required other than regular cleaning with mild detergent, clean water rinse and wipe down.
- Check stability every 6 months and reset as required.

Recycled Plastic Bollard Type A - Fixed

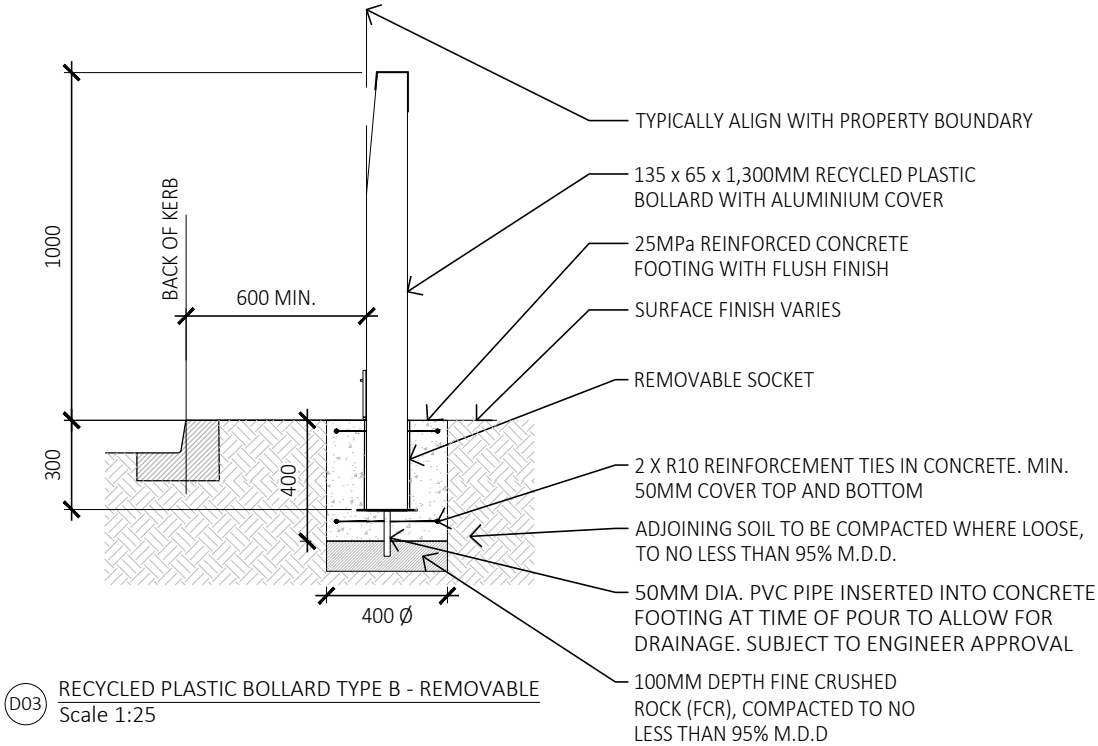
Recycled Plastic Bollard Type B - Removable, showing removable socket and locking mechanism



D01 BOLLARD SETOUT
Scale 1:25



D02 RECYCLED PLASTIC BOLLARD TYPE A - INGROUND
Scale 1:25



D03 RECYCLED PLASTIC BOLLARD TYPE B - REMOVABLE
Scale 1:25

E.13

Victorian Bollard

Function

- The Victorian Bollard is to be used in the Bondi Park central zone associated with the Pavilion only.
- Victorian Bollards may be used to separate pedestrians and vehicles and to prevent vehicle access into the park or pavilion.
- Bollards are not to be installed as a decorative element.
- Do not clutter spaces - use the minimum amount required.

Supplier

- Contractor to nominate based on below specifications.

Product

- **Victorian Bollard - Removable Socket:** Cast Aluminium Powder Coated Colour "Teal". 215mm W x 215mm D x 900mm H.

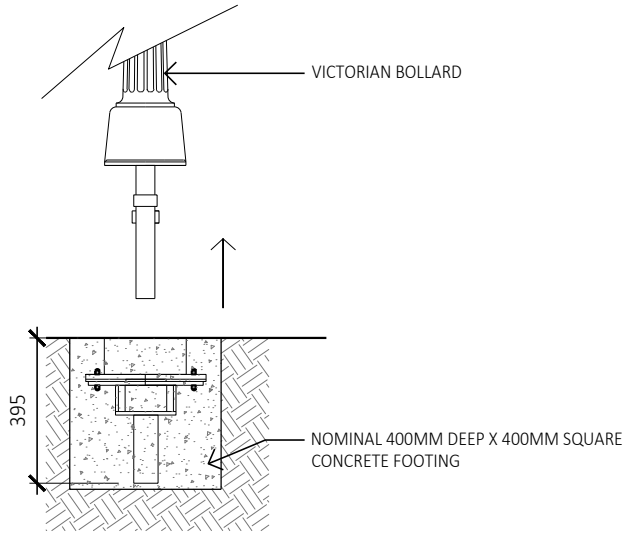
Installation

- Inground removable socket.
- Removable Bollards to be used in places where regular vehicular access / event access is required.
- Bollards are to be installed in alignment, equidistant, with at least 1000mm but no greater than 1500mm gap between bollards, to prevent vehicle access.
- Do not use removable post for at least 2 days after installation.
- Install vertical and plumb and in a constant alignment.

Maintenance

External surfaces, including the underside and sheltered areas, should be washed down regularly, especially in corrosive conditions (eg. salt or chemical deposits). Powder coated surfaces that have become dull through prolonged exposure to sunlight can usually be revived by polishing. Automotive polish (non-cutting) can be used to restore a surface that has become scratched or abraded.

Victorian Bollard



D01 VICTORIAN BOLLARD - REMOVABLE SOCKET - DETAIL
1:20

E.14

Drinking Fountain

Function

- To be used everywhere as standard across the LGA. This includes Parks, Reserves, Bondi Junction, and all Local/Neighbourhood centres.
- Do not use dog bowl and modified frame where dogs are prohibited, eg. playgrounds.
- Position on paved areas to ensure ease of access for mobility challenged users.
- Ensure the drinking fountain does not encroach onto the path.

Supplier

- E.P Draffin Manufacturing Pty Ltd[1]
  03 9720 1033

Product

- **Drinking Fountain Type A - Standard Frame**
  - 88770/SB
- **Drinking Fountain Type B - Dog Bowl Frame**
  - 88770/DB/RB

Material Specification

- **Drinking Fountain Type A - Standard Frame**: 'Bent Leaf' Drinking Fountain. 316 Marine grade stainless steel. Electro polished finish. Standard frame to include bottle filling tap.
- **Drinking Fountain Type B - Dog Bowl Frame**: 'Bent Leaf' Drinking Fountain. 316 Marine grade stainless steel. Electro polished finish. Dog Bowl frame to include bottle filling tap and modified dog bowl.
- No signage / branding (manufacturer or Council) to be on furniture.
- Bottle filling tap to be used as standard.

Installation

- Position the drinking fountain in clear view.
- Sub-surface mount and bolt to a concrete footing using supplied galvanised steel rag cage and bolts.
- Connect drainage pipes to sewer. Alternatively, connect to soakage pit as approved by Council.
- The operating pressure is not to exceed 19.5N.
- Installation of all plumbing items shall be performed by a licensed plumber.
- All fountains must be supplied with a plumber's certificate once installed.
- Install vertical and plumb and in a constant alignment.
- Install a pit within close proximity of the bubbler with a shut-off valve for maintenance.

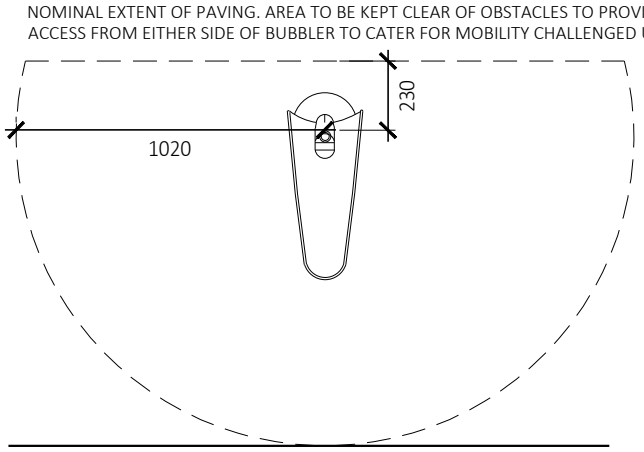
Drinking Fountain Type A - Standard Frame

Drinking Fountain Type B - Dog Bowl Frame

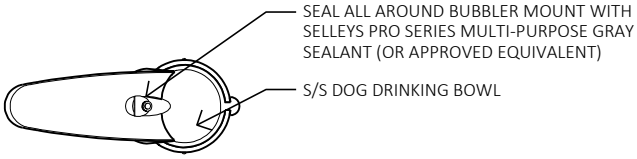
Maintenance

- Clean as needed using a soft cloth or brush with a mild detergent.
- Avoid steam cleaning.
- Abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Refer to manufacturers website for more information.

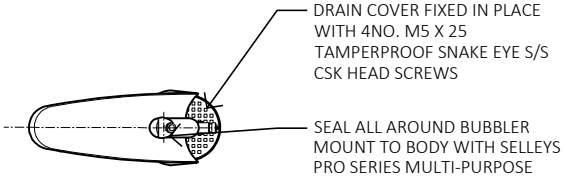
1 *Waverley Council , 2018, CM/7.20/18.11 Minutes of the Waverley Council Meeting Tuesday 20 November 2018, Waverley Council*



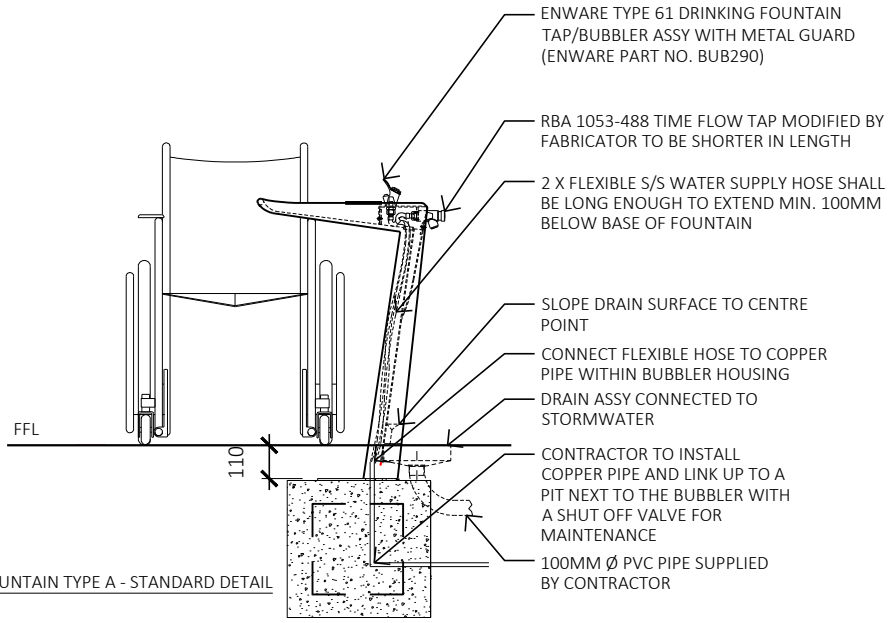
D01 SETOUT PLAN
Scale 1:25



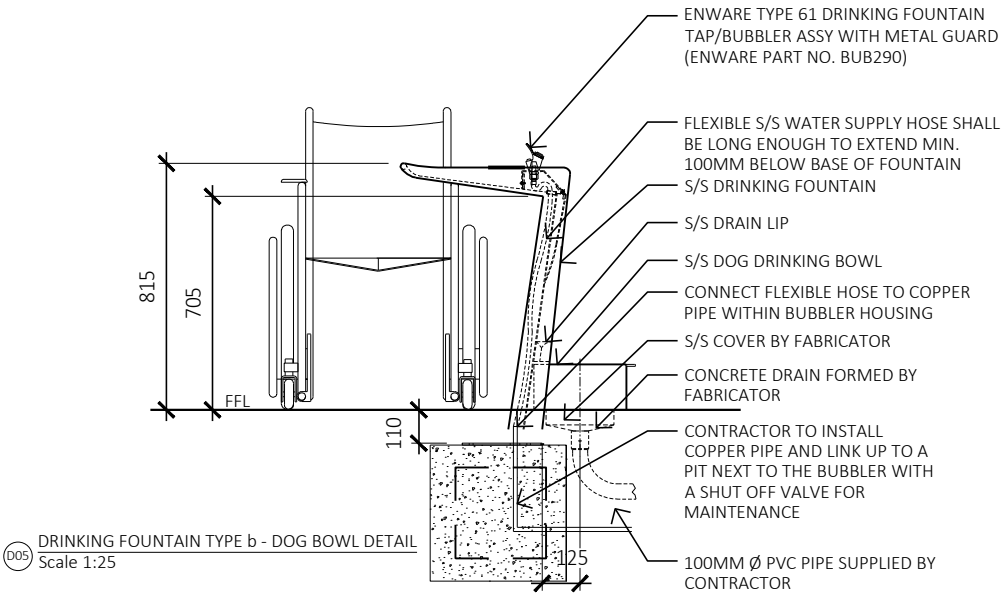
D02 DOG BOWL FRAME TOP VIEW
Scale 1:25



D03 STANDARD FRAME TOP VIEW
Scale 1:25



D04 DRINKING FOUNTAIN TYPE A - STANDARD DETAIL
Scale 1:25



D05 DRINKING FOUNTAIN TYPE b - DOG BOWL DETAIL
Scale 1:25

E.15

Beach Shower

Function

- Beach Showers are to to be installed at beach locations as an outdoor shower to provide amenity for beach users.

Supplier

- Contractor to nominate based on below specifications.

Product

- Beach Shower Type A: Three Way Stainless Steel Shower Column (One Foot Wash Column) as a preference. Other configurations available to suit the location as per Council recommendations.
- 316 Marine grade stainless steel with electro polished finish.
- No signage / branding (manufacturer or Council) to be on furniture.
- Drainage requirements to be discussed with Council during design stage

Installation

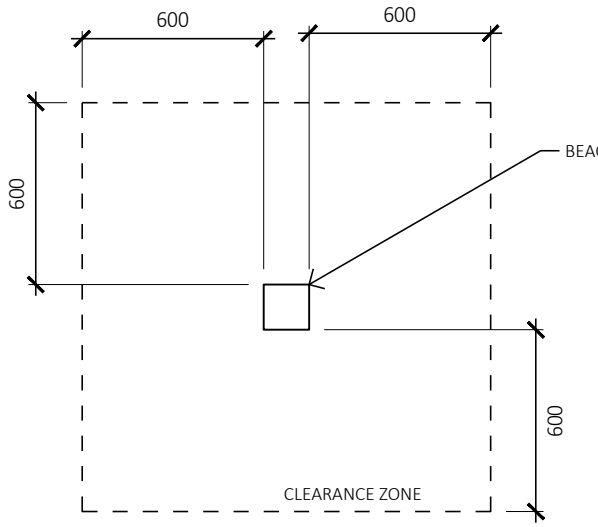
- Locate beach showers at intervals along beach promenades near ramps, stairs and paths.
- Locate showers in clear view near entry and exit points to beach.
- Ensure a potable water connection point is in close proximity to the beach shower.
- Locate beach shower near existing drainage pits. If drainage pits do not exist, construct a 316 Marine Grade Stainless Steel channel drain surrounding the base of the shower at 1000mm from the column. Seek Council approval for drainage details.
- Position on paved areas to ensure equal access and set back to ensure that showers do not encroach on the path of travel.
- Ensure that the foot wash tap is easily visible from the primary approach.
- Refer to manufacturers instructions.
- Inlet connection 3/4” BSP (British Standard Pipe).
- Recommended Working Pressure 250-350kPa.
- Flow Rate 8 litres/minute.
- Install vertical and plumb and in a constant alignment.

Maintenance

- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.

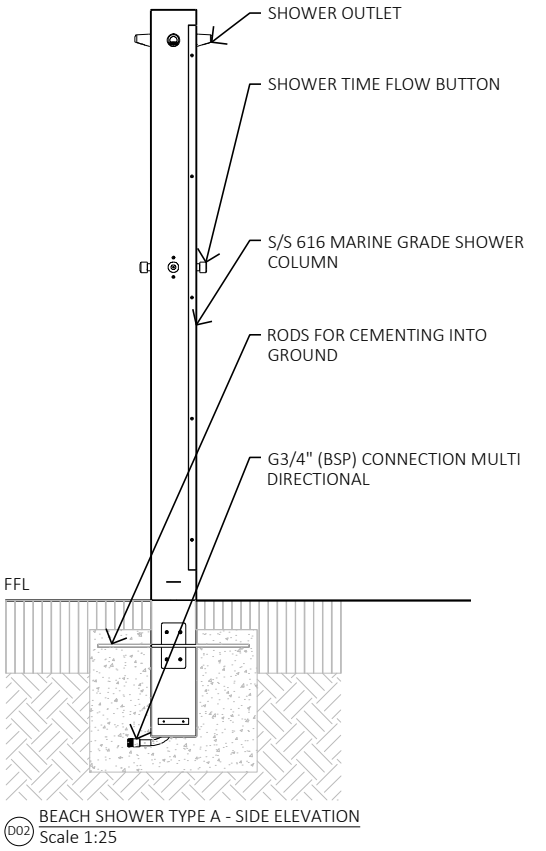
Beach Shower Type A, Bondi Beach

- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Refer to manufacturers website for more information.

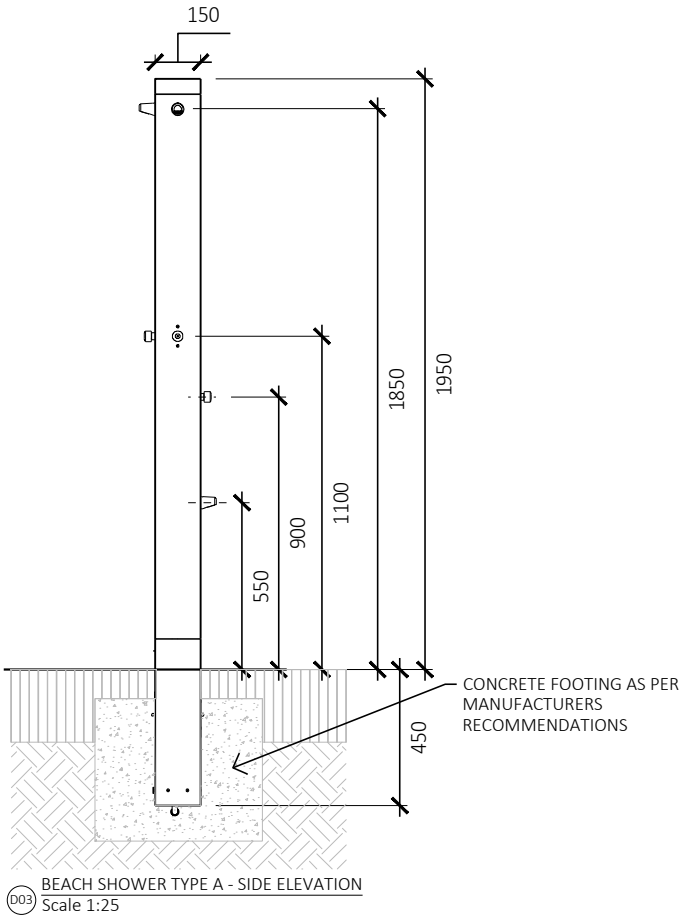


D01 BEACH SHOWER TYPE A - SETOUT PLAN
Scale 1:25

NOTE: OFFSET BEACH SHOWERS A MINIMUM OF 600MM FROM PATHWAYS, WALLS, AND ANY OTHER STRUCTURE. MAINTAIN VISIBILITY LINES AND ENSURE THE SHOWERS ARE LOCATED IN CLEAR VIEW



D02 BEACH SHOWER TYPE A - SIDE ELEVATION
Scale 1:25



D03 BEACH SHOWER TYPE A - SIDE ELEVATION
Scale 1:25

E.16

Skateboard Deterrent

Function

- Skateboard deterrents prevent skateboarders from causing damage via rail sliding and grinding on building features and landscape elements.
- They may be retrofitted to existing elements if necessary or incorporated into new work.
- Type 1A 'Skateboard Deterrent Dome Head Small' is the preferred deterrent to be used across the LGA.
- alternative options have been provided below

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Skateboard Deterrent Type 1A: Dome Head Small. Threaded, Solid 316 Stainless Steel, 10x20mm. Reccomended spacing is 500 - 700mm (maximum) with 150mm from ends, and 25mm in from the edge.
- Skateboard Deterrent Type 1B: Cylindrical mall. Threadless, Solid 316 Stainless Steel, 10x20mm. Reccomended spacing is 500 - 700mm (maximum) with 150mm from ends, and 25mm in from the edge.
- Skateboard Deterrent Type 2A: Cylindrical Large. Threadless, Solid 316 Stainless Steel, 30x23mm. Reccomended spacing is 500 - 700mm (maximum) with 150mm from ends, and 40mm in from the edge.
- Skateboard Deterrent Type 2B: Dome Head Large. Threadless, Solid 316 Stainless Steel, 15x30mm. Reccomended spacing is 500 - 700mm (maximum) with 150mm from ends, and 30mm in from the edge.

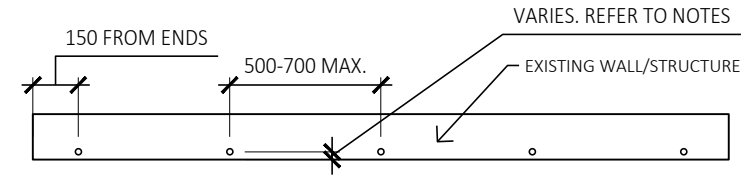
Installation

- Reccomended spacing is 500 - 700mm (maximum) with 150mm from ends. Spacing in from the edge varies according to the product. Refer to Product details.
- Attach with a 2-part masonry epoxy, ensuring excess epoxy is cleaned prior to drying.
- Alternative Treatments: It is preferable forskateboard deterrent measures to be integrated into the detail design. This can be achieved by:
- incorporating steel inserts into jointing pattern;
- using textured or heavily jointed masonry;
- adding a steel strip along the top edge of a seat to protect it;
- using heavily textured pavements at the base of seats or steps;
- locating street furniture or other features to impede clear runs;
- installing them on or near edges and slopes that may be used for jumps.

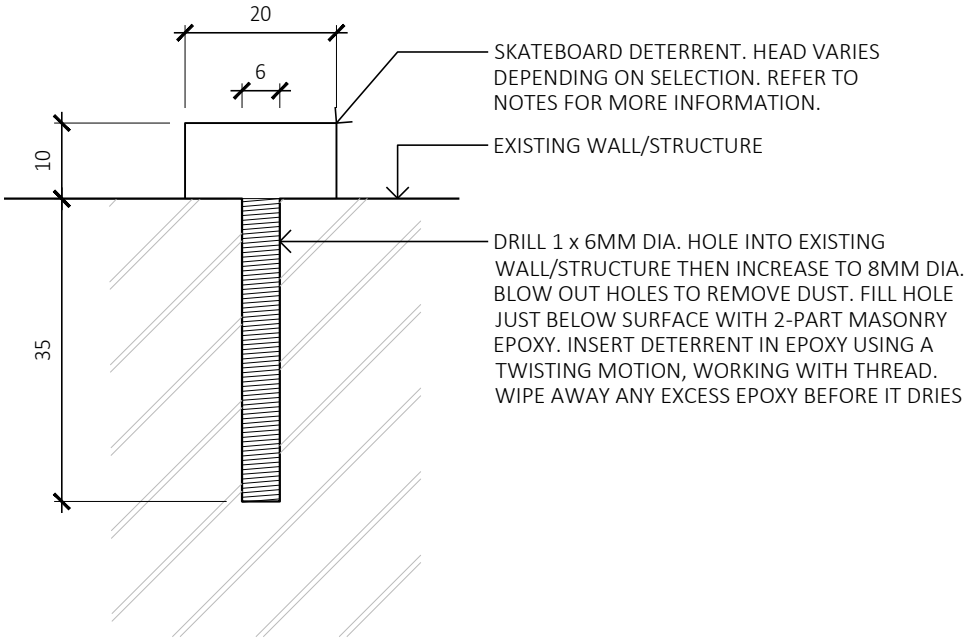
Maintenance

Skateboard DeterrentType 1A - preferred deterrent to be used across the Waverley LGA

- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Check for loose fittings and tighten/replace every 6 months.



D01 SKATE DETERRENT SETOUT PLAN
Scale 1:25



D02 TYPICAL SKATE DETERRENT DETAIL
Scale 1:1

NOTE:
- SKATEBOARD DETERRENT TYPE 1A: DOME HEAD. INSTALL 25MM FROM EDGE;
- SKATEBOARD DETERRENT TYPE 1B: CYLINDRICAL HEAD. INSTALL 25MM FROM EDGE;
- SKATEBOARD DETERRENT TYPE 2A: CYLINDRICAL HEAD. INSTALL 40MM FROM EDGE;
- SKATEBOARD DETERRENT TYPE 2B: DOME HEAD. INSTALL 30MM FROM EDGE.

F. Handrails

F.01

Wall-Mounted

Function

- Stainless steel wall mounted handrail is to be used on stairs, walkways, and ramps adjacent to a wall.
- Handrails are to be provided on both sides of the stair, walkway or ramp; to provide a safe and convenient pedestrian access over level changes.
- All handrails shall meet requirements as set out in AS 1428.

Supplier

Contractor to nominate based on below specifications.

Materials and Dimensions

- 316 Marine Grade Stainless Steel, 2B raw material with preliminary 320 grit polish, and final finish mirror electropolish.

Installation

- Refer to manufacturers instructions.
- Surface mounted to wall with Stainless Steel fixings.

Maintenance

- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Check for loose fittings and tighten/replace every 6 months.

Stainless Steel Handrail - Wall Mounted

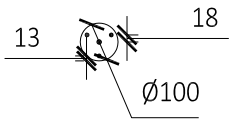
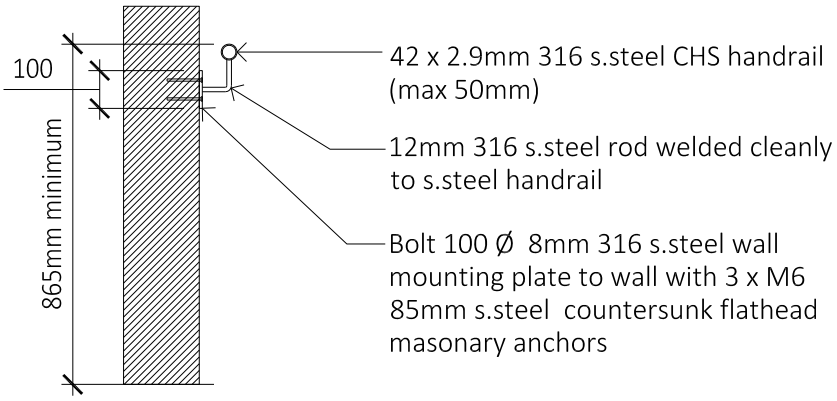


Plate Elevation 1:5

8mm X 100mm Ø 316 s.steel plate.
3 X M6 s.steel chemical anchors



F.02

Free Standing

Function

- Stainless Steel Handrail - Free Standing is to be used on stairs, walkways and ramps where a simple handrail is required and where there is no transition to a balustrade.
- Handrails are to be provided on both sides of the stair, walkway or ramp.
- Handrails are to provide safe and convenient pedestrian access over level changes and meet requirements set out in AS 1428.

Supplier

Contractor to nominate based on below specifications.

Materials and Dimensions

316 Marine Grade Stainless Steel, 2B raw material with preliminary 320 grit polish, and final finish mirror electropolish.

Installation

Sub-surface or surface mounted posts

Maintenance

- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.

Stainless Steel Handrails - Free Standing

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F.03

Tapered Post

Function

- Stainless Steel Handrail with Tapered Post is to be used on stairs, walkways and ramps where the handrail is used in conjunction with the horizontal or vertical balustrade or transitions to the horizontal or vertical balustrade.
- Handrails are to be provided on both sides of the stair, walkway or ramp.
- Handrails are to provide safe and convenient pedestrian access over level changes and meet requirements set out in AS 1428.

Supplier

Contractor to Organise

Materials and Dimensions

316 Marine Grade Stainless Steel, 2B raw material with preliminary 320 grit polish, and final finish mirror electropolish.

Installation

Based on details of Steel Fences. Refer Fences and Barriers - Steel Fences for more details

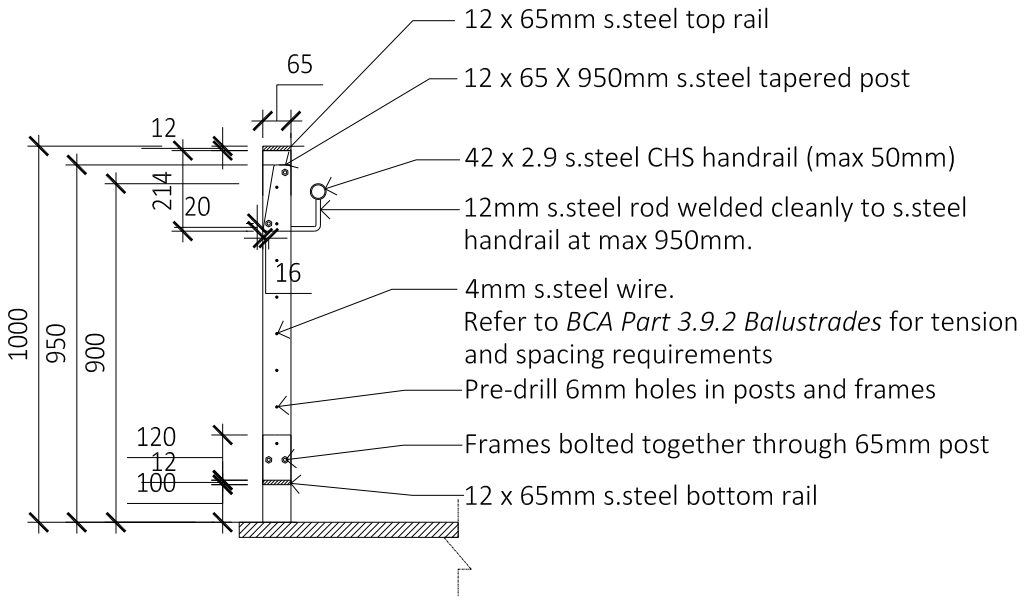
Maintenance

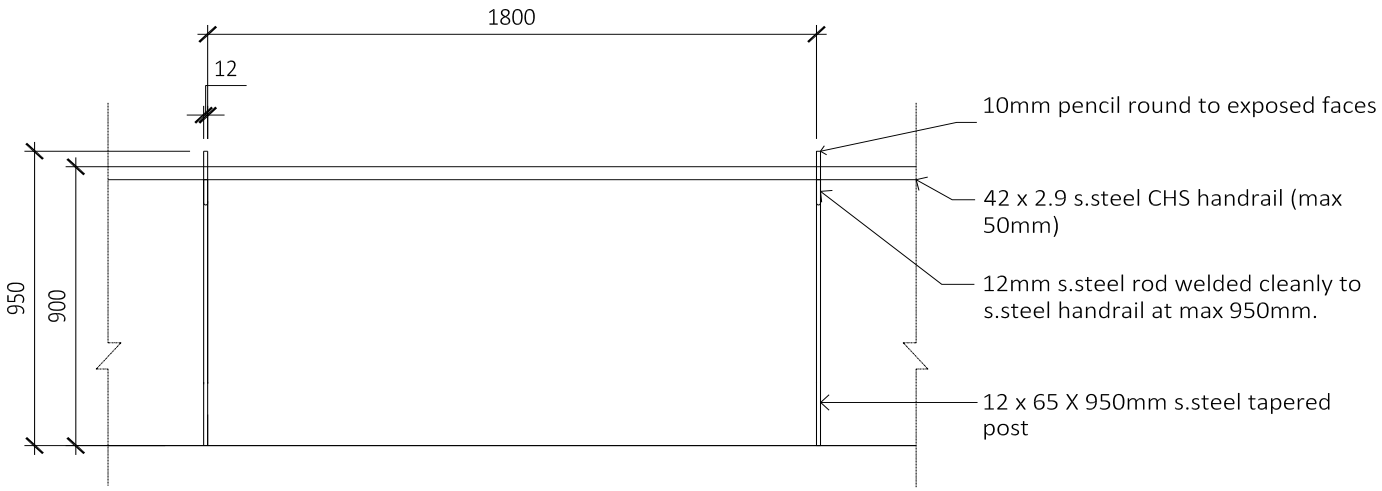
- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless furniture to remove stubborn stains. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
- Deeper scratches and damage can sometimes be ground out and repolished, but this should be done professionally.
- Check for loose fittings and tighten/replace every 6 months.

Stainless Steel Handrail with tapered Post - Image is for representational purposes only. For exact railing please refer Steel Fences

Balustrades

- Balustrades are required to protect people from falling where there is a level change of 1m or more between adjoining floor or finished ground levels such as on a stair, ramp or a path; unbound by a wall.
- Balustrades may be used in conjunction with handrails.
- Balustrades must be 1m high above the ground level or 865mm above the ground level of a landing to a stair or ramp. A transition zone may be incorporated where the balustrade or barrier height changes from 865mm on the stair flight or ramp to 1m at the landing.
- Openings in balustrades must not permit a 125mm sphere to pass through.
- Horizontal balustrades may be used when there is a level change less than 4m.
- Balustrades must be designed to applicable Australian Standards and the National construction Code (NCC)
- Refer to Fences and Barriers for further details.


12 x 65mm s.steel top rail
65
12 x 65 X 950mm s.steel tapered post
12
42 x 2.9 s.steel CHS handrail (max 50mm)
214
20
12mm s.steel rod welded cleanly to s.steel handrail at max 950mm.
16
4mm s.steel wire.
Refer to *BCA Part 3.9.2 Balustrades* for tension and spacing requirements
1000
950
900
Pre-drill 6mm holes in posts and frames
120
12
100
Frames bolted together through 65mm post
12 x 65mm s.steel bottom rail


1800
12
10mm pencil round to exposed faces
42 x 2.9 s.steel CHS handrail (max 50mm)
950
900
12mm s.steel rod welded cleanly to s.steel handrail at max 950mm.
12 x 65 X 950mm s.steel tapered post

G.

Fences and Barriers

G.01

Arris Rail Fence

Function / Location

- The white Arris Rail fence provides a consistent character to the Waverley coast.
- It is to be used primarily along the coast where an edge definition is required.

Supplier

Contractor to nominate based on below specifications.

Product

- **Arris Rail Fence Type A:** Arris Rail Fence with 2 rails 1,150mm High.
- **Arris Rail Fence Type B:** Arris Rail Fence with 2 rails and wire infill 1,150mm High.
- Australian hardwood timber complying with one or more of the following: Australian Forest Certification Scheme (AFS); Forest Stewardship Council (FSC),or Programme for the Endorsement of Forest Certification (PEFC).
- 100 x 150mm post, 90 x 90mm Arris top rail, 75 x 100mm mid rail at 1,500mm centres.
- 6 x 4mm 316 Stainless Steel 7x7 lay wire rope for Fence Type B only.
- Allow for stainless steel 316 wire rope end-post fixing & tensioning fittings including 8x60mm eye screws, wire rope thimbles and crimps and m8 forged closed jaw-jaw turnbuckles at terminations and change in fence direction for Fence Type B only.
- Paint finish to timber - Dulux Weathershield Low Sheen “Vivid White”.

Installation

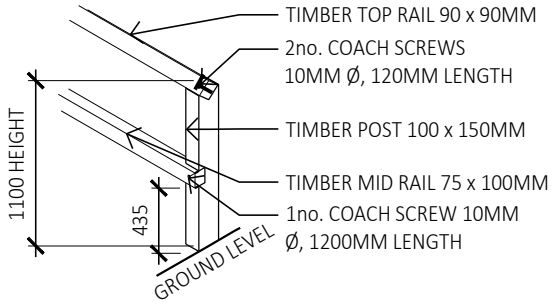
- **Arris Rail Fence Type B** is to be used where there is a level change between 1,000 and 2,500mm.
- Sub-surface in concrete footings.
- Structural engineer’s review and certification required during all stages of design and installation.

Maintenance

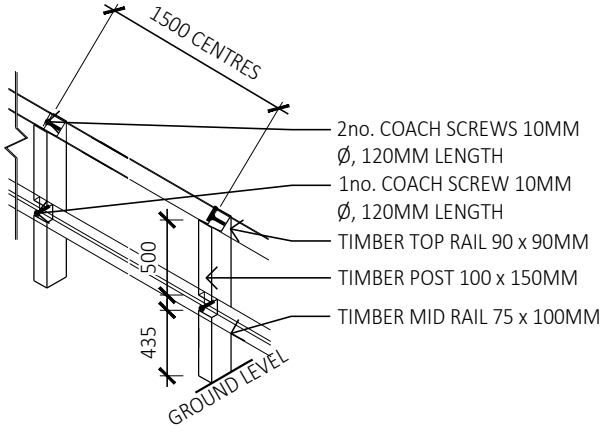
- Regular maintenance should be carried out at a minimum of six monthly intervals, and any repairs to the coating should be made immediately.
- Maintenance consists of cleaning down with a mild detergent in warm water using a cloth or sponge, rinsing off with clean water, and then a visual inspection to check the integrity of the coating.
- Any breaks or openings in the coating need to be repaired. Repairs would require cutting back through the coating to the raw timber using a medium abrasive paper (120 grit), providing a smooth surface by sanding with fine abrasive paper (240 grit), and recoating with Dulux Weathershield Low Sheen “Vivid White”.

Arris Rail Fence Type A

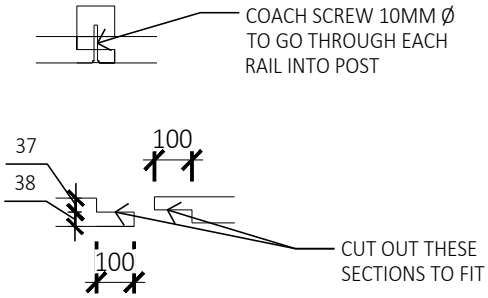
Arris Rail Fence Type B



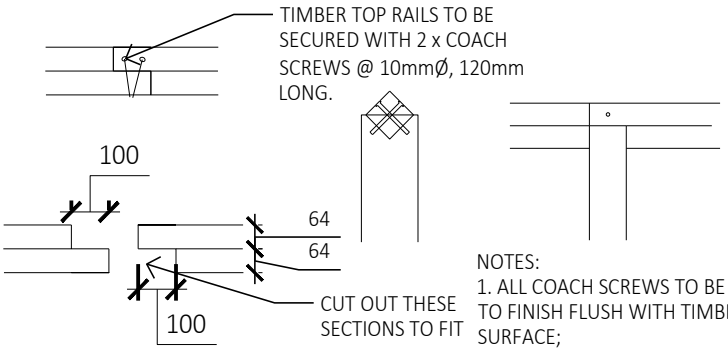
D01 ARRIS RAIL FENCE TYPE A - END POST
Scale 1:50



D02 ARRIS RAIL FENCE TYPE A - TRANSITION POST
1:50



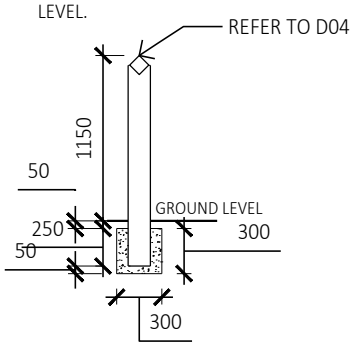
D03 ARRIS RAIL FENCE TYPE A - MID RAIL CONNECTION
1:20



D04 ARRIS RAIL FENCE TYPE A -
TOP RAIL CONNECTION
1:20

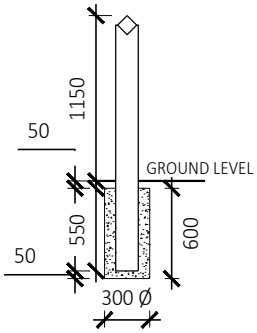
NOTES:
1. ALL COACH SCREWS TO BE SEATED TO FINISH FLUSH WITH TIMBER SURFACE;
2. ALL CONNECTION SURFACES, HOLES & SCREW LOCATIONS TO BE FILLED WITH BOG-UP AND SANDED SMOOTH;
3. TIMBER TO BE AFS, FSC OR PEFC HARDWOOD;
4. TOP RAILS TO BE SECURED WITH 2 X COACH SCREWS @ 10MM DIA., 120MM LONG.

NOTE: CREATE CONCRETE FOOTING 300 X 300 X 300MM. TOP OF FOOTING TO BE NO LESS THAN 50MM BELOW GROUND LEVEL. POST TO SIT 250MM DEEP INTO FOOTING. POST TO BE CUT TO ENSURE HEIGHT IS 1100MM ABOVE GROUND LEVEL.



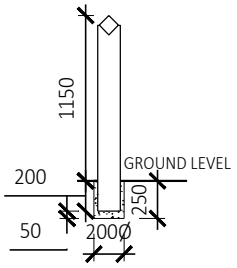
D05 ARRIS RAIL FENCE TYPE A -
INSTALLED IN SOIL
1:50

NOTE: CREATE CONCRETE CYLINDRICAL FOOTING 300MM Ø X 600MM DEEP. TOP OF FOOTING TO BE NO LESS THAN 50MM BELOW GROUND LEVEL. POST TO SIT 550MM DEEP INTO FOOTING. POST TO BE CUT TO ENSURE HEIGHT IS 1100MM ABOVE GROUND LEVEL.

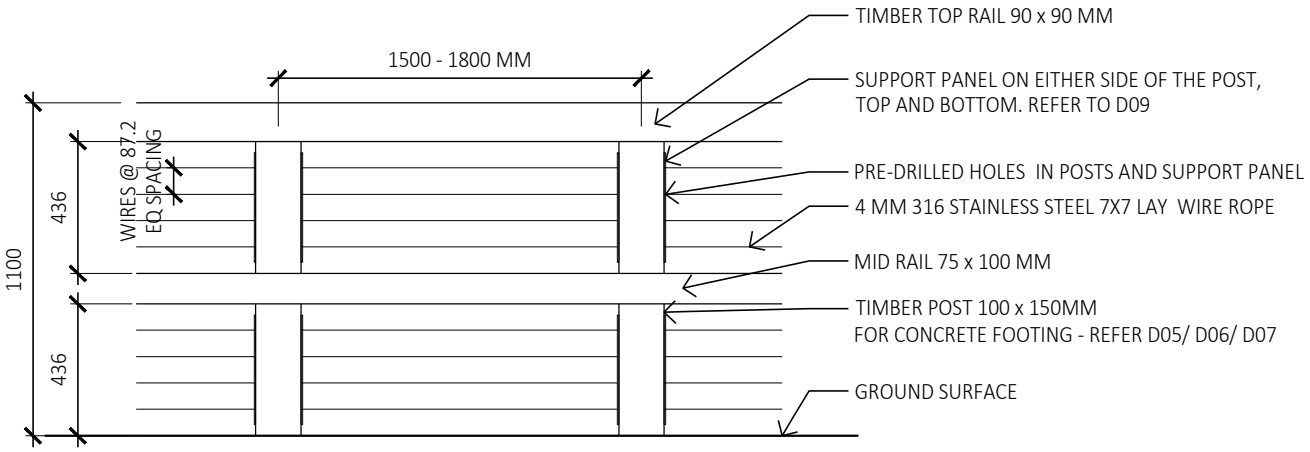


D06 ARRIS RAIL FENCE TYPE A -
INSTALLED IN LOOSE SAND
1:20

CORE HOLE 200MM Ø X 250MM DEPTH INTO STONE. POST TO SIT 200MM DEEP INTO FOOTING. FILL HOLE WITH CONCRETE. POST TO BE CUT TO ENSURE HEIGHT IS 1100MMM ABOVE GROUND LEVEL.



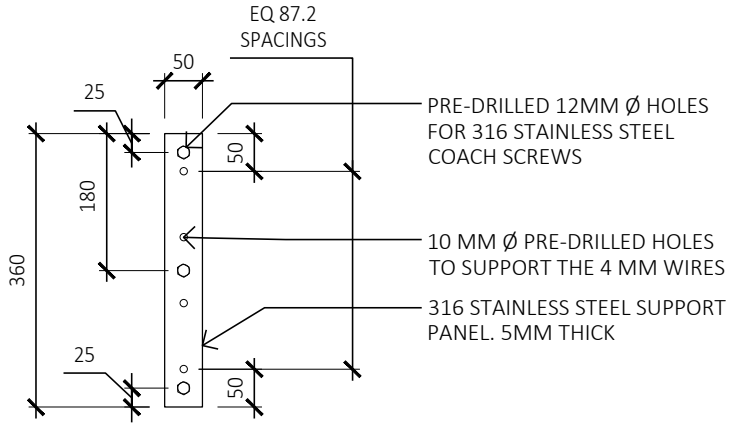
D07 ARRIS RAIL FENCE TYPE A -
INSTALLED IN SANDSTONE
1:20



D08 ARRIS RAIL FENCE TYPE B WITH WIRE INFILL - ELEVATION
1:25

NOTES:

1. WIRES TO BE TENSIONED AS PER NCC SECTION 3.9.2 BARRIERS AND HANDRAILS BASED ON THE WIRE SPACING
2. ALLOW FOR STAINLESS STEEL 316 WIRE ROPE END-POST FIXING & TENSIONING FITTINGS INCLUDING 8X60MM EYE SCREWS, WIRE ROPE THIMBLES AND CRIMPS AND M8 FORGED CLOSED JAW-JAW TURNBUCKLES AT TERMINATIONS AND CHANGE IN FENCE DIRECTION.



5MM THICK S/S SUPPORT PLATE TO BE SECURED WITH 3 x S/S COACH SCREWS @ 10MMØ,65MM LONG

D09 ARRIS RAIL FENCE TYPE B - SUPPORT PANEL
Scale 1:10

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G.02

Steel Fence

Function

- Steel Fence Type A may be used around playgrounds where planting, rock or the pedestrian garden barrier are not appropriate.
- Height requirements - Minimum 600mm to a maximum 850mm for general fencing. If the fence is to be used as a balustrade, follow requirements as per AS4685.1:2014
- In special areas such as lookouts, a hardwood timber rail shall be incorporated (see image).
- Steel Fence Type B may also be used where separation of vehicles and pedestrians is required, such as on park edges adjacent to high speed busy roads, or where a 'transparent' fence is desirable. Fall heights should not exceed 1000mm. Application to be confirmed with council prior to installation.
- Steel Fence Type B should not be used in playgrounds as it is climbable and does not meet the code.
- Steel Fence Type C may be used at lookouts and special areas with fall heights that exceed 4,000mm.
- Continuous fences and other barriers should be avoided along park edges adjacent to moving vehicles to avoid trapping pedestrians.

Supplier

- Contractor to nominate based on below specifications.
- Product
- Steel Fence Type A - Steel Fence with Vertical Balustrade.
- Steel Fence Type B - Steel Fence with Wire infill. Wire to be 4mm Ø 316 Marine Grade Stainless Steel.
- Steel Fence Type C - Steel Fence with clear laminated toughened Glass infill to AS1170.1.
- In coastal zones, use 316 Marine Grade Stainless Steel, 2B raw material with 600 grit polish finish.
- Other zones, use Hot Dip Galvanised Steel with natural finish or mild steel with MIO finish.
- No signage / branding (manufacturer or council) to be on fencing.

Installation

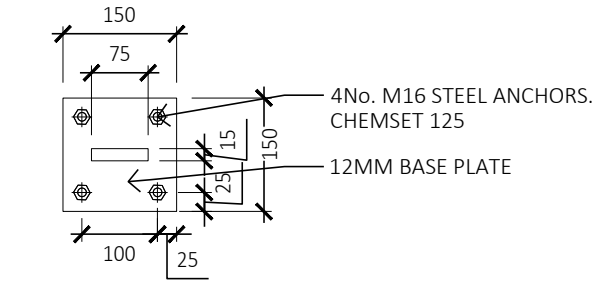
- Sub-surface mounted in concrete footing in gardenbed areas.
- Surface mounted on concrete slab.
- Hidden mounting on deck structures
- Structural engineer's review and certification required during all stages of design & installation

Steel Fence Type A

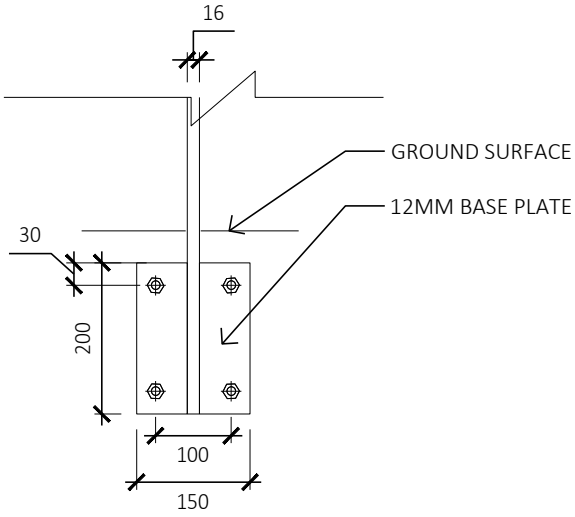
Steel Fence Type A with hardwood timber rail

Maintenance

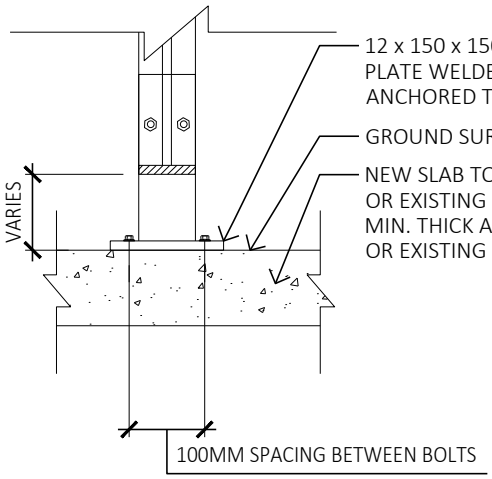
- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleansers, carbon steel brushes/wools and cleaners containing chlorine. Stainless steel cleaners may be used on stainless fences to remove stubborn stains.
- A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids such as Brasso.
- Deeper scratches and damage can sometimes be ground out and repolished by a professional.



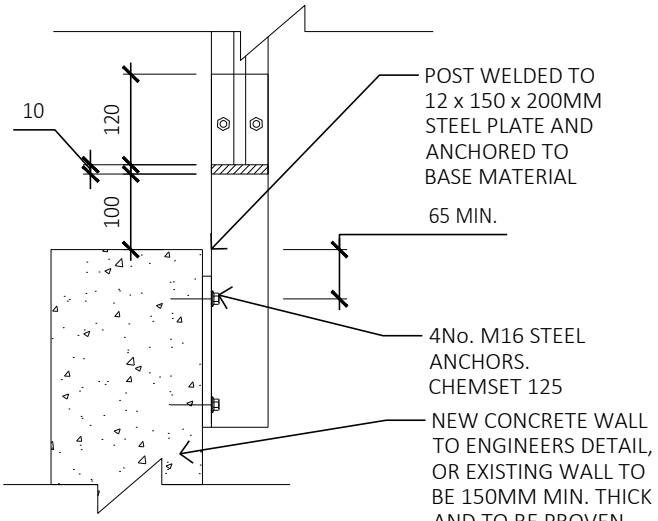
D01 HORIZONTAL BASE PLATE PLAN
Scale 1:10 @ A4



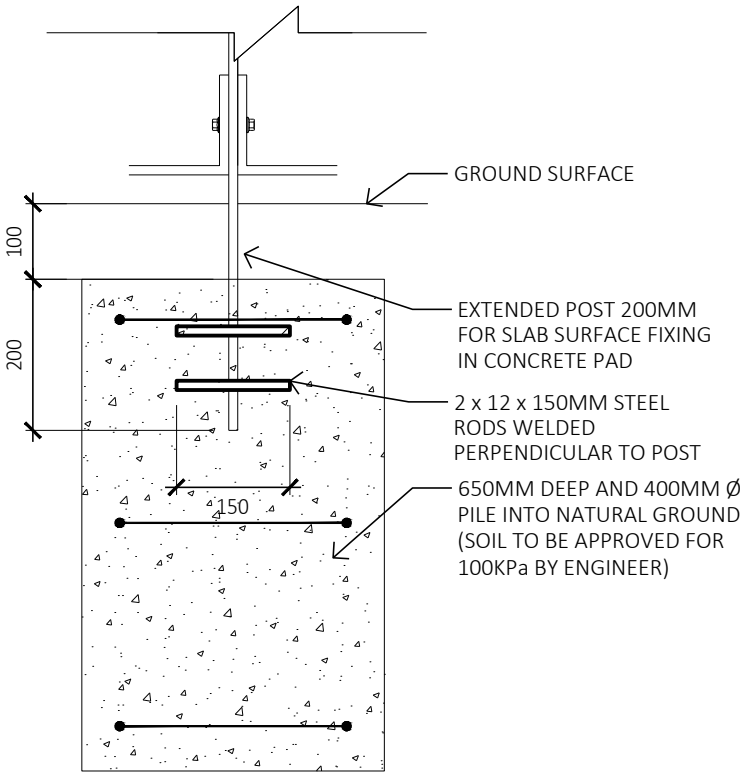
D02 VERTICAL BASE PLATE ELEVATION
Scale 1:10 @ A4



D03 HORIZONTAL BASE PLATE ELEVATION
Scale 1:10 @ A4



D04 VERTICAL BASE PLATE PLAN
Scale 1:10 @ A4

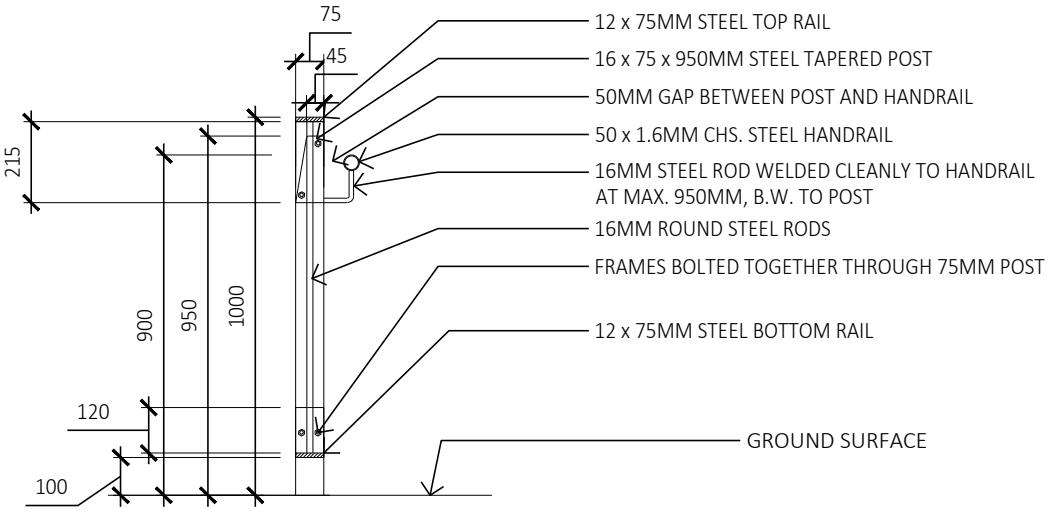


D05 SUB-SURFACE POST SECTION
Scale 1:10 @ A4

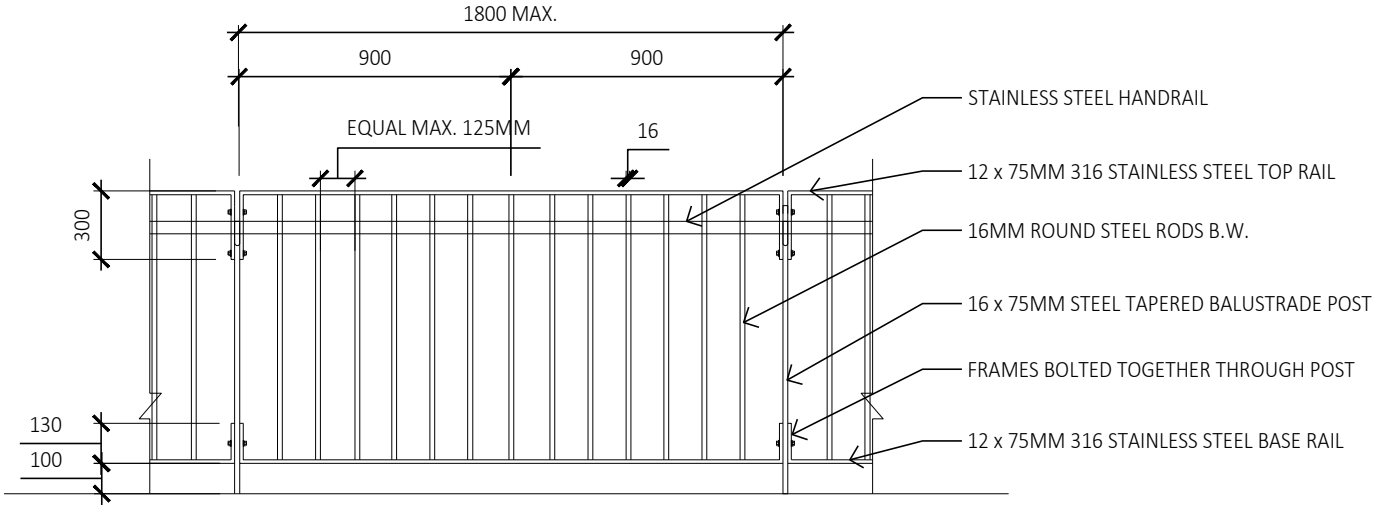
NOTES:
1. WELDING FINISH TO BE BUTT WELD (B.W.)
2. STAINLESS STEEL TO HAVE MIN. YIELDING STRENGTH OF 205MPa AND TO BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
3. 316 STAINLESS STEEL FIXINGS TO BE USED TO CONNECT 316 STAINLESS STEEL PARTS ONLY.
4. ALL HANDRAILS TO BE MARINE GRADE 316 STAINLESS STEEL.
5. ENDPOSTS AND OTHER POSTS WHERE TENSION FORCE IS LOCKED OFF, ARE TO BE DOUBLE 75 x 16MM.
6. STEEL FINISH OPTIONS:
   A. 316 STAINLESS STEEL, 2B RAW MATERIAL WITH 600 GRIT POLISH FINISH
   B. BLACK STEEL WITH DULUX MIO PAINT FINISH, COLOUR 'BRIDGE GREY', OR
   C. HOT DIP GALVANISED STEEL WITH NATURAL FINISH

Steel Fence Fixing Details

Steel Fence Type A



D01 STEEL FENCE TYPE A WITH VERTICAL BALUSTRADE - DETAIL
1:20 @ A4

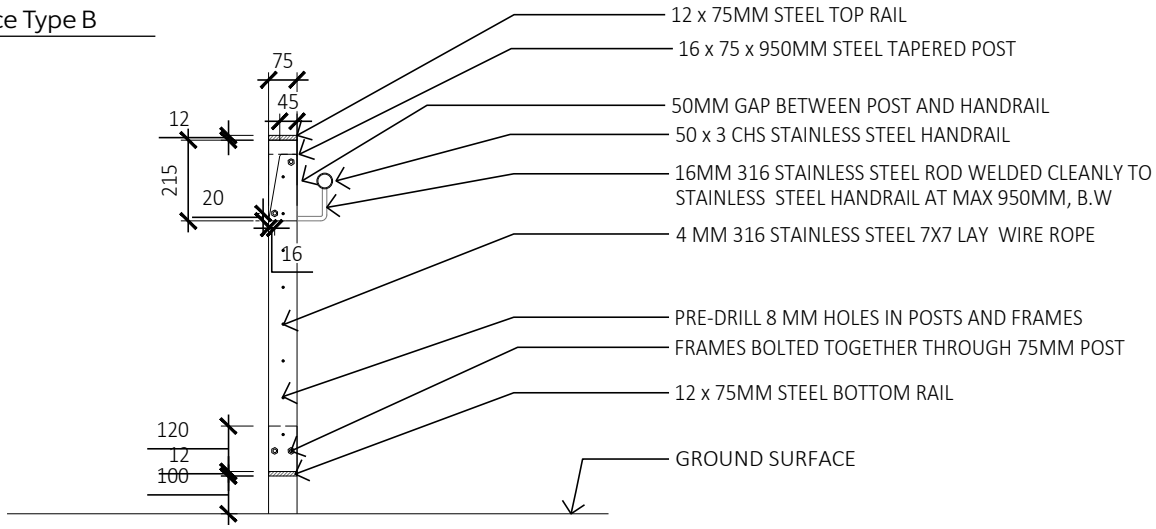


D02 STEEL FENCE TYPE A WITH VERTICAL BALUSTRADE - ELEVATION
1:25 @ A4

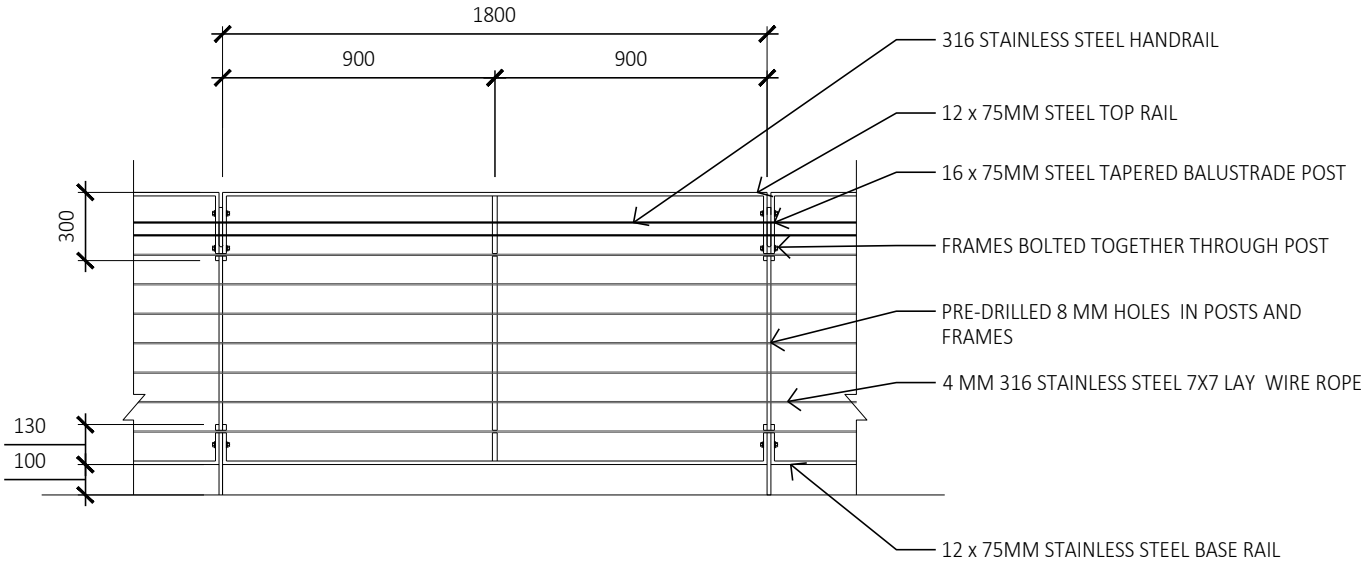
NOTES:

1. WELDING FINISH TO BE BUTT WELD (B.W.).
2. STAINLESS STEEL TO HAVE MIN. YIELDING STRENGTH OF 205MPa AND TO BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
3. 316 STAINLESS STEEL FIXINGS TO BE USED TO CONNECT 316 STAINLESS STEEL PARTS ONLY.
4. ENDPOSTS AND OTHER POSTS WHERE TENSION FORCE IS LOCKED OFF, ARE TO BE DOUBLE 75 x 16MM.
5. ALL HANDRAILS TO BE MARINE GRADE 316 STAINLESS STEEL
6. STEEL FINISH OPTIONS:
   A. 316 STAINLESS STEEL, 2B RAW MATERIAL WITH 600 GRIT POLISH FINISH
   B. BLACK STEEL WITH DULUX MIO PAINT FINISH, COLOUR 'BRIDGE GREY', OR
   C. HOT DIP GALVANISED STEEL WITH NATURAL FINISH

Steel Fence Type B



D01 STEEL FENCE TYPE B WITH WIRE INFILL - DETAIL
1:20 @ A4

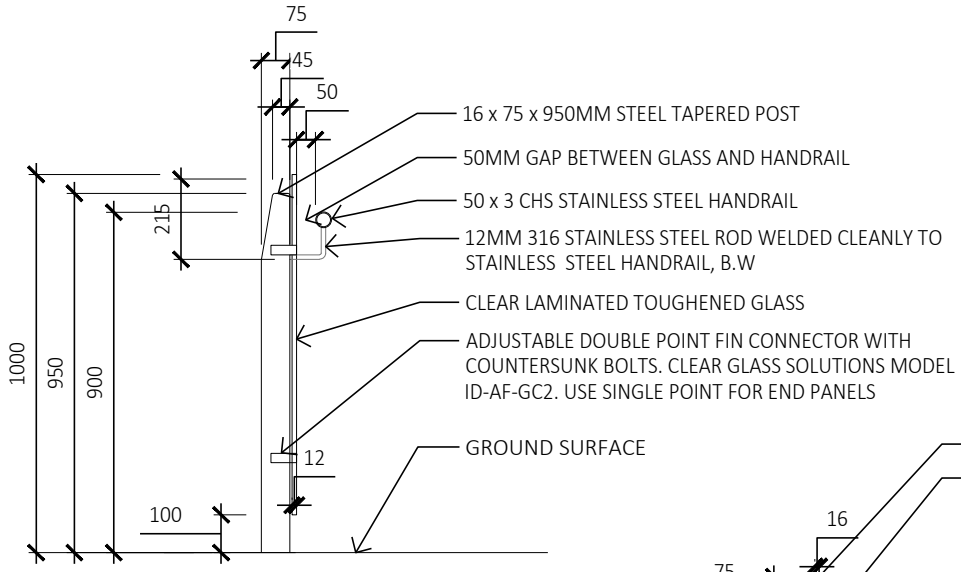


D02 STEEL FENCE TYPE B WITH WIRE INFILL - ELEVATION
1:25 @ A4

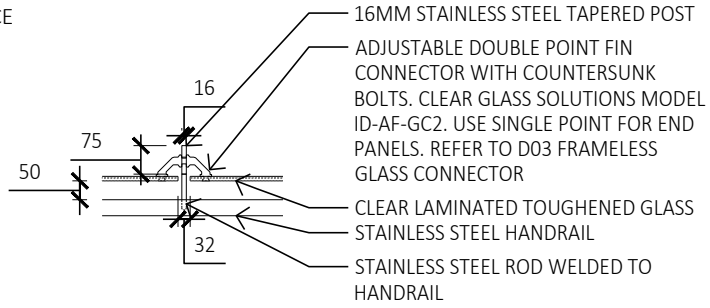
NOTES:

1. WELDING FINISH TO BE BUTT WELD (B.W.)
2. STAINLESS STEEL TO HAVE MIN. YIELDING STRENGTH OF 205MPa AND TO BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
3. 316 STAINLESS STEEL FIXINGS TO BE USED TO CONNECT 316 STAINLESS STEEL PARTS ONLY.
4. ENDPOSTS AND OTHER POSTS WHERE TENSION FORCE IS LOCKED OFF, ARE TO BE DOUBLE 75 x 16MM.
5. ALL HANDRAILS TO BE MARINE GRADE 316 STAINLESS STEEL
6. STEEL FINISH OPTIONS:
   A. 316 STAINLESS STEEL, 2B RAW MATERIAL WITH 600 GRIT POLISH FINISH
   B. BLACK STEEL WITH DULUX MIO PAINT FINISH, COLOUR 'BRIDGE GREY', OR
   C. HOT DIP GALVANISED STEEL WITH NATURAL FINISH
7. WIRES TO BE TENSIONED AS PER NCC SECTION 3.9.2 BARRIERS AND HANDRAILS BASED ON THE WIRE SPACING
8. ALLOW FOR STAINLESS STEEL 316 WIRE ROPE END-POST FIXING & TENSIONING FITTINGS INCLUDING 8X60MM EYE SCREWS, WIRE ROPE THIMBLES AND CRIMPS AND M8 FORGED CLOSED JAW-JAW TURNBUCKLES AT TERMINATIONS AND CHANGE IN FENCE DIRECTION.

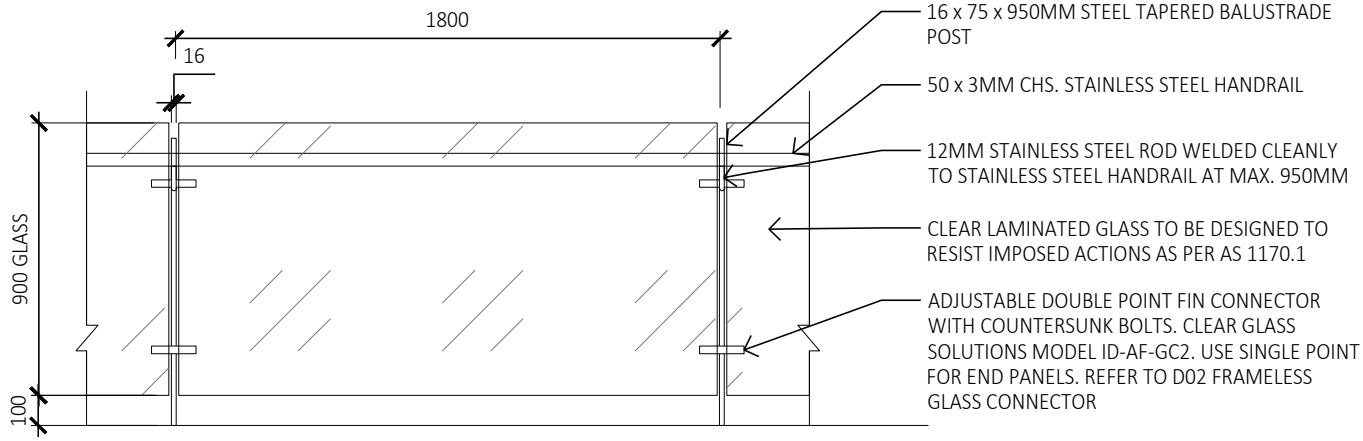
Steel Fence Type C



D01 STEEL FENCE TYPE C WITH GLASS INFILL - DETAIL
1:20 @ A4



D02 STEEL FENCE TYPE C - FRAMELESS GLASS CONNECTOR DETAIL
1:20 @ A4



D03 STEEL FENCE TYPE C WITH GLASS INFILL - ELEVATION
1:25 @ A4

NOTES:

1. WELDING FINISH TO BE BUTT WELD (B.W.).
2. STAINLESS STEEL TO HAVE MIN. YIELDING STRENGTH OF 205MPa AND TO BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
3. 316 STAINLESS STEEL FIXINGS TO BE USED TO CONNECT 316 STAINLESS STEEL PARTS ONLY.
4. ENDPOSTS AND OTHER POSTS WHERE TENSION FORCE IS LOCKED OFF, ARE TO BE DOUBLE 75 x 16MM.
5. ALL HANDRAILS TO BE MARINE GRADE 316 STAINLESS STEEL.
6. WHERE POSTS ARE FIXED AT 1600MM CENTRES, ROD WELDED TO HANDRAIL MUST BE 20MM Ø. 16MM Ø WHERE FIXED AT 900 MAX. CENTRES.
7. STEEL FINISH OPTIONS:
   A. 316 STAINLESS STEEL, 2B RAW MATERIAL WITH 600 GRIT POLISH FINISH
   B. BLACK STEEL WITH DULUX MIO PAINT FINISH, COLOUR 'BRIDGE GREY', OR
   C. HOT DIP GALVANISED STEEL WITH NATURAL FINISH

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G.03

Post Fence with Wire

Function

- The Recycled Plastic Post fence with Stainless Steel wire may be used to form a fence barrier to vegetation areas that need to be protected such as Bush Care sites.
- The Recycled Plastic Post fence should not be used in urban park settings such as Bondi Junction.
- Continuous fences and other barriers should be avoided along park edges that are adjacent to moving vehicles as they can trap pedestrians.

Supplier

- Contractor to nominate based on below specifications.
- Product
- Recycled Plastic Post Fence with Stainless Steel Wire
- Recycled Plastic Fixed Bollards. See PDTM Furniture and Fixtures - Recycled Plastic Bollard.
- 135 x 65 x 1,500mm. 1,000mm height above ground.
- 4 strands 4mm Stainless Steel Wire.
- No signage / branding (manufacturer or council) to be on fencing.

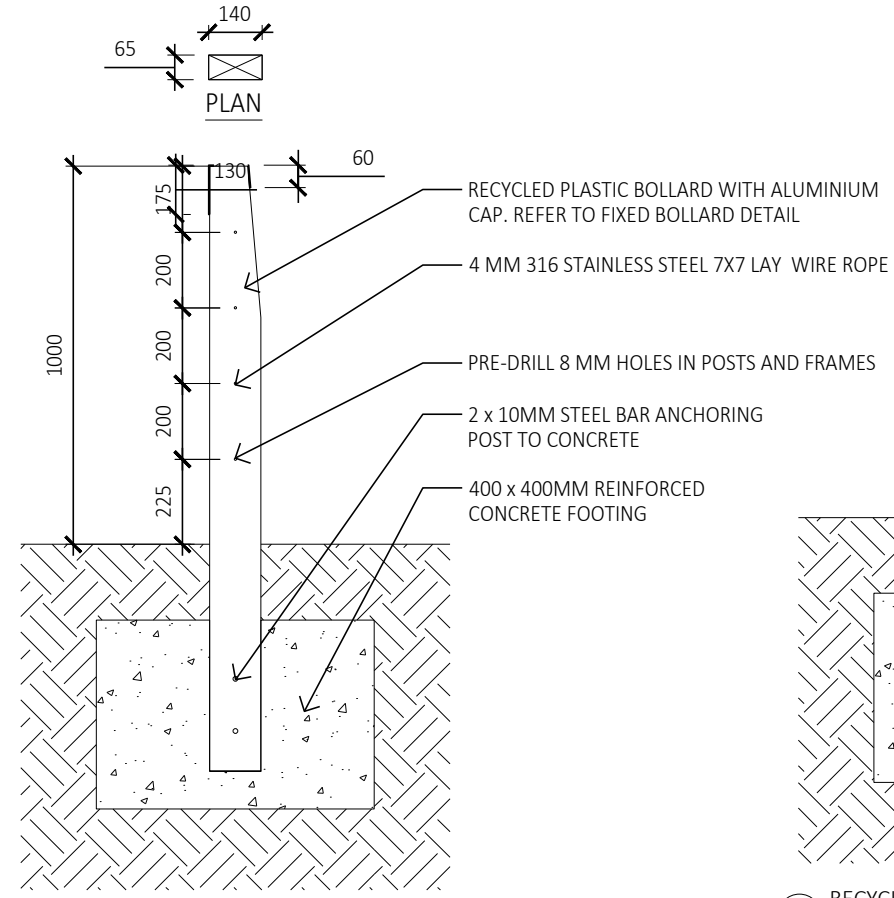
Installation

- Sub-surface mount in reinforced concrete footing. Wire to be held in place and tightened using Stainless Steel Turnbuckle.
- Structural engineer's review and certification required during all stages of design & installation

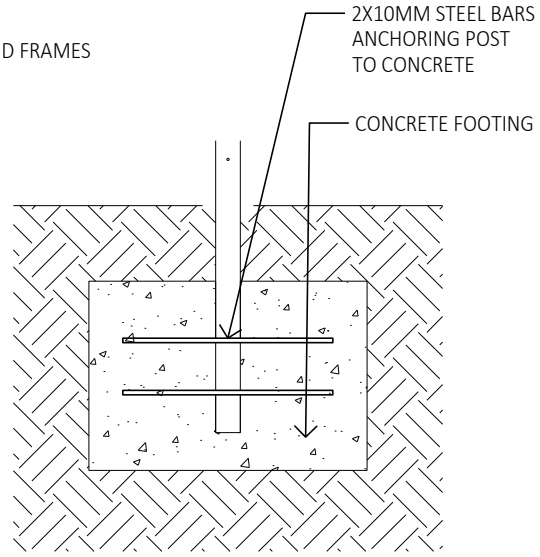
Maintenance

- No special maintenance is required other than regular cleaning with mild detergent, clean water rinse and wipe down.

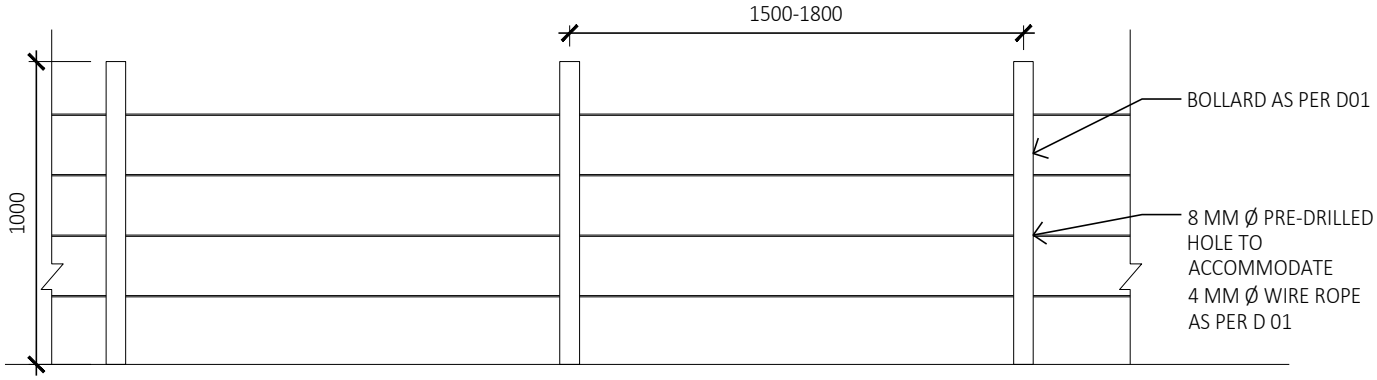
Recycled Plastic Fence with Stainless Steel Wire



D01 RECYCLED PLASTIC POST FENCE WITH SS WIRE - DETAIL
1:20



D02 RECYCLED PLASTIC POST FENCE WITH SS WIRE - POST ANCHORING DETAIL
1:20



D03 RECYCLED PLASTIC POST FENCE WITH SS WIRE - ELEVATION
1:25

NOTES:

1. NOT TO BE USED AS A BALUSTRADE / BARRIER.
2. WIRES TO BE TENSIONED MIN. EXTENT TO BECOME VISUALLY STRAIGHT / ACCEPTABLE. DO NOT OVER TENSION, CARE TO BE TAKEN BY INSTALLER TO ENSURE POSTS ARE NOT STRESSED / DEFLECTING HORIZONTAL.
3. WIRES TO BE TENSIONED AS PER NCC SECTION 3.9.2 BARRIERS AND HANDRAILS
4. ALLOW FOR STAINLESS STEEL 316 WIRE ROPE END-POST FIXING & TENSIONING FITTINGS INCLUDING 8X60MM EYE SCREWS, WIRE ROPE THIMBLES AND CRIMPS AND M8 FORGED CLOSED JAW-JAW TURNBUCKLES AT TERMINATIONS AND CHANGE IN FENCE DIRECTION.

G.04

Picket Fence

Function

- The steel white picket fence may be used to define the edges of cricket fields.

Supplier

- Contractor to nominate based on below specifications.

Product

- Steel Picket Fence: Osborne Spearhead

Materials and Dimensions

- 65 x 65mm Galvanised Steel posts. Each panel contains 17 pickets welded onto two horizontal members. Steel to be powder coated “Pearl White”. Typically 1,200mm high, but in sections, these heights may vary to 1,600mm high (as specified by council representative).
- No signage / branding (manufacturer or council) to be on fencing.

Installation

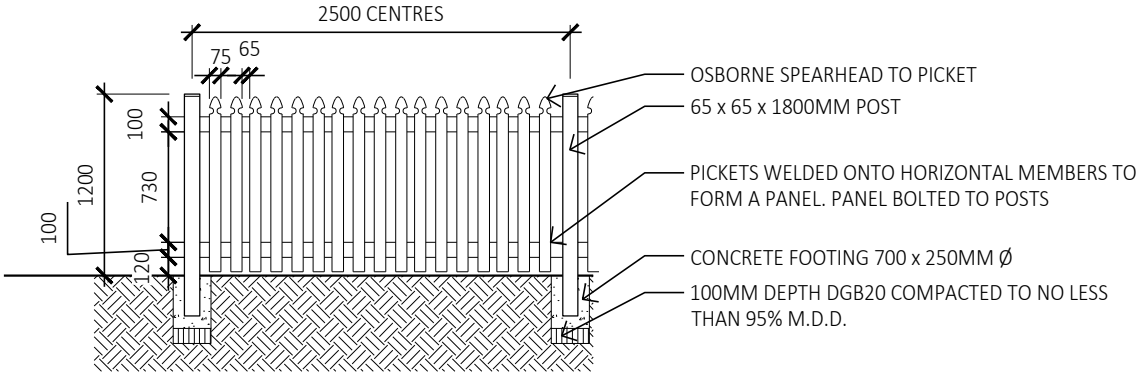
- Installed by sub-contractor as per manufacturer’s and structural engineer’s recommendations.
- Sub-surface mount in concrete footing.
- Structural engineer’s review and certification required during all stages of design and installation.
- Install and make good mowing strip where present/ required to match existing.

Maintenance

- External surfaces, including the underside and sheltered areas, should be washed down regularly, especially in corrosive conditions (eg. salt or chemical deposits).
- Powder coated surfaces that have become dull through prolonged exposure to sunlight can usually be revived by polishing. Automotive polish (non-cutting) can be used to restore a surface that has become scratched or abraded.

Picket Fence Type 4

NOTES:
1. POSTS 65 x 65MM.
2. PICKET FENCE TO BE 1200 MM HIGH, UNLESS OTHERWISE REQUESTED
3. FINISH - POWDER COATED PEARL WHITE



D01 STEEL PICKET FENCE - ELEVATION
1:50 @ A4

G.05

Garden Fence

Function

- The Garden Fence is to be used to protect gardens where pedestrian and or dog trampling is a risk.
- The Garden fence is used to define edges and guide movement.
- This fence is suitable to define playground edges in conjunction with planting and is preferable to the Steel Fence.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Garden Fence
- 800mm High (700mm above ground).
- Finish to be Galvanised Steel with black powdercoat finish, MIO Bridge Grey paint or Natural Hot Dip Galvanised steel finish; or mild steel with MIO finish.
- No signage / branding (manufacturer or council) to be on fencing.

Installation

- Install as per structural engineer's recommendations.
- Sub-surface mount in concrete footings.
- Connect single loops to form continuous line of fencing, using shared footings.
- Structural engineer's review and certification required during all stages of design & installation.

Maintenance

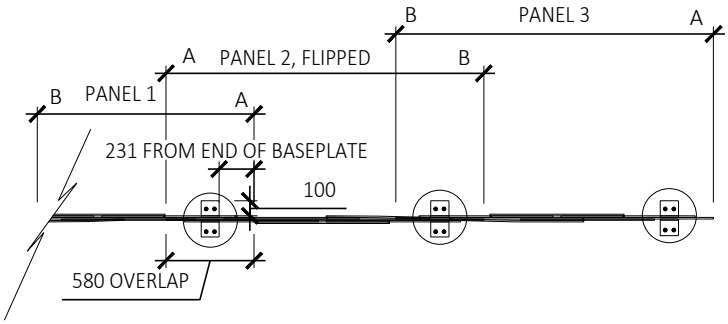
- Unpolished and brushed metals, will weather naturally. If required, these surfaces may be cleaned using a stiff bristle brush, mild detergent and warm water, with a clean water rinse.
- Minor damage and scratches can generally be restored by hand using Scotch-Brite pad or stiff, non-ferrous wire brush.

Garden Fence

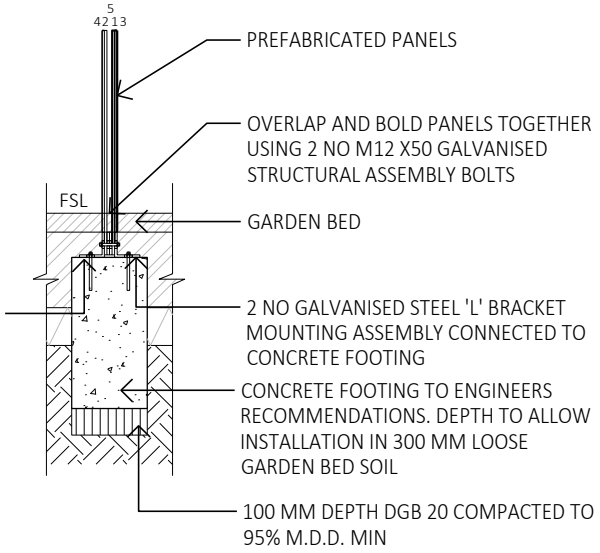
Garden Fence Dickson Park

NOTES:

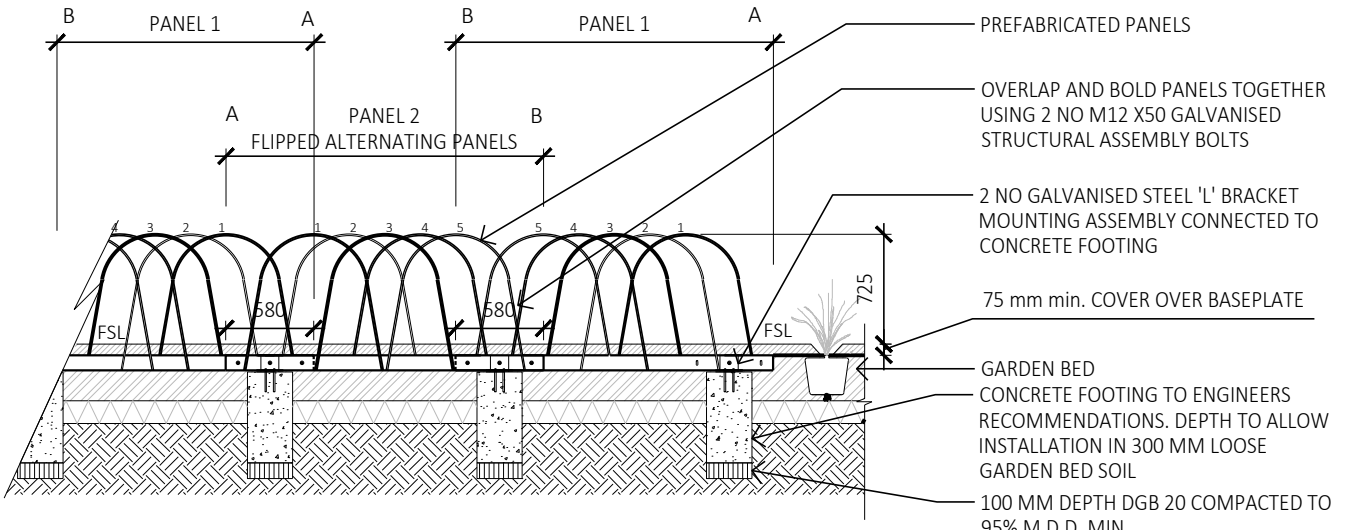
1. ALTERNATE PANELS BY FLIPPING 180 DEGREES HORIZONTALLY, AS SHOWN IN D01
2. WHERE STEEL RODS ARE JOINED TO THE OUTSIDE AND THE BASE DOES NOT SIT FLUSH WITH THE BASEPLATE, A 10MM Ø X 80MM LONG STEEL ROD SHALL BE USED AS A SPACER, AND WELDED BETWEEN THE ROD AND BASEPLATE TO ALIGN ROD OVERLAPS



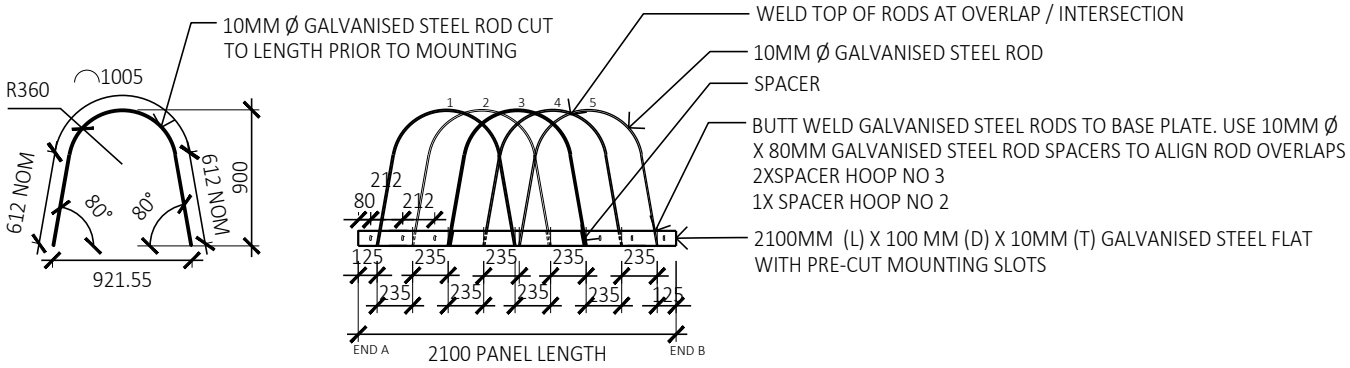
D01 GARDEN FENCE - LAYOUT PLAN
Scale 1:50



D02 GARDEN FENCE - ANGLE CONNECTION SECTION
Scale 1:30



D03 GARDEN FENCE - ELEVATION
Scale 1:50



D04 GARDEN FENCE - PANEL DETAILS
Scale 1:50

G.06

Coastal Fence

Function

- The Coastal Fence is used along coastal reserves with an existing coastal fence or along clifftop perimeters where a heightened risk of fall is identified.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- 1,200mm high post and infill panel fence to be used in cliff top locations within parks and alongside walking tracks.
- 1,800mm high post and infill panel fence in cliff top locations adjoining sports fields.
- Timber rail at top of fence to be used at lookout locations to allow people to comfortably lean against fence.
- Materials 316 stainless steel at 320 grit polish, final finish electropolish.
- Timber cladding, seasoned Australian Hardwood, durability class 1. Timber to be oiled.
- The Coastal Fence is guided by

AS 2156.2 Walking tracks, Part 2: Infrastructure design

AS 1926.1 and AS 1926.2 Swimming pool safety

AS 1170.1 Structural design Actions, Part 1: Permanent, imposed and other actions

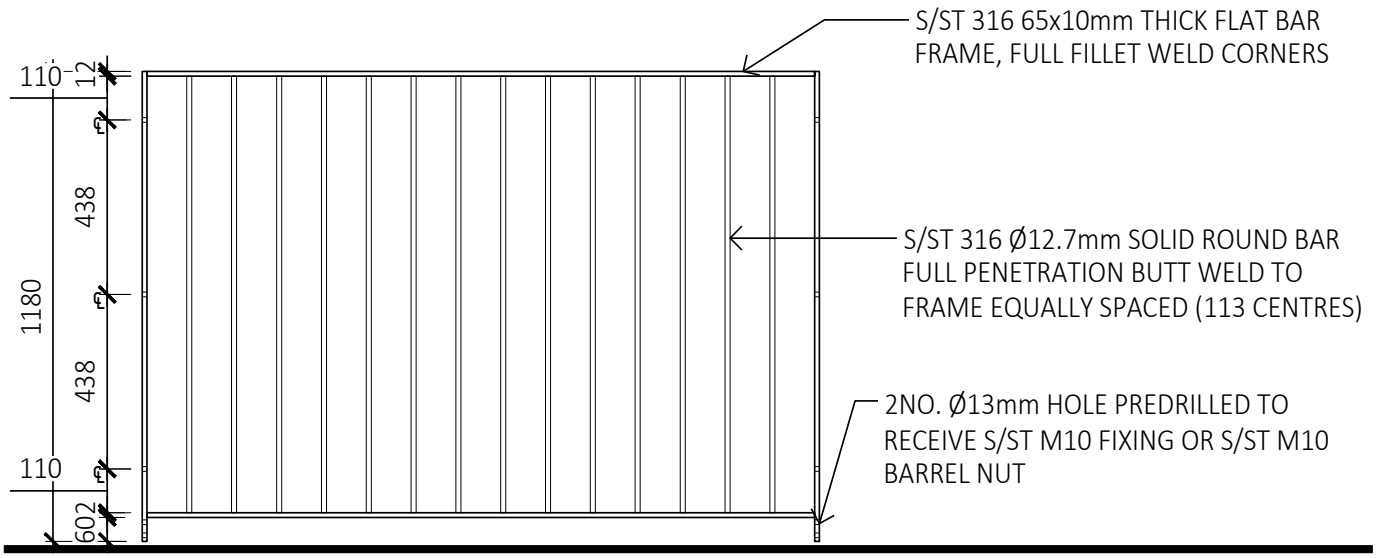
Installation

- Install as per structural engineer's recommendations.
- Sub-surface mount in concrete footings.
- Structural engineer's review and certification required during all stages of design and installation.

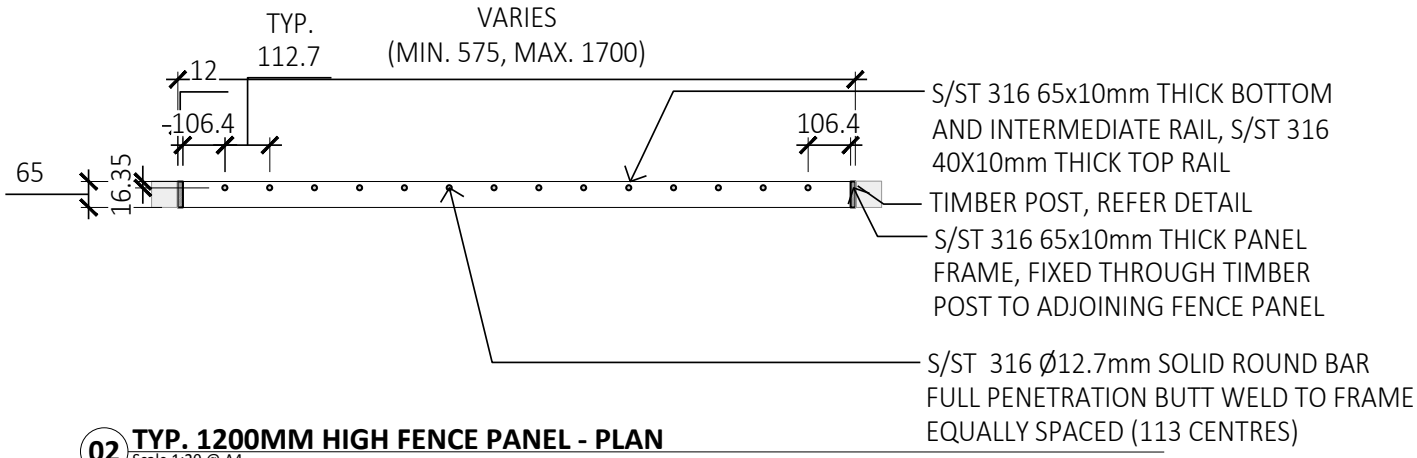
Inspection and Maintenance

- Check upright and supporting posts for wear and tear. All upright, supporting poles should be at right angles to the ground.
- Replace any broken or damaged sections of fencing.
- Regular cleaning with a mild detergent, clean water rinse and wipe down of stainless steel.
- Timber to be re-oiled annually with Intergrain Natures Oil.

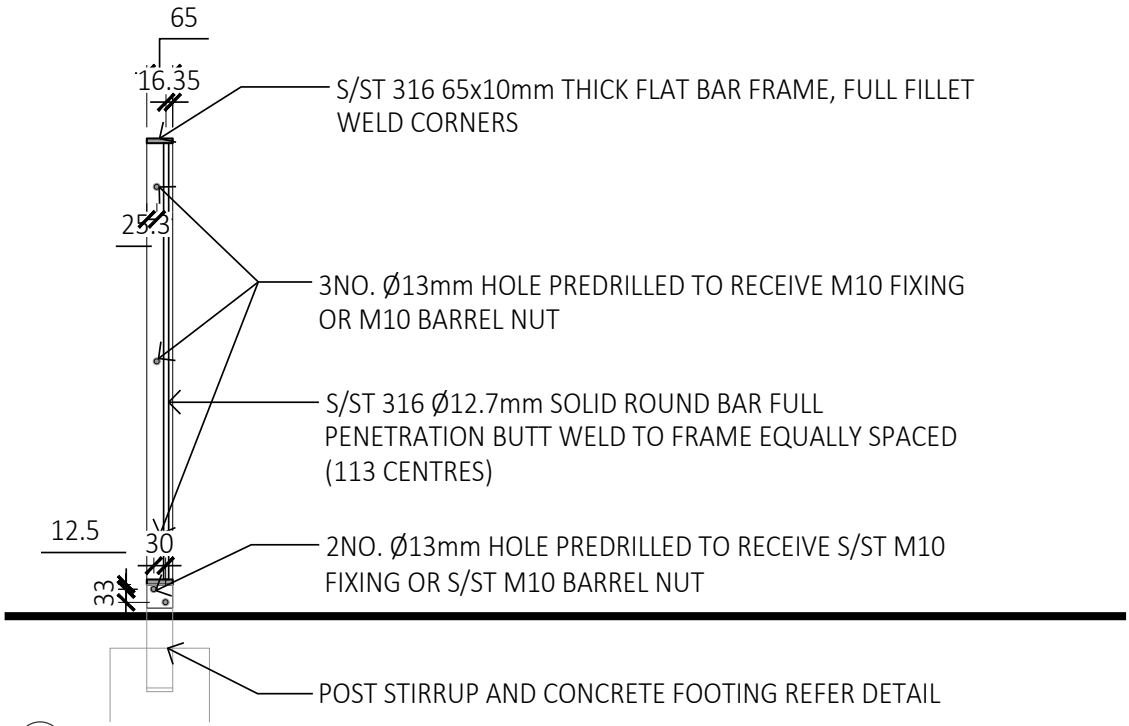
Coastal Fence 1,800mm high



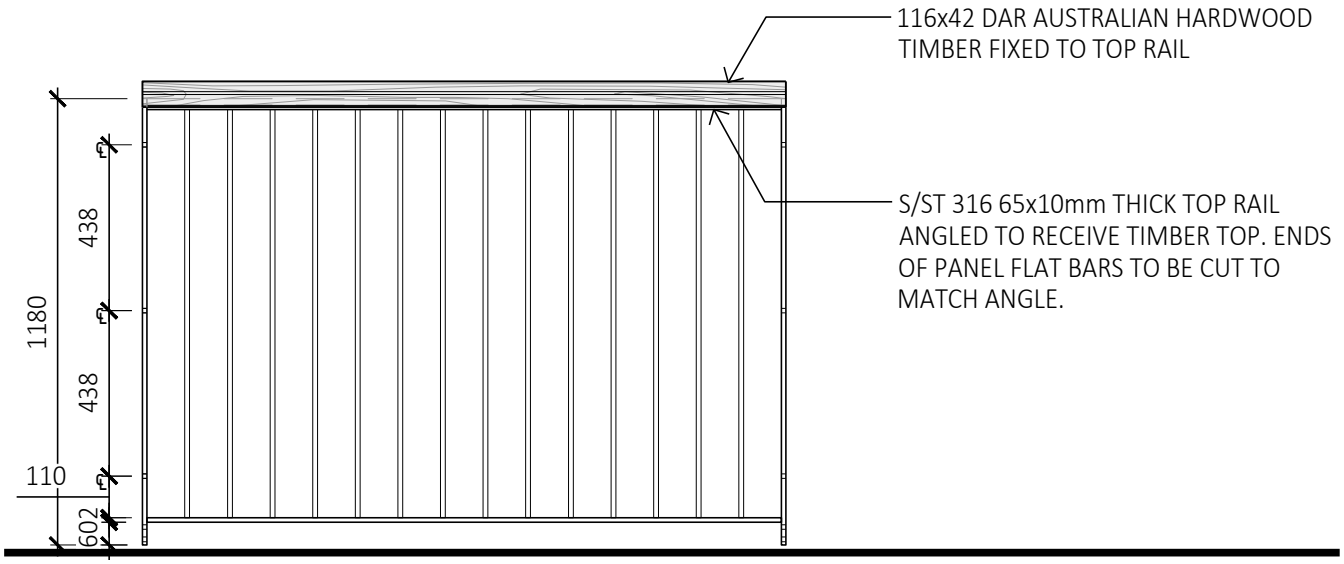
01 TYP. 1200MM HIGH FENCE PANEL
Scale 1:20 @ A4



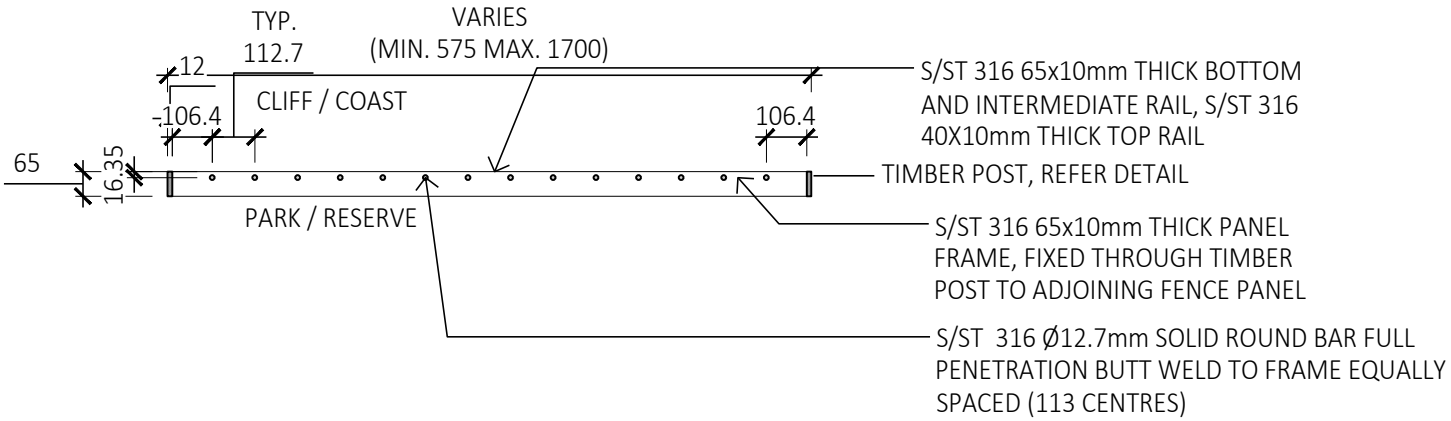
02 TYP. 1200MM HIGH FENCE PANEL - PLAN
Scale 1:20 @ A4



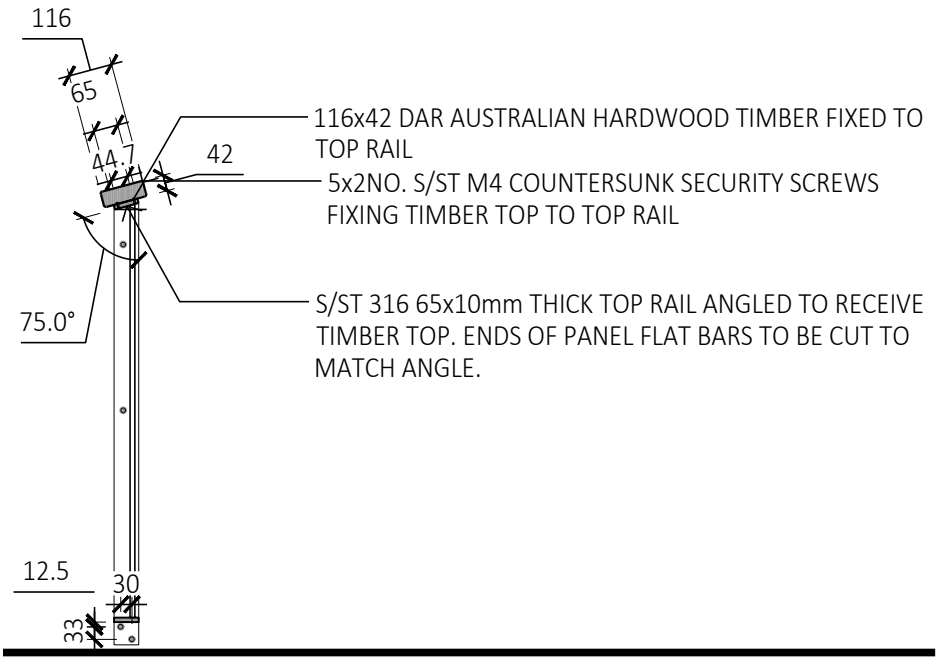
01 TYPICAL 1200 HIGH FENCE PANEL
1:10

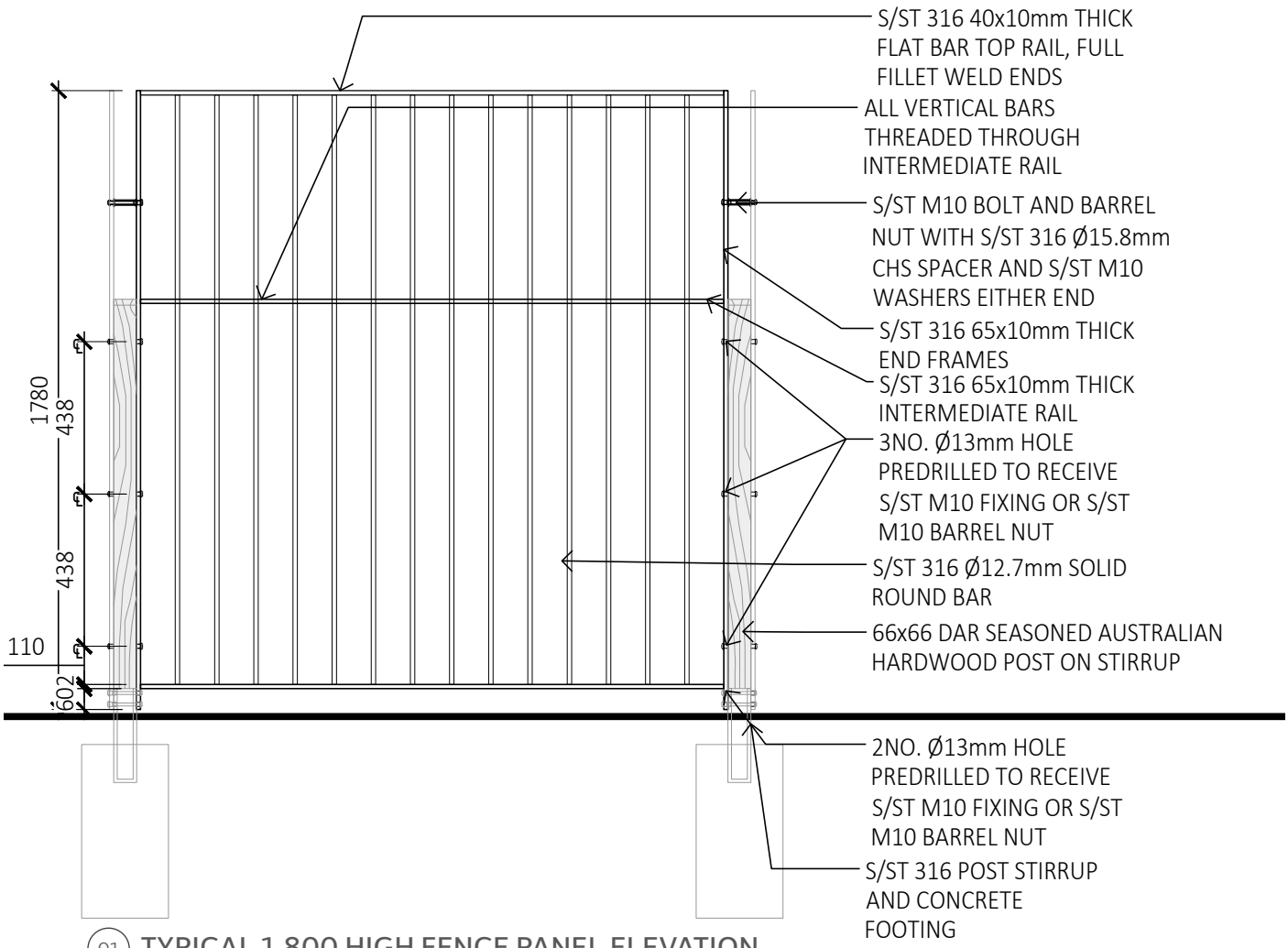


01 **TYP. 1200MM HIGH FENCE PANEL WITH TIMBER TOP**
Scale 1:20 @ A4



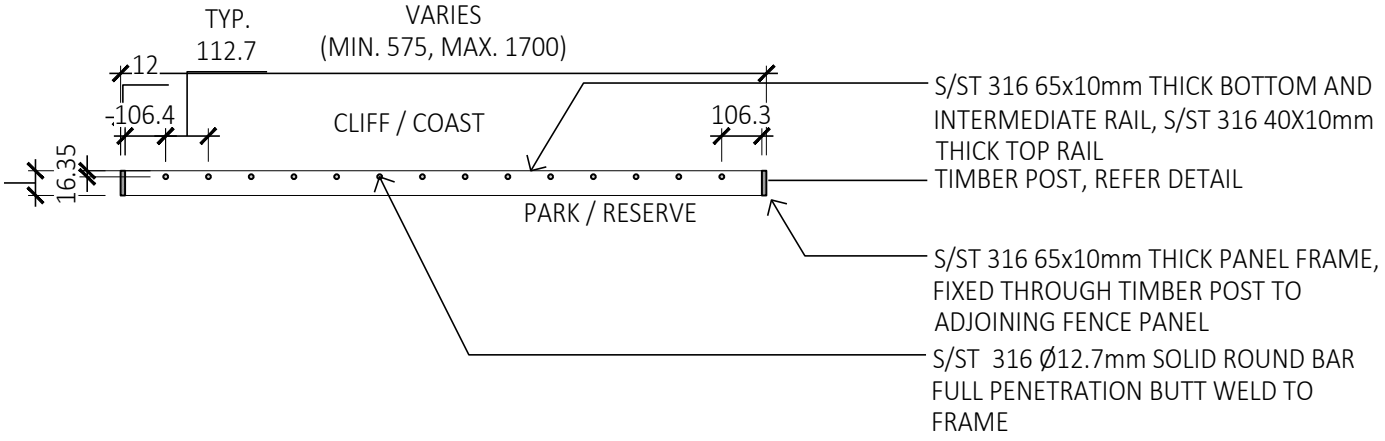
02 **TYP. 1200MM HIGH FENCE PANEL WITH TIMBER TOP - PLAN**
Scale 1:20 @ A4





01 TYPICAL 1,800 HIGH FENCE PANEL ELEVATION

1:20



02 TYPICAL 1,800 HIGH FENCE PANEL PLAN

1:20

G.07

Chain Wire Fence

Function

- The Chain Wire Fence may be used at certain sports grounds and courts where ball loss is an issue.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Chain Wire Fence.
- Posts and Rails to be Galvanised Steel with black powdercoated finish, 1,800mm high.
- Mesh to be 3.15mm Galvanised Steel with black PVC coating.
- No signage / branding (manufacturer or council) to be on fencing.

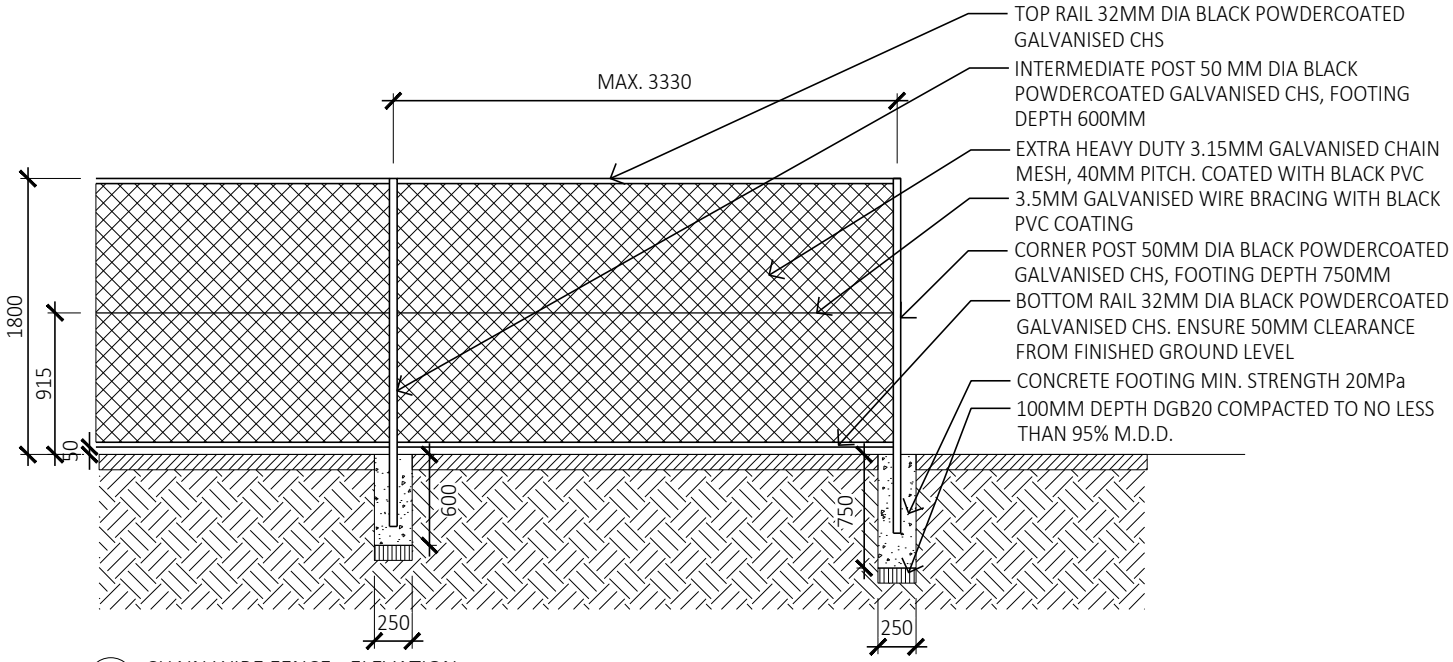
Installation

- Install as per structural engineer's recommendations.
- Sub-surface mount in concrete footings.
- Surface mount on concrete pad.
- Structural engineer's review and certification required during all stages of design and installation.

Maintenance

- Check upright and supporting posts for wear and tear. All upright, supporting poles should be at right angles to the ground.
- Replace any broken or damaged sections of chain wire fencing.
- Regular cleaning with a mild detergent, clean water rinse and wipe down.

Chain Wire Fence



D01 CHAIN WIRE FENCE - ELEVATION
1:50 @ A4

NOTES:

1. CHAIN-LINK FABRIC FENCING SHALL COMPLY WITH AUSTRALIAN STANDARD AS 1725-2010 PARTS 2-5 AS APPLICABLE INCLUDING FIXINGS, GATE CATCHES AND HINGES
2. ALL CHAIN LINK FABRIC FENCES ARE TO BE SUPPLIED AND INSTALLED AS PER FENCES TYPE 2 -T-B/P-T (TOP AND BOTTOM RAIL) OR AS SPECIFIED.
3. THE GALVANISED (ZINC) COATING ON THE STEEL PIPES SHALL COMPLY WITH AS/NZ 4792.
4. POST AND RAILS TO BE MANUFACTURED FROM MEDIUM QUALITY GALVANISED STEEL PIPES TO COMPLY WITH AS 1725-2010 PARTS 2-5 AS APPLICABLE AND AS 1163 GRADE 250.
5. ALL CHAIN LINK FABRIC MESH FENCE TO BE GALVANISED STEEL WITH A BLACK PVC COATING.
6. ALL POSTS AND RAILS SHALL BE BLACK POWDERCOATED FINISH TO AS 5405.
7. ALL ITEMS WELDED OR CUT ON SITE MUST BE PRIMED FOLLOWED BY BLACK PAINT.
8. ALL FITTINGS INCLUDING NUTS AND BOLTS ARE TO BE SPOT-WELDED TO STOP REMOVAL.
9. SECURE RAILS TO POSTS WITH GALVANISED STEEL BOLTED SPLIT CLAMPS AS PER AS 1725-2010 PARTS 2-5 AS APPLICABLE.

H.

Structures

H.01

Bus Shelter - Standard

Function

- Bus stop shelters provide weather protection to commuters
- JC Decaux bus shelters are the current standard for bus stops in Waverley. Under the current contract they have the capacity for advertising. Installation of new shelters is by mutual agreement. When the current contract is due for renewal a performance assessment should be carried out before entering a new contract.

Supplier

- JC Decaux
  t. 02 9557 65
  e. sydney@jcdecaux.com.au
  w. www.jcdecaux.com.au

Product

- L 3900mm x W 1413 x H 2275mm metal and Perspex JC Decaux shelters
- Bus shelter with a double-sided, back illuminated advertising panel on one end designed by Norman Foster and developed by JCDecaux Design.

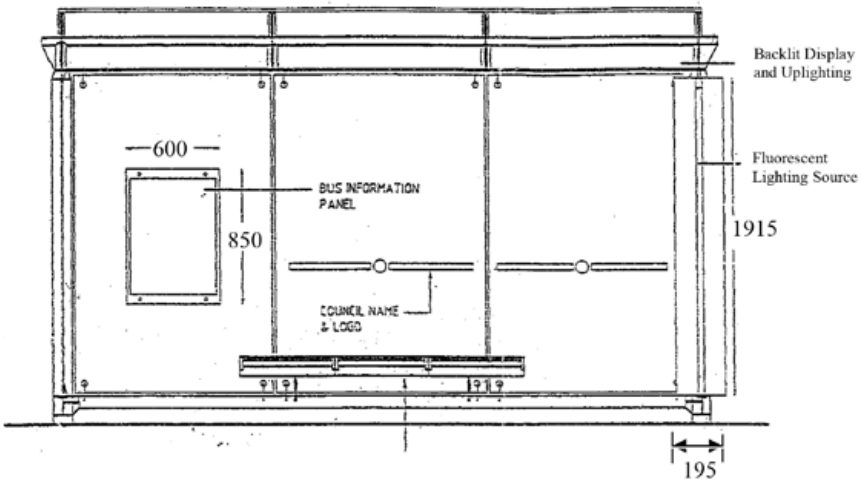
Installation

- Locate bus shelters behind the property line or set back from footpath is the preferred location. However, when there is inadequate space behind the property line, position bus shelters on the kerb
- Bus Stops are required to have warning and directional TGSIs installed in accordance with The Disability Standards for Accessible Public Transport and AS1428.4.1.
- Directional TGSIs are required to be installed across the direction of travel, extending 600-800mm
- A 600-800mm x 600-800mm pad of warning TGSIs, located 300mm from the kerb edge, indicates the location of the bus boarding point. This pad links to the directional TGSIs side of the footpath to provide a clear access path and optimal weather protection
- A minimum of 1200mm is required between the edges of the shelter end panels and the kerb for access to the shelter. Where the distance from the kerb to the property line is limited a rear entry shelter may be more suitable
- Provide sufficient circulation space within a bus shelter so that a wheelchair user can manoeuvre into an allocated space or to a boarding point
- Ensure adequate space is provided between the kerb and seat as well as a hardstand that is level and firm with a gradient no steeper than 1:40

Maintenance

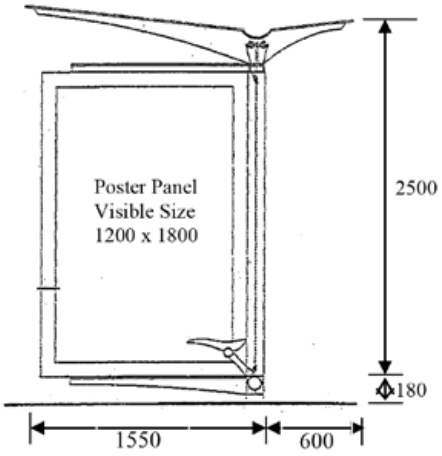
- As per manufacturer's details

JC Decaux bus stop shelter with advertising panel - Bondi beach



01 FRONT ELEVATION - SIZES VARY

not to scale



02 SIDE ELEVATION - SIZES VARY

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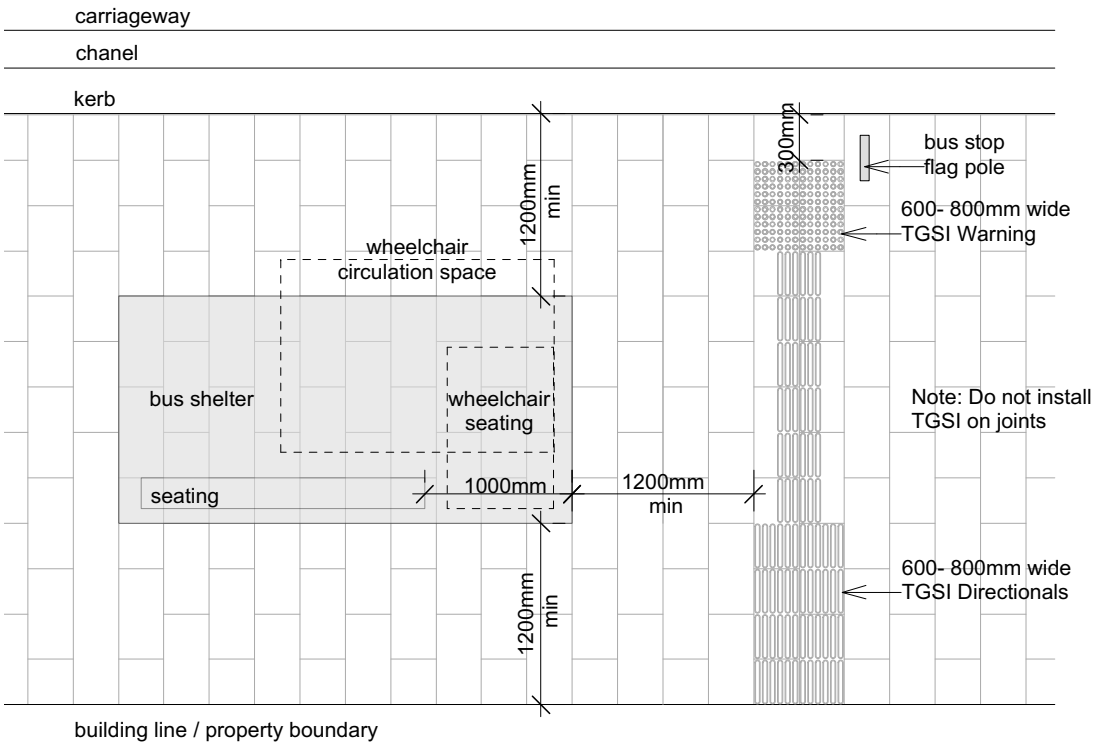


03 TYPICAL LAYOUT + TGSI LOCATION

not to scale

H.02

Bus Shelter - Heritage

Function

- Bus stop shelters provide weather protection to commuters
- Heritage bus stop shelters were created at many tram stops and are now very rare items of major heritage value. Waverley has erected several additional 'Heritage Style' bus shelters as a tribute to the Bondi trams.

Installation

- Bus Stops are required to have warning and directional TGSIs installed in accordance with The Disability Standards for Accessible Public Transport and AS1428.4.1.
- Directional TGSIs are required to be installed across the direction of travel, extending 600-800mm
- A 600-800mm x 600-800mm pad of warning TGSIs, located 300mm from the kerb edge, indicates the location of the bus boarding point. This pad links to the directional TGSIs.

Maintenance

- Heritage bus stop shelters to be re-painted and touched-up with the following Dulux Selections Heritage exterior colours: www.dulux.com.au
- Indian red PM
- Egyptian red UD
- Teal B
- Cream W

'Heritage Style' bus stop shelter - bondi Road


Sydney Buses owned Heritage tram / bus stop shelter. Locations - Bondi Road near Flood Street, Bronte Park Terminus, Macpherson Street, Bronte

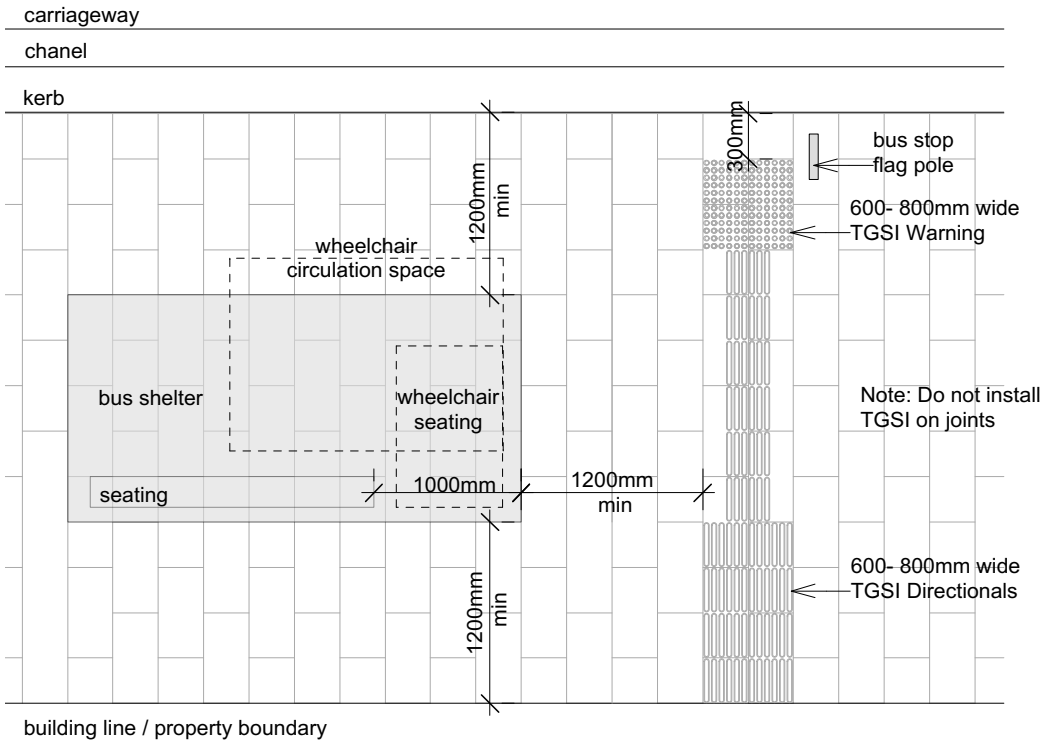
Indian red PM

Team B

Egyptian red UD

Cream W

01 DULUX PAINT COLOUR PALETTE



02 TYPICAL LAYOUT + TGSI LOCATION

not to scale

H.03

Park Shelter

Function

- To be used in parks across the LGA - except in the following special places -
  - Bondi Park
  - Bronte park and
  - Tamarama Park

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Structure - Australian hardwood timber slats (AFS, FSC, PEFC or recycled).
- 8X6m Shelter with skillion roof - (Note: this can be varied for site conditions)
- Roof - Colorbond with 10 degree fall
- Base - Concrete pavement with sponge finish
- Size - Typically L 8000mm x W 6000mm H Various. Note: this can be varied for site conditions)

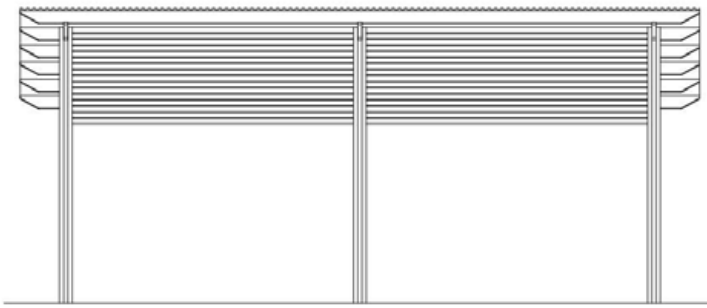
Installation

- 316 Stainless steel stirrups base plate at ground level with 24 x M16 Chem. Set anchors

Maintenance

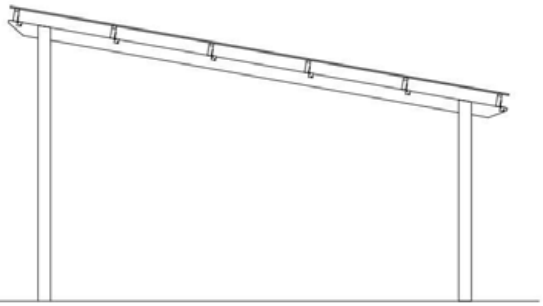
- under review

Park Shelter Dickson Park



01 FRONT ELEVATION - SIZES VARY

not to scale



02 SIDE ELEVATION - SIZES VARY

not to scale

1. Planting

I.01

New Tree - Mall / Plaza

Function

- Tree grates are required for new trees in high quality special places like Urban Plazas.
- Install where there is a high level of pedestrian activity.
- The use of continuous planting trenches, structural soil, structural cells, WSUD components, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to installation.

Supplier

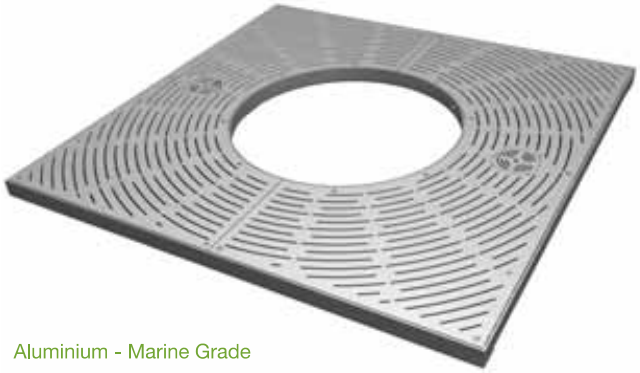
- Contractor to organise

Materials and Dimensions

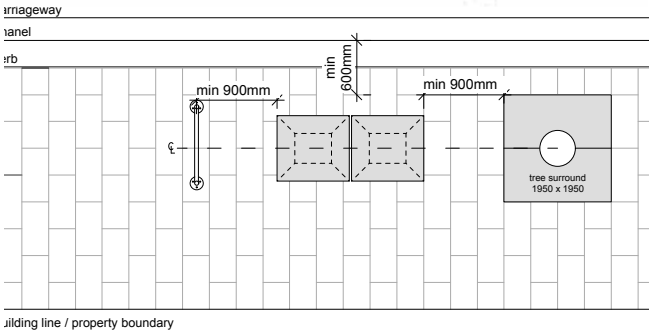
- Typical tree grate 1200 x 1200mm or sized to suit the size of paving units in the dominate surrounding paving to avoid cuts
- Tree species and container size as specified
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Tree saplings shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site should be maintained until planted and clearly labelled.

Installation

- Tree Grate to be installed to manufacturer's specifications.
- Because of the presence of awnings or for streets with constrained width (less than 2.5 3metres) butt tree grates to back of kerb.
- For streets that are wider than 2.5-3m allow 300mm header.
- Align street furniture such as bins and bike racks to the centre of the tree pit where applicable.



Aluminium - Marine Grade

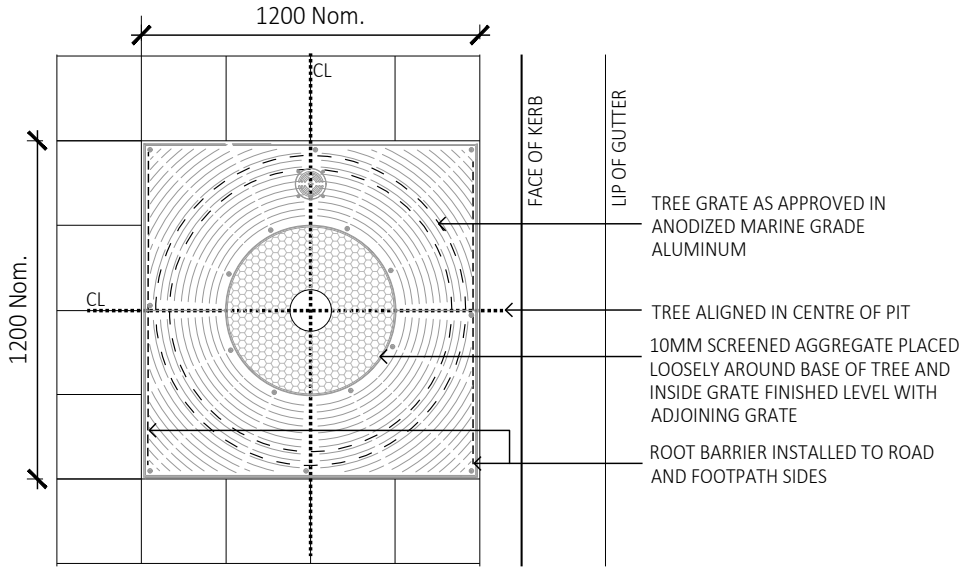


Typical layout - New Tree with tree grates

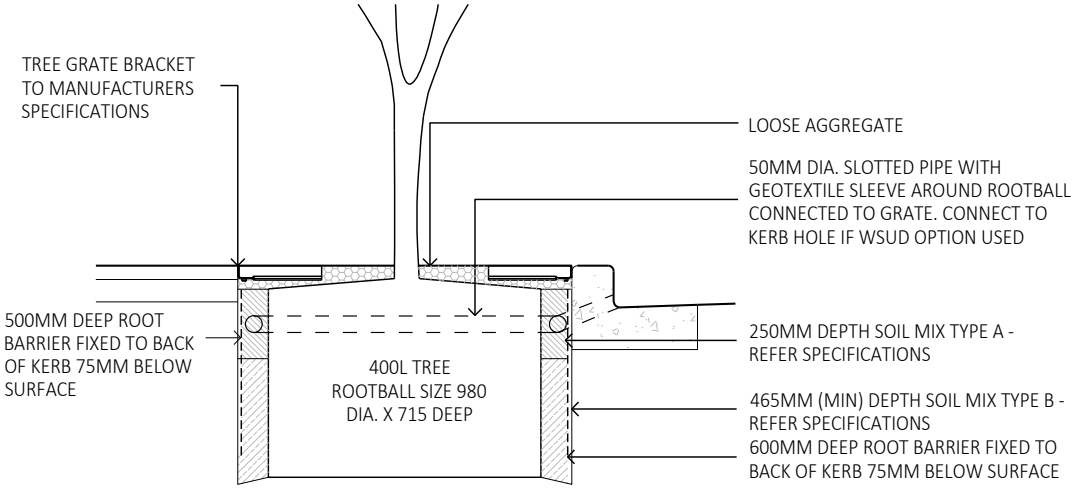
Maintenance

- Throughout the planting establishment period, carry out maintenance work including watering, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, watering, pruning, replenishment and restoration of mulch.
- The tree grate to be maintained to manufacturer's specifications

Refer towards the end of this section for stormwater quality improvement principles and bioretention tree pit detail applications.



D01 NEW STREET TREE (400L) WITH TREE GRATE - PLAN
Scale 1:25



D02 NEW STREET TREE (400L) WITH TREE GRATE - DETAIL
Scale 1:25

NOTE:

1. TREE PIT SURROUND TO BE SIZED TO ALLOW 300MM X 300MM UNIT PAVING TRIM WITHOUT CUTTING PAVERS
2. STRUCTURAL ROOT CELLS TO BE USED IN CONJUNCTION WITH THESE TREE PITS WHEREVER POSSIBLE
3. WSUD OPTION: SHALL BE INSTALLED IN SANDY SOIL, ONLY AS DIRECTED BY THE COUNCIL

I.02

New Street Tree - Urban

Function

- Porous resin aggregate to be used throughout Bondi Junction, all Local and Strategic Centres, parks and open spaces (when applicable) around new trees to contribute to the quality and character of the streetscape.
- 400 L trees to be used for Bondi Junction
- 200 L trees to be used for local centres
- The use of continuous planting trenches, structural soil, structural cells, WSUD components, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to any installation.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- 400 L Trees as specified for Bondi Junction
- 200 L Trees as specified for all other local centres
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Tree saplings shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be maintained until planted and clearly labelled.
- Porous Resin Aggregate as specified and approved

Installation

- Approved porous resin aggregate to replace existing stone set pits.
- Porous resin aggregate surrounds to be premixed, finished smooth, and level to adjacent surfaces and to a nominated depth and distance away the trunk of the tree.
- Aggregate shall be pea gravel mulch sieved to 7mm and an inert binder.
- Typical new tree porous resin aggregate tree surround 1200 x 1200 mm or sized to suit the size of paving units in the dominant surrounding paving to avoid cuts in case of a varied pit size.
- For light washed concrete and other concrete paths

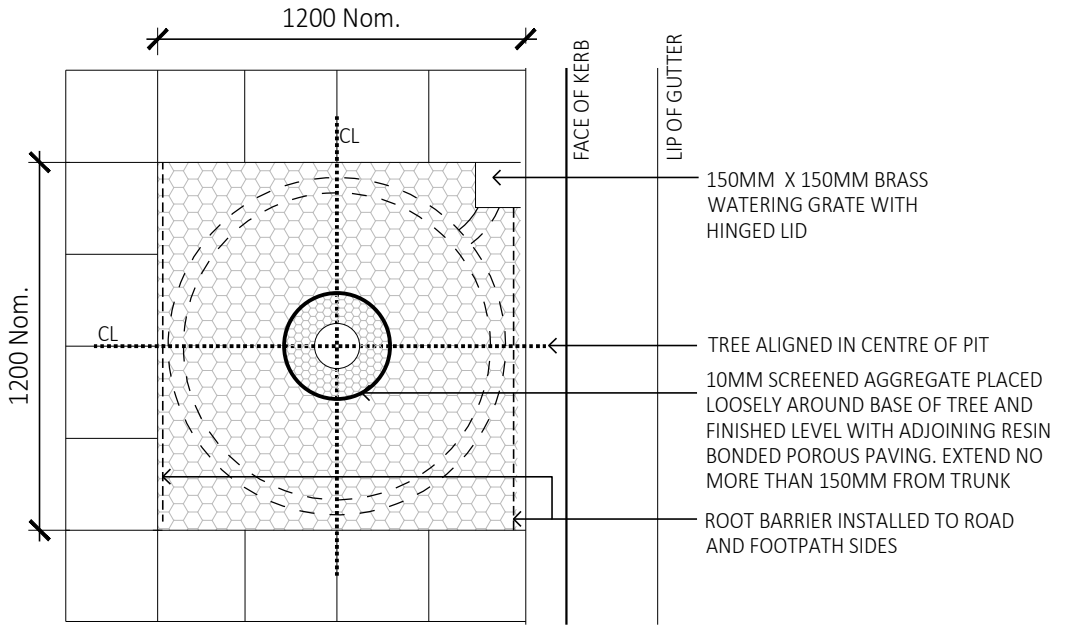
Typical Layout - Tree Surround

colour type 1 (pyramid hill grey) to be used. Refer detailed specifications for colours.

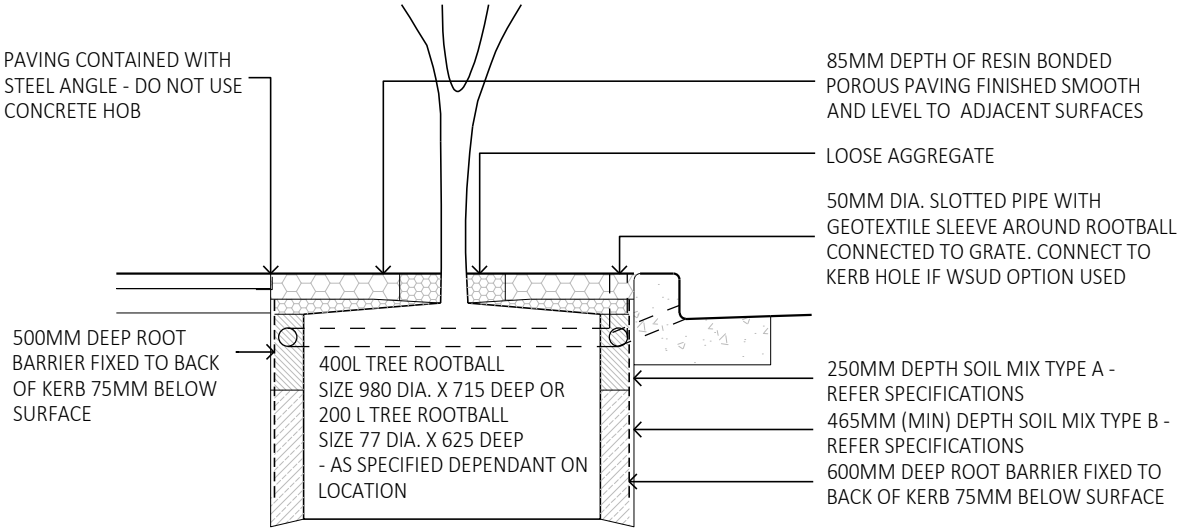
- For paved areas with paving types, 1, 2 and 3, resin aggregate colour type 2 (dark Grey) to be used.
- The porous resin aggregare should not be used as a continuous footpath treatment.
- Resin aggregate to be positioned accordingly if the tree pit size is different based on instructions.
- Ensure settlement of tree prior to installation of the resin aggregate.
- Because of the presence of awnings or for streets with minimum width (less than 2.5 3metres) butt the resin aggregate to back of kerb.
- For streets that are wider than 2.5-3m allow 300mm header.
- Align street furniture such as bins and bike racks to the centre of the tree pit where applicable.

Maintenance

- Throughout the planting establishment period, carry out maintenance work including watering, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, watering, pruning, replenishment and restoration of mulch.
- The porous resin aggregate to be maintained to manufacturer's specifications



D01 NEW STREET TREE WITH POROUS RESIN AGGREGATE - PLAN
Scale 1:25



D02 NEW STREET TREE WITH POROUS RESIN AGGREGATE - DETAIL
Scale 1:25

NOTE:

1. TREE PIT SURROUND TO BE SIZED TO ALLOW 300MM X 300MM UNIT PAVING TRIM WITHOUT CUTTING PAVERS
2. STRUCTURAL ROOT CELLS TO BE USED IN CONJUNCTION WITH THESE TREE PITS WHEREVER POSSIBLE
3. WSUD OPTION: SHALL BE INSTALLED IN SANDY SOIL, ONLY AS DIRECTED BY THE COUNCIL

I.03

Existing Tree - Urban

Function

- Porous resin aggregate to be used throughout Bondi Junction, all Local and Strategic Centres, parks and open spaces (when applicable) around existing trees to contribute to the quality and character of the streetscape.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Porous Resin Aggregate as specified & approved
- Approved porous resin aggregate to replace existing stone set pits.
- Aggregate shall be pea gravel mulch sieved to 7mm and an inert binder.
- Typical porous resin aggregate tree surround sized to suit the size of paving units in the dominant surrounding paving to avoid cuts.
- For light washed concrete and other concrete paths colour type 1 (pyramid hill grey) to be used. Refer detailed specifications for colours.
- For paved areas with paving types, 1, 2 and 3, resin aggregate colour type 2 (dark Grey) to be used.
- The porous resin aggregare should not be used as a continuous footpath treatment.
- Tree pit sizes may vary and resin aggregate to be positioned accordingly.
- Because of the presence of awnings or for streets with minimum width (less than 2.5 3metres) butt the resin aggregate to back of kerb.
- For streets that are wider than 2.5-3m allow 300mm header.

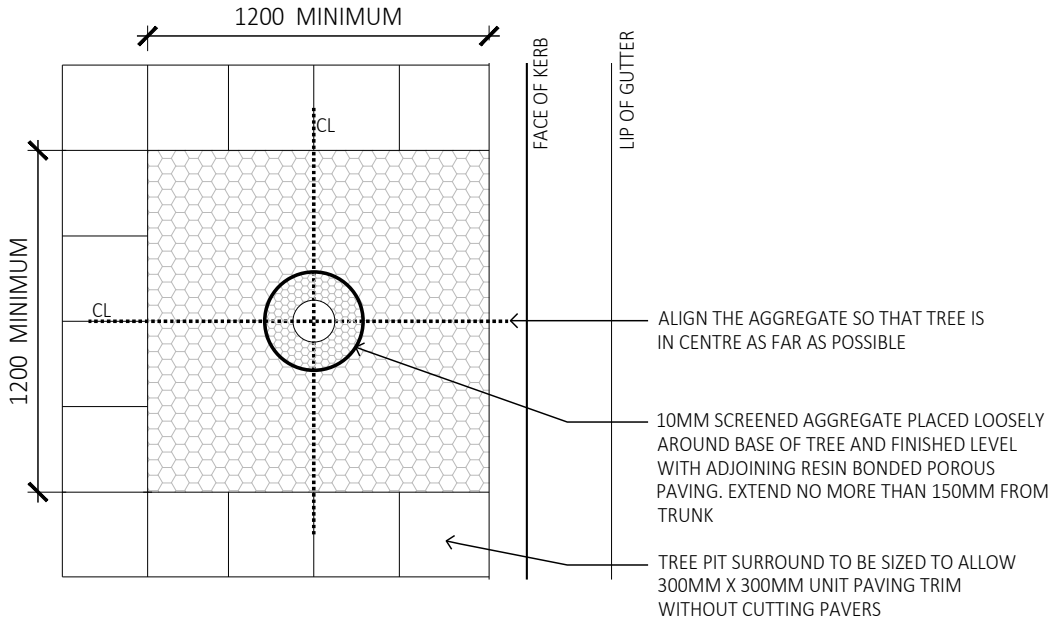
Installation

- Porous resin aggregate surrounds to be premixed, finished smooth, and level to adjacent surfaces and to a nominated depth and distance away the trunk of the tree.
- Where required & indicated, the existing pavement shall be cut by a road-saw to dimensions given. Cutting shall be only at right angles and parallel to the kerb. Cut shall have a striaght edge and smooth face.

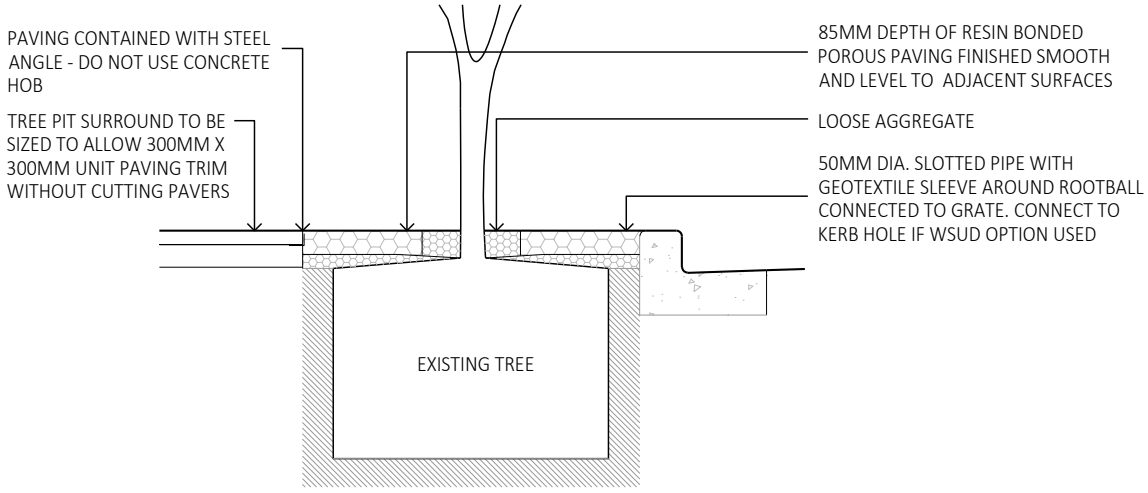
Maintenance

- Reinstate and make good to match exactly the surrounding pavement, to the satisfaction and approval of Council, all pavement, paving, concrete, brick or other surface damaged or affected by the tree base installation works.
- The porous resin aggregate to be maintained to manufacturer's specifications

Typical Layout - Tree Surround



D01 EXISTING STREET TREE WITH NEW POROUS RESIN AGGREGATE - PLAN
Scale 1:25



D02 EXISTING STREET TREE WITH NEW POROUS RESIN AGGREGATE - DETAIL
Scale 1:25

I.04

New Tree - Parks

Function

- The new tree planting details are to be used for planting in parks and reserves.

Supplier

- Contractor or Council to organise.

Materials and Dimensions

- Tree species and container size as specified;
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury.
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be maintained until planted and clearly labelled.

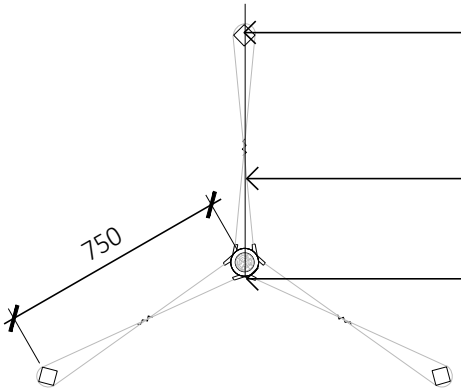
Installation

- Excavate a hole twice the diameter of the root ball. Break up the base of the hole to a depth of 100 mm, and loosen compacted sides of the hole to prevent confinement of root growth. Root ball should be placed on level and compacted subgrade.
- Supply and install 3 or 4 wooden stakes for all trees planted up to 75 litres in size and attach black mesh where detailed.
- Thoroughly water plants before and after planting, and as required to maintain growth rates.
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Mulch shall be spread evenly to a depth of 75mm.
- Mulch shall be kept 50mm from stems to avoid collar rot.
- Watering shall be carried out on a regular basis twice weekly for the first 2 weeks and then as required according to weather conditions, rainfall and soil type.

Typical Layout - Tree Surround
- image is representational only

Maintenance

- Recurrent works – Throughout the planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of mulch, top dressing and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, weeding, watering, pruning, replenishment and restoration of mulch.

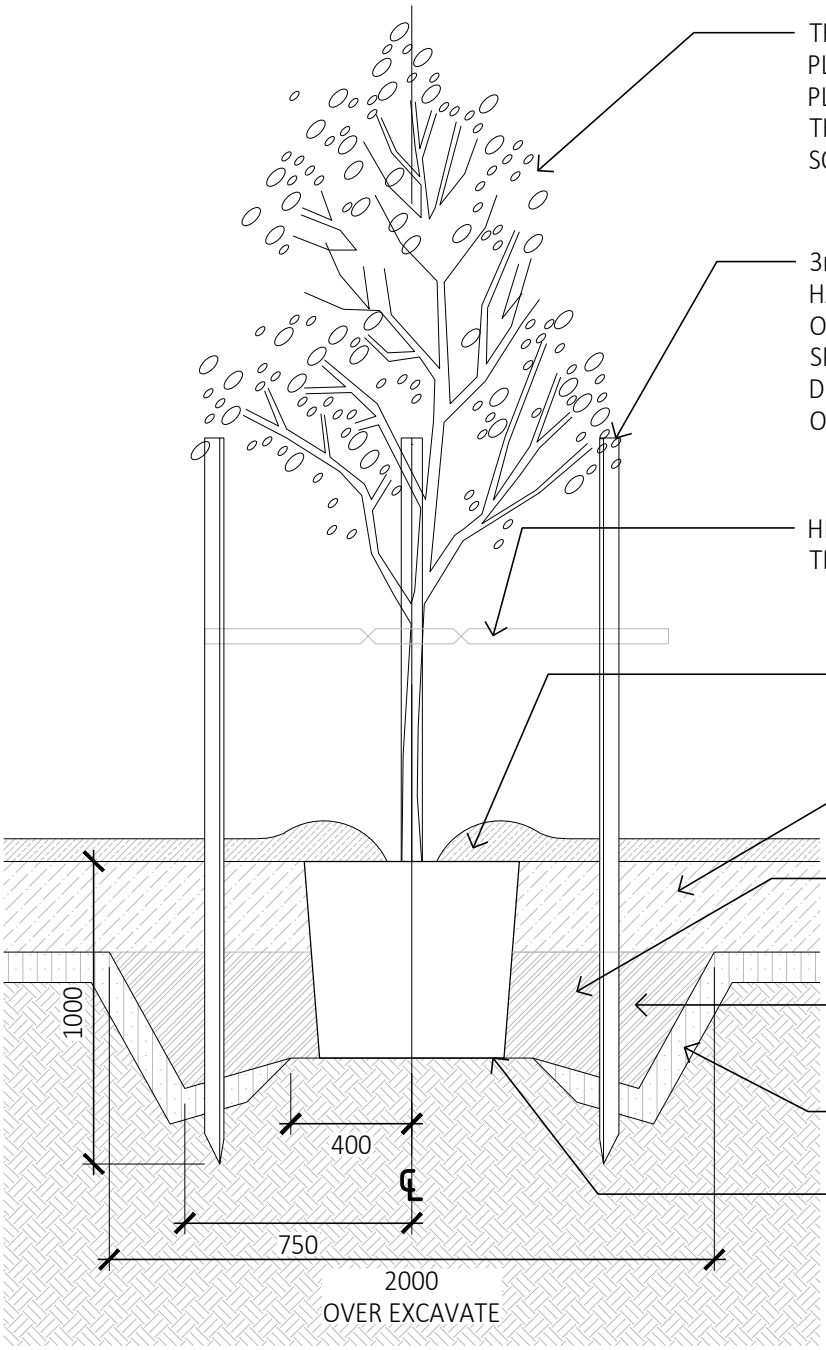


3no. 50 x 50 X 2400mm AUSTRALIAN HARDWOOD TIMBER STAKES

HESSIAN TIE IN FIGURE EIGHT NAILED TO TIMBER STAKES

HESSIAN TIE IN FIGURE EIGHT NAILED TO TIMBER STAKES

D01 NEW TREE IN PARKS - PLAN
Scale 1:25



TREE PLANTING AS SPECIFIED
PLACE IN PLANTING HOLE CENTRED AND PLUMB, WITH THE ROOT BALL LEVEL WITH THE FINISHED SURFACE OF SURROUNDING SOIL.

3no. 50 x 50 X 2400mm AUSTRALIAN HARDWOOD TIMBER STAKES POINTED AT ONE END. ENSURE FREE OF KNOTS, SPLINTERS, AND CRACKS. STAKES ARE TO BE DRIVEN MIN. 1000mm INTO GROUND FREE OF ROOTBALL.

HESSIAN TIE IN FIGURE EIGHT NAILED TO TIMBER STAKES

75MM DEPTH MULCH AS SPECIFIED. DISHED TO BASE OF TREE TO FORM WATERING RING

MINIMUM 300MM DEPTH 'A' TOPSOIL AS SPECIFIED

EXCAVATE TREE PIT HOLE TO BE MINIMUM 600MM WIDER THAN CONTAINER

MINIMUM 300MM DEPTH 'B' HORIZON IMPORTED TOPSOIL MIX AS SPECIFIED

100MM DEPTH CULTIVATED SUB GRADE

PLACE TREE ROOTBALL ON LEVEL AND COMPACTED SUBGRADE

D02 NEW TREE IN PARKS - DETAIL
Scale 1:25

I.05

New Street Tree - Nature Strip

Function

- The new street tree in mulch details are to be used for planting in all Local and Strategic Centres, parks and open spaces (when applicable) where specified, to contribute to the quality and character of the streetscape.
- The use of continuous planting trenches, structural soil, structural cells, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to any installation.

Supplier

Contractor or Council to organise.

Materials and Dimensions

- Tree species and container size as specified;
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be maintained until planted and clearly labelled.
- Mulch as specified to a maximum depth of 75 mm. Mulch shall be free of deleterious and extraneous matter, including soil, weeds, rocks, twigs and the like.

Installation

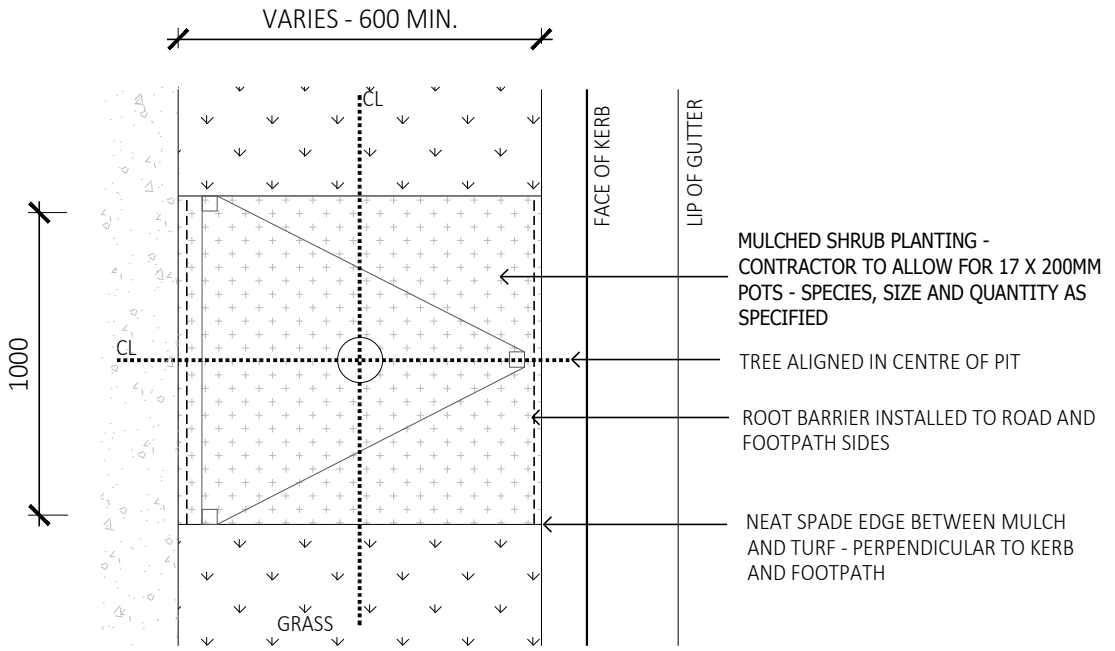
- Excavate a hole twice the diameter of the root ball. Break up the base of the hole to a depth of 100 mm, and loosen compacted sides of the hole to prevent confinement of root growth. Root ball should be placed on level and compacted subgrade.
- Thoroughly water plants before and after planting, and as required to maintain growth rates.
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Mulch shall be spread evenly to a depth of 75mm.
- Mulch shall be kept 50mm from stems to avoid collar rot.

Typical Layout - Tree Surround
(Image is representational only)

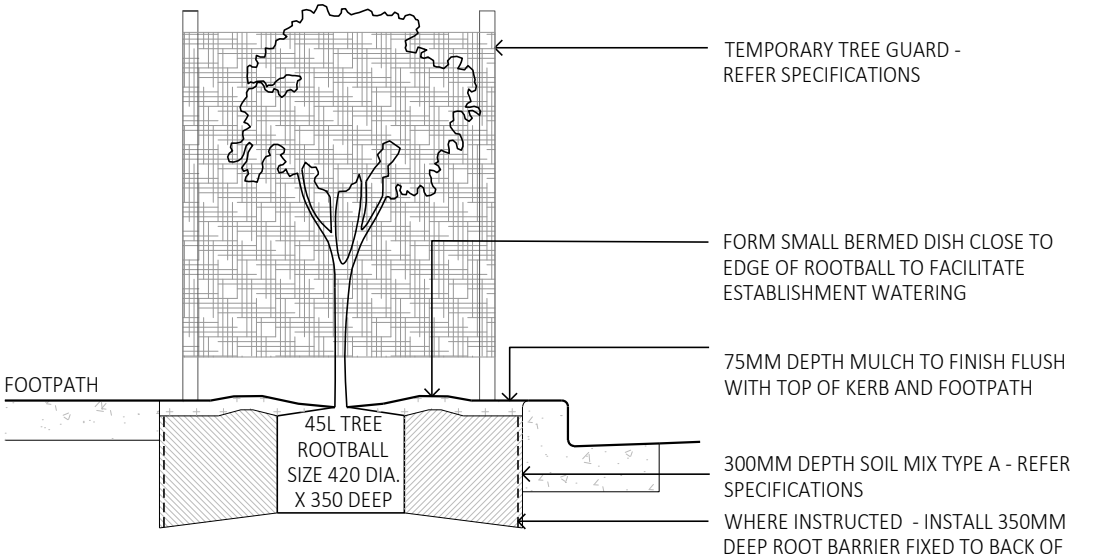
- Watering shall be carried out on a regular basis twice weekly for the first 2 weeks and then as required according to weather conditions, rainfall and soil type.

Maintenance

- Recurrent works – Throughout the planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of mulch, top dressing and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, weeding, watering, pruning, replenishment and restoration of mulch.



D01 NEW STREET TREE IN MULCH - PLAN
Scale 1:25



D02 NEW STREET TREE IN MULCH - DETAIL
Scale 1:25

NOTE:

1. TREE PIT SURROUND TO BE SIZED TO ALLOW 300MM X 300MM UNIT PAVING TRIM WITHOUT CUTTING PAVERS
2. STRUCTURAL ROOT CELLS TO BE USED IN CONJUNCTION WITH THESE TREE PITS WHEREVER POSSIBLE

I.06

New Street Tree - Garden Bed

Function

- The new street tree in planting details are to be used for planting in all Local and Strategic Centres, parks and open spaces (when applicable) where specified, to contribute to the quality and character of the streetscape.
- The use of continuous planting trenches, structural soil, structural cells, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to any installation.
- For WSUD option refer to bioretention raingarden or open bioretention tree pit.

Supplier

- Contractor or Council to nominate based on below specifications.

Materials and Dimensions

- Tree species and container size as specified;
- Shrub planting around tree as specified:
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be maintained until planted and clearly labelled.

Installation

- Excavate a hole twice the diameter of the root ball. Break up the base of the hole to a depth of 100 mm, and loosen compacted sides of the hole to prevent confinement of root growth. Root ball should be placed on level and compacted subgrade.
- Thoroughly water plants before and after planting, and as required to maintain growth rates.
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Mulch shall be spread evenly to a depth of 75mm.
- Mulch shall be kept 50mm from stems to avoid collar rot.

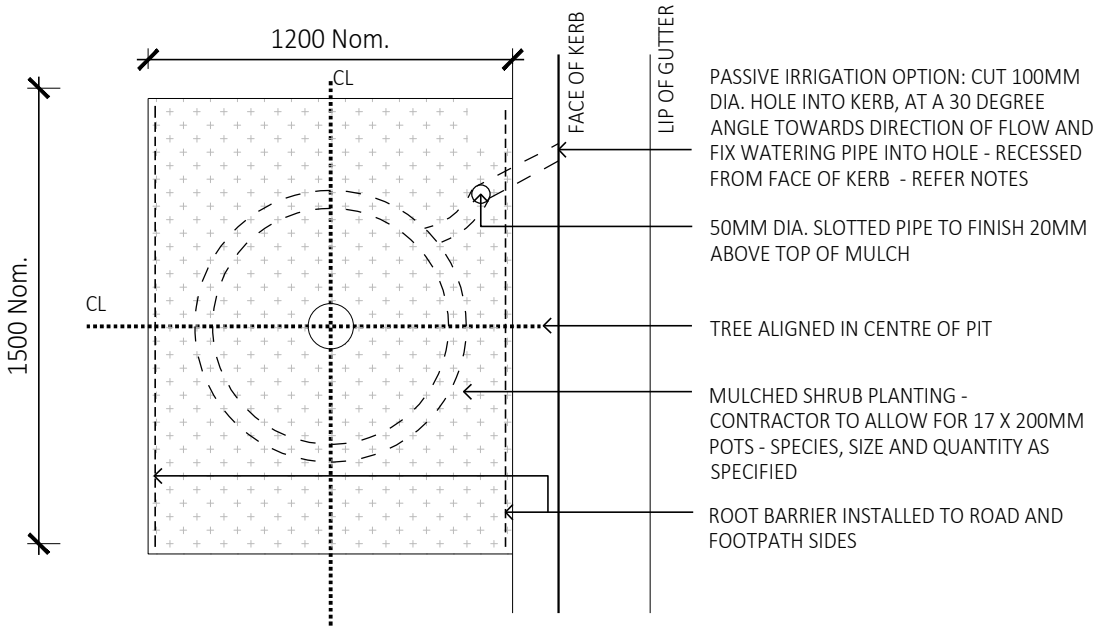
Typical Layout - Tree Surround

- Watering shall be carried out on a regular basis twice weekly for the first 2 weeks and then as required according to weather conditions, rainfall and soil type.

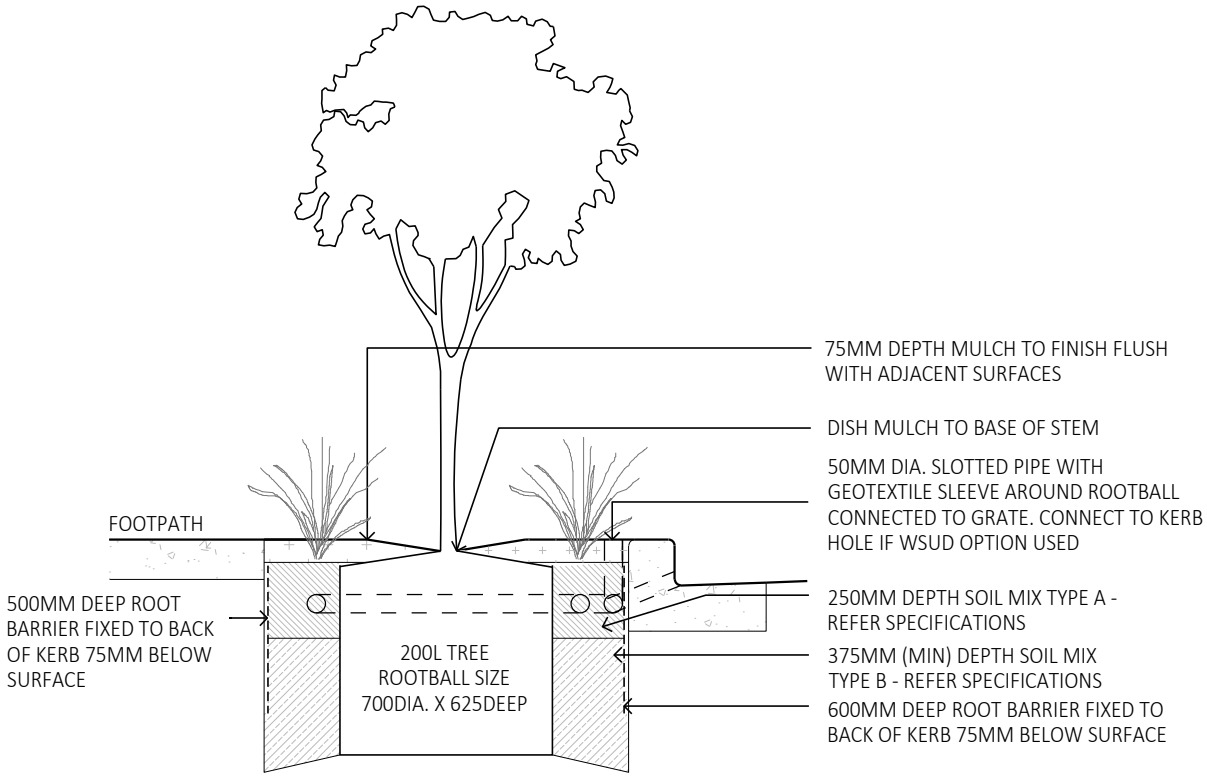
Maintenance

- Recurrent works – Throughout the planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of mulch, top dressing and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, weeding, watering, pruning, replenishment and restoration of mulch.

Refer towards the end of this section for stormwater quality improvement principles and bioretention tree pit or raingarden detail applications.



D01 NEW STREET TREE IN PLANTING - PLAN
Scale 1:25



D02 NEW STREET TREE IN PLANTING - DETAIL
Scale 1:25

NOTE:

1. TREE PIT SURROUND TO BE SIZED TO ALLOW 300MM X 300MM UNIT PAVING TRIM WITHOUT CUTTING PAVERS
2. STRUCTURAL ROOT CELLS TO BE USED IN CONJUNCTION WITH THESE TREE PITS WHEREVER POSSIBLE

I.07

New Street Tree - Parking Lane

Function

- The passive irrigation detail for the new tree in parking forms part of the water sensitive urban design (WSUD) infrastructure of the Council.
- The detail is applicable for Bondi Junction; other commercial areas and streets with roadside planting or potential for median strip planting
- The use of continuous planting trenches, structural soil, structural cells, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to any installation.
- For stormwater quality improvement option refer to open bioretention tree pit.

Supplier

- Contractor or Council to nominate based on below specifications.

Materials and Dimensions

- Tree and shrub species and container sizes as specified;
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be maintained until planted and clearly labelled.

Installation

- Excavate a hole twice the diameter of the root ball. Break up the base of the hole to a depth of 100 mm, and loosen compacted sides of the hole to prevent confinement of root growth. Root ball should be placed on level and compacted subgrade.
- Thoroughly water plants before and after planting, and as required to maintain growth rates.
- Tree in parking lane to be installed adjacent to existing gully pit or in locations where a new gully pit can be easily constructed over existing Council stormwater lines.
- WSUD option to be investigated on a case by case basis and should not be installed without direct approval from Council. Watering pipe not required in WSUD option.
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Mulch shall be spread evenly to a depth of 75mm.
- Mulch shall be kept 50mm from stems to avoid collar rot.
- Watering shall be carried out on a regular basis twice weekly for the first 2 weeks and then as required according to weather conditions, rainfall and soil type.

Typical Layout - Tree Surround

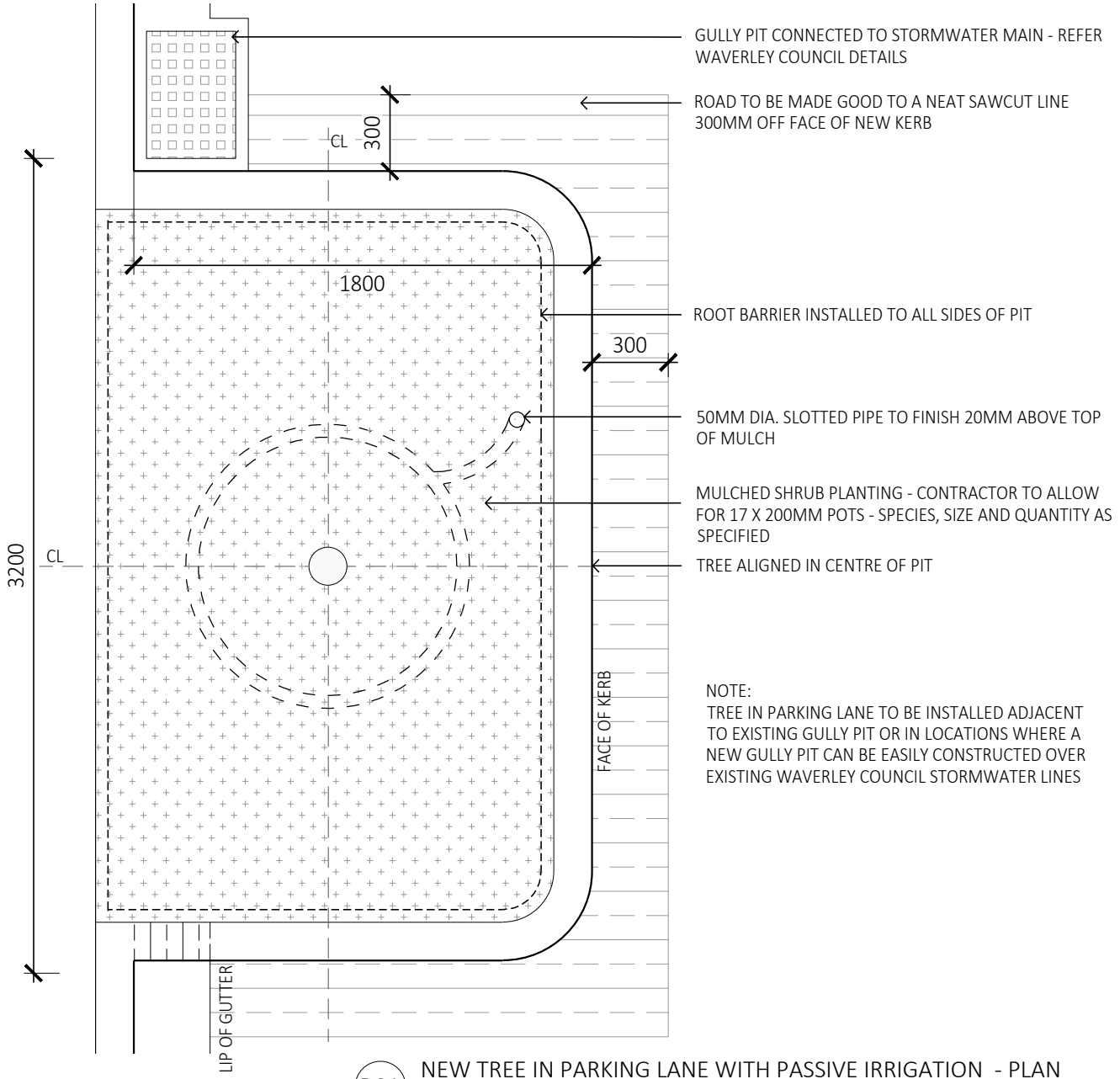
Maintenance

- Recurrent works for planting – Throughout the planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of mulch, top dressing and keeping the site neat and tidy.

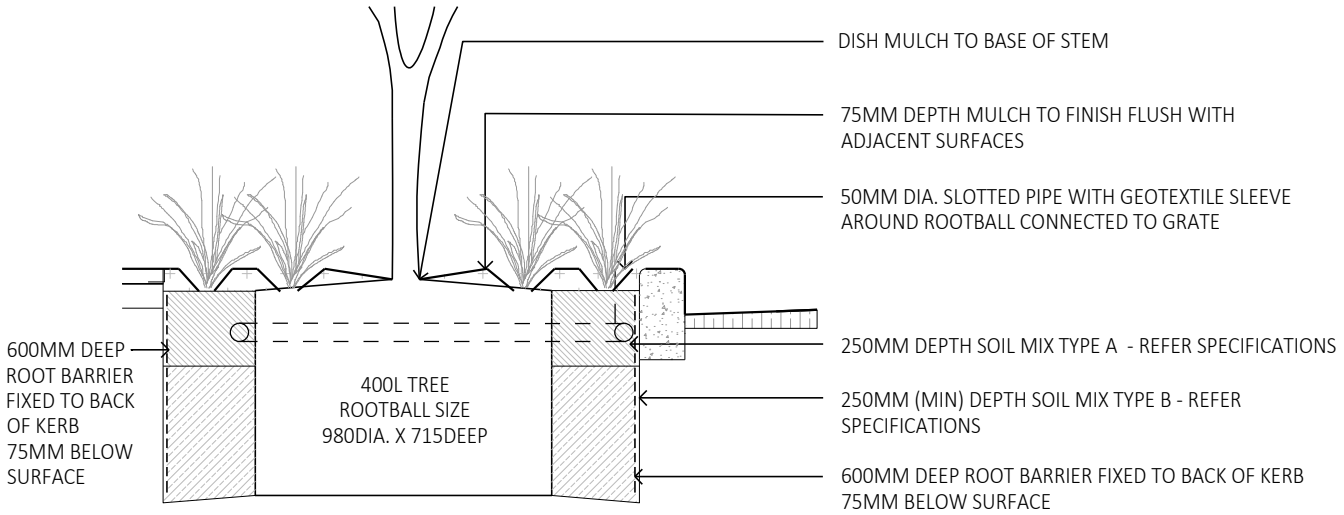
On-going maintenance may include:

- Replacement of any damaged or inferior plants, weeding, watering, pruning, replenishment and restoration of mulch.
- Tree pit - Manual removal of sediments from inlet pipe and filter - every 3-6 months
- If the filter sock has been removed from the irrigation pipe, flushing out the irrigation pipe - every 5-7 years

Refer towards the end of this section for stormwater quality improvement principles and bioretention tree pit detail applications.



D01 NEW TREE IN PARKING LANE WITH PASSIVE IRRIGATION - PLAN
Scale 1:25



D02 NEW TREE IN PARKING LANE WITH PASSIVE IRRIGATION - DETAIL
Scale 1:25

I.08

New Tree - Structural Root Cells

Function

- The detail is applicable for Bondi Junction; other commercial areas and streets with roadside planting.
- The use of continuous planting trenches, structural soil, structural cells, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed and submitted to Council based on these technical details for consideration prior to any installation.
- For WSUD option refer to grated or open bioretention tree pits.

Supplier

Contractor to nominate based on below specifications.

Materials and Dimensions

- Tree species and container size as specified;
- All planting and soils shall be in accordance with AS 2303:2015 - Tree Stock for Landscape Use, AS 4419—2003 - Soils for Landscaping and Garden Use, AS 4454-2003 Compost Soil Conditioners and Mulches, and AS 4373-2007 Pruning of Amenity Trees;
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound;
- Plants shall be free of weeds, insect pests, disease or physical injury;
- Plants delivered to site must be delivered or transported in a covered (pantech) vehicle, prior to installation, to avoid wind burn.
- Delivered plants should be clearly labeld and maintained until planted.
- Structural root cells to be installed as per details and to manufacturer's recommendations.

Installation

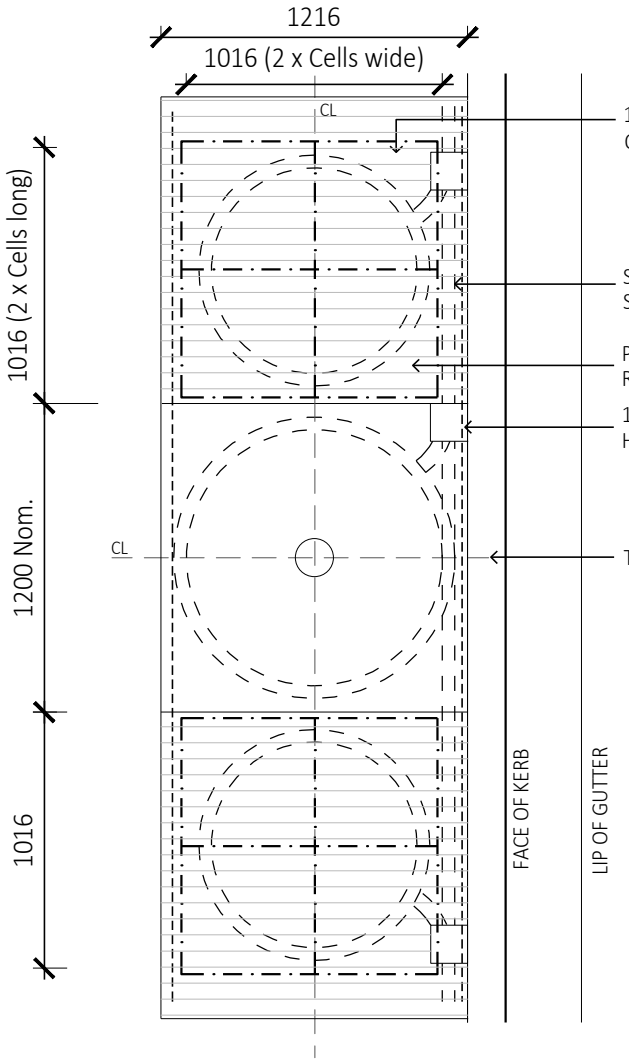
- Excavate a hole twice the diameter of the root ball. Break up the base of the hole to a depth of 100 mm, and loosen compacted sides of the hole to prevent confinement of root growth. Root ball should be placed on level and compacted subgrade.
- Thoroughly water plants before and after planting, and as required to maintain growth rates.
- Structural root cells to be installed 2 high and 2 wide as shown. length may vary due to site conditions or the presence of services. Council to determine number of cells following excavation of pit.
- Contractor to provide geotechnical certification of permeable paving option prior to commencement.
- If permeable paving is not used - contractor to allow for additional watering grates to be installed.
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Watering shall be carried out on a regular basis twice weekly for the first 2 weeks and then as required according to weather conditions, rainfall and soil type.

Typical Layout - Tree Surround

Maintenance

- Recurrent works – During planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, weeding, watering and pruning.

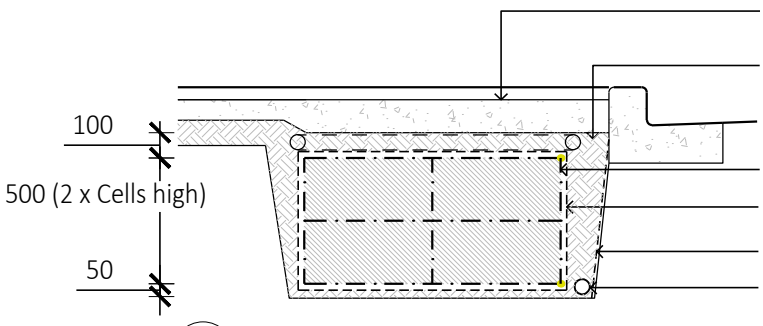
Refer towards the end of this section for stormwater quality improvement principles and bioretention tree pit detail applications.



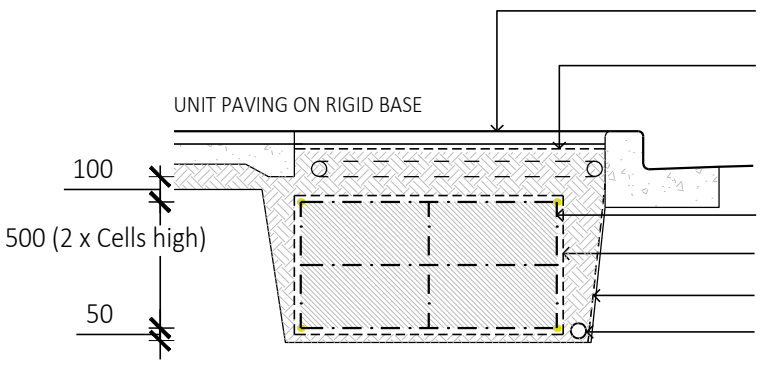
NOTES:

1. STRUCTURAL ROOT CELLS TO BE INSTALLED 2 HIGH AND 2 WIDE AS SHOWN. LENGTH MAY VARY DUE TO SITE CONDITIONS OR THE PRESENCE OF SERVICES. COUNCIL TO DETERMINE NUMBER OF CELLS FOLLOWING EXCAVATION OF PIT.
2. CONTRACTOR TO PROVIDE GEOTECHNICAL CERTIFICATION OF PERMEABLE PAVING OPTION PRIOR TO COMMENCEMENT.
3. IF PERMEABLE PAVING IS NOT USED - CONTRACTOR TO ALLOW FOR ADDITIONAL WATERING GRATES TO BE INSTALLED AS SHOWN - SUPERINTENDENT TO CONFIRM ON SITE.

D01 NEW STREET TREE WITH STRUCTURAL ROOT CELLS - PLAN
Scale 1:30



D02 NEW STREET TREE WITH STRUCTURAL ROOT CELLS - DETAIL
Scale 1:30



D03 OPTION - WITH PERMEABLE PAVING - DETAIL
Scale 1:30

I.09

Turf

Function

To provide areas of lawn in parks, reserves and street verges.

Supplier

- Contractor to nominate based on below specifications.

Materials and Dimensions

- Contractor to supply and install turf as specified.
- All planting and soils shall be in accordance with AS 4419—2003 - Soils for Landscaping and Garden Use and AS 4454-2003 Compost Soil Conditioners and Mulches.
- Contractor to obtain turf rolls from a specialist grower of cultivated turf.
- Use turf roll of even thickness, free from weeds and other foreign matter.
- Supplied turf is to demonstrate vigorous growth, be free from obvious signs of stress, weed, pest or disease infestation, damage or physical defects.

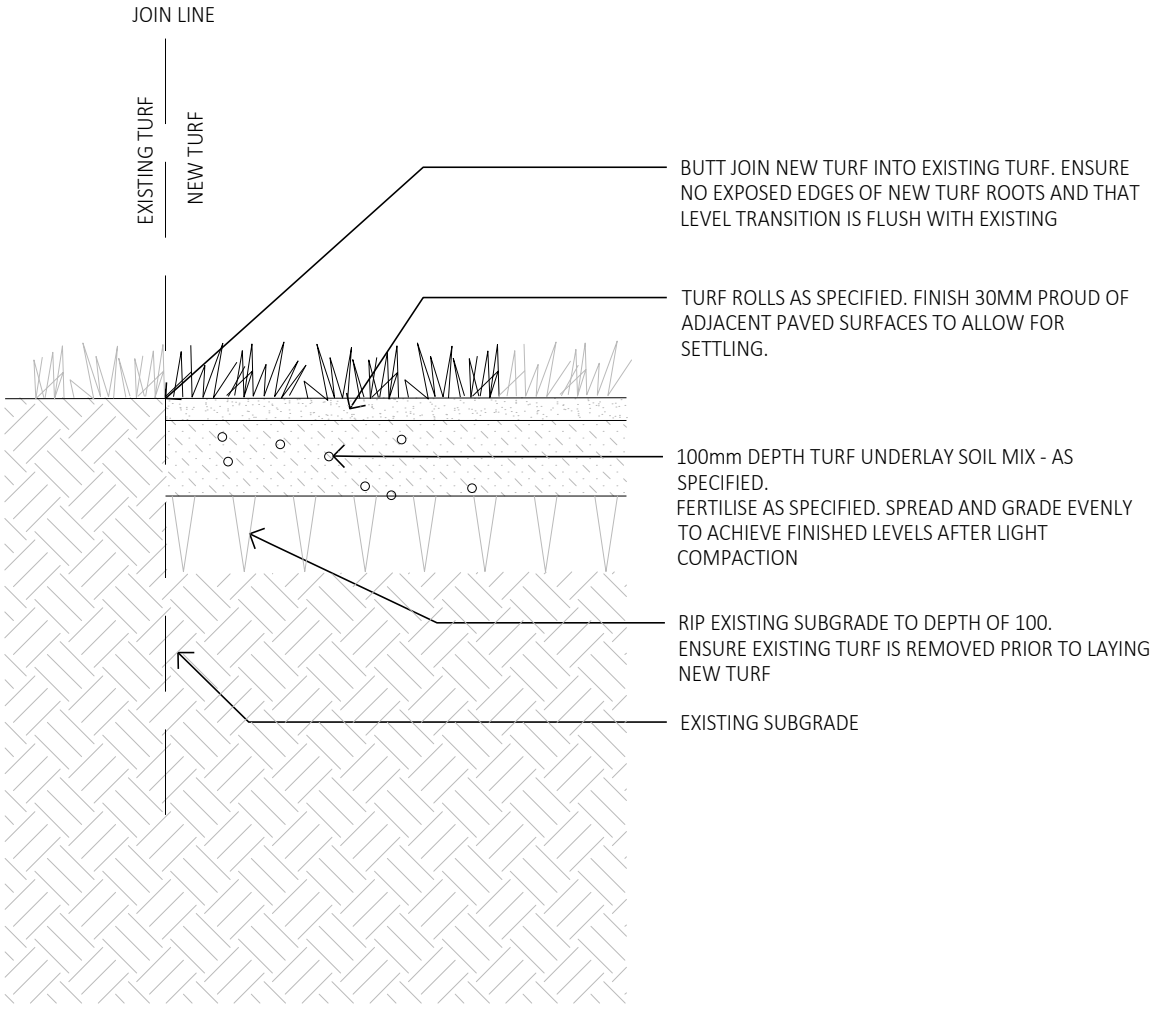
Installation

- Deliver the turf sods from the supplier within 24 hours of cutting, and lay it within 36 hours of cutting.
- Prevent it from drying out between cutting and laying. If it is not laid within 36 hours roll it out on a flat surface with the grass up, and water as necessary to maintain a good condition.
- Lightly tamp to an even surface immediately after laying, avoiding air pockets. Do not use a roller.
- Water immediately after laying. Moisten the topsoil to its full depth. Continue watering as necessary to maintain moisture to this depth.
- Apply slow release fertiliser as required and specified
- Allow for topdressing of the turf following installation, to establish surface smoothness and turf density following establishment.

Turf

Maintenance

- Lift failed turf and relay with new turf to give a good even layer whilst still revealing the grass shoots.
- Lawn areas shall be mown at a height consistent with the growth habit of the grass variety. A regular height range of 40mm to 60mm shall be maintained.
- Recurrent works – Throughout the planting establishment period, carry out maintenance work including watering, mowing, weeding, rubbish removal, fertilising, pest and disease control, reseeding, returfing, top dressing and keeping the site neat and tidy.



D01 TURF PLANTING- KEY-IN DETAIL
Scale 1:10

I.10

Mass Planting

Function

Provide planting to garden beds in parks, reserves and suburban streets

Supplier

- Contractor or Council to nominate based on below specifications.

Materials and Dimensions

- Contractor to supply and install plants as specified.
- All planting and soils shall be in accordance with AS 4419—2003 - Soils for Landscaping and Garden Use and AS 4454-2003 Compost Soil Conditioners and Mulches.
- Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound.

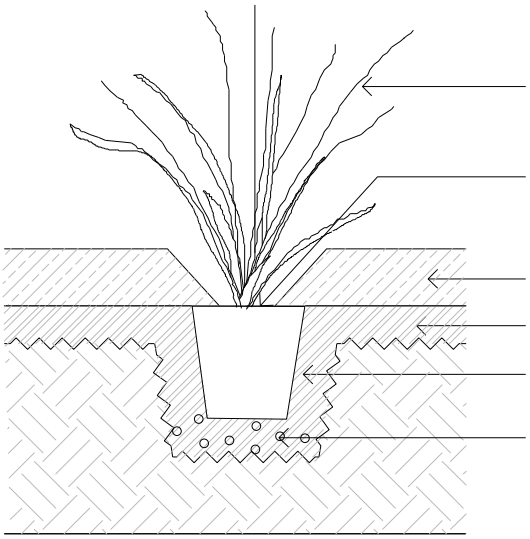
Installation

- Subsoil to be ripped and cultivated to a minimum depth of 200mm with 300mm garden soil mix to be spread over the prepared subsoil base
- Topsoil to be spread on the prepared subsoil and grade evenly, compacted lightly and uniformly in 150mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:
  - Finished to design levels, allowing for mulch or turf, which is to finish flush with adjoining hard surfaces such as paths and edge
  - Smooth and free from stones or lumps of soil
  - Graded to drain freely, without ponding, to catchment points
  - Graded evenly to adjoining surfaces, and
  - Ready for planting
- Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
- Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress.
- Fertilise and backfill. Use fertilizer as specified.
- Mulch as specified

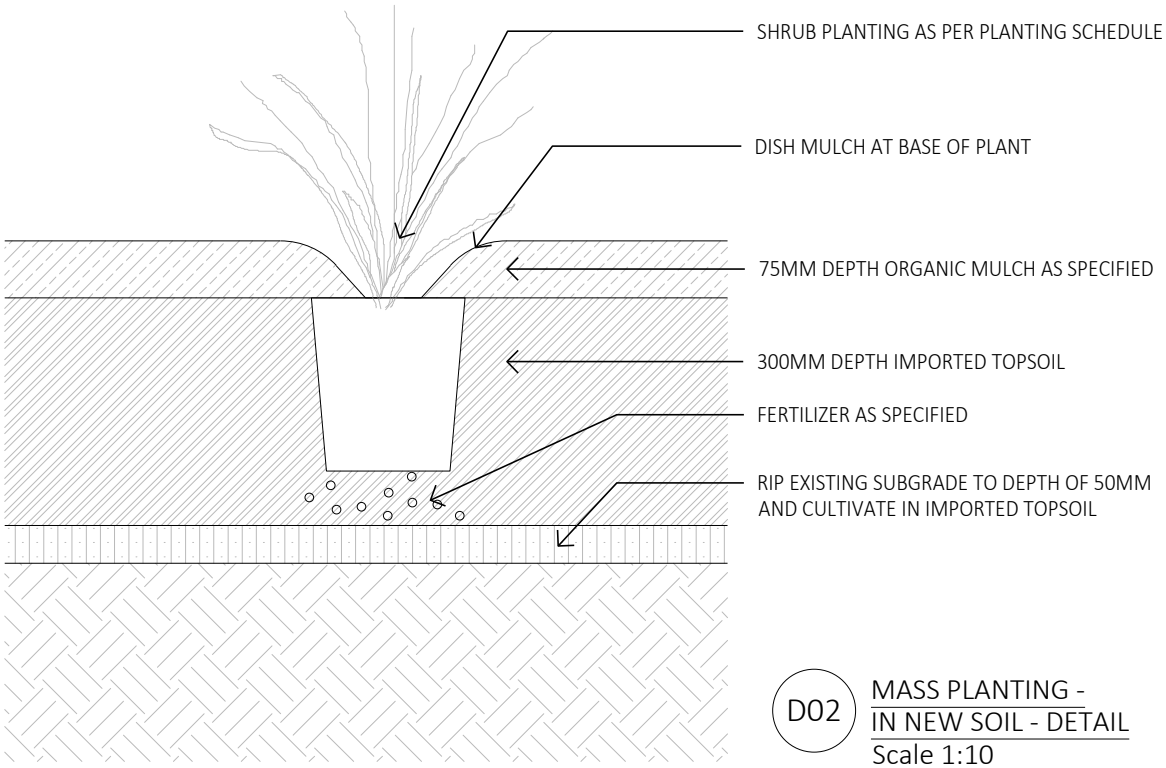
Mass Planting

Maintenance

- Throughout the planting establishment period, carry out maintenance work including watering, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting, cultivating, pruning, hedge clipping, aerating, reinstatement of mulch, top dressing and keeping the site neat and tidy.
- On-going maintenance may include: Replacement of any damaged or inferior plants, weeding, watering, pruning, replenishment and restoration of mulch.



D01 MASS PLANTING - IN EXISTING SOIL -DETAIL
Scale 1:10



D02 MASS PLANTING - IN NEW SOIL - DETAIL
Scale 1:10

I.11

Stormwater Quality Improvements

Stormwater quality improvement details form part of the water sensitive urban design (WSUD) infrastructure of Council.

Bioretention

Bioretention systems filter stormwater vertically through a vegetated filter media. Treated stormwater is then collected by a perforated underdrain and directed to the downstream stormwater drainage system.

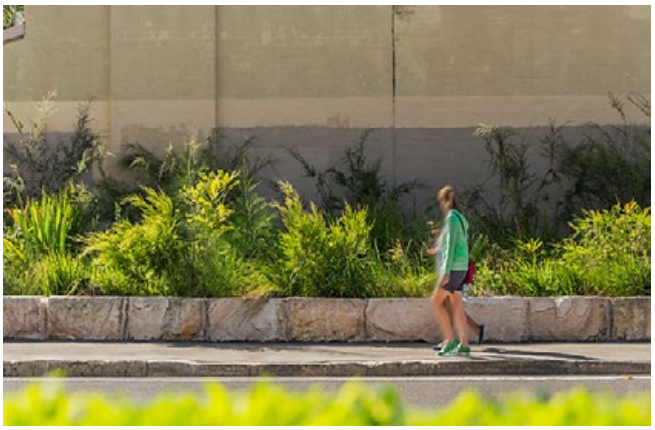
The primary objective of a bioretention tree pit or raingarden treatment area is to filter pollutants to improve stormwater quality. Other potential benefits include:

- Stormwater flow management i.e. reduction of runoff frequency and volumes or flow rates
- Improved irrigation of vegetation, improved vegetation quality and reduced need for hand watering, especially through dry weather periods
- Reduced maintenance and increased lifespan of traditional stormwater drainage infrastructure
- Increased pervious surfaces resulting in less stormwater runoff, more comfortable micro-climate and reduced heat island effect
- Improved visual amenity
- Improved human health and wellbeing.

Application

Bioretention systems can be implemented in almost any size and shape, in many different locations including streetscapes, traffic calming devices, parks or as part of drainage works. It is important to have:

- Sufficient biofilter area of 1% to 2% of the impervious catchment area
- Sufficient depth (normally at least 800mm) between the inlet and outlet of a bioretention system. However, there are design solutions to overcome depth constraints such as the creation of a saturated zone.
- Pre-treatment to capture sediment to prevent clogging.



Streetside garden with established bioretention raingarden at Hollywood Avenue

Newly constructed bioretention raingarden at Gray Street North

Developers and designers are required to carry out feasibility assessment considerations as directed by and in consultation with the Council prior to application and implementation of these details. The design elements to be applied should be determined based on the essential components required and the functions these are expected to carry out after consultation with the Green Infrastructure Team of the Council.

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I.12

Bioretention Tree pit with Tree grate

Function

- Bioretention tree pits with tree grates are to be implemented in pedestrian plaza spaces as directed by the Council, based on their assesment of pollutants of concern, type of stormwater treatment required and available catchment area and on the location of the project under development.
- Technical details are to be developed further based on consultation with the Council and site specific designs shall be submitted to the Council, based on these technical details, for consideration prior to any installation.

Supplier

Contractor or Council to nominate based on below specifications.

Materials and Dimensions

- Tree species as specified in the planting schedule and as confirmed by Council. Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound. Plants shall be free of weeds, insect pests, disease or physical injury.
- Paving, kerbs as per PDTM depending on location of the bioretention open tree pit.
- All concrete works to structural engineers details
- Tree grates as specified by the Council. These grates could be special-order items.
- All required materials such as liners, structural root cells, tree pit and structural cell media, transition layer materials, drainage layer materials etc should be as specified and as approved by the Council.

Installation

- Setout and earthworks to be as documented and to be inspected by Council.
- Inspections to be carried out by the Council at every stage of installation as listed in the hold points, some of which can be at completion of of all new drainage conduits, pits and grates, liner, slotted and solid subsoil drains, the flushing points and caps, completed water-tight seals of any pipe penetration through liner, installation of the drainage media and the finished levels of the drainage layer, at installations of the first layer of structural root cells and soil, top layer of structural root cells, soil and the heavy mesh fabric, installation of the transition layer and the finished levels of the transition layer, filter media and the finished levels of the filter layer, installation of tree pit and grate, planting and installation of pavers.
- Defects period is 52 weeks.

Example Typical Layout - Bioretention Tree pit with Tree grate

Maintenance

- Throughout the planting establishment period, carry out maintenance work including watering if required, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, and keeping the site neat and tidy.

On-going maintenance may include:

- Replacement of damaged or inferior tree, weeding, pruning and replenishment and restoration of filter media if required.
- Manual removal of sediment from sediment forebay or scour pad every 3-6 months
- Manual scraping/tilling of clogged layer of filtration media. Clogged layer to be appropriately disposed off approximately every 5-7 years testing dependent.

I.13

Bioretention Tree pit - Open

Function

- Bioretention open tree pits are to be implemented in locations such as streetscapes, traffic calming devices, parks or as part of drainage works as specified by the Council, based on an assesment of pollutants of concern, type of stormwater treatment required and available catchment area and on the location of the project under development.
- Technical details are to be developed further based on consultation with the Council and site specific designs shall be submitted to the Council, based on these technical details, for consideration prior to any installation.

Supplier

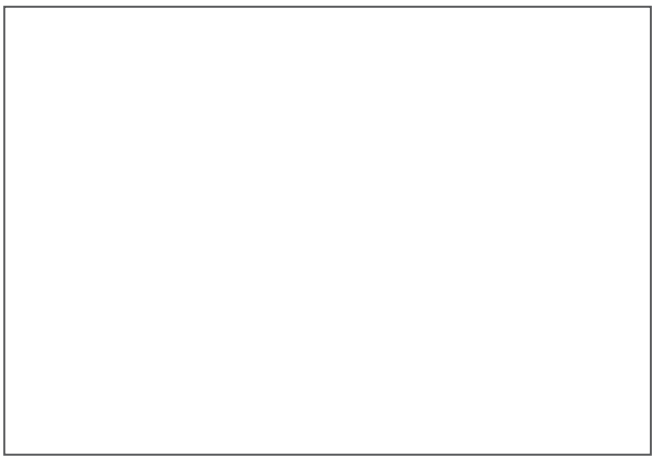
Contractor or Council, as specified, to organise.

Materials and Dimensions

- Tree species and grasses & groundcovers as specified in the planting schedule and as confirmed by Council. Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound. Plants shall be free of weeds, insect pests, disease or physical injury.
- Paving, kerbs as per PDTM depending on location of the bioretention open tree pit.
- All concrete works to structural engineers details
- All required materials such as liners, structural root cells, bioretention and structural cell media, transition layer materials, drainage layer materials etc should be as specified and as approved by the Council.

Installation

- Setout and earthworks to be as documented and to be inspected by Council.
- Inspections to be carried out by the Council at every stage of installation as listed in the hold points, some of which can be at completion of all new drainage conduits, pits and grates, liner, slotted and solid subsoil drains, the flushing points, completed water-tight seals of any pipe penetration through liner, installation of the drainage media and the finished levels of the drainage layer, at installations of the first layer of structural root cells and soil, top layer of structural root cells, soil and the heavy mesh fabric, installation of the transition layer and the finished levels of the transition layer, filter media and the finished levels of the filter layer, gravel mulch & planting and installation of pavers.
- Defects period is 52 weeks.



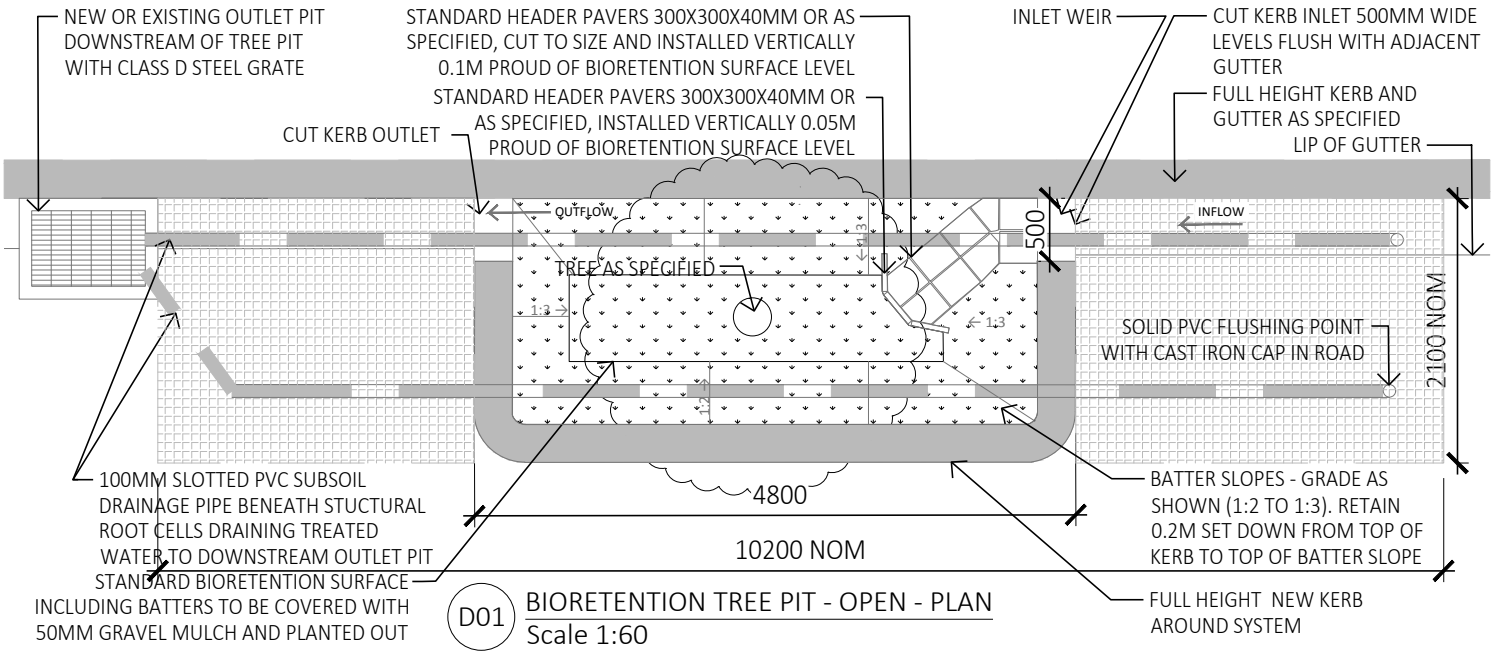
Typical Layout - Tree Surround - Image to be provided when available

Maintenance

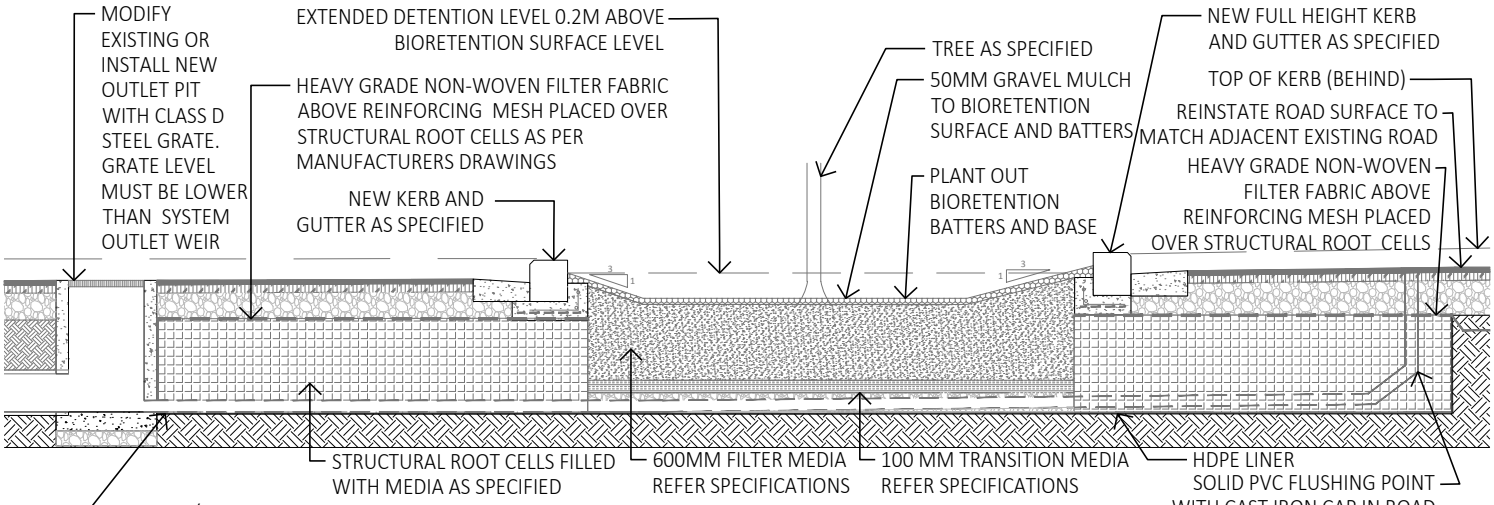
- Throughout the planting establishment period, carry out maintenance work including watering if required, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of gravel mulch, top dressing and keeping the site neat and tidy.

On-going maintenance may include:

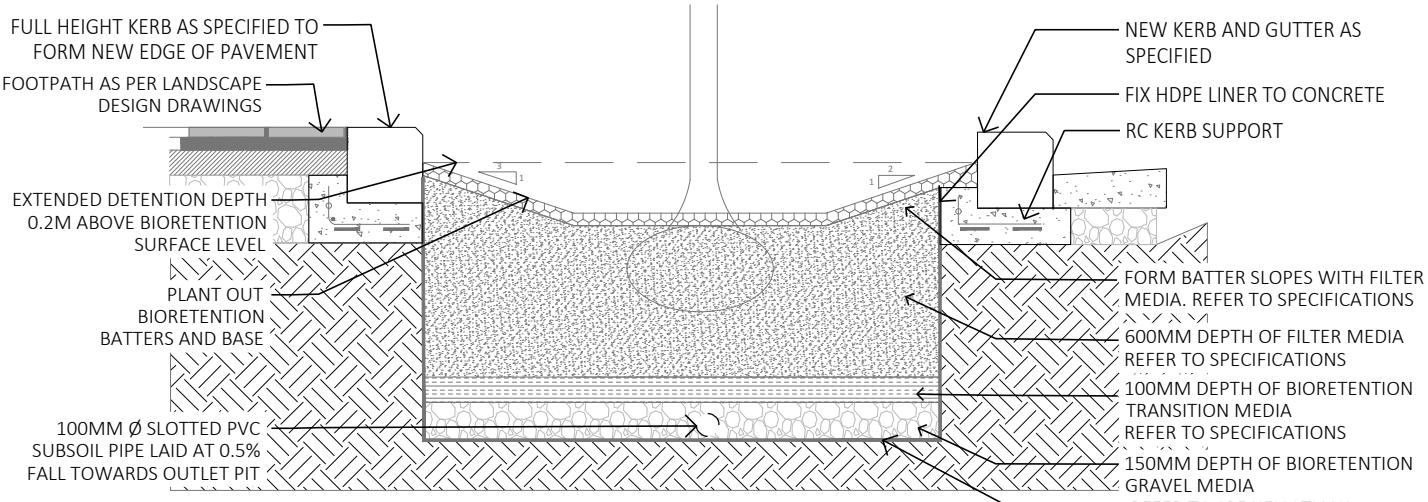
- Replacement of any damaged or inferior plants, weeding, pruning, replenishment and restoration of gravel mulch.
- Manual removal of sediment from sediment forebay or scour pad every 3-6 months
- Manual scraping/tilling of clogged layer of filtration media. Clogged layer to be appropriately disposed off approximately every 5-7 years testing dependent.



D01 BIORETENTION TREE PIT - OPEN - PLAN
Scale 1:60



D02 BIORETENTION TREE PIT - OPEN - LONG SECTION
Scale 1:60



D03 BIORETENTION TREE PIT - OPEN - DETAIL
Scale 1:30

I.14

Bioretention Raingarden

Function

- Bioretention raingardens are to be implemented in locations such as streetscapes, traffic calming devices, parks or as part of drainage works as specified by the Council, based on their assesment of pollutants of concern and type of stormwater treatment required, for the area under development.
- Technical details are to be developed further based on consultation with the Council and site specific designs shall be submitted to the Council, based on these technical details, for consideration prior to any installation.

Supplier

Contractor or Council, as specified, to organise.

Materials and Dimensions

- Grasses, groundcovers and shrub species as specified in the planting schedule and as confirmed by Council. Plants shall be well-formed, healthy, hardened off stock where possible with a sturdy root system and not root bound. Plants shall be free of weeds, insect pests, disease or physical injury.
- Paving as per PDTM depending on location of raingarden
- All concrete works to structural engineers details
- All required materials such as liners, bioretention media, transition layer materials, drainage layer materials etc should be as specified and as approved by the Council during consultation.

Installation

- Setout and earthworks to be as documented and to be inspected by Council.
- Inspections to be carried out by the Council at every stage of installation as listed in the hold points, some of which can be at completion of all new drainage conduits, pits and grates, liner, slotted and solid subsoil drains, the flushing points and caps, completed water-tight seals of any pipe penetration through liner, installation of the drainage media and the finished levels of the drainage layer, at installations of the transition layer and the finished levels of the transition layer, filter media and the finished surface levels of the system, gravel mulch and planting.
- Defects period is 52 weeks.

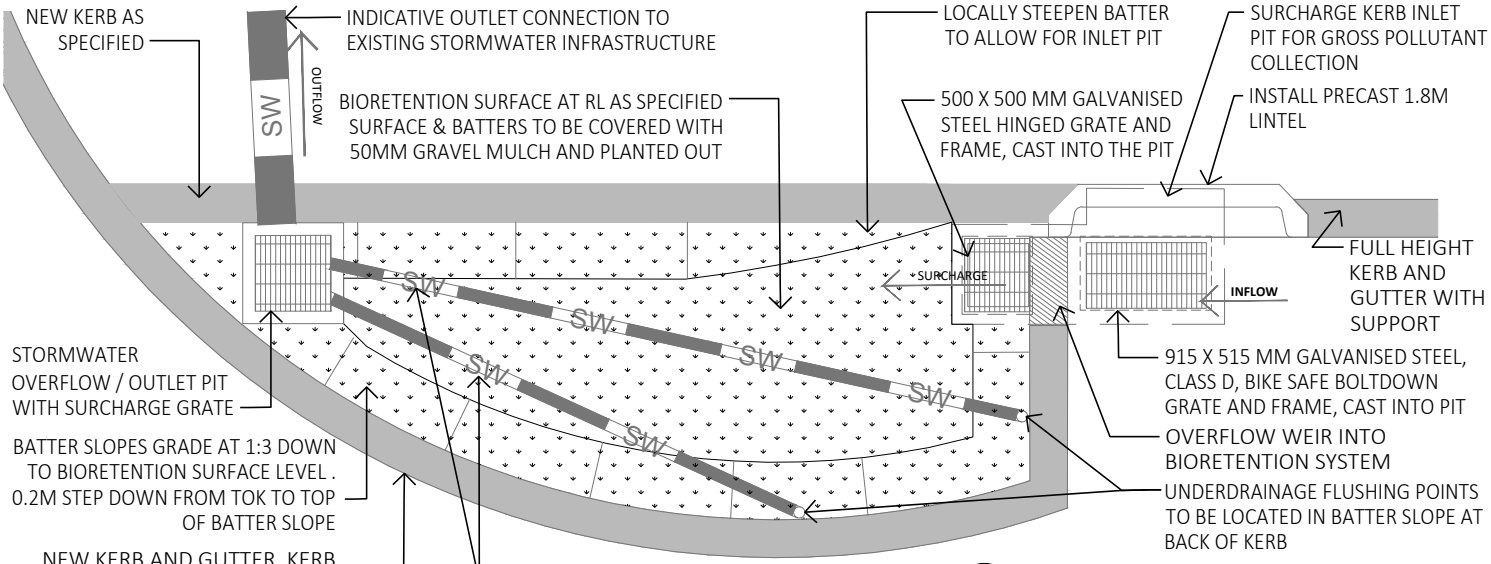
Bioretention Raingarden at Gray Street North

Maintenance

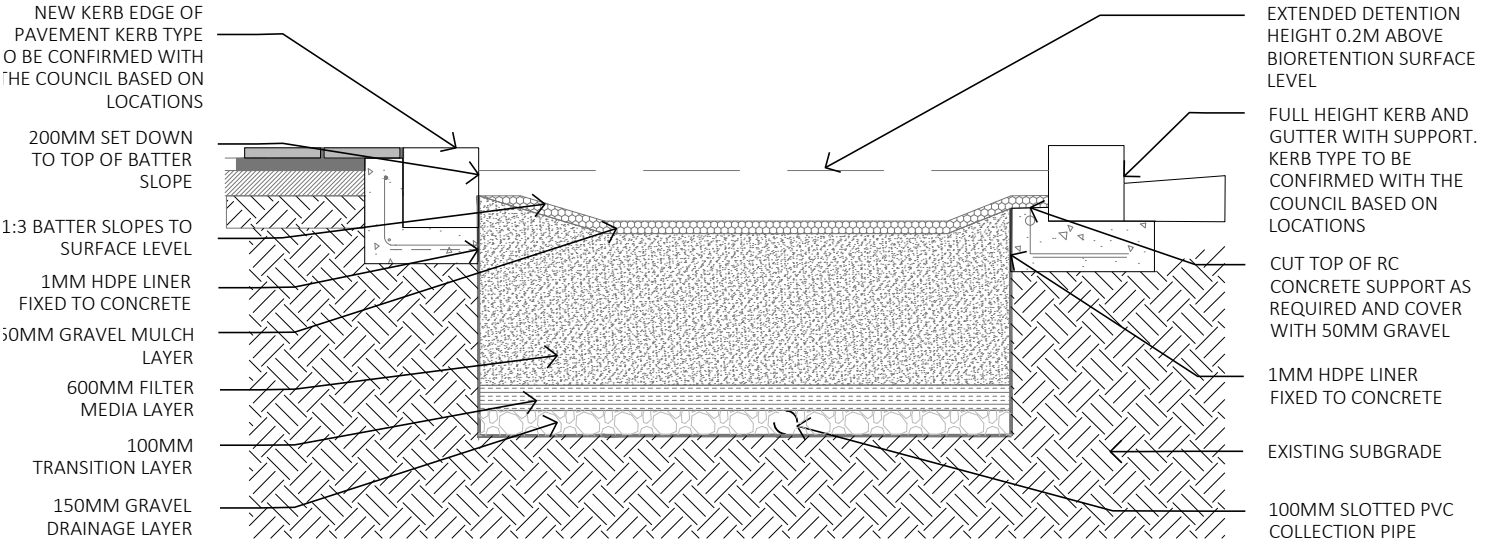
- Throughout the planting establishment period, carry out maintenance work including watering if required, weeding, rubbish removal, fertilising, pest and disease control, staking and tying, replanting if required, cultivating, aerating, reinstatement of gravel mulch, top dressing and keeping the site neat and tidy.

On-going maintenance may include:

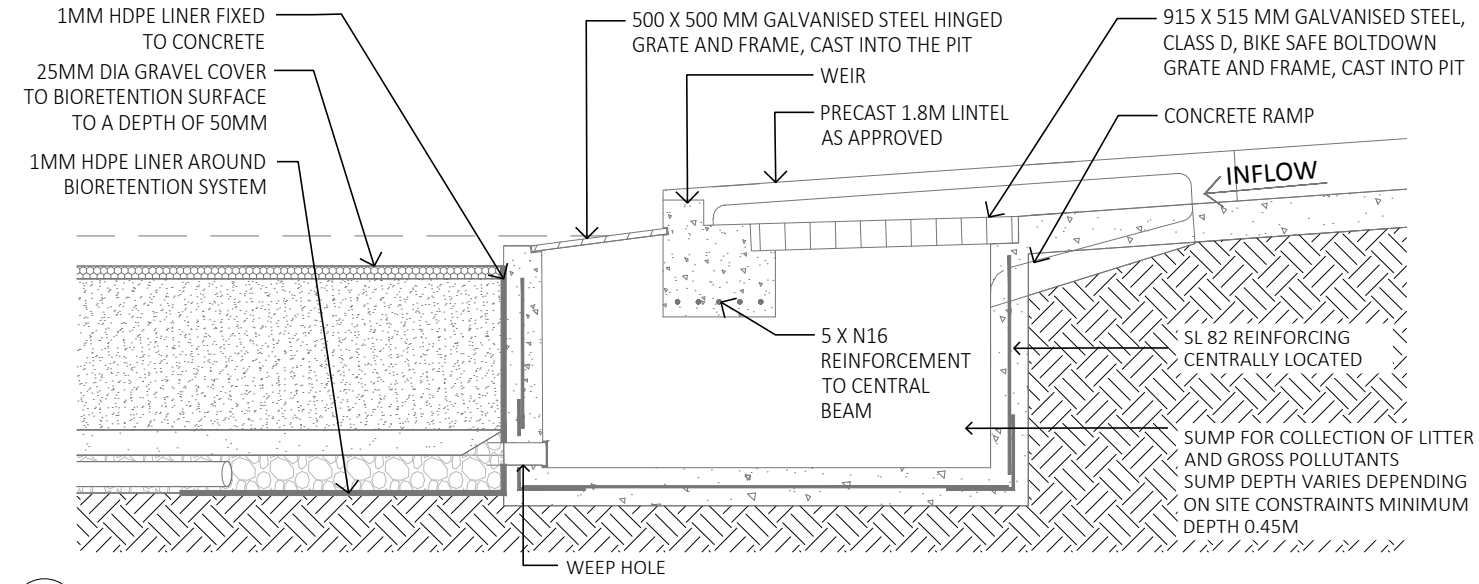
- Replacement of any damaged or inferior plants, weeding, pruning, replenishment and restoration of gravel mulch.
- Manual removal of sediment from sediment forebay or scour pad every 3-6 months
- Manual scraping/tilling of clogged layer of filtration media. Clogged layer to be appropriately disposed off approximately every 5-7 years testing dependent.



D01 BIORETENTION RAINGARDEN - PLAN
Scale 1:60



D02 BIORETENTION RAINGARDEN - DETAIL
Scale 1:30



D03 BIORETENTION RAINGARDEN - INLET LONG SECTION
Scale 1:30

I.15

Waverley Council Plants Species List

The following planting palette is to be used within Waverley Council's Parks and Streetscape. For street tree species selection refer to the Street Tree Masterplan.

Various attributes and applications of each plant have been given in the palette which will enable the users to choose a species suitable for their purpose.

The palette presents a useful tool for ensuring good habitat is planted within the Council limits.

Trees in Parks

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Life Expectancy	Application					Notes on Form / Maintenance / Performance
							Accent Plants	Re-vegetation	Parks	Plants for Stormwater Quality Improvement	Playgrounds	
Small (to 6 metres)												
Angophora hispida	Dwarf Apple	Native	Second Line Coastal	Multi-trunked large shrub-sized	6m	80-100	No	Yes	Yes	No	Yes	Large clusters of creamy white flowers in Summer - January. Nectar source for many birds & invertebrates. Very Hardy. Re-sprouts well after wildfires. Can be trained as a single trunked street tree. Occurs natuarally on ridgetops, most commonly in heath and open woodlands
Acacia longifolia	Sydney Golden Wattle	Native	No	Round, large shrub sized	6m	10-20 yrs	No	Yes	Yes	No	Yes	Bright Yellow rod shaped flowers in abundance from early winter through early spring. Highly attractive small tree; striking flower display, tolerates a range of soils. Borers an issue in late life. Good as windbrekas and for erosion control. Nitrogen fixer.
Callistemon citrinusalso known as Melaleuca citrina(Callistemon lanceolatus is an older name)	Crimson Bottle-brush	Native	Front Line/ Second Line	Round, large shrub sized	3-4m	<50	Possibly	No	Yes	Yes	Yes	Showy, crimson-red, bottlebrush form twice a year - Spring and Autumn (if well watered). Can attract Noisy Miners. Choose planting sites carefully. Especially if trying to provide small bird habitat. Many bird species use the tree as a food source. Can also be planted in very wet soils.
Callistemon citrinus 'Kings Park Special'	Kings Park Special	Cultivar	No	upright-rounded large shrub sized, pendulous branches	4x 3m	<50	Yes	No	Yes	No	Yes	Bright red, multiple heads on branch terminals from Mid-September to October. Possible small flowering in autumn. Fast growing. Responds well to pruning after flowering. Can be planted in a wide variety of soils. Can suffer frost damage. Good for small landscapes where space is limited.
Corymbia eximia 'nana'	Dwarf Yellow Bloodwood	Native	Front Line/ Second Line	Compact Rounded	6-8m x 4m	Long, beyond 100 yrs	Yes	Yes	Yes	Yes	Yes	Creamy white to golden yellow in winter spring - August to October. Slighty open canopy, big yellow flowers, patchy, grey and brown bark, frequently on a crooked trunk. Does well on poor gravelly or sandy soils. Remains healthy in drought. Suffers frost damage. Extremely sutable for height restricted areas. Attracts nectar loving birds. Honey producing plant. Excellent as a street tree. Makes a good feature tree, shade tree or as part of wind break, native shelter.
Cupaniopsis anacardioides	Tuckeroo	Native	Front Line Coastal	Rounded	6m x 6m	40-70	No	No	Yes	No	Yes	Small white flowers in autumn. Dome - formed into umbrella with annual pruning. Incredibly hardy species. Tolerant of drought and vandalism. Very high survival rates on establishment. Downside is fruit load which can be a hazard on sealed surfaces. Fruit is favourite of many fruit eating birds.
Eucalyptus luehmanniana	Yellow-top Mallee Ash	Native	Second Line	Multi-trunked large shrub-sized	6m x 4m	possibly >40	No	No	Yes	No	Yes	Creamy white flowers from mid winter to late spring. Grows in high rainfall areas as well . Rare eucalyptus. Can be grown as a single trunk small tree. Grows well in poorly drained, skeletal, sandy soils.
Melaleuca armillaris	Bracelet Honey Myrtle	Native	Front Line-Second Line	Rounded	5m x 5m	>60	Possibly	Yes	Yes	Yes	Yes	Cylindrical bottlebrush-style, red or pink buds, open to white or pink flowers in spring and summer. Fast growing species with a good canopy intially which suffers from thinning out with age. Susceptible to bracket fungi in later years w/ associated branch drop. Myrtle rust host. Bird Habitat

Monotoca elliptica	Tree Broom-heath	Native	Front Line Coastal	Bushy shrub-like	4-10m tall	Long, beyond 100 yrs	No	Yes	Yes	No	No	Small cream coloured flowers from July to September. Grows in scrub or sclerophyll forest, most often on coastal dunes. Fruits eaten by Noisy Miners. Foodplant of a variety of butterflies.
Pandanus leucanthusalso known as Pandanus odorifer	Screw Pine	Native	Front Line Coastal	Palm-like, small branched	4m	Typically 50-80	No	Yes	Yes	No	Yes	White fragrant flowers in summer. Used to make perfume elsewhere in the world. Prop roots emerge at times. Grow well in sandy, rocky soils as well as seasonally waterlogged soils.
Pyrus calleryana	Callery pear	Exotic	No	Conic rounded crown	5-8m	15-20 years	Yes	No	Yes	Yes	No	White five petaled flowers in early spring. Deciduous tree. Fruit small and woody, when softened by frost are eaten by birds. Summer foliage is dark green and very smooth. In autumn these turn brilliant colours of yellow, orange, red, pink purple and bronze. Wood used for instruments and veneers. The tree is known for its pungent, often unpleasant smell during its flowering stage, which has been described as reminiscent of rotting fish, chlorine, or semen.
Tristaniopsis laurina	Water Gum	Native	Possible secondline coastal	Oval	5m x 3-6m	Long, beyond 100 yrs	Yes	Yes	Yes	No	Yes	Bright yellow flowers in short clusters in spring and summer. Low maintenance. Fast growing. Drought resistant. Tolerates light frost. Likes full sun or light shade. Good as a feature plant, wind break, street tree. Used for erosion control, as a bird nesting plant and as a pollution tolerant. Attracts a wide range of birds, butterflies, insects and possums.
Medium (6 to 12 metres)												
Agathis robusta	Queensland Kauri Pine	Native	No	Conical conifer	25-30m	Very long	No	No	Yes	No	No	Timber is highly prized for furniture.
Agonis flexuosa	Willow Myrtle	Native	Front Line/ Second Line	Umbrella - Pendular	6m x 8m	Long (R)	Yes	No	Yes	No	Yes	Clusters of small white flowers between leaves in spring and summer. Myrtle rust host. Great native alternative to a Willow Tree.
Allocasuarina littoralis	Black She-Oak	Native	Front Line/ Second Line	Elongated Oval	12m	>15 upto 50	No	Yes	Yes	No	Possibly on boundaries	Fast growing, nitrogen fixing tree. Makes excellent wind-break or shelterbelt species
Banksia integrifolia	Coast Banksia	Native	Front Line Coastal	Twisted Informal	4-15m x 1-6m	40-100	Yes	Yes	Yes	No	Yes	Adult leaves are stiff and arranged in whorls with a silvery underside. Pale yellow flowers through autumn followed by woody cones. Spot flowering can occur all year through. Can be multi-trunked in some situations. Fast growing, narrow upright. Useful low maintenance street tree. Can be pruned. Drought and frost tolerant. It has excellent resistance to Phytophthora cinnamomi. Attracts birds, bees, buuterflies, insects, arboreal mammals and is a good seed source for cockatoos.
Banksia marginata	Silver Banksia	Native	Front Line/ Second Line	Plants can have various leaf types and growth habits includ-ing weeping foliage	1-12m	80+	No	Yes	Yes	No	Yes	Numerous yellow or golden green flowers in a compact candle-shaped spike from september through april but can be all year long, followed by persistent woody cones. Form and size can vary considerably even within the same area. Varia-tions also occur in leaf size and shape and physical features such as stem and leaf surfaces. Very hardy, long lived, salt tol-erant, drought and frost tolerant and can survive in exposed windy sites. Prefers well drained soils but can tolerate moist or waterlogged sites. Attracts honey eating birds, insects and other wildlife. Can be susceptable to Phytophthora cin-namomi disease.

Banksia serrata	Old Man Banksia	Native	Front Line/ Second Line	Informal oval, prostrate in exposed coastal situations	3-15m x 2-4m	Over 100 years	No	Yes	Yes	No	Yes possibly	Cream, yellow or brown coloured flowers in spikes from late summer through autumn followed by woody seed cones. Leaves are stiff with serrated edges. Prefers sandy soils and good drainage. Very hardy once established. Attracts birds, insects, arboreal mammals and is a good seed source for cockatoos. In bushlands can be susceptable to Phytophthora cinnamomi disease.
Callistemon viminalis	Weeping Bottlebrush	Native	No	Oval Weeping	8m	>50	Yes	No	Yes	No	Yes	Can attract Noisy Miners. Choose planting sites carefully. Especially if trying to provide small bird habitat. Attractive red bottlebrush shaped flowers in spikes from spring through autumn or all the year through. Leaves are lanceolate. Common along watercourses. Does best in moist well drained soils in full or partial sun but can grow in heavily waterlogged soils as well as shady wet situations. Good screen plant, in erosion control or as a street tree.
Callistemon salignus also knows as Melaleuca salicina	Willow Bottlebrush	Endemic to Eastern Australia	Possible secondline coastal	Spreading	1-10m x 1-5 m	20-40 yrs	No	No	Yes	Yes	Possible	The pink to red new foliage and its yellow flowers are the best qualities of this very adaptable bottlebrush. Flowering in spring, summer and atumn. Can tolerate waterlogged soils for extended periods as well as is drought tolerant. Roots can become invasive, so keep away from buildings. Tolerates heavy frost. Pollution tolerant. Likes full sun or light shade. Good as a screening plant, windbreak, for erosion control and in bog gardens. Attracts bees, nectar eating birds, butterflies and other insects.
Calodendrum capense	Cape Chestnut	Exotic	No	Broad Domed	10m x 6m	no data	Yes	No	Yes	No	Yes	Suitable for special areas only. Pink flowers in large massed terminal heads in spring. Excellent specimen and avenue tree. Dense canopy. When in bloom, the whole tree turns pink.
Casaurina equisetifolia	Coast Sheoak	Native	Front Line Coastal	Columnar irregular	9m x 5m	40-50	No	Yes	Yes	No	Possible on borders	Wide spreading. Good wind breaker. Drooping branches.
Ceratopetalum gummiferum	NSW Christmas Bush	Native	No	Pyramidal	10m x 4m	Long, beyond 100 yrs	Yes	Yes	Yes	No	Yes	Very showy massed display of red sepals. Inconspicuous white flowers followed by bright red showy sepals. Flowers appear in October followed by the sepals around christmas time.
Elaeocarpus reticulatus	Blueberry Ash	Native	No	Slender oval	6-10m x 4m	>50	Yes, in a cluster	Yes	Yes	No	Yes	Look good in groups. Beautiful downward facing white to pale pink flowers with fringed petals, hanging like bells in late spring, followed by small oval bright blue fruits ripening through april to october. Flowers have a light fragrance. Does well in full sun or partial shade. Can be used for hedging. Nectar attracts birds, bees, butterflies and insects.
Eucalyptus haemastoma	Scribbly Gum	Native	Front Line/ Second Line	Elongated umbrella shaped	8m x 6m	Long beyond 100 yrs	No	Yes	Yes	No	Yes	Consistent with character of the area. Open crown of grey/ silver coloured foliage - often multiple trunks. Flowers white, from autumn through spring. Nectar attracts birds and insects. Attracts the larvae of scribbly gum moth.
Ficus coronata	Creek Sandpaper Fig	Native	No	Irregular	6-12m x 3-5m	no data	No	Yes	Yes	No	Possibly	Common near water courses. Food plant for caterpillars of butterflies, many species of birds and the flying fox. Very hardy. Can tolerate poor soil and poor light. Has texturally interesting leaves. Fruits grow off trunk and leaf bases.

Ficus rubiginosa	Port Jackson Fig	Native	Second Line Coastal	Dome shaped, spreading	10m x 12m	Over 100 years	No	Yes	Yes	No	No	Can be kept under 7m high with yealy to two yearly pruning. Can develop invasive root system around built infrastructure. Foliage bright shiny green with rusty underside. Fruits eaten by several species of birds and also flying foxes.
Glochidion ferdinandi	Cheese Tree	Native	Second Line Coastal	Rounded	8m x 5m	>60	No	Yes	Yes	No	Yes	Shrub to medium sized broad tree. A handsome easily established species with good habitat value. Can be weedy in bushland remnants. Thirsty. Small greenish yellow flowers between July and December. Fruit is red small and pumpkin shaped. Fruits are eaten by several species of birds.
Hibiscus tiliaceus 'Rubra'	Bronze Cotton-wood	Exotic	Second Line Coastal	Rounded	6-8m x 6-8m	no data	Yes	No	Yes	No	Yes	Dense, low crown. Suffer in drought conditions and can be suseptible to unsightly mealy bug infestions. High establishment rates and a fast grower. Bright powder-yellow flowers with a deep red spot in the middle, in spring. Red green foliage. Dense habit.
Melaleuca leucadendra	Fine Leafed Paperbark	Exotic	No	Columnar	10m x 7m	>15 yrs	No	No	Yes	No	Possible	Myrtle rust host. Cream, white or greenish white flowers in spikes at any time in the year. Bark is white.
Melaleuca linariifolia 'snow in summer'	Melaleuca 'Snow in Summer'	Native	No	Round	8-10m x 5-7 m	60 yrs	Yes	No	Yes	No	Yes	Myrtle rust host. A hardy tree. Prominent fluffy white flowers in clusters in spring and summer. Leaves are linear in shape. Adaptable to a wide range of climates and soils.
Syzigium australe	Brush Cherry	Native	Common to coastal and highland rain forests. Neither frontline or secondline coastal.	columnar bushy	6-15m tall in cultivation x 3-6m	no data	No	Yes	Yes	No	Yes	White flowers from November to February followed by large fleshy pink-red attractive fruits, edible and often made into jams. Wind tolerant. Foliage grows right down to ground making it a good choice for hedging. Prone to psyllids. Prefers rich soils. Non-Invasive roots. Adaptable to most conditions.
Large (over 12 metres)												
Acmena smithiialso known as Sizygium smithii	Lillypilly	Native	No	Round	15-20m	100-200 yrs	Yes	Yes	Yes	No	No	Be careful where these berry-producing plants are installed. They will attract birds such as Currawongs that also feed on small birds. White fragrant flowers in spring followed by abundant pale pink-maroon fruits in autumn. Trunk is rich red-brown in colour with a bubbly texture. Excellent insect & bird attracting tree. Many varieties are available.
Araucaria columnaris	Cook Island Pine	Exotic	Front Line Coastal	Columnar	25m x 7m	Long	Possible	No	Yes	No	Yes	Slender spire-like crown. Short branches in whorls around the trunk.
Araucaria heterophylla	Norfolk Island Pine	Exotic	Front Line Coastal	Pyramidal	30m x 15m	Long	Possible	No	Yes	No	Yes	Whorled braches. Fast growing amongst araucarias.
Brachychiton acerifolius	Illawarra Flame Tree	Native	No	Columnar spreading	10-40m x 5-15 m	Long	Yes	Yes	Yes	No	No	Suitable for special areas only. Spectacular bell shaped crimson flowers, in clusters in spring and summers. Deciduous in summers. Hardy in a wide range of soils. Great as a feature plant. Attracts bees, nectar eating birds, butterflies and insects.
Casaurina glauca	Swamp she-oak	Native	Front Line Coastal	Columnar conical	10-20m x 6-8 m	100-200 yrs	No	Yes	Yes	No	No	A good windbreak tree. Wind and salt tolerant. Good for saline soils. Good for seasonal waterlogging areas. Fast growing, nitrogen fixing. Likes full sun. Has excellent potential to remediate discharge areas affected by salinity and seasonally waterlogging. Useful for sites subjected to heavy erosion as it has strong propensity to form root suckers.

Corymbia gummifera	Red Bloodwood	Native	Second Line Coastal	Columnar with long trunks with irregular canopy	20-25m x 10m	Over 100 years	No	Yes	Yes	No	No	Profuse white or creamy flowers on terminal branchlets from late summer to early autumn. Nectar attracts birds and insects. Fruit eaten by cockatoos. Sap eaten for food by glider possums. Older trees develop hollow branches which provide breeding & roosting opportunities for many species.
Corymbia maculata	Spotted Gum	Native	Second Line Coastal	Columnar with long trunks	30m x 10m	no data	No	Yes	Yes	No	No	Might work in a grouped planting due to interesting bark, but not really in keeping with character of area. Small white flowers. Flowering from May to September. Moderately drought tolerant. Is an important commercial timber species. Shallow roots. Susceptible to stem girdling by parrots.
Eucalyptus botryoides	Bangalay	Native	Frontline coastal	Tall upright with spreading canopy	20m x 7-9 m	Long lived upto 600 yrs	No	Yes	Yes	No	No	Only suitable place for such a tree where it would not need its limbs pruned. Has a habit of shedding limbs without warning even when the tree is in a healthy condition. Known for its hard, pink to dark red wood. Timber good for furniture.
Eucalyptus leucoxylon Megalocarpa	Yellow Gum	Not indigenous	Second Line Coastal	Round	8-10 m x 5- 6 m	no data	Yes	No	Yes	No	Yes	High branching, varied form Will attract honeyeaters such as bullying Noisy Miners. Roots known to cause sewer and drain bloackages. Grey green foliage, pendulous branches. Flowers large pink appearing in summer.
Eucalyptus piperita	Sydney Peppermint	Native	Second Line Coastal	Tall irregularly shaped	20m x 15m averages 8-10 m in height with a spread of 4-5 m	no data	No	Yes	Yes	No	No	Creamy white flowers in clusters. Foliage has strong distinctive peppermint aroma. Requires full sun. Nectar and pollen highly sought after by fauna when tree is in flower. Grey flaky rough bark.
Eucalyptus robusta	Swamp Mahogany	Native	No	Irregular columnar	20-30m tall	Over 20 years	No	Yes	Yes	No	No	Has a habit of shedding limbs without warning even when the tree is in a healthy condition. White creamy flowers in autumn to winter. Grows well in swampy waterlogged soils.
Eucalyptus tereticornis	Forest Red Gum	Native	Second Line Coastal	Very tall, linear	30m-50m x 10m	15-40 years	No	No	Yes	No	No	A very tall tree not really of local character. Fast growing. Mainly cultivated in forestry plantations. White filamentous flowers June to November. Drought sensitive.
Ficus macrophylla	Moreton Bay Fig	Native	No	Large spreading umbrella shaped	15 - 35m x 15-35m	Long	No	Yes	Yes	No	No	Large Evergreen Banyan Tree. Known for its imposing buttress roots. It is a strangler fig which strangles its host and eventually becomes a free standing tree by itself.
Ficus microcarpa var. Hillii	Hill's Weeping Fig	Not indigenous Native to Queensland	No	Broad canopy	15 - 20m x 12-16m	Long	No	No	Yes	No	Yes	Large Tree. Dense foliage. A very hardy tree. Roots are invasive and wide spreading. Should not be planted close to buldings and pipes.
Jacaranda mimosifolia	Jacaranda	Exotic	No	Dome shaped, branches ascending	10m x 8 m	80 - 90 years	Yes	No	Yes	No	Yes	Suitable for special areas. Beautiful long lasting blue flowers in summer with green soft foliage. Fast growing. Likes full sun in most soil types. It can handle periods of drought and periods of wet weather. Deciduous.

Lophostemon confertus	Brush Box	Native	Possible secondline coastal	Dense elongated rounded canopy	10-15m x 6-12 m	Over 20 years	Yes	No	Yes	Yes	Yes	Can be a weed in Sydney bushland. Good for urban landscapes. Very hardy & reliable. Lush dense foliage. Bark has salmon tones. White flowers in spring and summer. Robust strong and tolerates a wide variety of soils and climatic conditions. Can be pruned. Fire retardant, smog and drought tolerant. Fast growing. Good as a wind break, screen, in erosion control. Is a honey producing, bird nesting plant. Disease & pest resilient. Rarely sheds limbs.
Magnolia grandiflora	Bull Bay Magnolia	Exotic	Second Line coastal. These trees are tolerant of the typically sandy conditions associated with living along the coast.	Oval dome shaped	25m x 10 m	80-100 years	Yes	No	Yes	No	Yes	Suitable for special areas only. A beautiful dense tree with dark green glossy leaves. Large, elegant, cup shaped, white fragrant flowers in spring to summer.
Melaleuca quinquenervia	Broad Leaf Paperbark	Native	No	Columnar, elliptical	15-20m x	More than 100 years	No	Yes	Yes	No	No	Myrtle rust host. Very fast growing. White to cream coloured bottle brush like flowers at the end of summer and into autumn. Suitable for parks and gardens only as it develops a massive trunk. Used for revegetation where erosion control is required. Resistant to termite attack. Attracts wide range of fauna, specially birds and bats.
Melia azedarach var. australasica	White Cedar	Native	Deciduous native	Umbrella shaped	6-12m in height x 6-12m spread	20 years	Yes	No	Yes	No	No	A good choice if you need a deciduous native tree. Deciduous between June and August. Fruits are poisonous to humans. Fragrant lilac flowers in summer. Drought and frost tolerant once established. Prefers partial shade.
Zelkova serrata	Green Vase, Japanese Elm	Exotic	No	Triangular upturned vase shaped	12-15m x 10-12 m	20-80 yrs	Yes	No	Yes	Yes	Yes	Hardy. Deciduous. Leaves are alternatively arranaged. Short main trunk, low braching. Famous for its fall colours - foliage turns lemon-yellow to bright-red in autumn. Fast growing. Deep root system. Likes full sun or partial shade.

Palms in Parks

							Application					
Species	**Common Name**	**Indigenous / Native / Exotic**	**Coastal Exposure**	**Form**	**Size (H x W)**	**Longevity (Years)**	**Accent Plants**	**re-vegetation**	**parks**	**Plants for Stormwater Quality Improvement**	**Playgrounds**	**Notes on Form / Maintenance / Performance**
Archontophoenix cunninghamiana	Bangalow Palm	Native	No	Tall, slender	20m x	possibly 40-60 years	No	Yes	Yes	No	Yes	Attractive red fruits. Good for wet areas and gullies. Popular in parks.
Howea forsteriana	Kentia Palm	Native	Second Line Coastal	Tall, slender	5-10m x 2m	possibly 40-60 years	No	No	Yes	No	Yes	Palm. Species considered vulnerable by world Conservation Union. Elegant. Does not do well in temperatures below 10. Slow growing.
Livistona australis	Cabbage-tree Palm	Native	Front Line Coastal	Tall, slender	25-30m x 4-6m	possibly 40-60 years	No	Yes	Yes	No	Yes	Salt, frost and wind tolerant

Shrubs

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Application						Notes on Form / Maintenance / Performance
						Accent Plants	Streetscape (traffic calming devices and verges)	Re-vegetation	Parks	Plants for Stormwater Quality Improvement	Playgrounds	
Small (less than 1m)												
Acacia myrtifolia	Myrtle Wattle, Red-stemmed wattle	Native	No	Irregular, bushy	1-2m x 1-2m	No	No	Yes	Yes	No	Yes	Distinctive reddish stem. Globular, clustered, cream flowers in spring. Mature plant does not have true leaves but has leaflike flattened stems called phyllodes. They are elliptic & slightly curved. Hardy in most reasonably drained soils and can be lightly pruned. Prefers full sun and is moderately frost tolerant.
Acacia suaveolens	Sweet scented Wattle	Native	Possible secondline coastal	Prostrate to erect	0.3 - 3.0 m tall	No	No	Yes	Yes	No	Possible	Sweet smelling pale yellow to near white globular flowers in small clumps from winter to early spring.Lives upto 15 years. Highly variable both in foliage ans growth patern.Flowers and seeds are a food source for a variety of birds and invertebrates. Easy to maintain. Can be pruned. Species provides winter colour and can be used as low screen plant.
Baeckea imbricata	Spindly Heath Myrtle	Native	Front Line Coastal	Erect or spreading, bushy	1m x 1m	No	No	Yes	Yes	No	Possible	White flowers from early spring to late autumn. Interesting cross leaf arrangement. Very hardy. Tolerates high winds. Likes full sun to low sun. Can be grown as a low hedge.
Correa reflexa	Common Correa / Native Fuchsia	Native	No	Mound-shaped, can be Prostrate	0.5-1.2m x 0.5-1m	No	No	No	Yes	No	Yes	Bell shaped long flowers, pale green, red, or red with cream tips mainly from winter to early spring but flowers most year through. Attracts honey eating birds, bees, butterflies and other insects. Prefers well drained soils and likes semi-shade but can grow in any conditions. Hardy. Rarely troubled by pests or disease. Good groundcover or border plant.
Darwinia fascicularis	None recorded	Native	Requires adequate moisture	neat compact round	1mx1m	Possible	Yes	Yes	Yes	No	Yes	Light green needle-like leaves crowded at the end of branches, opposite or whorled around the stem. Attractive flowers in clusters nestled in the foliage from early spring to late autumn. They open creamy-white and turn bright red with age. Useful for cut flowers. Requires good drainage. Frost hardy. Grow well in full sun to heavy shade.
Micromyrtus ciliata	Fringed Heath-myrtle	Native	Possible secondline coastal	small Spreading, prostrate	0.5m - 1m x 0.5 - 2m	Yes	No	Yes	Yes	No	Yes	Small white, red or pink flowers from spring to early summer. Scented foliage. Drought resistant. Likes full sun to light shade and well drained soils. Good for cut flowers, as a border plant, feature plant, groundcover fragrant oils, erosion control, pipe and drain friendly. Honey producing. Attracts bees, butterflies and other insects.
Olearia tomentosa	Toothed Daisy Bush or Downy Daisy Bush	Native	No	Compact mounding	0.75-1 m x 0.75-1 m	Yes	Possible	Yes	Yes	No	Yes	Masses of daisy flowers open up mauve and age to pure white. Flowering in spring and summer. Can be pruned. Prefers moist free draining soil and sunny or light shade conditions. Attracts bees and butterflies. Drought resistant, tolerates light frost.
Pimelea linifolia	Slender Riceflower, Queen-of-the-bush	Native	No	Prostrate to erect, Stems globulous	Prostrate to 1.5m high	Yes	Possible	Yes	Yes	No	No	Attractive white to pink flowers in bracteate heads in winter and spring, resembling exploding fireworks. Spectacular in masses. Elongated bluish green leaves. Toxic to livestock. Best planted in well drained soils in a protected position. Bark can be processed in a strong thread. Good for urban bushlands.

Large (more than 1m)												
Acacia sophorae	Coastal Wattle	Native	Frontline coastal	Prostrate or decumbent	2-3 m	No	No	Yes	Yes	No	No	Bright yellow flowers occuring in the axils of the phyllodes as elongated spikes in late winter and spring. Suited for a wide range of soils. Does not like waterlogged conditions. Tolerates sea spray and sand blast and provides protection for less hardy plants. Tolerant of light frost. The plant has become a weed in certain areas. Used for dune stabilisation.
Adenanthos sericeus	Albany Wolly Bush	Not Indigenous	possible frontline coastal	Upright oval	0.5 - 5m x 2m	Yes	No	No	Yes	No	No	Small red inconspicuous flowers throughout the year forming a great source of nectar for honeyeaters. Silver-grey attractive contrasting foliage. Grows in a wide range of soils provided those are free-draining. Likes full sun but can adapt to semi-shade. Very hardy. Can be pruned. Vulnerable to borers. Also susceptible to Phytophthora cinnamomi and can have major issues with mealybugs.
Atriplex nummularia	Old Man Saltbush	Not Indigenous Native to Australia	Front Line Coastal	Bushy, irregular	3 x3m	No	Yes	No	Yes	Yes	Yes	Silvery grey foliage. Very adaptable. Very hardy. Can tolerate severe drought as well as periodic flooding. Salt and frost tolerant. Suitable for pruning. Useful as a windbreak. Can be grown as a hedge.
Baeckea linifolia	Weeping baeckea	Native	No	Weeping, in a 'tree' shape with a bare trunk	1.5-2m high - 2m	Possible	Possible	No	Yes	Yes	Yes	Small white tea-tree like flowers in massed displays along the weeping branches in summer. Hardy in most well drained soils. Prefers full sun or dappled shade. Tolerates moderate frost. Once established can withstand extended dry conditions. Wind tolerant, fast growing.
Banksia ericifolia	Heath Banksia	Native	Possible secondline coastal	Round	3-6m x 3-6 m	Yes	possible	Yes	Yes	No	Yes	Very beautiful plant, large striking spikes of yellow to reddish-orange flowers contrast with small, linear, light-green to greyish-green leaves. Flowering autumn to early spring. Attracts honey-eating birds. Likes sandy well drained soils. Portrays the unique australian image. very adaptable and hardy. Tolerates frost. Likes full sun or semi-shade conditions.
Banksia robur	Swamp Banksia	Native	possible secondline coastal	Spreading	2-2.5m x 2m	Yes	Possible	No	Yes	Yes	Yes	Greenish-yellow long flower heads changing to dull orange and brown with age, in winter and early spring, but can occur throughout the year. Leaves are stiff, leathery, egg shaped and broadest at the tip, and shiny above, dull beneath. Seeds in hairy woody follicles, retained on the plant for a considerable period. Will tolerate poor soils and poor drainage. Very hardy.
Bauera rubioides	Dog Rose	Native	Needs moist soil	Spreading	0.3-1.5m x 0.5 - 1m	Yes	No	Yes	Yes	Yes	Yes	Grows well in moist soils and flowers well in shady spots. Attractive delicate white or deep to mid pink flowers with a mass of yellow stamens, flowering sporadically throughout the year. Makes great understorey and is a good feature plant. Can be grown as a low hedge or screen. Likes consistent moist soil. Attracts bees and butterflies. Can be shortlived if not planted in right soil and water conditions.
Callistemon 'Captain Cook'	Captain Cook	Not Indigenous, Cultivar	Possible secondline coastal	Erect, compact, spreading	1.5-2m x 1-1.5 m	Yes	Yes	No	Yes	No	Yes	Bright pinkish- red bottle-brush shaped flowers in spring and summer. Lance shaped leaves. Hardy. Flowers best in full sun or partial shade. Drought resistant. Long lived. Ideal for screening, hedging or as a feature plant. Attracts bees, nectar eating birds, butterflies and other insects.

Callistemon 'Western Glory'	Bottle brush	Not Indigenous, Hybrid	No	Bushy	2-3m x 2-3 m	Yes	Possible	No	Yes	No	Yes	Bright red to rose pink bottle-brush shaped flowers in mid to late spring. Lance shaped leaves. Hardy. Flowers best in full sun or partial shade.Tolerates drought & moderate frost. Ideal for screening, hedging or as a feature plant. Attracts birds.
Calytrix tetragona	Common Fringe-myrtle	Native	No	Bushy rounded	1-2.5m x 0.5-1.5m	No	No	No	Yes	No	Yes	Leaves are tiny, slightly fleshy and give out a spicy perfume when bruised. White or pink star-shaped floers in clusters in October upto December. Hardy. Attracts bees in flowering season. After flowering the caiyces hang on for some weeks with long curling threads in golden bronze or purpulish coulrs and give the plant a feathery effect. Good as feature plant, screen or as a windbreak. Tolerates light frost. Drought resistant.
Correa alba	White Correa	Native	Front Line Coastal	Bushy, round mound shaped	1.5m x 1.5m	No	Yes	Yes	Yes	No	Yes	Low, dense shrub. Leaves are oval and greyish in colour. White flowers from leaf axils in a flora ltube split to give a star shape, from late autumn to winter. Can flower at other times in the year. Very hardy. Resistant to salt sprays and moderate frost. Responds well to pruning. Attracts nectar eating birds and other insects. Good border plant. Attractive foliage.
Crinum pedunculatum	Swamp Lily	Native	Secondline coastal	Tufting	2.0m x 2.0-3.0 m	Yes	Yes	Yes	Yes	No	Yes	Pleasantly perfumed white showy flowers in clusters from november to march. Grows well in swampy areas. Does well in full sun to 70% shade. Can be planted successfully below eucalypts. Sutable for coastal areas and tolerates frost. Susceptible to some caterpillars and snails and slugs.
Doryanthes excelsa	Gymea Lily	Native, Endemic to coastal areas of NSW near Sydney	Possible secondline coastal	Clumplike with swordlike leaves with flowers borne on stems 2-4 m high.	2-4m x 2-3 m	Yes	Possible	Yes	Yes	No	Yes	Attractive flowers, bold foliage. Large red trumpetlike flowers on terminal heads on Long flowering stems 2-4 m high from October to November. Plants do best in deep soil. Suitable for large rockeries and gardens, as a feature plant, as a screen and windbreak. Likes full sun or partial shade. Plant frost resistant but flowers need frost protection. Pollution tolerant, used in erosion control. Attracts nectar feeding birds, butterflies, bees and other insects.
Grevillea mucronulata	Green spider flower	Native, Endemic to NSW	No	Spreading or decumbent to erect	1-3m x 1-3m	No	No	No	Yes	Yes	Yes	Green to reddish brown spider-like flowers in pendant clusters most of the year. Leaf and flower colours vary. A hardy plant. Likes well drained sunny areas. Attracts bees and honeyeaters.
Grevillea sericea	Pink Spider Flower	Native	No	Bushy rounded	0.5 - 2m x 2m	No	Possible	No	Yes	No	Yes	Cream, pink or mauve spider-like flowers mainly from August to December, but flowers all year. Leaves in whorls of 3. Prefers sunny to semi-shade conditions. Does not attract birds or bees. Fast growing. Good as a hedge plant.
Grevillea speciosa	Red Spider Flower	Native, Endemic to NSW	No	Bushy rounded	0.4-3m x 2m	No	Possible	Yes	Yes	No	Yes	Masses of bright red spider-like flowers mainly through winter and spring but flowers June through to March. Ideal for smaller nectar feeding birds like spinebills and honeyeaters. Fast growing. Likes full sun or light shade.
Hakea gibbosa	Hairy Hakea	Native	No	Irregular Oval	1-3m x 1.5m	No	No	Yes	Yes, away from pedestrian areas	No	No	Very prickly do not plant near pedestrian areas. Stiff grey-green long needle-like leaves covered with fine hair. Has a particularly attractive dense habit. Small cream coloured flowers in loose clusters during early winter followed by large ovoid pods. Likes open sun and makes a good screening hedging plant.
Hakea teretifolia	Daggar Hakea	Native	No	Spreading	1-2.5m x 0.5 - 2.5m	No	No	Yes	Yes, away from pedestrian areas	No	No	Prickly. White flowers on braches, from September to February. Interesting dagger shaped seed pods. Attracts small birds and honeyeaters. Is a good prickly deterrant.

Jacksonia scoparia	Dogwood	Native	No	Broomlike open weeping habit	3-4m tall	No	No	No	Yes	No	Yes	Masses of yellow to light orange pea-like flowers in recemes from late spring to summer. Greyish foliage. Flat angular or winged branches which are entirely leafless. Hardy and adaptable. Does well in full sun or partial shade. Good as a small shade tree, specimen or fence cover. Requires good drainage.
Kunzea ambigua	Tick bush	Native	No	Stiff, upright spreading with fibrous bark in NSW. Some forms are low with a weeping habit	2.5m - 5m x 2.5m - 5m	No	No	Yes	Yes	Yes	Yes	Masses of small, honey-scented white flowers borne in heavy sprays in spring. Leaves are small and crowded. Distinctive bowl-shaped seed capsules, often with a rosy bloom. Adapts to many situations. Good as a background shrub, for screening or as a feature plant. Grows well in sandstone and granite based soils. Very hardy. Can withstand moderate frost. Attracts bees, nectar eating birds, butterflies and other insects.
Leptospermum laevigatum	Coastal Tea Tree	Native	Possible frontline secondline coastal	Muiti-stemmed, spreading umbrella shaped	1.5 - 4 x 3m	No	No	Yes	Yes	No	No	White 5 petalled flower, flowering April to October. Foliage greyish, attractive. Fruit woody, attractive, flat topped containing many seeds. Salt resistant and very hardy. Plants prefer full sun or partial shade. Highly invasive outside its natural habitat.
Leptospermum squarrosum	Pink Tea-tree, Peach blossom tea-tree	Native	Possible secondline coastal	Muiti-stemmed, erect, globular	2.5 - 4m x 1.5 m	Yes	Possible	Yes	Yes	No	Yes	White to pink 5 petalled flower, flowering irregularly but often from autumn, through winter up to spring. Fruit woody, attractive, flat topped containing many seeds. Extremely hardy. Tolerant of both well drained and damp conditions. Good as an informal hedge, windbreak and is salt resistant.
Leptspermum polygalifolium	Yellow Tea-tree, Tantoon	Native	No	Muiti-stemmed	0.5-3m tall	Yes	Yes	No	Yes	Yes	Yes	White to greenish attractive flowers in spring to early summer. Leaves are sometimes aromatic. Fruit woody, attractive, flat topped containing many seeds. Has high wildlife value and is valued as an ornamental and a hedge plant. Tolerates light frost and low level non-continuous waterlogging.
Macrozamia communis	Burrawang	Native	Possible frontline secondline coastal	Tufted palmlike	2-4 m tall	No	No	Yes	Yes	No	No	Type of australian cycad. Large trunked. Sought after for its highly ornamental qualities. Prefers partially shaded locations. Can adapt to full sun with adequate watering. Transplants readily. Can be affected by mealybugs. Can live upto 120 years. Generally forms subterranean stems when in sand dunes.
Melaleuca ericifolia	Swamp Paperbark	Native	No	Tall umbrella shaped, can be multi-stemmed	Upto 8 m tall	No	No	No	Yes	No	No	Profuse, cream coloured bottle brush-like flowers in spring and summer. Pale white or brownish papery bark. Tolerant of most soils and situations including waterlogging and heavy frost. Responds to pruning, can be grown as a hedge or screen. Excellent as a shelterbelt for animals and a wind break. Likes full sun or partial shade. Grows well besides streams and coastal swamps. This melaleuca has fragrant flowers which attract birds.
Melaleuca nodosa	Ball Honey Myrtle, Prickly-leaved paperbark	Native	No	Irregular umbrella shaped	1-4m tall	No	No	Yes	Yes	No	No	Corky to papery bark. White to yellow flowers in dense inflorescenses from September to November but also April through to January. Leaves narrow, needle-like. Fruits are woody, cup-shaped. Hardy. Adaptable to wide variety of climates and soils. Attracts native bees, honey bees and other insects.
Philotheca myoporoides 'Profusion'	Long-Leaf Wax Flower - compact form	Native cultivar	No	Globular	0.8 - 1m x 0.8 - 1m	Yes	Possible	Yes non-cultivar	Yes	No	Yes	Masses of starry whilte flowers following pink buds in spring. Adapts well to wide range of environments. Leaves have a wonderful apple-like fragrance when crushed. Frost tolerant. Grows well in full sun or partial shade. Attracts insects.

Syzygium australe 'Aussie Copper'	Brush Cherry, Aussie copper Lilly Pilly	Native	No	Columnar	1-4m x 1.5 m	Yes	Possible	No	Yes	No	Yes	Glossy green leaves with coppery coloured new growth. White filamentous flowers in spring. Attractively shaped red coloured fruits. Non-invasive roots. Good as specimen, can be grown as a hedge, along roadside, as a windbreak and is fast growing. Resistant to drought, pollution, frost, coastal exposure and tropical heat. Suitable for most soil conditions. Likes full sun or light shade.
Syzygium australe 'Blaze'	Lilly Pilly, Rose apple	Native	No	Globular oval	1.5 - 2.5m x 1.2 - 1.5m	Yes	Yes	No	Yes	No	Yes	A small naturally dense shrub with mid-sized glossy green leaves with bright red new growth. White to cream powder-puff flowers in spring are followed by pinkish fruits that attract birds. Low maintenance, drought tolerant, can grow in any soil types. Likes full sun to light shade conditions. Responds well to pruning and can be grown as a hedge. Good for screening, as a windbreak, erosion control and is play-ground friendly. Attracts bees, birds and butterflies. Fruits are edible and are eaten fresh or as a jam.
Syzygium Australe 'Select'	Lilly pilly 'select form', select scrub cherry	Native	No	Columnar	3-5m x 1.5 m	No	No	No	Yes	No	Yes	A compact, bushy, large Australian native shrub with glossy dark green foliage and flushes of bronze-tinged new growth. 'Select' is a form of Syzygium australe that was introduced to replace the original species because of its resistance to Psyllid and 'clean' status. Fluffy white pendulous flowers in mid Summer followed by edible purplish-red berries. Thrives in full sun but will tolerate part shade. Is tolerant of most soil types and conditions and will withstand light frosts once established. Fast growing. Responds well to pruning and shaping. Great plant for hedging, screening and topiary work.
Westringia fruticosa	Coastal Rosemary	Native	Front Line Coastal	Globular	1.5m x 1.5m sometimes 2m x 4m	Yes	Yes	Yes	Yes	Yes	Yes	Flowers are lightly scented, small white to pale mauve, hairy and have upper petal divided in two lobes. Flowering throughout the year but mainly spring to summer. Foliage grey to dark green with underside of leaves having a silvery tint. Very hardy, fast growing and long lived. Will grow in full sun or partial shade in most soil conditions. Can be pruned. Drought frost and salt spray tolerant. Good as a specimen plant or for hedging and screening. Responds well to pruning and can be grown as a hedge.

Tufting Plants

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Application						Notes on Form / Maintenance / Performance
						Accent Plants	Streetscape (traffic calming devices and verges)	Re-vegetation	Parks	Plants for Stormwater Quality Improvement	Playgrounds	
Anigozanthos 'Bush gem'	Kangaroo Paw	Native / Cultivars	Possible second line coastal	Free branching	0.6- 0.8 m x 0.45 m	Yes	No	No	Yes	No	Yes	Prolific flowering. Tough, disease tolerant plants. Varieties available. Bird attracting. Good for cut flowers. Full sun or partial shade conditions. Drought tolerant, coastal - salt tolerant, light frost tolerant.
Anigozanthos 'Bush Gold'	Kangaroo Paw	Native	Possible second line coastal	Tufting	0.8 - 1m x 0.5 - 0.6 m	Yes	No	No	Yes	No	Yes	Yellow gold flowers all year through. Good for cut flowers. Attracts bees, nectar eating birds & butterflies. Good disease tolerance. Full sun or partial shade conditions. Drought tolerant, coastal - salt tolerant, light frost tolerant.
Carex appressa	Tall Sedge	Native	Possibly not	Densely tufted	0.8 - 1m x 1 m	No	No	Yes	Yes	Yes	No	Foliage may scratch, so keep away from pedestrian traffic. Forms great foliage contrast. Very hardy and can be used in both wet and dry aspects of landscape. Ideal for rain gardens. Full sun to partial shade conditions. Medium frost tolerant.
Carex inversa	Common Sedge, Knob sedge	Native	Possible Front Line Coastal	Loosely tufted	0.1 - 0.5 m x 0.1 - 0.3 m	No	No	No	Yes	Yes	No	High frost tolerance, high coastal tolerance, high drought tolerance
Clivea minata	Clivea	Exotic	No	Tufting	0.45m x 0.45 m	Yes	No	No	Yes	No	Yes	Stunning large funnel-shaped, faintly perfumed flowers in vibrant shades of red, yellow and orange in spring and summer followed by showy brightly coloured berries. Good ornamental plant. Can withstand light frost. Requires dappled shade outdoors.
Dianella congesta	Beach flax lily	Native	Front Line Coastal	Tufting	1.0 x 2.5m	Yes	Yes	No	Yes	No	Yes	Mid- to dark blue flowers in spring-summer followed by bright shiny blue-purple berries. A very hardy plant.
Dianella caerulea	Blue flax lily	Native	Possible secondline coastal	Tufting	1.2m x 0.6m	Yes	Yes	Yes	Yes	Yes	Yes	Dark green blade like leaves with blue flowers in spring and summer followed by indigo coloured berries. Very hardy and long living. Attracts fruit eating birds and butterflies.
Dichelachne crinata	Long Haired Plume Grass	Native	Possible secondline coastal	Tufting, erect	1.5m tall	No	No	Yes	Yes	No	No	Tall upright seed heads whitish purple. Does well near the shore as well as in woodlands. Does well in full sun to 50% shade.
Dichopogon fimbriatus also known as Arthropodium fimbriatum	Nodding Chocolate lily	Not Indigenous	No	Tuberous tufting	0.5-1.0m x 0.4m	No	No	No	Yes	No	Yes	Strong chocolate fragranced beautiful purple flowers with fringed petals from beginning of spring to late summer. Does well in all soils. Resilient and can survive a range of temperatures extremes, fires and grazing. Does well in full sun.
Diplarrena moraea	Butterfly flag iris	Exotic	No	Tufting	0.6 x 0.4m	Yes	No	No	Yes	No	Yes	Lightly scented white tri-petaled flowers in spring and summer, long narrow leaves. Does well in full sun. Frost hardy. Good resistance to insect and disease attack.
Ficinia nodosa (formerly: Isolepis nodosa cv arida)	Knobby Club Rush	Native	Front Line Coastal	Tufting	0.8 x 0.6m	No	No	Yes	Yes	Yes	Possibly yes	Upright to gently weeping sedge with evergreen deep green cylindrical foliage. Can take full exposure to ocean winds. Does well inland too. Semi-spherical brownish/cream flower at the top of the stems in spring and summer. Does well in full sun to 70% shade. Can handle light frost.
Gahnia aspera	Rough SawSedge	Native	No	Tufting	0.75 x 0.6m	No	No	Yes	Yes	No	No	Long straplike leaves. Cream flowers in dense clusters. Attractive red berries. Keep away from pedestrian areas as leaves are very rough and can cut deep. Tolerates semi-shade. Does well in moist soils. Frost tolerant.
Imperata cylindrica	Blady grass, Cogon grass	Native	Possible second line coastal	Tufting, Erect	0.6 - 3.0 m x 0.3m	No	No	Yes	Yes	No	Possibly yes	Fluffy white inforescence. Has medicinal properties and can be used in papermaking, construction, as fibre and as an ornamental. Good for soil stabalization and erosion control. Tends to become an invasive weed in some areas as it adapts well to harsh conditions and any soil types.
Juncus krausii	Sea Rush, Salt marsh rush	Native	Salt marshes, estuarine and coastal areas	Tussock forming	1.0m x 1.0m	No	No	Yes	Yes	Yes	No	Deep green, cylindrical reed like, arching foliage. Grows well in full sun to 90% shade in permanently wet to dry soils. Flowers clustered, brownish, small in spring-summer.
Juncus usitatus	Common Rush	Native	No	Desnsely tufted	0.4-1.1 m tall	No	No	Yes	Yes	Yes	No	Usually good around streams and river banks and damp sites. Good for wetland rehabilitation. Can become very dominant in wet environments.

Liriope muscari	Evergreen Giant, Big Blue Lilytuft	Exotic	No	Grasslike, tufting	0.6 x 0.5m	Yes	Yes	No	Yes	No	Yes	Small showy white to violet-purple flowers in tiered whorls in late summer. Glossy dark arching leaves. Low maintenance, drought tolerant, hardy. Grows well in full sun or partial shade. Prone to snail attacks.
Libertia paniculata	White Native Iris, Grass Flag	Native	No	Tufting, weeping	0.5 - 0.7m x 0.2 - 0.5 m	Yes	Yes	Yes	Yes	No	Yes	White flowers in spring. Grows well in light shade. Tolerates light frost. Attracts butterflies and other insects.
Lomandra longifolia	Mat Rush	Native	Possible frontline coastal	Tufting	0.7 - 1.0m x 1.0m - 1.3 m	No	Yes	Yes	Yes	Yes	No	Grassy. Leaves are glossy green, shiny, firm and flat. Flowers are scented and attracts pollinating beetles. Flowering late winter/ early spring till summer, straw-coloures sessile flowers. Highly drought tolerant but can also withstand occasional flooding and low temperatures. Used for basket weaving and tubers are eaten. Grows well in full sun to 70% shade. Will handle full exposure to coastal winds.
Lomandra longifolia 'Tanika'	Lomandra Tanika	Cultivar	Possibly not	Tufting	0.5-0.6m x 0.65 m	Yes	Yes	No	Yes	Yes	Yes	Soft evergreen grasslike foliage. Drought & frost tolerant. One of the toughest plants. Good for full sun to moderate shade conditions. Small yellow flowers from april to October. Is soft to touch.
Patersonia glabrata	Native Iris	Native	No	Tuberous tufting	0.3-0.8 m tall	No	No	Yes	Yes	No	Yes	Recommended as a rockery plant in sunny situations. It has erect dark green leaves 15-30 cm long and blue to light purple tri-tepal flowers from september to november.
Patersonia longifolia	Native Iris, Dwarf purple flag	Native	No	Tuberous tufting	0.4 m x 0.4m	No	No	Yes	Yes	No	Yes	Purple tri-tepal flowers. Require full sun and good drainage. Occurs on the coast and adjacent to sandstone plateaus. Bluish green leaves. Smaller plant than the sericea.
Patersonia sericea	Native Iris, Silky purple flag	Native	No	Tuberous tufting	0.6m x 0.6 m	No	No	Yes	Yes	No	Yes	Deep violet-blue tri-tepal flowers from June to November. Grass-like silky greyish green leaves. Thrives in hot dry situations
Phormium cookianum also knows as Phormium colensoi	Mountain flax	Exotic	Possibly not	drooping tufting	1m tall x 1m wide - 2m long leaves	Yes	No	No	Yes	No	Yes	Greenish yellow or orange flowers grow into twisted seed pods. Used in maori traditional textiles. Bright gree nfoliage. Low maintenance plant. Good for wet or dry conditions, sun or shade, exposed or sheltered. Good food source for native birds.
Poa affinis	Tussock Grass	Native	Possibly not	Tufted	1.2 m tall	No	No	Yes	Yes	No	No	Grass - grows in dryish sandstone areas or in soils based on sandstone
Poa poiformis	Coast Tussock Grass	Native	Coastal foreshores and estuaries	Densely tufted	1m x 1m	No	No	Yes	Yes	No	Possibly yes	Grass - blue green leaves, full sun to partial shade conditions. Drought tolerant, salt tolerant, frost hardy. Fast growing. Grows in most soil types. Good for feature planting or revegetation projects.
Sarcocornia quinquenervia	Glasswort	Native	Grows along coasts, in dry lakes, saltmarshes and saltpans. Grows between mangroves and the shoreline.	No data	No data	No	No	Yes	Yes	No	No	Listed as "Endangered Ecological Community" in NSW.Used in salads and dishes.
Suaeda australis	Seablite	Native	Coastal or estuarine shorelines or salt marshes	Spreading habit with branching occurring from base	0.1 m - 0.9m tall	No	No	Yes	Yes	No	No	Leaves are light green to purpulish-red in colour, succulent, linear and flattened.
Themeda australis (coastal form)	Kangaroo Grass	Native	Coastal headland heaths	Densely tufted	1.5 m tall	No	No	Yes	Yes	Yes	No	Green to blue-green foliage in spring, changes to purple and later brown during aytumn and winter. Vigorously growing. Highly shade tolerant. Drought tolerant.

Groundcovers

						Application						
Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Accent Plants	Streetscape (traffic calming devices and verges)	Re-vegetation	Parks	Plants for Storm-water Quality Improvement	Playgrounds	Notes on Form / Maintenance / Performance
Banksia integrifolia (prostrate form)	Prostrate Banksia, Banksia 'Roller Coaster'	Not Indigenous, Cultivar	Possible Front Line Coastal	Prostrate	0.15m tall x 4m wide	No	No	No	Yes	No	No	Lemon Yellow flowers in spikes from autumn to winter. Good for semi arid conditions, beach reclamation and erosion control. Drought tolerant and hardy to light frost. New growth is bronzy green. Leaf underside is very light contrasting with the dark green on top.
Bolboschoenus caldwellii	Club Rush	Native	For swamps	Grasslike, Erect	0.3 - 0.9 m x 0.3m	No	No	Yes	Yes	Yes	No	Full sun or partial shade, frost hardy and salt tolerant, easy to care. Stems are triangular in shape. Good wetland plant.
Brachycome angustifolia	Stiff Daisy	Native	No	Low spreading	0.3m tall	No	No	No	Yes	No	Yes	Pink or light purple daisy flowers in spring. Moist soils in full sun or semi-shade conditions preferred.
Carex pumila	Strand or Spreading Sedge	Native	Front Line Coastal on sand dunes along the coast	Grass, Erect, Loosely tufted	0.05-0.2m tall	No	No	Yes	Yes	No	No	Useful sand binding plant
Carpobrotus glaucescens	Pig Face	Native	Front Line Coastal	Prostrate, creeping	0.1 - 0.3m x 1-3m	No	No	Yes	Yes	No	Yes	Succulent coastal groundcover with deep pink flowers in spring and autumn. Low maintenance. Good as a groundcover, feature plant or border plant. Fast growing. Helps with erosion control. Attracts bees, butterflies and other insects.
Chrysocephalum apiculatum	Yellow buttons	Native	Suitable for both inland and coastal plantings.	Low, spreading	0.2-0.6m x 1m	No	No	Yes	Yes	No	Yes	Golden yellow buttonlike flowers throughout the year but mostly spring. Beautiful silvery grey foliage. Caterpillars and aphids tend to attack the flower buds and new shoots. Reasonably long lived 6-10 yrs. Frost-hardy, salt, wind & drought tolerant. Fast growing. Prefers full sun. Food plant to Austalian painted lady, a butterfly. Long-lasting cut flowers.
Cotula coronopifolia	Water Buttons	Naturalised non native	No	Erect to spreading	0.05-0.1 m tall	No	No	Yes	Yes	Yes	No	Yellow buttonlike flowers in winter and spring. Grows well in wet soils that are periodically flooded. Good for waterlogged soils. Very salt-tolerant.
Dichondra repens	Kidney weed	Native	No	Small prostrate herbaceous plant	0.2m x 1.5m	No	Possible	Yes	Yes	No	Yes	Good lawn substitute. Grows well in most climates. Fast growing.
Einadia nutansalso known as Chenopodium nutans	Nodding Saltbush, Climbing saltbush	Native	Front Line Coastal	Prostrate or twining	Prostrate or twining to 1m tall X 1m	Yes	No	Yes	Yes	No	Yes	Climbing groundcover. Leaves flat, triangular arrowhead shaped, alternate or opposite. Flowers inconspicuous green balls in summer, transforming into very conspicuous tiny attractive bright-red squashed spherical berries in autumn. Requires low maintenance and low water.
Grevillea 'Poorinda Royal Mantle'	Prostrate Grevillea	Not Indigenous Cultivar	possible secondline coastal	Prostrate, dense, spreading	0.1 m x 3-8m	No	No	No	Yes	No	Yes	Toothbrush type red flowers all year through. Attractive toothed leaves. Attracts bees, nectar eating birds, butterflies and other insects. Low maintenance, drought resistant. Good for erosion control. Fast growing. Good for covering large areas.
Grevillea curviloba	Prostrate Grevillea	Native, Endemic to Perth	No	Prostrate to erect	2.5m x 3-4.6m	No	No	No	Yes	No	Yes	Spider type white or cream flowers in late winter to mid-spring Aug-Oct. Attracts native bees. Grows well in sun or partial shade. Good for planting under large Eucalypts. Fast growing. Drought tolerant. Requires pruning.
Grevillea 'gaudichaudii'	Gaudichaudii	Endemic to NSW	possible secondline coastal	Prostrate	0.2- 0.3m x 1 to 3m	Possible	Possible	No	Yes	No	Yes	Red toothbrush style flowers in spring and summer. Ferny, naturally dense foliage. Useful weed deterrant. Good for erosion control. Fast growing.Attracts nectar eating birds, butterflies and insects. Sunny, light shade coditions preferred. Tolerates light frost. Low maintenance, drought resistant. It is a naturally occurring hybrid between Grevillea acanthifolia subsp. acanthifolia and Grevillea laurifolia.
Hibbertia diffusa	Wedge Guinea Flower	Native	No	Prostrate	0.3- 0.5m x 0.5 - 1.5m	No	No	Yes	Yes	Yes	Yes	Yellow flowers over long periods in spring and summer. Hardy. Requires sunny or partial shade conditions and resonable drainage.

Pachystegia insignis	Yellow Rock Daisy	Exotic	Frontline / secondline coastal	Globular	0.8 - 0.9 m x 1.2 m	Yes	No	No	Yes	No	Yes	Beautiful tough ornamental plant. Soft velwet leaves. Large white gerbera like flowers with yellow centres. Likes full sun
Pelargonium australe	wild Geranium	Native	Frontline / secondline coastal	Sprawling	0.3 - 0.5m x 0.5-0.6 m	No	No	Yes	Yes	No	Yes	Flowers pink to white with dark markings, in umbels from October to March. Prefers sunny or lightly shaded places. Wind and salt tolerant
Lobelia alata	Coastal Lobelia	Native	No	Trailing	0.3 x Trailing	No	No	Yes	Yes	No	Yes	Good in swampy heaths, brackish marshes, wet rocks near sea. Mauve lobe shaped flowers in spring. Winged stems. Can withstand frost for short periods.
Melanthera biflora	Beach Sunflower	Native	Possible secondline coastal	sprawling, scrambling habit	2m tall	No	No	Yes	Yes	No	Yes	Medicinal value. Leaves valued against stomachache, flowers are used as a purgative. Plant can become woody at the base. Scrambles over ground or grows into other plants for support. Yellow daisylike flowers. Moderately salt tolerant.
Myoporum parvifolium	Creeping Boobialla	Not Indigenous	No	Prostrate	0.3m x 2m	No	No	No	Yes	No	Yes	Flowers star shaped, white or pale pink with purple spots. Flowering through late spring through to early autumn. Hardy plant. Good in sunny positions. Does not do well in shade.
Oplismenus aemulus	Basket Grass	Native	No	weak trailing Creeping grasslike	0.3m tall	No	No	Yes	Yes	No	Yes	Creeping grass, prefers shady forests, flowers most of the year.
Plectantrus parviflorus	Native Spur Flower	Native	No	Spreading, mound shaped	0.4-0.5 m x 0.3-0.4 m	No	No	No	Yes	No	Yes	Blue-lilac perfumed flowers in spires in spring summer and autumn. Leaves are variegated. Attracts butterflies and native bees. Low maintenance hardy plant. Grows well in sunny as well as difficult shady areas.
Pratia purpurascens	White Root	Native	No	ground hugging or standing	0.15 tall	No	No	Yes	Yes	No	Possible	Grows in damp sheltered areas. Small herbaceous plant. Single white to pale purple flowers at end of long stalks. Flowering December to May
Scaevolia aemula	Fairy Fan Flower	Native	Secondline coastal	Prostrate	0.12 m x 1m	No	No	Yes	Yes	No	Yes	White or blue flowers on spikes from August to March. Prefers sunny or partially shaded conditions. Tolerates salt sprays and periods of drought.
Scaevola calendulacea	Dune Fan Flower	Native	Front Line Coastal	Spreading	0.2 m x 2m	No	No	Yes	Yes	No	Yes	High salty winds tolerant. Moderately fragrant blue flowers from late spring ot late autumn
Sporobolous virginicus	Sand counch, Saltland genie	Native	Front Line Coastal. High salt tolerance	Creeping	0.3-0.5 m tall	No	No	Yes	Yes	Yes	No	Common to coastline
Viola hederacea also known as Viola banksii	Native Violet	Native	No	Spreading	0.2 - 0.4m x 0.3 - 2m	No	No	Yes	Yes	Yes	Yes	Can be used as a lawn substitute in absense of foot traffic.
Xerochrysum bracteatum, name Change from Bracteantha bracteata	Yellow Diamond Head, Everlasting Daisy	Native	No	Dense, Clumping	0.2-0.5m x 0.2-0.5m	Possible	No	Yes	Yes	No	Yes	Golden flowers produced most of the year with best bloom in spring. Quick growing. Good for cut flowers.

Ferns

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Application						Notes on Form / Maintenance / Performance
						Accent Plants	Streetscape (traffic calming devices and verges)	Re-vegetation	Parks	Plants for Stormwater Quality Improvement	Playgrounds	
Adiantum aethiopicum	Common Maidenhair Fern	Native	No	Low, spreading clumps	0.1-0.45m in height x 0.6-1.0m wide	No	No	Yes	Yes	No	Yes	Soft lacy plants. Very tough. Likes moist shaded locations. Good groundcover fern. Fronds are horizontal and layered.
Asplenium australasicum	Bird's Nest Fern	Native	No	Dome shaped, Spreading,	1.5 m tall x upto 3m wide	Yes	No	Yes	Yes	No	Yes	Can grow on trees, rocks and in the soil. Consists of large elliptical shaped fronds arising from a central stem. Very hardy. Likes plenty of moisture although plants tend to rot in poorly drained soils. Prefers filtered sun.
Blechnum ambiguum	(none recorded)	Native	No	Semi-erect	0.5m tall	No	No	Yes	Yes	No	Possible	Pendant shaped fronds. Fronds are pale green with pinkish new growth. Common on wet rocks, open forests and rain forests.
Cyathea australis	Rough Tree-fern	Native	Possible secondline coastal	Palm-like Tree Fern	Up to 12m tall x 4-6m wide	Yes	No	Yes	Yes	No	Yes	Has a mass of hair-like scales on it s trunk. Extremely hardy species capable of withstanding direct sun when the roots are wet. Tolerant of salty winds. Provides nesting substrate for red bees. This bee is a pollinator of other plants in Australia. Adaptable ot a variety of climate and soils.
Cyanthea cooperi	Lacy Tree Fern	Native	No	Palm-like Tree Fern	12m tall with 0.15 dia trunk	Yes	No	Yes	Yes	No	Yes	Delicate lacy bright green fast growing fronds. Has a more slender trunk than the C. australis with distinctive coin spots where old frond shave broken off the trunk. Very hardy.
Dicksonia antarctica	Soft Tree Fern	Native	No	Palm-like Tree Fern	12-15m x 6m	Yes	No	Yes	Yes	No	Yes	Likes moist areas with high water content. Has small round sori. Can be used as a host for epiphyte ferns, orchids and bryophytes. Provides shelter for more delicate ferns.Can be easily transplanted. Is a food source. Thrives equally well in sun or shade provided it has adequate water.
Doodia aspera	Rasp Fern	Native	No	Spreading	0.35m tall	Possible	No	Yes	Yes	No	Yes	Fern adapted to both sunny and shaded areas. Grows best in shady conditions. Grows well in rainforests and eucalypt forests. Reddish new growth. Tolerant of short dry periods. Adaptable to cultivation. Drainage needs to be sufficient to prevent waterlogging.
Histiopteris incisa	Bats Wing Fern	Native	No	No data	1-2m long fronds	Possible	No	Yes	Yes	No	Possibly No	Usually found in moist areas. Fronds are widely spaced. Soft in texture. Requires little sunlight. Highly aesthetic in appearance. Can become invasive in wet forests.
Hypolepis muelleri	Ground Fern	Native	No	Erect	0.3 to 1m tall with an erect habit	No	No	Yes	Yes	No	Possibly No	Grows along creeks and swamps in open forest or margins of rainforest. The fronds are erect, stiff and harsh but soft to touch.
Pteridium esculentum	Austral bracken	Native	No	Dense, spreading, Creeping roots.	0.6-1.5m tall	No	No	Yes	Yes	No	Possibly No	Used as food, medicine. Common in dry and wet sclerophyll forest. Forms dense understory. Is food for a variety of insects. Can be invasive.

Vines / Climbers

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Application						Notes on Form / Maintenance / Performance
						Accent Plants	Streetscape (traffic calming devices and verges)	Re-vegetation	Parks	Plants for Stormwater Quality Improvement	Playgrounds	
Billardiera scandens	Apple Berry	Native	Possible secondline coastal	Climbing	0.2- 1.5 m high x 0.5 - 3m wide	Yes	No	Yes	Yes	No	Yes	Good plant for all purposes. Non-invasive. Tough and adaptable. Excellent feature plant and screening plant. Attractive bell shaped pink and white flowers in clusters throughout spring. Good nectar provider for native birds. Fruits are edible.
Cissus antarctica	Kangaroo Vine	Native	No	Vigorous dense Climber	0.3-4 m high x 0.5 - 6 m wide	No	No	Yes	Yes	No	Yes	It is tough and reliable. Can also be used as groundcover. Can grow in light shady to dark shady areas. Good for erosion control. Pollution tolerant, fast growing.
Cissus hypoglauca	Water Vine	Native	No	Woody, Climbing	Large	No	No	Yes	Yes	No	Yes	Edible fruits, used to make jams and jellys. Grows in well developed upland rain forest. Sap can be drunk as water.
Hardenbergia violacea	Purple Coral Pea	Native	No	Scrambling or more clumping shrubby plant habit; woody, evergreen	0.2-0.8 m x 2-3m	Yes	Yes	Yes	Yes	No	Yes	Bright purple and possibly pink white & violet pea flowers in masses, in winter spring and possibly summer. Drought tolerant. Not frost tolerant. Fast growing. Highly sensitive to waterlogged soils. Tolerates partial shade. Popular as a garden ornamental. Attracts bees, butterflies and other insects.
Hibbertia scandens	Climbing Guinea Flower	Native	frontline / secondline coastal	Good Creeping and twining plant	0.3 x 3m	Possible Yes	Yes	Yes	Yes	No	Yes	Groundcover under trees/climber. Ideal for trailing down rockeries. Large attractive bright yellow flowers on dark green decorative foliage. Low maintenance. Can be clipped to a low hedge. Great for erosion control. Can grow in sun or shade. Highly salt talerant. Attracts bees, butterflies and lizards.
Pandorea pandorana	Wonga Wonga Vine	Native	possible secondline coastal	Woody climbing vine	Height 2-20 m; width 1-9 m	No	No	Yes	Yes	No	Yes	Flowers from winter to summer, has massive pendulous flowers with variable colour from pure white with purple-maroon veining through to yellow. A good butterfly food plant.
Sarcopetalum harveanum	Pearl Vine	Native	possible secondline coastal	Slender vine	No Data	No	No	Yes	Yes	No	Yes	Grows in well developed lowland and upland rain forest. Red and yellow flowers occur on racemes in summer. Flowers are tiny. Fruit is red and resembles miniature grapes. It is food for larvae of two types of moth.
Stephania japnonica var. discolor	Stephania, Snake Vine	Native	possible secondline coastal	Slender vine, a twining climber	No Data	No	No	Yes	Yes	No	Yes	Flowers mostly in summer. Drooping habit. Grows in or near all types of warmer rainforest, sometimes in open forest or in coastal dune communities. Leaf underside is very light.

Turf

Species	Common Name	Indigenous / Native / Exotic	Coastal Exposure	Form	Size (H x W)	Notes on Form / Maintenance / Performance
Stenotaphrum secundatum	Buffalo	Exotic	Good Salt Tolerance	Coarse leaf type		Good shade tolerance. High traffic tolerance. Medium aggressive. Low invasive properties.
Cynodon dactylon	Couch	Exotic	Good salt tolerance	Fine leaf type		Does well in full sun. Poor shade tolerance. High traffic tolerance. Highly aggressive. Average mowing required.
Sporobolus virginicus	Seashore dropseed or marine counch	Native	High salt tolerance	coarse broad leaf	creeping to 50cm tall	Good for grazing. High tolerance to salinity and waterlogging. Useful for stabilising sea-shores.
Zoysia macrantha	Nara grass	Native	High salt tolerance, thrives near coastal areas	Soft. Finer than buffalo	Mowing height 25-50mm	Excellent winter colour and can out-compete weeds when established. Great all-purpose turf. Low maintenance and highly drought tolerant. Moderate shade tolerance.
Pennisetum clandestinum	Kikuyu	Exotic	Good Salt Tolerance	Coarse leaf type		Inexpensive to purchase, quick ot propagate, requires minimal care. Remains healthy and grows and repairs quickly. Good for community areas and schools. Needs more lawn mowing than some other types. High invasive propeties. Good Shade tolerance.

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J.

Signage

J.01

Wayfinding Signage

Wayfinding signage is important for pedestrians, cyclists and motorists for identification of landmarks, points of interest and major destinations. Location of wayfinding signage is to position the signs at key decision points only, to identify connections and destinations.

In 2015, Deuce Design to prepare a signage strategy for Waverley Council to provide guidelines for the ongoing implementation of signage design and manufacture throughout the Waverley. These designs have since been developed and implamented throughout the LGA.

Function

The sign suite features modular panels that can be updated individually as information, maps and regulations change.

The signage scheme features:

- Visitor information signs (VIS). To be used at major park entrances to regional parks.
- Welcome Sign (WL520) to be places at secondary entrances to regional parks and all entrances to sports parks.
- Small Parks (WL340). To be used at all park entrances to all neighbourhood level parks.
- Coastal Walk, used on the coastal and cliff top walks
- Park Name Signs including park sign vertical (SMP and park signs horizontal (SMP2) to be used on all local level parks
- Urban Module, to be used in the public domain and streetscapes
- Fingerpost A, to be used on streets to assist in the wayfinding of the coast and cliff top walks.
- Fingerpost B, to be used to assist in compliance within parks.

Supplier

- Cunneen Signs

Materials and Dimensions

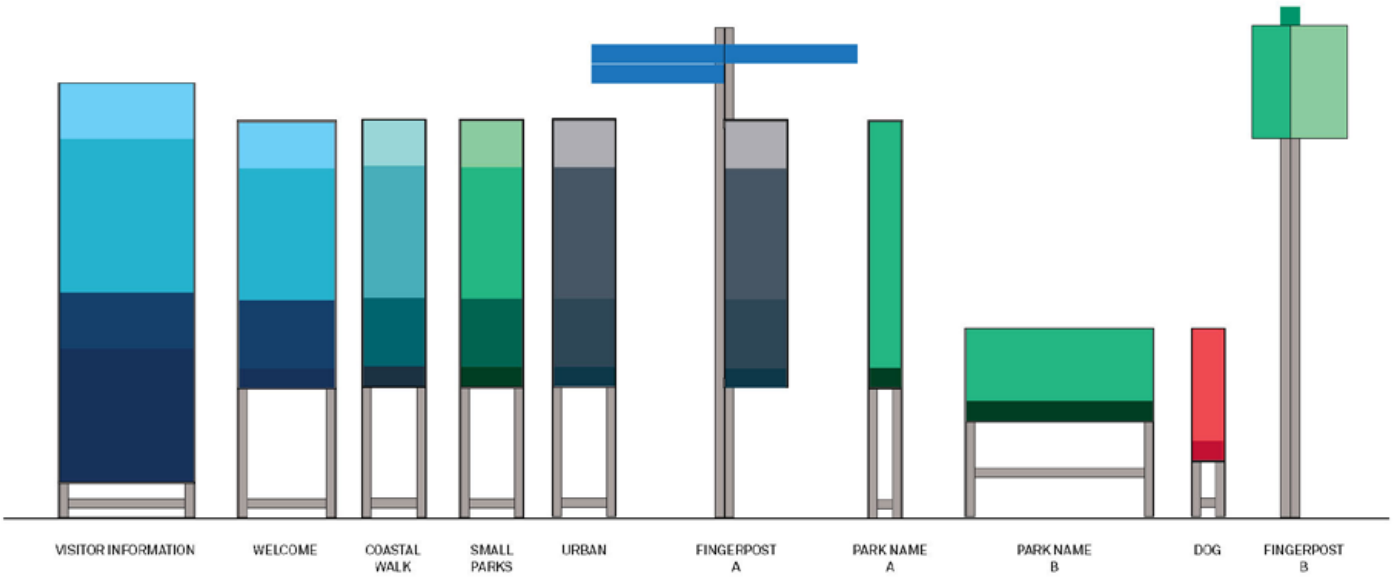
- Posts and frame, aluminium extrusion fabricated framework, with non-directonal sanded finish.
- Sign panels, 2mm with digital print graphics and sprayed ‘elco’ clear satin finish tip protective coating, complete with magnetic tape fixings concealed to rear.
- Sign frame, 20mm x 20mm x 3mm aluminum SHS.

Installation

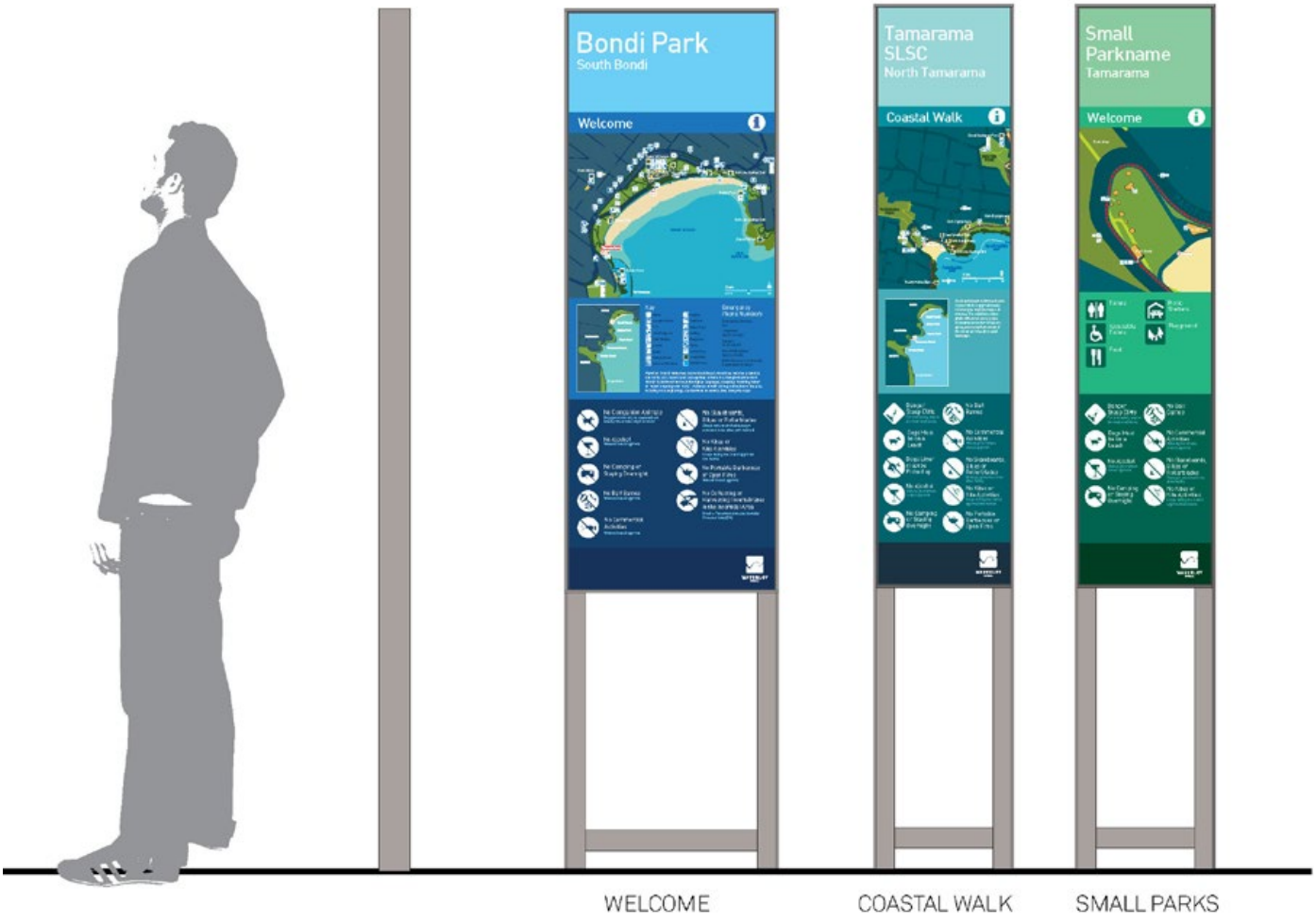
- Install as per structural engineer’s recommendations.
- Sub-surface mount in concrete footings.
- Surface mount on concrete pad.

Maintenance

- Check upright and supporting posts for wear and tear. All upright, supporting poles should be at right angles to the ground.
- Replace any broken or damaged panels.
- Regular cleaning with a mild detergent, clean water rinse and wipe down.



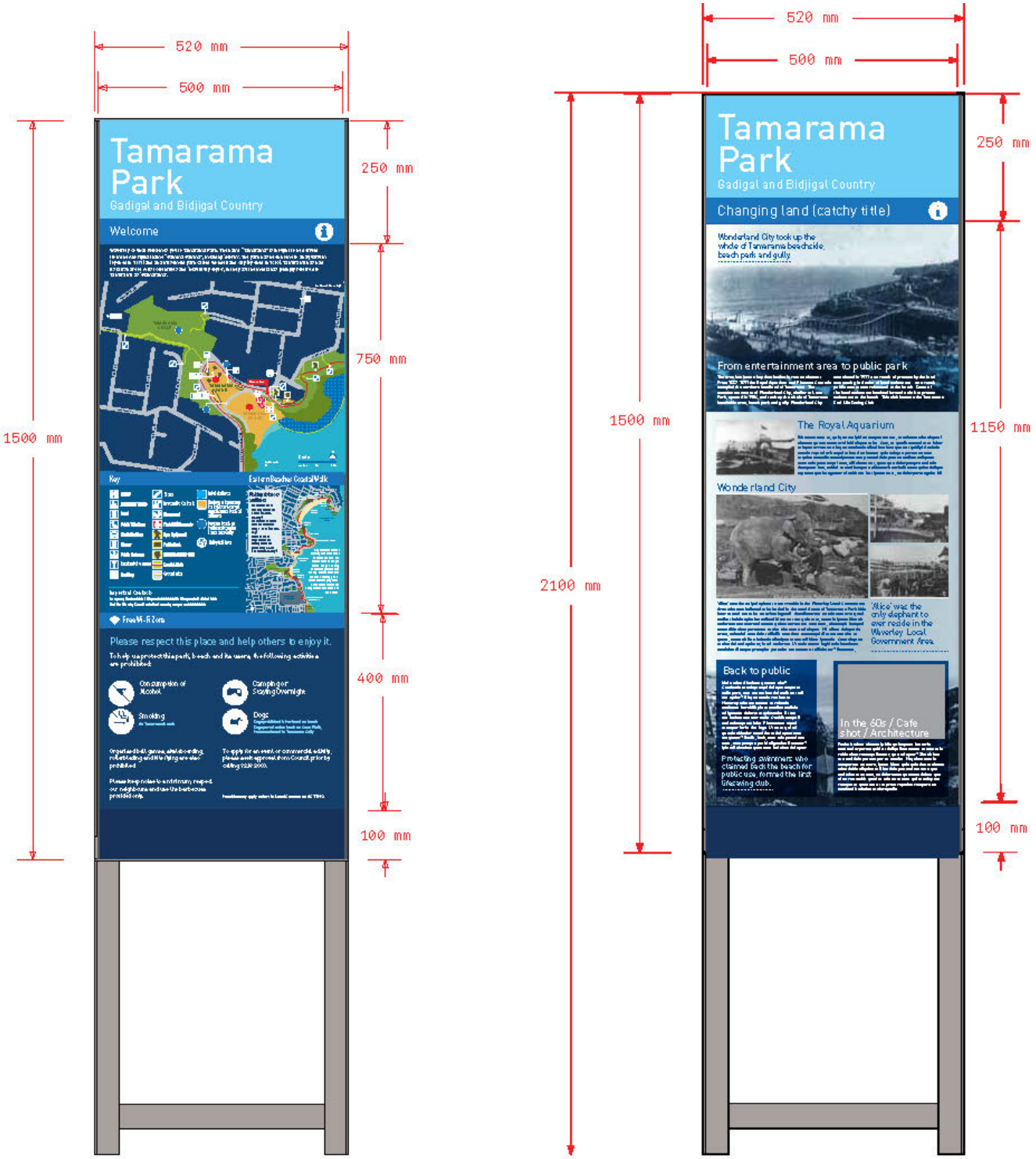
Wayfinding signage schematic design



Wayfinding signage schematic design

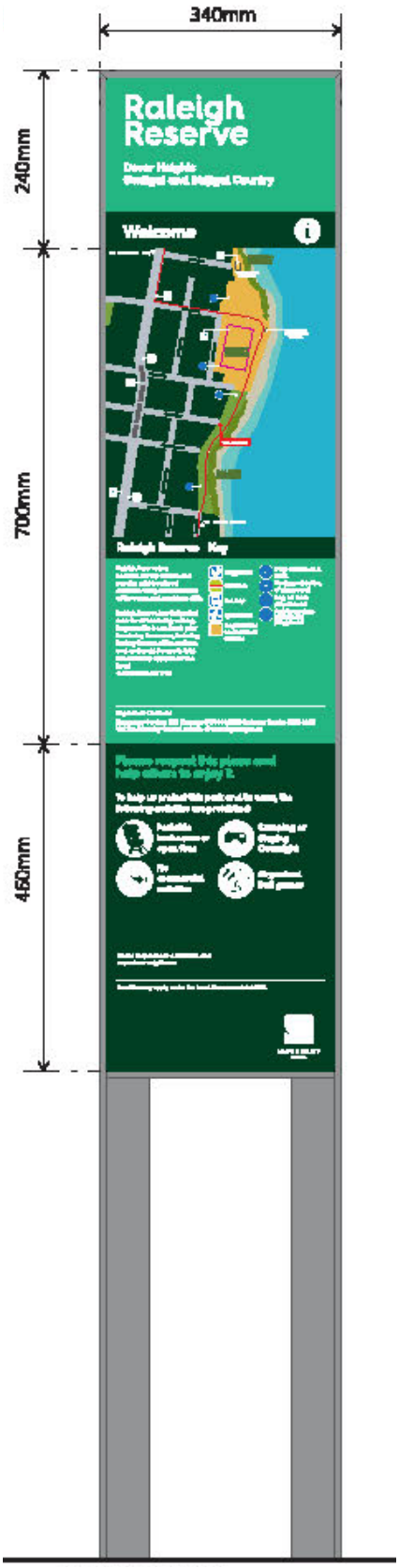
A K01 VISITOR INFORMATION SIGNS (VIS), FRONT AND REAR ELEVATIONS

not to scale



B K01 WELCOME SIGN (WL520), FRONT AND REAR ELEVATIONS

not to scale

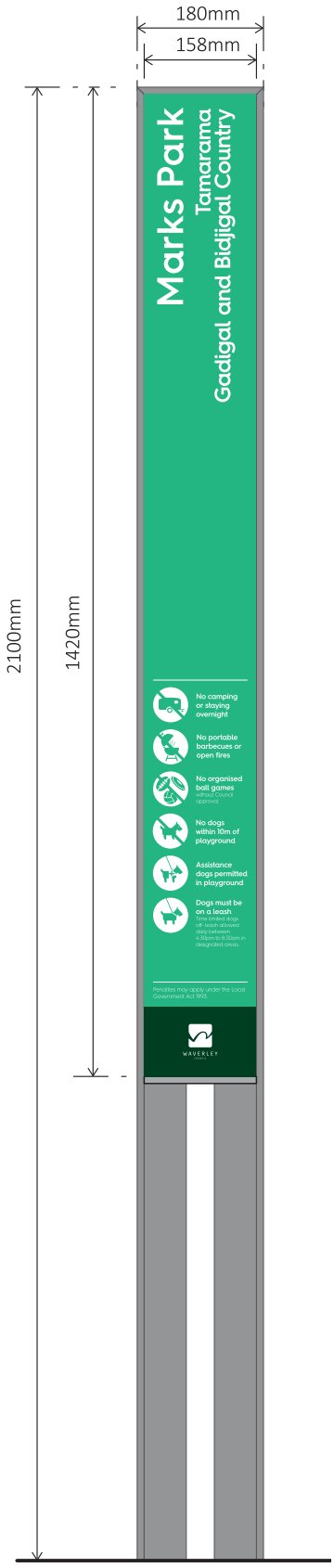


C K01 SMALL PARKS (WL340) ELEVATIONS

1:10

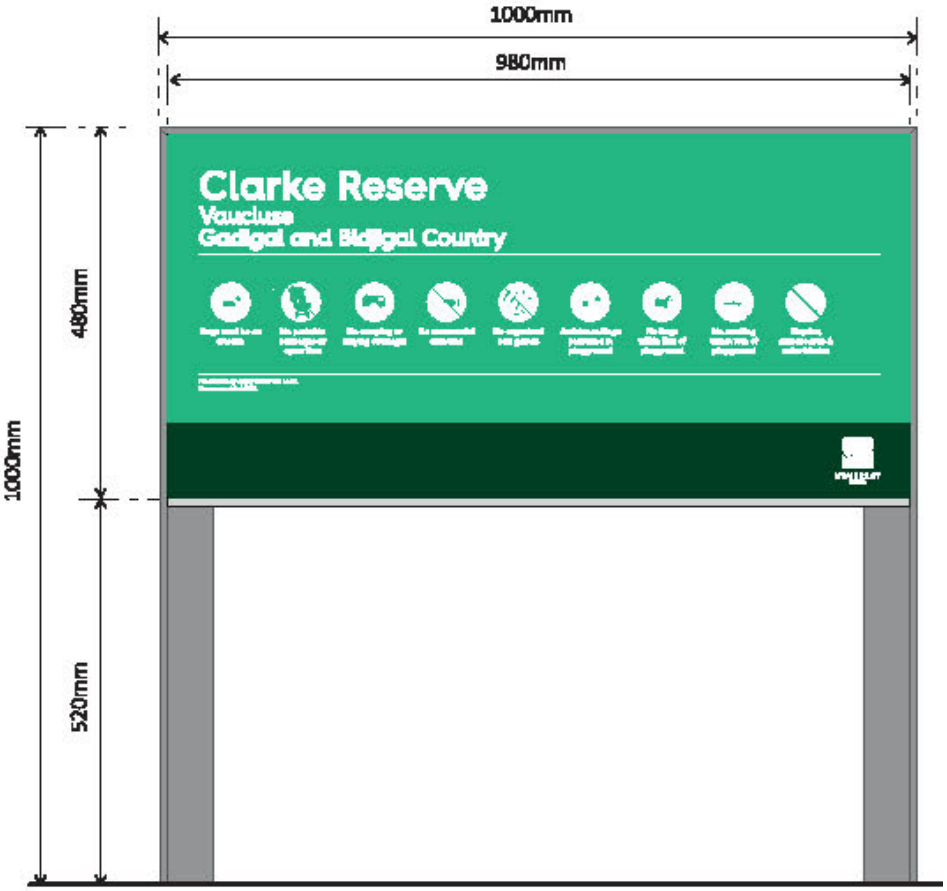
D K01 COASTAL WALK (WL340) ELEVATIONS

1:10



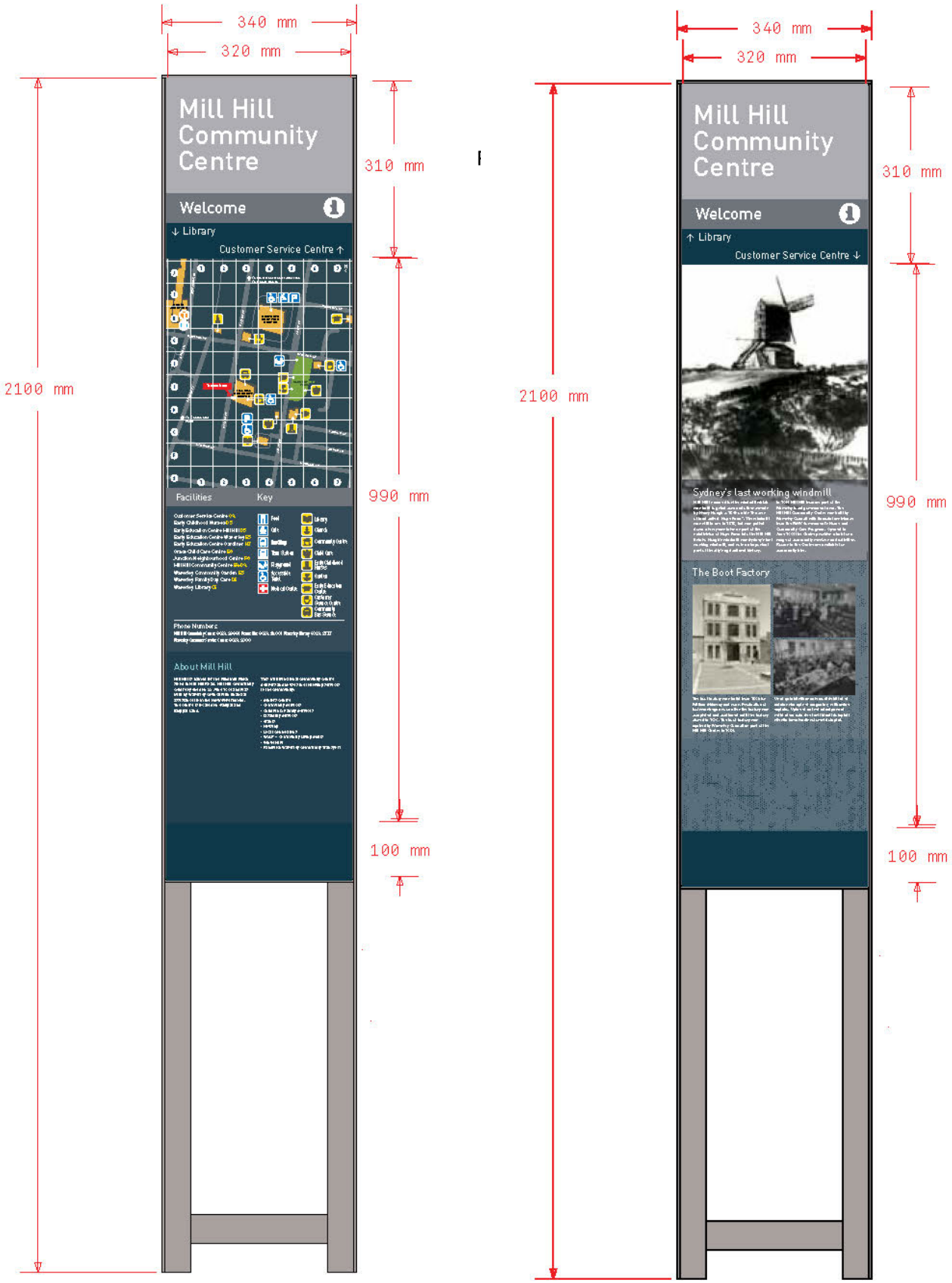
E K01 PARK NAME SIGNS (SMP) FRONT ELEVATION

1:10



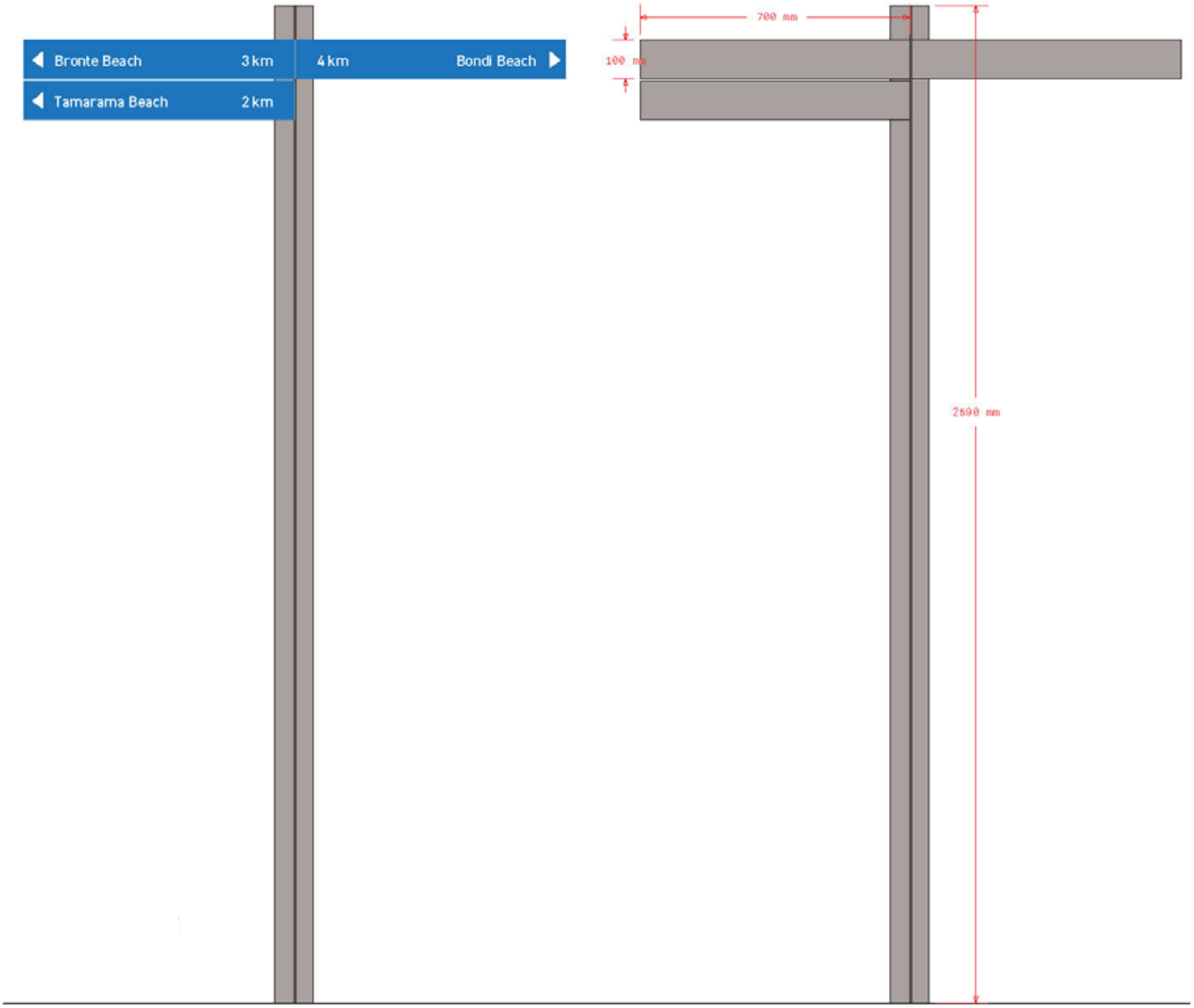
F K01 PARK SIGN HORIZONTAL, FRONT ELEVATION

1:10



G K01 URBAN MODULE, FRONT AND REAR ELEVATIONS

1:10



H K01 FINGERPOST A, FRONT ELEVATION

NOT TO SCALE

J.02

Compliance Green Links Signage

Function

Its Green Links Pedestrian Network has established an integrated network of recreation pedestrian links throughout the community, providing recreational opportunities for all local residents and visitors, as well as providing links to schools, shops, beaches and transport. There are four Green Links walking routes in total.

Markers guide walkers along the routes while blades provide maps. Where possible maps should be integrated and consolidated with other wayfinding signage.

Supplier

Waverley Council is the custodian for graphic artwork files. Signage artwork can be updated in- house.

Fabrication:

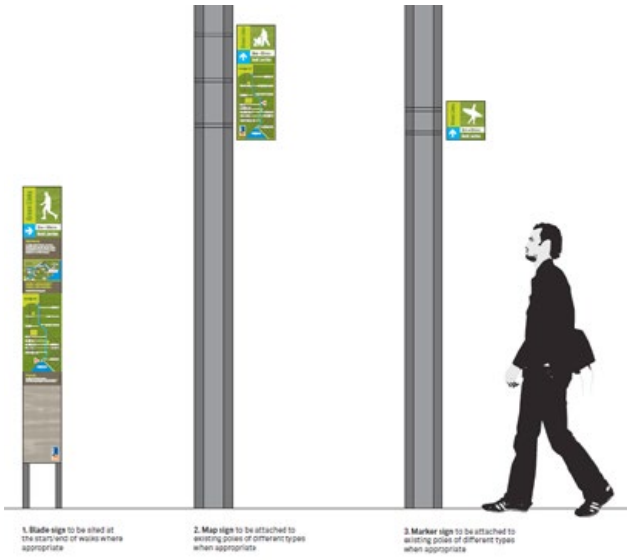
Materials and Dimensions

- Blade sign H 1800 x W 250mm - Height when installed 2100mm
- Map sign H 750mm x W 250mm
- Marker sign H 250mm x W 250mm
- Aluminium panels, polyurethane paint finish, no raw edges. Digital print direct to panel with UV flat-bed printer, finish with 2-pack clear allover.Poles: Aluminium poles, 2-pak paint. Metal fastenings: Basic strapping.

Installation

- Fittings: Aluminium back panel 3mm, screw fixed with tamper proof screws. Panels installed to frames with 3M VHB adhesive tape 4941 Footings: Post extended 750mm into packed earth/gravel concrete. Reinforced with 20 MPA concrete footings (300 x 750)
- Panels that are mounted using Bandit strapping require tongues spaced at no more than 200 CTS. The following panels require strapping: Map sign: 5 tongues, 4 straps.
  Marker: 3 tongues, 2 straps.
- Suitable brackets for standard poles can be sourced at RMS: Road Management Solutions
  Tel 03 5831 6999.

Maintenance



Right to left - blade sign, map sign, marker sign

- Signage has superseded stencils. No further stencils to be installed

Also refer to

GL13 Design Package 110621: Deuce Design Signage Manufacture Tender Package

Update graphic design to display up-to-date and complete map information – display all Green Links walks

A K02 GREEN LINKS SIGNS
NOT TO SCALE

J.03

Compliance and Safety Signage

Ensure primary signage placement and size is consistent with AS/NZS 2416.1/3, sections 3.1 and 3.2 of the Australian Coastal Public Safety Guidelines, and relevant sections of the National Aquatic and Recreational Signage Style Manual. In particular:

- Mandatory action, prohibition and hazard symbols should be sized to comply with AS2416 (Part 3) based on minimum viewing distance and viewing angle.
- Hazards symbols should be of a sunflower yellow (PMS 136C/115U) diamond with black border. The yellow diamonds should have a black border with a width of 2.5% of the size of the shape. The use of diamond shaped symbols is consistent with existing signage in the Waverley LGA.
- Regulation prohibition symbols should consist of a signal red (PMS 186C/1795U) annulus and bar on a white background.
- Black pictograms and writing must be used for all hazard and regulation prohibition symbols.
- Lettering size used in a sign should comply with the viewing distances and lettering sizes outlined in Table 3.2 of the Australian Coastal Public Safety Guidelines.
- Signs should be mounted as close as practical to an adult observer's line of sight. For a standing adult this will be approximately 5 degrees up or down from a point 1500mm above the ground level in front of the observer.
- Care should be taken to ensure that the placement of signage does not become a hazard and that other physical features, for example vegetation or views, do not obscure or distract from the sign.
- Care should be taken to ensure that signs are not placed close to other signs, which may limit the ability for the information to be processed and understood.
- The logo of Waverley Council can be in corporate colours and should be located in the bottom left corner of the sign below the regulation prohibition symbols.

Function

The bollard and beach signs features modular panels that can be updated individually as information and regulations change.

- Beach Signs (BESA), to be located at all beach entry points.
- Bollard Sign (PLG), to be used in playgrounds or to inform of changing compliance rules within parks
- Fingerpost B, to be used for general warnings or regulations.

Supplier

- Cunneen Signs for supply of Beach Signs and Bollard signs

Materials and Dimensions

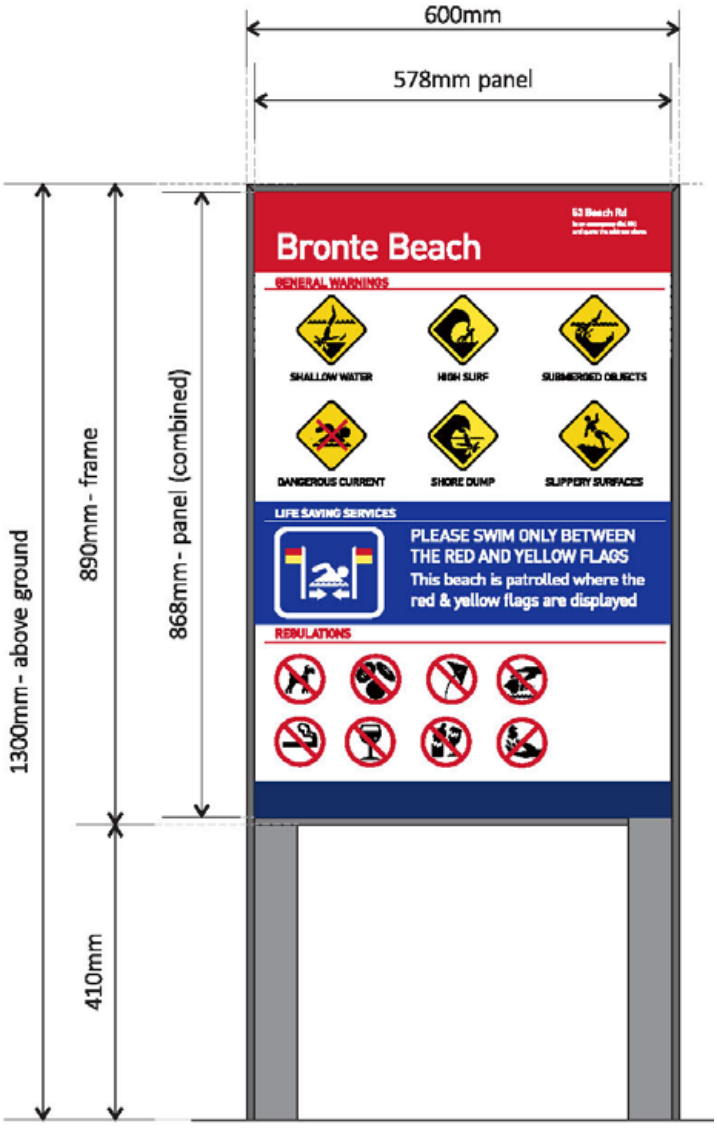
- Posts and frame, aluminium extrusion fabricated framework, with non-directonal sanded finish.
- Sign panels, 2mm with digital print graphics and sprayed 'elco' clear satin finish tip protective coating, complete with magnetic tape fixings concealed to rear.
- Sign frame, 20mm x 20mm x 3mm aluminum SHS.

Installation

- Install as per structural engineer's recommendations.
- Sub-surface mount in concrete footings.
- Surface mount on concrete pad.

Maintenance

- Check upright and supporting posts for wear and tear. All upright, supporting poles should be at right angles to the ground.
- Replace any broken or damaged panels.
- Regular cleaning with a mild detergent, clean water rinse and wipe down.

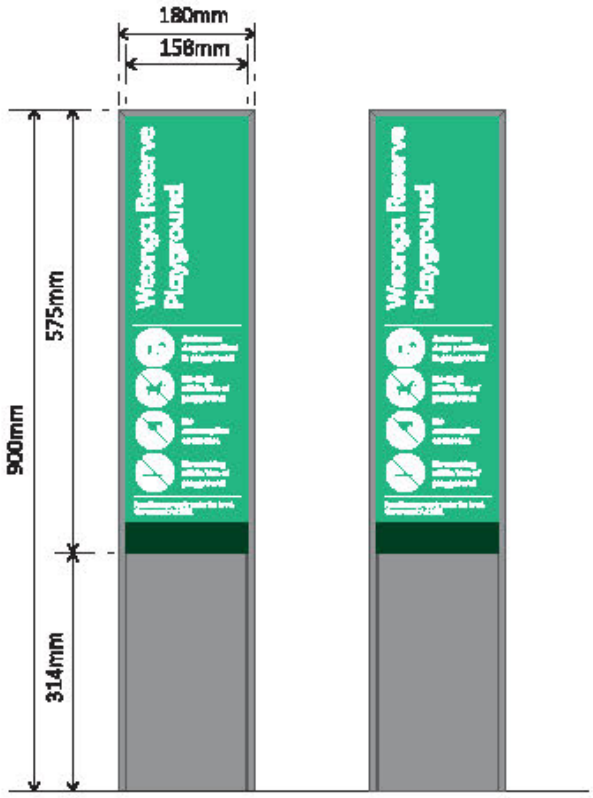


A KO3 BEACH SIGNS (BESA) ELEVATION

10

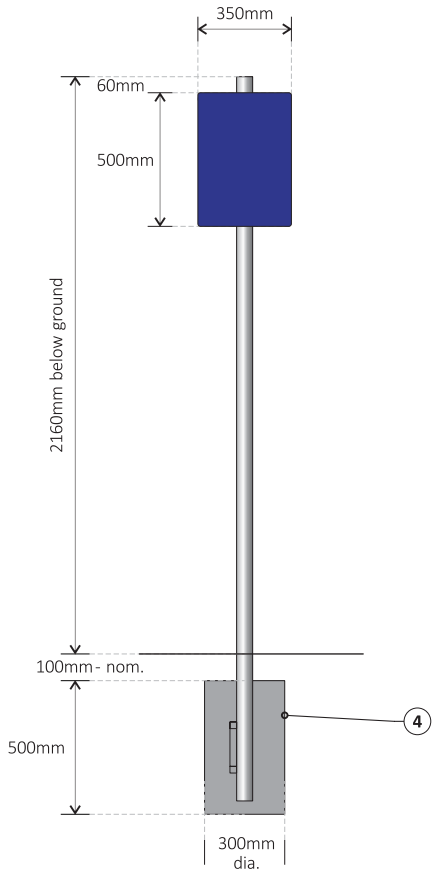
B KO3 BEACH SIGN (BESASEC), ELEVATION

1:10



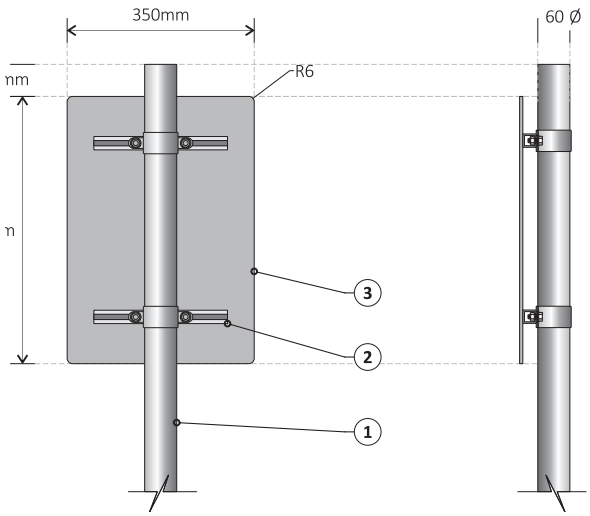
C K03 BOLLARD SIGN (PLG), FRONT AND REAR ELEVATIONS

1:10



D K02 FINGERPOST B, FRONT ELEVATION

1:20



E K03 FINGERPOST B, FRONT AND SIDE ELEVATION

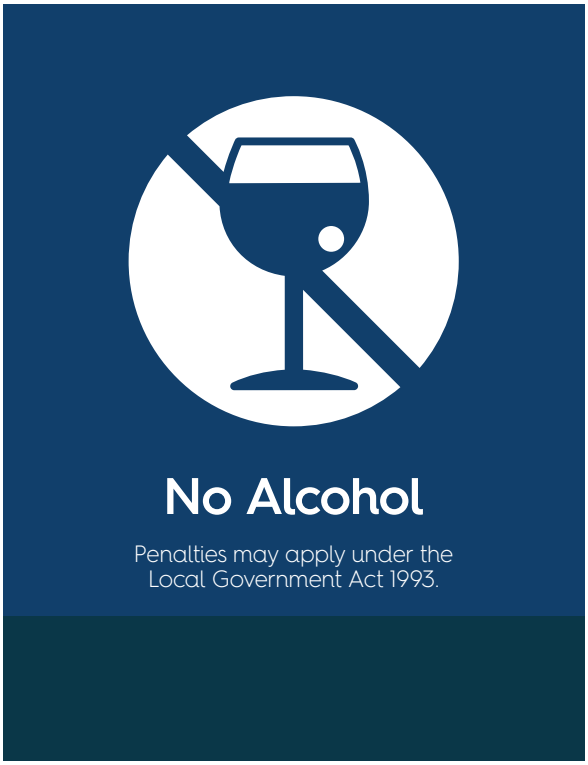
1:10

F K03 WARNING AND REGULATION ARTWORK

NOT TO SCALE

G K03 ORDINANCE SIGN DOG OFF LEASH

NOT TO SCALE



H K03 NO ALCHOL POLE AND WALL SIGNS

NOT TO SCALE

J K03 NO SMOKING POLE AND WALL SIGNS

NOT TO SCALE

K.
Lighting

K.01

Street Lighting

Waverley Council is adopting a plan to provide a modern and sustainable lighting network in its key business precincts, main roads and Local Centres. This lighting plan will facilitate for safer lighting levels in these high use areas, reduce the number of street assets with the use of Multi- Function Poles by incorporating signage and traffic control devices. Waverley Council has key objectives in the Environmental Action Plan (EAP3) to adopt sustainable street lighting with the use of LED.

Where new public roadworks and private developments are being constructed within the MFP precincts, the applicant shall pay (undertake) for the cost of under grounding electrical and communications infrastructure. Then new street lighting in the form of MFP's will need to be paid for in accordance with the planned layout of lighting.

Artist Impression showing MFP's on Campbell Pde

Objectives

- To illuminate high use areas in the LGA to provide adequate visibility for pedestrian and vehicular traffic. This includes conflict locations where there is safety concerns like: pedestrian crossing, intersections, changes of alignment (on sharp bends) and along vehicular/ pedestrian routes
- Support use of parks
- Activating public spaces
- Showcasing urban features
- Safe walking, cycling, public transport and driving
- To develop a network plan outlining lighting locations, power sources, inventory information and energy consumption estimates
- To use Multi- Function Poles for facilitating the new LED lighting. These Multi- Function Poles will also reduce clutter by housing signage, banners, traffic control devices etc. (de-cluttering the streetscape)
- To upgrade lighting levels for both Pedestrian (Category P) and Vehicular (Category V) to meet Australian standards as per AS/NZS 1158.
- To reduce intrusive light on neighbouring properties. This is both a measure for comfort and reduction of lost energy by illuminating areas that are not needed
- To include supplementary lighting is areas of high use. This may include spotlighting and pedestrian crossing lighting
- To utilise current lighting technologies for reduced power consumption, minimising green house gas emissions. This may include LED lighting, integrated control systems etc
- Street lights are to be located 10m from face of kerb at corners and spaced evenly along the dimensions of a block; nominal distance 30m apart, staggered spacing on opposite sides of the street.
- Light poles are to be located 400mm - 600mm from the face of the kerb.
- Pedestrian lighting should generally be mounted under awnings, with pole lighting in larger public spaces or where awnings are absent.

System Components

Luminaires

Luminaires will be determined by the SSROC Tender (TBA) Minimum performance requirements are as follows:

- Ingress Protection Ratings IP65 Minimum
- Lumens Per Watt - >100lm/W
- Led category Class 1
- Minimum Performance 70% at 50,000Hr
- Meet exterior lighting standards: To AS/NZS 1158.0, AS/NZS 1158.1.1, AS/NZS 1158.1.2, AS/NZS 1158.2 and AS/NZS 1158.3.1

Electrical

The Electrical Services work shall comprise the provision of the following major items:

- Incoming supply service mains
- Metering
- Main switchboard(s)
- Earthing
- Light and power sub circuit wiring
- Luminaires
- Lighting columns
- Control systems
- Conduit and pit system
- Spare conduits x2
- Miscellaneous works and equipment

Control Systems

The lighting control system shall be the Sylvania SLV CMS (Streetlight Vision Central Management

System) provided with the Echelon RF lighting control interface. (TBA for Procurement)

The supply of the lighting control system shall include equipment as follows (as well as all other equipment necessary to facilitate the required control):

- Echelon CPD4000 outdoor lighting controller to be provided for each luminaire
- Sylvania Control Box Wireless – control box quantities to be provided to suit luminaire quantities

The Control system shall be capable of, but not limited to the following:

Control

- ON / OFF / Step Dimming
- Time Scheduling and programming
- Web user interface for PC and MAC
- Remote software updates (where necessary)

Roads and Maritime Services Signals

The MFP's are to have the capability of carrying RMS traffic signals and house all associated electrical equipment, including pedestrian push buttons.

Cable Pits

Cable pits are to have the following:

- Cable draw-in pits: Provide cable draw-in Pits ≤ 1200 x 1200 mm. Sizes given are internal dimensions
- Provide pit covers to suit external loads. Fit flush with the top of the pit. Covers to have paving infill. Standard: To AS 3996
- Pavers are to weigh < 40 kg for any section of the cover
- Lifting handles: Provide a lifting handle for each size of cover section
- Provide drainage from the bottom of cable pits, either to absorption trenches filled with rubble or

  to the stormwater drainage system

MFP General Technical Specifications

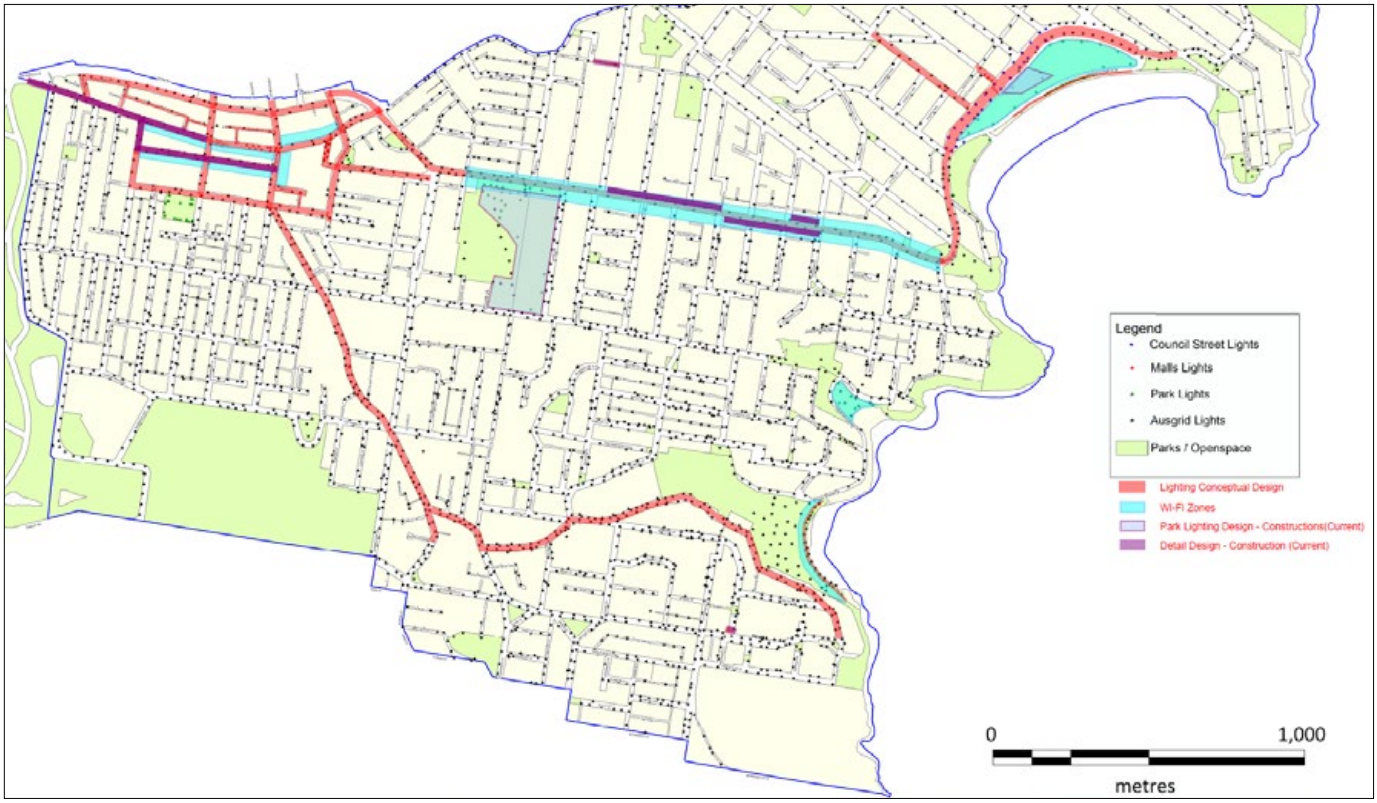
Luminaire height is to be set at 9m

- Luminaire arms are to be set at 3m
- A set of access keys (drill attachments) will be provided to Waverley Council for the removal of cladding to access the termination boards
- Manufacturers' warranties and certificates are to be supplied to Waverley Council with all required accredited engineering signoffs
- Certification from a Structural Engineer that the standard footings have been designed to meet Australian standards for all loading types and general site conditions
- Pole layout at signalised intersections is to follow RMS requirements
- All poles, cubicles etc are to be labelled with the location of supply in accordance with the 2006 Service and Installation Rules of NSW. The label shall be engraved Aluminium or Stainless steel and shall be permanently fixed to the pole immediately above the door (Council will provide Asset number & contact details to be included on the label)
- Assume LED luminaires with 4000k
- Include provision for centralised control systems at meter/switchboard locations

- Include provision for central override switches for circuits

MFP General Functional Specifications

- Pole layout along street lengths is to follow staggered pattern as shown in the lighting layout plans.
- To incorporate changes to any capital works projects within the specified zones to include multi-function poles, this includes any works undertaken within public domains by projects from private developers where ownership of the assets will be handed onto Council.
- The front face of poles is to have minimum allowable setback as allowable by RMS. Any poles with RMS signals will need to meet the strict designs of “Design for signalised intersections”
- Include provision for co-location of other assets on the poles e.g. signage and Wi-Fi
- Include supplementary lighting for pedestrian crossings and other significant locations
- Lighting to be generally compliant with P2, V3 lighting for high use/main roads and P3 lighting for lower pedestrian trafficable areas. To be compliant with AS/NZS 1158
- Meter box to be compliant with Ausgrid requirements and meet the general design specifications shown
- Place as many circuits as possible on one meter, whilst also trying to minimise road crossings (especially on main roads)
- Take account of any shop awnings that may be in the way
- Include provision for spare conduits (power, lighting and CCTV)
- Meter boxes placed against boundaries



Map showing streets where MFP's will be installed - Under Review

K.02

Multi-Function Pole

Function

- This pole will be used on all streets within business districts, main roads and Local Centres.

Supplier

- Under review

Materials and Dimensions

Street Lighting Poles are to be of 9.6m High Multipole Series 300 pole. Details of the poles include:

- LED street light (type TBA)
- Traffic Signals where at intersections
- Signage
- Banners
- Wi-Fi wireless access points
- Spare power sockets
- Hanging baskets
- Other attachments as advised by Council officers

Installation

Pole type 1 – pole with street lighting including a range of attachments but without Traffic Signals

Pole type 2 – Pole with street lighting, Traffic Signals and a range of attachments.

Refer to Council lighting plans for individual street design layouts, general pole locations and luminaire requirements.

Additional components for inclusion on the MFP's will be determined at the design considerations and Council officer approvals.

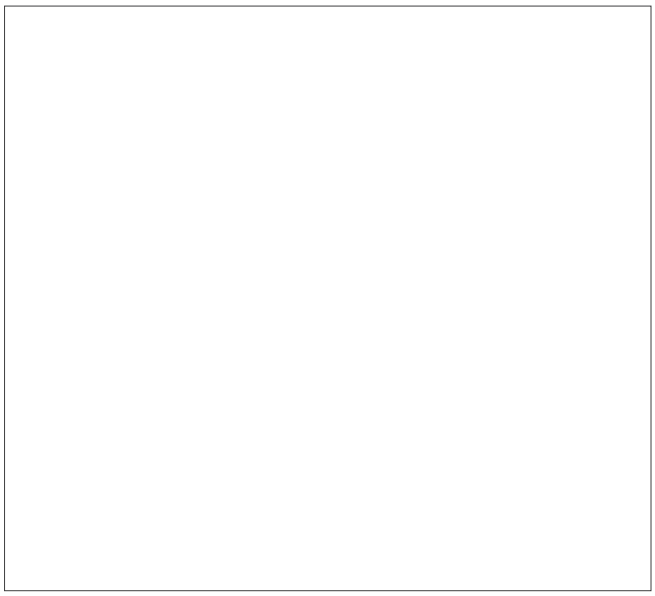
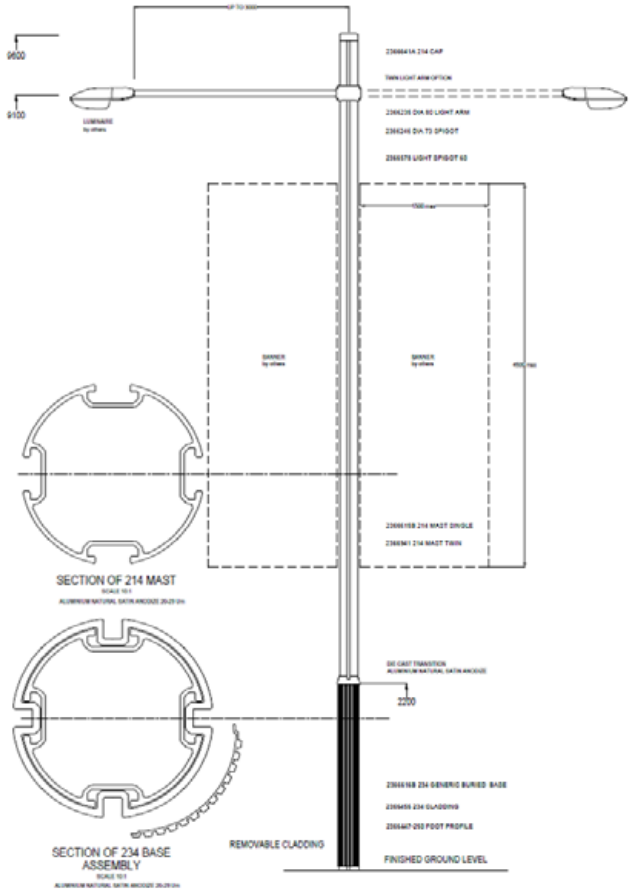
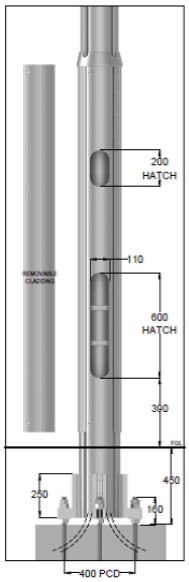


Image showing Lighting Type 1 & 2 to be provided



01 POLE TYPE 1 & 2

Scale: NTS



BASE DETAIL

Patented Multipole Footing System
Foot Extrusions, 4 off
Aluminum 6005A T5
Anodized 20 Microns
12 x M20 Bolts Galvanized
8.8 Grade Steel

Foundation bolts
M24 @ 400 PCD

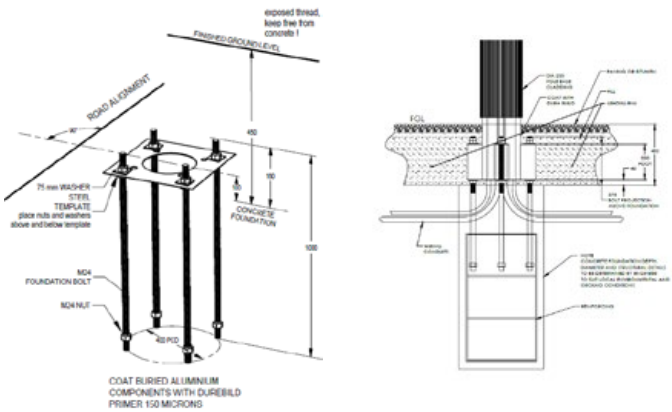
NOTE
All poles manufactured in accordance with relevant standards

Pole footings to be engineered by others to suit local environmental and ground conditions

Note
All buried components must be coated with DUREBILD STE paint 150 microns.
IP 65 rated electrical enclosures to be used for electrical connections.
Stainless steel fixings to be isolated from Aluminium components with Barium Chromate paste.

02 STANDARD POLE DETAIL

Scale: NTS



03 STANDARD POLE FOOTING DETAILS

Scale: NTS

Note:

1. Standard pole footings are depicted here.
2. No installations are to be undertaken without a structural report and engineering signoff of footings.

L

Paints and Coatings

L.01

Exterior Timber Paint

Function

- To be used (ONLY) on timber furniture and elements that are currently painted.
- All new timber to be oiled.

Supplier

- Contractor to nominate based on below specifications.

Finish

- Dulux Weathershield Acrylic Low Sheen
- Various existing colours. Refer to Maintenance and Construction Coating Schedule for specific colours, maintenance

Installation

- Refer to manufacturers instructions.

Maintenance

- Under review

L.02

Exterior Timber Stain

Function

- To be used (ONLY) on timber furniture and elements that are currently stained.
- All new timber to be oiled.

Supplier

- Contractor to nominate based on below specifications.

Finish

- Dulux – Intergrain Natural Stain
- Colour selection to match the furniture/ element stain

Installation

- 3 stage process. Refer to manufacturers instructions.

Maintenance

- Under review

L.03

Exterior Timber Clear Oil

Function

Clear oil coating for timber decking, seats and furniture adjacent to planting such as along the Coastal walk.

Supplier

- Contractor to nominate based on below specifications.

Finish

Dulux – Intergrain Nature's Timber Oil

Installation

- Suitable for use adjacent to vegetation.
- Refer to manufacturers instructions.

Maintenance

- Under review

L.04

Exterior Metal Paint

Function

- Micaceous Iron Oxide (MIO) is to be used on balustrades, fences and gates where there is limited physical contact i.e. Not as a handrail.
- Use where the surface will have low levels of wear and tear and is unlikely to be marked.

Supplier

- Contractor to nominate based on below specifications.

Finish

Dulux MIO Colour: Bridge Grey

Installation

- Refer to manufacturers instructions.

Maintenance

- under review

L.05

Paving Sealant

Function

- To protect and treat unit pavers from the ingress of water and water borne chemicals.

Supplier

- Contractor to nominate based on below specifications.

Finish

- Silane-siloxane penetrating sealant.
- The sealant should be solvent based silane-siloxane penetrating sealer designed to protect both horizontal and vertical surfaces from the ingress of water and salts.
- It should have a low VOC content.
- It should be water repellent, such that the water will bead on the surface of the concrete paver.
- It should not alter the colour of the surface ensuring a natural look is retained.

Installation

- Apply in two coats as per manufacturer's instructions
- Ensure the sealant is not applied on damp or wet surfaces.
- The sealed surface should be protected from moisture for a minimum of six hours after application.

Maintenance

- TBC

L.06

Anti-Graffiti Wall Sealant

Function

- For use on walls

Supplier

- TBC

Finish

- TBC

Installation

- TBC

Maintenance

- TBC

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WAVERLEY
COUNCIL