

Cardinia Shire Council
Developer landscape guidelines

January 2017



Who should read this document?

This document is intended for property developers and their consultants including:

- Landscape architects and designers
- Landscape construction professionals
- Landscape maintenance professionals
- Arboricultural consultants
- Civil engineering professionals
- Planning professionals

Purpose

These guidelines have been prepared to better direct the design, approval and implementation of landscaping in new subdivisions in Cardinia Shire. The guidelines articulate Council's expectations at each stage of the process and aim to facilitate a straight forward and efficient landscape development process.

How to use this document

This document consists of three sections relating to the process of providing landscaping for subdivisions:

- Landscape master planning and design
- Detailed landscape works design and delivery of landscape projects
- Checklists and appendices

Other authorities

This document does not waive the responsibility to satisfy the requirements of other authorities (i.e. Melbourne Water). It is the Developer's responsibility to ensure the requirements of other authorities are met. It is the Developer's responsibility to gain the approval of other authorities for landscaping where required.

Prepared by:

Cardinia Shire Council

Landscape Development Unit

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ABN: 32 210 906 807

20 Siding Avenue, Officer

PO Box 7, Pakenham Vic 3810

(DX 81006)

Phone: 1300 787 624

Email: mail@cardinia.vic.gov.au

Web: cardinia.vic.gov.au

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1 Landscape master planning and design



1 Landscape master planning and design

The role of landscaping

Cardinia Shire's population is continuing to grow at a rapid rate. Alongside this the amount of landscaping being delivered as part of the continued subdivision of the central growth corridor and the outlying smaller growth areas is also increasing. The shire's population is expected to rise by 98 per cent over the next 20 years which will have a direct impact on the need for public open space at a local level.

The delivery of landscaping and open space in new subdivisions is moving away from private 'backyards' and relying more and more on the public realm. As lot sizes become smaller and building footprints occupy more of the lot, the role of public open space is becoming ever more vital. In many new streets, the only trees to be found are in nature-strips and the main outdoor recreation spaces are local parks. The provision of trees and open spaces is thus becoming extremely important, not only aesthetically but in reducing the 'urban heat island' effect and reducing the environmental impact of new developments. Council acknowledges the community and environmental benefits of well-designed public open space and encourages creativity, sustainability and innovation in landscape design.

Council has categorised the shire's open spaces into five types and organised them into a hierarchy from regional to local. These five types are:

- regional
- municipal
- district
- neighbourhood
- local.

The role and function of each open space type is outlined in Table 1. This table is indicative of the minimum acceptable standard, it is not intended to be prohibitive. Inclusion of additional assets will be considered on a case by case basis. In general, lineal walkways are not supported without sufficient justification. The provision of infrastructure and facilities in open spaces needs to be appropriate for and reflective of the type of space. In planning for active open space reserves, developers are also directed to Council's *Recreation Reserve Facility Standards Policy* which outlines Council's approach to the construction of sport and recreation facilities in the shire and can be found on our website.

Contacting Council

A number of aspects must be considered in creating and assessing a landscape master plan. All correspondence relating to landscape master plans must be directed to Council's statutory or strategic planning teams as appropriate. Applicants are asked not to liaise directly with the Landscape development team. Pre-application meetings are encouraged prior to lodgement of subdivision applications and can include members of Council's landscape development team upon request.



Council has categorised the shire's open spaces into five types and organised them into a hierarchy from regional to local. These five types are:

- regional
- municipal
- district
- neighbourhood
- local.

1 Landscape master planning and design (cont.)

Table 1. Open space hierarchy and functions

	Local	Neighbourhood	District	Municipal	Regional
Purpose	Serves as an immediate local reserve, providing daily and weekly access for the local neighbourhood	Serves as a larger reserve for the local neighbourhood. May be situated adjacent to shopping precincts, schools, community facilities, or formal junior sport activities	Serves as extensive, informal open space for adjoining neighbourhoods. May be associated with waterways or greenfield developments which extend across a series of neighbourhoods	Serves as extensive, informal open space for adjoining neighbourhoods. May be associated with multi-use trail networks, waterways or greenfield developments which extend across a series of neighbourhoods	Attracts people located within local community as well as beyond the shire. May contain significant sites, i.e. cultural heritage, flora and fauna species, as well as a range of recreational opportunities which may attract high numbers of visitors
Distance from residents	Within a 10-minute walk	Within a 15-minute walk	Within 10km	Non-specific	Non-specific
Reserve size	Up to 1 hectare	1–4 hectares	4–10 hectares	Unlimited	Unlimited
Visitor catchment	Generally caters for local residents	Generally caters for local residents	Generally caters for local residents, and surrounding townships	Caters for residents across entire shire	Caters for residents of Cardinia Shire and beyond
Access (mode of transport to site)	Walk, cycle	Walk, cycle, motor vehicles	Walk, cycle, public transport, motor vehicle	Walk, cycle, public transport, motor vehicle, horse	Walk, cycle, public transport, motor vehicle
Duration of use	Less than 1 hour	Less than 2 hours	1–4 hours	Varied length of time	Varied length of time
Activities	Caters for local uses including play, social interaction, relaxation Reflecting local context and interests	Caters for a range of uses, from community service provision, informal recreation, junior formal events, cultural heritage, relaxation and solitude, social interaction	Caters for a range of uses, from community service provision, informal and formal sport, animal activity, play, passive recreation, contemplation, enjoyment of natural and cultural heritage	Caters for specific uses including events, formal and informal sport, play, animal activity, passive recreation, contemplation, enjoyment of natural and cultural heritage	Caters for a range of uses including major events, formal sport, play, and passive recreation, contemplation, enjoyment of natural and cultural heritage

1 Landscape master planning and design (cont.)

Table 1. Open space hierarchy and functions (cont.)

	Local	Neighbourhood	District	Municipal	Regional
Infrastructure	Minimal infrastructure provided: seating, pathway, vegetation	Basic infrastructure reflecting local context and interest: picnic facilities, waste facilities, junior grassed sports, pathways, shade, drinking fountains, play space	Moderate infrastructure reflecting local context and interests: picnic facilities, waste facilities, junior grassed sports, pathways, shade, drinking fountains, play space, shared and walking paths, and toilet facilities	Infrastructure to reflect specific functions and use of site: picnic facilities, waste facilities, junior grassed sports, pathways, shade, drinking fountains, play space, shared and walking paths, and toilet facilities	Infrastructure to cater for large numbers of visitors and periods of intense use. Including: barbeques, picnic facilities, waste facilities, shade, shelter, drinking fountains, play space, shared and walking paths, and toilet facilities
Active		Junior competition, facilities co-located with adjacent schools, grassed sport used for training	Senior and junior competition for clubs, schools and sporting associations	Accommodate sports and activities with lower participation rates where only one or two facilities are required across shire	Significant facilities capable of hosting state and regional level tournaments
Natural Resource Areas	Low quality vegetation, low quality habitat, local ecological significance	Moderate quality vegetation, moderate quality vegetation, local ecological significance	Moderate quality vegetation, high quality habitat, regional ecological significance	High quality vegetation, high quality habitat, state ecological significance	High quality vegetation, high quality habitat, national ecological significance

1 Landscape master planning and design (cont.)

Environmental considerations and pre-planning

Council actively seeks to protect and enhance the natural environment and encourage sustainable practices in the development of open space areas. The environmental assets within the site must be considered at the commencement of the planning process. As part of a planning permit application, a biodiversity audit of the site must be undertaken (unless otherwise agreed by Council, e.g. this is not required in Officer PSP area), prepared by a suitably qualified ecologist and must include the following as a minimum.

- A survey for threatened species or their habitat, based on desktop analysis of their likelihood of occurrence.
- If any threatened species or their habitat are found onsite or nearby – a site-specific or precinct-specific threatened species management plan is required. This may need to be approved by the Australian Government Environment Department.
- A surveyed site plan showing all native vegetation (patches or individual scattered trees) existing onsite. Vegetation needs to be either shown for proposed retention or removal.
- A description of the vegetation including the understorey to be removed, including the species, extent, number and size (diameter at 1.3 metres above natural ground level) of any trees to be removed and the Ecological Vegetation Class (EVC) of the patches of native vegetation.
- Location of any mature trees bearing hollows.
- Topographic information, highlighting ridges, crests and hilltops, streams and waterways, slopes of more than 20 per cent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion.



Council actively seeks to protect and enhance the natural environment and encourage sustainable practices in the development of open space areas.

1 Landscape master planning and design (cont.)

- A written explanation of the steps that have been taken to:
 - avoid the removal of vegetation, where possible
 - minimise the removal of vegetation
 - appropriately offset or replant vegetation as required.

In accordance with Clause 14 of the Cardinia Planning Scheme, natural drainage corridors should be retained with vegetated buffer zones at least 30 metres wide along each side of a waterway to maintain the natural drainage function, stream habitat and wildlife corridors, and landscape values, to minimise erosion of stream banks and verges and to reduce polluted surface runoff from adjacent land uses. Access to an environmental focal point may be considered but not a continuous incursion into this zone.

Development should be avoided within 30 metres either side of creeks and ridge-tops. This includes footpaths, benches, play spaces, and residential properties. Vegetation planted within creek and ridge-top corridors must be chosen from the relevant EVC standards. The creek setback may be increased to 50+metres within the growth corridor or priority waterways typically in accordance with precinct structure plans, threatened species management plans or at the direction of Council's Environment Unit.



1 Landscape master planning and design (cont.)

Landscape master plan design guidelines

A landscape master plan aims to provide a clear overview of the landscaping intentions for the site. It needs to demonstrate that due consideration has been given to landscaping in the design and development of the subdivision and that all requirements of the relevant planning policy documents (e.g. precinct structure plans, structure plans, township strategies, vegetation management plans) have been met. The landscape master plan needs to address the constraints and opportunities of the site analysis and give a clear picture of the completed development. This will include its character, function and amenities.

A landscape master plan should include:

- a north point
- a clear and easy to understand legend
- be drawn to a suitable scale and provide a scale bar
- existing and proposed contours and levels including falls
- text which is easily readable if re-sized to A3
- a staging diagram
- a location plan or context plan
- reserve boundaries
- the area in square metres
- road reserve and nature strip widths (nature strip widths should generally be in accordance with Victorian Planning Authority (VPA) PSP note – *Our Roads: Connecting People*)
- the proposed locations of furniture, structures, garden beds, trees, fences, barriers, walls, maintenance access points, taps, drinking fountains, public art, play spaces, paths and path hierarchies (design details of structures/ infrastructure will be required as part of detailed design stage)
- annotations outlining any proposed play elements
- existing trees and vegetation approved to be retained
- an indicative plant schedule
- the proposed locations of any mounding
- proposed grassed areas
- existing and proposed easements
- the proposed locations of any car parking
- view lines if relevant
- lighting if proposed
- land affected by significant planning overlays
- consideration of fuel management zones including fuel breaks for asset protection against wild fire
- consideration of and compliance with Crime Prevention Through Environmental Design Principles (CPTED)
- where remnant vegetation exists on roadsides that the roadside will be preserved and protected
- any items required to be delivered under the relevant Development Contributions Plan (DCP).

Other Council strategies such as The Municipal Public Health and Well Being Plan, Healthy by Design Guidelines, Pedestrian and Bicycle Strategy, Play Space Strategy, Skate and BMX Strategy, Age Friendly Strategy, must also be considered as appropriate when preparing a landscape master plan. These documents can be found on Council's website.

Checklist 1 (on page 47 of this document) needs to be completed and submitted with all proposed landscape master plans.

1 Landscape master planning and design (cont.)

When developing a landscape master plan the following areas must be taken into consideration and reflected in the design outcome:

Drainage

- Council will not accept public open space that is located within designated flood prone land. Any open space in flood prone land is to be provided above and beyond the open space requirements for the land.
- All areas of public open space must be located above the adopted 1 in 10 year flood level.
- All infrastructure within an open space area should be positioned clear of 1 in 100 year stormwater overland flow paths.

Water sensitive urban design

- The use of water sensitive urban design (WSUD) treatments within landscaped areas is subject to Council's approval and must be designed and constructed in accordance with Melbourne Water's **Water Sensitive Urban Design Guidelines – South Eastern Councils**.
- Only the WSUD treatments nominated in the **Cardinia Shire Council specific addendum** to Melbourne Water's guidelines will be considered for use in landscaped areas.

Native vegetation

In addition to significant trees which have been individually protected in a Cardinia planning scheme overlay, Council prioritises the retention of large, indigenous trees, particularly those with habitat hollows. Council also prioritises the retention of all remnant bushland areas including roadsides. When planning for their retention it is Council's preference that remnant vegetation be protected within an area of public land (in prioritised order):

1. bushland reserves
2. natural resource assets
3. creek reserve
4. passive recreation reserves
5. road reserves
6. large round about
7. widened out stands of nature strips.

As a secondary option, consideration may be given to retaining trees within larger lots, typically over 4,000 square metres with appropriate tree protection envelopes placed on the title. Building envelopes must be sited so that they are not within the tree protection zones, or drip line of protected trees.

Native vegetation offsets must meet the Biodiversity Assessment Guidelines (or any subsequent replacement DELWP documents) and be to the satisfaction of the responsible authority. Offsets must be secured prior to the removal or impacts to any native vegetation. As a first priority, offsets should occur within the existing bushland areas of the development or the nearest development. Where a Native Vegetation Precinct Plan (NVPP) applies, all offset requirements of the NVPP must be achieved to the satisfaction of Council.



More information

For further information in relation to planning for retention of native vegetation please contact Council's Environment Unit on 1300 787 624 or mail@cardinia.vic.gov.au

1 Landscape master planning and design (cont.)

Threatened species

Threatened species are plant species, animal species, or vegetation communities that are listed under the Flora and Fauna Guarantee Act 1988 or Environmental protection and Biodiversity conservation Act 1999 (FFG or EPBC Act). Each development or precinct structure plan area may have its own threatened species management plan where threatened species or their habitat have been found onsite or nearby. These requirements will become apparent through the initial biodiversity assessment.

If a threatened species or their habitat exists onsite or nearby, the developments may need to be referred to the Australian Government's environment department under the EPBC Act 1999. This will become apparent through the developer's biodiversity audit or from Council's Environment Unit's requirements.

Threatened species management plans often run for 10 years and can cover many different requirements including but not limited to culvert design, wetlands, dedicated threatened species movement corridors, structures and refuges to conserve the species, weed removal, educational material for domestic animal management to protect threatened species, or may be a cat-free subdivision, revegetation and interpretive signage and/or virtual ranger to showcase the significance of the threatened species.

This threatened species management plan must be provided to the landscape architect so the requirements can form part of the landscape master plan and detailed landscape design.

More Information

For further information in relation to threatened species management please contact Council's Environment Unit on 1300 787 624 or mail@cardinia.vic.gov.au

Photo credit James Booth



1 Landscape master planning and design (cont.)

Arboricultural assessment and documentation

An arboricultural assessment must be undertaken, by a suitably qualified person (with a minimum Level 5 in arboriculture), of all existing vegetation within the site and within 10 metres of the site boundary. The assessment must include trees within road reserves and any other vegetation which is going to be impacted, for example, through the installation of services for the site.

The retention of healthy existing trees should be prioritised in the design of the development. Where intended removal of a tree is shown on the plans, specific evidence as to why this tree requires removal must be provided.

See page 63 for Attachment 1: Arboricultural vegetation risk assessment template.



1 Landscape master planning and design (cont.)

Play spaces

The term 'play space' is used to define an entire area where play occurs, rather than just play equipment contained within a soft-fall area (i.e. organic softfall or rubberised impact absorbing surface). Play spaces can provide structured and/or unstructured play opportunities and may include a combination of different features such as built play equipment (e.g. swings, slides, climbing structures), pathways, open spaces for balls games, natural and landscaped areas (i.e. containing rocks, sand, logs, water features) and supporting infrastructure, such as seating, picnic facilities and drinking fountains.

When selecting playground equipment, preference should be given to Australian designed and manufactured products. All equipment must meet Australian standards for manufacture and installation. Council is taking proactive steps to try to reduce the incidence of graffiti across the shire. Playground designs should respond to this by limiting the inclusion of surfaces that would provide a canvas for graffiti and being constructed of a material which allows for easy graffiti removal.

Playground designs should consider all abilities and provide equipment, infrastructure and access which responds to this. Please refer to Council's *Play Space Strategy* and *Universal access guidelines* when planning for play spaces. The environmental impacts of materials used in play spaces should be minimised and products containing recycled content are preferred.



Play spaces should include a combination of formal and informal play opportunities to enable children of all ages to participate in a range of play types, including physical, social and cognitive play.

1 Landscape master planning and design (cont.)

Informal and natural play

Play spaces should include a combination of formal and informal play opportunities to enable children of all ages to participate in a range of play types, including physical, social and cognitive (imaginative/sensory) play. More specifically, a combination of formal play equipment and informal/unstructured areas, such as open spaces and natural features, are required to enable children to create their own play.

The provision of natural features enhances the play experience for children by providing opportunities for informal, creative and exploratory play such as climbing trees, balancing on fallen logs, making cubbies in bushes and rolling down hills. Loose materials such as rocks, twigs, sand and water can also be used in a variety of ways due to their ability to act as props in children's play. Natural/landscaped areas are also important in attracting parents and families to play spaces and contribute to the overall appeal and enjoyment of the park setting.

Avoid using plants with traces of toxicity, plants which produce hard seeds, plants which are attractive to bees, have swallowable fruit, spines, sharp edges, abrasive trunks or foliage, and plants which are known to induce asthma and allergic reactions around play spaces. The placement of any natural play balancing elements must allow for a minimum 1.5 metre fall zone.

Drainage

Council requires all play spaces to be drained adequately. Drainage plans must be included with plans submitted for play spaces. Details and specifications, including legal point of discharge, of drainage elements must also be included.

Shade

Shade should be provided for all proposed play spaces. Council's preference is for natural shade rather than additional physical infrastructure such as shade sails.



1 Landscape master planning and design (cont.)

Fencing

Fencing around play equipment is generally not supported in public open space as it can lead to reduced levels of supervision and interaction between parents/carers and children. Additionally, fencing can diminish a child's sense of freedom and restrict play opportunities by segmenting formal play equipment from informal/natural play opportunities. Fencing also requires additional capital costs and ongoing maintenance requirements.

In most instances, the fencing of play spaces is not required. Play spaces should ideally be designed and located away from potential hazards to minimise the need for fencing. The use of natural barriers, landscaping, supporting infrastructure or partial fencing are preferred means of defining a play environment and/or restricting movement in a certain direction.

However, some fully fenced play spaces should be provided in key locations throughout the municipality to provide an option for parents/carers who require a secure play area for their children. This is particularly important for parents of young children and children with special needs (i.e. autism, hearing impairment), in addition to parents with limited mobility who find it difficult to supervise and confine their children to a designated area. Fencing may also be required where a play space is located in close proximity to a potential hazard such as a busy road, car park, water body or steep embankment.

Where required, fencing should not be restricted to the formal play equipment only, but rather a larger area that includes both formal and informal play areas (i.e. perimeter fencing that also includes open space and natural areas).



1 Landscape master planning and design (cont.)

Fitness/exercise equipment

In order to maximise community use and benefit, the siting of exercise stations should:

- be accessible via an interconnecting trail network
- be located in a high profile area with good natural surveillance to ensure the safety of users (who are often likely to use them at times of limited light and visibility i.e. early morning/evening)
- be complemented by large open spaces
- include shade
- consider access for maintenance vehicles
- consider the relationship/proximity to children's play spaces to minimise children mistaking fitness equipment for items of play equipment
- be incorporated into a landscape plan for the site in which it is intended.



1 Landscape master planning and design (cont.)

Public art

Council encourages the inclusion of public art in open space areas in key nodes of district, municipal and regional open space areas and primary paths and trails. Inclusion of public art will be viewed as favourable when assessing your landscape master plan.

For the purpose of this document, public art excludes landscape or architectural features and refers to works that have been acquired through a commissioning process where an artist with a professional practice in public art has created a work in response to a brief and site.

Public art offers a range of benefits to the community, including:

- enhancing the aesthetic value of the built and natural environment
- maximising the community's understanding and ownership of their local landscape, culture, history and identity
- activating new spaces by providing a variety of experiences and opportunities for community engagement.

Council is committed to working in partnership to deliver public art outcomes that enrich the landscape, development and community. A partnership with Council's Cultural Development Officer can provide developers with further expertise in commissioning processes, formulating briefs and agreements, artist and concept selection, risk assessment, and conservation and maintenance assessment.

Council must be involved in the commission and selection process given that Council will assume maintenance responsibilities once the work is permanently accessioned into the collection after the initial two-year defects and liability period.

The design of the public art must consider the issue of accessibility and as such either encourage it by providing hand/foot holds, appropriate undersurfacing and eliminating entrapment points or discourage it by eliminating hand/foot holds altogether.

More Information

For further information about Council's Public Art Policy and how we can assist you in planning for and commissioning public art, please contact Council's cultural development officer or email mail@cardinia.vic.gov.au



2 Detailed design of landscape works plans and delivery of landscape projects



2 Detailed design of landscape works plans and delivery of landscape projects

Approval of planning permit and landscape master plans will often include the requirement to meet conditions that relate to the detailed design and construction of the landscaping. Landscaping requirements will be detailed in the planning permit as appropriate for the type of development proposed. The detailed landscape works plans need to reflect the approved landscape master plan, the requirements of the planning permit and the guidelines outlined below. This section provides a summary of the process for delivery of landscape projects and a number of checklists to provide step-by-step guidance.

Contacting Council

Following planning approval of the landscape master plan, correspondence should be directed to the attention of the following Council officers for the next stages:

- Landscape compliance officer
 - Detailed landscape works plans
 - All correspondence relating to assessment, submission and return of landscape bonds
 - Requests for transfer of utilities
- Landscape surveillance officer
 - Requests relating to landscape inspections

All mail should be sent to mail@cardinia.vic.gov.au to ensure plans and documents are filed appropriately.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Summary of process

1	Assessment of detailed landscape works plans	<ul style="list-style-type: none"> – Must be generally in accordance with the endorsed landscape master plan – Must meet any requirements of the associated planning permit – Plans are to be submitted via email to mail@cardinia.vic.gov.au and attentioned to Council's Landscape Compliance Officer – Checklist 2 needs to be completed and submitted with all proposed detailed landscape plans – A fee of 0.75 per cent of the estimated cost of landscape works will be charged for plan checking and must be paid prior to the approval of the detailed landscape works plans and is non-refundable.
2	Submission of proposed 'opinion of probable cost' and bond and fee calculations	<ul style="list-style-type: none"> – A detailed opinion of probable cost (OPC) and proposed bond calculations is to be provided to Council for approval (refer to <i>Fees and bonds</i> section for rates). – Council will confirm in writing that the bond amounts are acceptable. – If statement of compliance (SOC) is required prior to practical completion (PC), an outstanding works bond is required to be paid to Council. – Bonds may be paid to Council in the form of cash, cheque, credit card or bank guarantee.
3	Pre-commencement meeting	<ul style="list-style-type: none"> – Contact Council's landscape surveillance officer a minimum of 5 days prior to the requested meeting date. – If works are to be undertaken within the road reserve after statement of compliance has been issued a traffic management plan in accordance with the <i>Road Management Act 2004</i> (and Code of Practice for Worksite Safety – Traffic Management 2010) must be submitted to Council two weeks prior to commencing works. – Checklist 3 needs to be submitted at the time of requesting the meeting. – Witness and hold points will be specified during the pre-commencement site meeting. – Planting of horticultural assets, excluding grass, from 1 November to 31 March is discouraged. Practical completion may be granted during this period; however, final completion will not and as such the site will be subject to an extended maintenance period.
4	Witness and hold point inspections	<ul style="list-style-type: none"> – Set out inspection will be the first hold point and can be incorporated in the pre-commencement meeting if appropriate and agreed prior by Council's landscape surveillance officer. – Witness point supporting photos and documentation to be submitted by landscape architect within 48 hours of works being undertaken and emailed to mail@cardinia.vic.gov.au and attentioned to Council's landscape surveillance officer. – Contact Council's landscape surveillance officer a minimum of 48 hours prior to the requested hold point inspection date.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Summary of process (cont.)

5	Practical completion	<p>a. Submit 'As constructed' plans and A-SPEC data and Checklist 4a and/or 4b as appropriate to Council a minimum of 48 hours prior to the practical completion site meeting. Plans are to be submitted via email to mail@cardinia.vic.gov.au and attentioned to Council's landscape compliance officer</p> <ul style="list-style-type: none"> • a fee of 2.5 per cent of the actual cost of landscape works must be paid for surveillance based on the landscape project cost. This fee is required to be paid prior to practical completion being issued and is non-refundable • if not paid at Step 2, payment of maintenance bond is required prior to practical completion being issued. <p>b. Council's landscape surveillance officer will contact the landscape architect to arrange a practical completion inspection, once step 5a has been completed.</p> <p>c. At the point of granting practical completion, Council's landscape compliance officer will provide relevant documentation including a landscape bond transfer form for completion and return to Council for reimbursement of any outstanding landscape works bond.</p>
6	Interim inspections	<ul style="list-style-type: none"> – Landscape architect to contact Council's landscape surveillance officer 6, 12 and 21 months after practical completion to arrange interim inspections. Failure to request these inspections will impact on the achievement of final completion. – Checklist 5 needs to be submitted to Council a minimum of 48 hours prior to an interim inspection site meeting via email to mail@cardinia.vic.gov.au and attentioned to Council's landscape surveillance officer. – Where works are deemed to be in an unsatisfactory state, a rectification notice will be issued and defects must be actioned within the specified timeframe. Failure to do so may result in the maintenance period being placed on hold or forfeiture of bond monies.
7	Final completion	<ul style="list-style-type: none"> – Landscape architect to contact Council's landscape surveillance officer to arrange a final completion inspection. – Checklist 6a and/or 6b needs to be submitted to Council a minimum of 48 hours prior to the final completion site meeting via email to mail@cardinia.vic.gov.au and attentioned to Council's landscape surveillance officer. – Financial compensation will need to be provided to Council for any areas of non-compliance with the <i>As constructed</i> plans prior to final completion being granted. Generally this will be based on the opinion of probable costs or a negotiated outcome. – Council will provide the landscape architect or developer, as appropriate, with the relevant documentation for completion and return to Council prior to the landscape maintenance bond being returned.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Preparation of detailed landscape works plans

When preparing the detailed landscape works plans for each stage of an estate the following requirements need to be met.

Drainage

- The detailed landscape works plans should be assessed for conformity with the detailed engineering plans prior to submission to Council.
- Trapped low points within open space areas should be avoided. Any trapped low point will need to be properly drained, i.e. pits and pipes.
- All stormwater runoff from paved areas and structures must be collected in and directed to Council's underground drainage system.
- Any constructed underground drainage within an open space area must be designed to accommodate a 1-in-5 year storm event.
- All pathways must be located above the adopted 1-in-100 year flood level.
- Consideration must be given to the positioning of soft landscaping, playgrounds and structures, to ensure they are outside designed overland flow paths.
- All drainage pits and pipes must accord with Council's engineering standards.
- Significant or extensive drainage infrastructure within open space reserves will be required to be checked and approved by Council's engineering development team.
- The use of permeable surfaces is encouraged where appropriate and practical



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

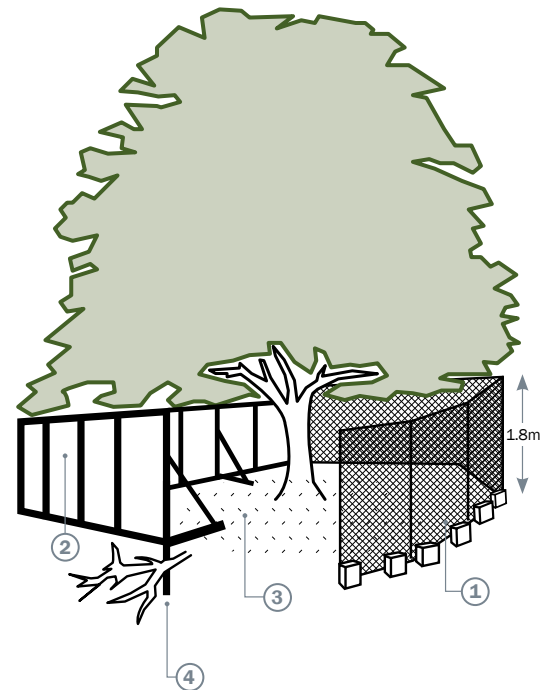
Tree protection fencing

Tree protection fencing must be installed in accordance with Australian standards (AS 4970-2009) and erected prior to any machinery or materials being brought onto site. Tree protection fencing is to be erected around the entire tree protection zone (TPZ). The TPZ is an exclusion zone designed to provide for adequate root space for the tree to access water and nutrients, as well as to reduce the impact on the canopy and structure of the tree.

Process for retention of all protected trees:

1. A Tree Management Plan is to be drafted by a suitably qualified professional and implemented by the developer to the satisfaction of Council. The plan must improve the useful life expectancy of retained trees and reduce safety issues where a target exists such as path, playground, or firebreak. All remedial pruning and mulching must be undertaken by a qualified arborist, with a minimum Level 5 in arboriculture, for the developer, prior to the handover to Council.
2. All retained scattered trees (not in patches) must have mulched tree protection zones to 5–10cm in depth. Mulch needs to be free of pathogens and weeds. Soil moisture levels to be regularly monitored as temporary irrigation may be required.
3. Tree protection fencing must be installed to the satisfaction of Council's landscape surveillance officer prior to works commencing and must not be moved or removed for the duration of all construction works. The fencing is to be of suitably robust construction (not flags or bunting) to prevent access to the area throughout the construction period and should be adequately signed and maintained throughout the construction period (see Figure 1).
4. Locating benches, paths, playground or other infrastructure within defined patches, tree protection zones or tree canopies should be avoided to minimise safety issues and impacts on protected trees.
5. Roadsides which contain vegetation to be retained are to be fully fenced with tree protection fencing prior to construction commencing and for the duration of construction.
6. Any works required within these roadsides is to be rehabilitated with 5–10cm mulch and revegetated with between one and four plants per square metre to EVC standards. Mulch needs to be free of pathogens and weeds.

Figure 1. Tree protection fencing



Reference AS 4970-2009 12
September 2016

Legend:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Infrastructure

All open space infrastructure must be clearly identified within the detailed landscape plan, Infrastructure selection should consider:

- Australian made
- level of maintenance required
- graffiti resistance
- compliance with Council's *Healthy by design guidelines* and *Age friendly strategy*
- *Disability Discrimination Act 1992* (DDA) compliance
- life expectancy
- environmental impacts of materials, their manufacturing and end of life disposal or recycling
- using products with a high level of recycled content (e.g. recycled bricks).

Below are the minimum infrastructure standards which should be considered within Cardinia Shire open space reserves, unless otherwise directed by Council. All infrastructure should be consistent with Council's *Healthy by design guidelines*.

Vehicle exclusion mechanisms and barriers

Vehicle exclusion mechanisms (VEMs) should be considered around all open spaces, with regular pedestrian openings provided. Consideration should be given to manage vehicle exclusion via natural features where possible.

Selection of the type of VEMs, whether vegetation, fences, bollards, or high barrier kerbs, will be made on a case-by-case basis in consultation with Council, with a preference for using natural features. Decisions will ensure that VEMs make a positive urban design contribution to their locality.

VEMs will be designed in accordance with the requirements and objects of the DDA, such that they contribute to providing continuous accessible paths. Bollards without horizontal elements must be at 1.75 metre centres to exclude vehicles. Maintenance and emergency vehicle access must be provided in VEMs and open space fencing.



Boardwalks and decks

Cardinia Shire Council requires the use of boardwalks across areas requiring preservation or protection as a part of an integrated pedestrian network, and supports the use of decks as recreation or observation facilities within that pedestrian network. For DDA compliance, pedestrians must at all times have access to continuous accessible paths of travel (CAPT).

Boardwalks and decks will be designed to:

- have regard to their likely degree of usage
- acknowledge their role as an important component of the visual landscape as well as a safe and viable engineering structure
- have a minimum design life of 25 years
- use materials, colours and textures to Council's satisfaction
- be fully accessible by all users
- be subject to the requirements of the *Building Act 1993* and be certified for both design and construction when structural design is required
- provide a minimum width of 1,800mm
- provide consistent, trip free and slip-resistant surfaces
- provide handrails or kick-rails, where required, to Australian Standards
- provide defined kerb edges
- provide graded ramp access for a continuous accessible path of travel.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Footpaths in open space

Consistent, accessible footpaths are critical to safe pedestrian movement for all users, including people with disabilities. Pedestrians must at all times have access to continuous accessible paths of travel (CAPT) to playgrounds and buildings within reserves.

Paths will generally be constructed using grey concrete with a slip resistant surface that is traversable by a person using a wheelchair. The use of textures, other colours and finishes will be considered for public use within open spaces having regard to the following performance criteria:

- durability of construction
- maintenance and access implications
- function of the path
- environmental issues and design sustainability
- achievability of minimum contrast with TGSIs
- other access elements
- where there is a defined property line it should be free of any barriers or hazards to provide a consistent reference for all users, particularly for people with vision impairment
- consistent, trip free and slip-resistant footpath surfaces
- a minimum overhead clearance of 2.4 metres is required above the trafficable footpath surface
- public lighting is required for all principal footpath and bike path connections located within the open space or reserve.

Council's signage requirements

All signage located within open space reserves must be in accordance with Council's *Corporate Signage Manual*. The signage manual details options and variations for signage at reserves and open space.

Signage should include:

- site name
- regulatory controls (if appropriate)
- activities and features of interest (if appropriate)
- Council logo (and possibly contact details).

For more detail regarding signage please contact Council's landscape compliance officer or Communications unit at mail@cardinia.vic.gov.au



Consistent, accessible footpaths are critical to safe pedestrian movement for all users, including people with disabilities.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Shelters

Shelters within open space areas must be a minimum of 10m² and include an approved building permit. When designing shelters within open spaces areas consideration should be given to the following elements:

- compliance with Crime Prevention Through Environmental Design Principles (CPTED)
- accessibility and linkages to interconnecting path trails
- complement the surround area and neighbourhood character
- proximity to other open space assets such as play spaces and picnic areas
- be constructed from environmentally sustainable materials, with a preference to natural material as opposed to painted materials
- reduce the opportunities for infestation by vermin
- how the site will use used in a range of seasons and weather patterns
- graffiti resistance
- level of ongoing maintenance requirements
- discourage inappropriate behaviour, particularly access to the roof.

Seating

When designing seating within open spaces areas consideration should be given to the following elements:

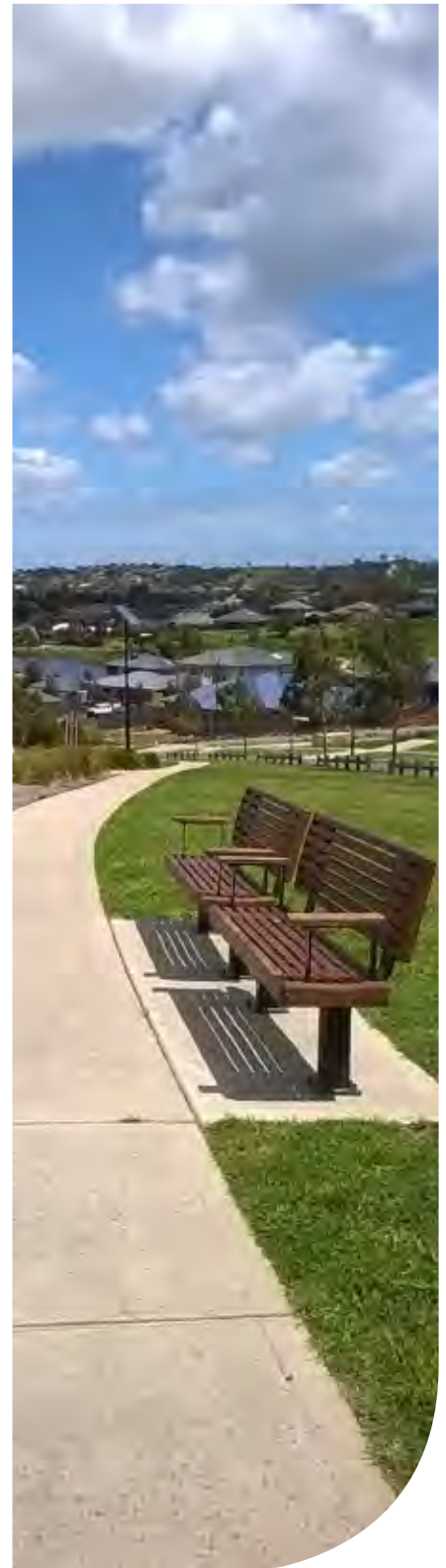
- provide seats to rest in at frequent intervals and in easily accessible positions with space for people in wheelchairs or prams to sit aside; arrange seats to facilitate to social interaction, e.g. position at right angles
- provide seats with backs and armrests; seats and armrest height should also be set at levels to suit adults and where possible seating at a suitable height for children should be provided
- provide shaded seating options to provide protection from weather
- align seats with attractive vistas and points of special interest, e.g. outlooks over play areas, wetlands, local views or sports oval
- locate seating along shared paths with suitable clearance from a path
- if designing custom furniture, consideration must be given to appropriate spacing of seat components to avoid issues such as head and finger entrapment of children.

Fountains

Council discourages the provision of fountains and other decorative water features in open space areas as they are not considered to be consistent with good sustainable design principles.

Entrance gateways

Entrance feature structures and signage are considered to be marketing features and may need to be removed prior to handover of the site to Council, unless prior agreements or arrangements have been put in place.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Play space detailed design

In addition to what is outlined in the previous play spaces section under Landscape master plan design, the following must also be taken into account when undertaking the detailed landscape works plans.

- The overall dimensions of the equipment and required fall zones (note: Natural play elements also need to include sufficient fall zones)
- The intended age-usage range
- Details of the materials and finishes for all components
- Details of under surface treatments
- The equipment orientation, where necessary, in relation to the sun and wind, slides to face SE to SW
- Details of the required foundations, anchorage in the ground and the design and location of the foundation

The design process should include checks from a playground specialist/auditor at various stages to review the safety/compliance of the overall design and its accessibility relative to the desired outcomes of the particular project.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Table 2. Open space infrastructure minimum standards

Infrastructure	Local	Neighbourhood	District	Municipal	Regional
Park furniture					
Barbeque	✗	✗	✓	✓	✓
Litter bins	✗	✓	✓	✓	✓
Park seating	✓	✓	✓	✓	✓
Picnic setting	✗	✓	✓	✓	✓
Picnic shelter	✗	✗	✓	✓	✓
Drinking fountain	✗	✓	✓	✓	✓
Other infrastructure					
Footpaths	✓	✓	✓	✓	✓
Shared paths	Case-by-case basis	Case-by-case basis	✓	✓	✓
Public lighting	✗	✗	✓	✓	✓
Play spaces	See play space strategy				
Car parking	✗	Case-by-case basis	✓	✓	✓
Toilets	✗	✗	✓	✓	✓



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Solar powered security lighting for car parking and reserves

Solar powered lights typically include a battery and panel, and do not require the installation of electrical wires. These products save on installation costs as wiring is not required, and pricing for supply and installation can be similar or less than traditional lighting powered from the electricity grid.

Once solar powered lights are installed ongoing savings are realised as no electricity costs are incurred from the units. Greenhouse gas emissions are also eliminated by using renewable energy to power the lights. Battery replacement presents a significant cost in relation to the lights and needs to be factored into the cost-benefit analysis for each site.

Where financially advantageous to install solar powered public lighting, developers will be encouraged to do so. Where the technology is cost neutral or close to cost neutral on a lifecycle costing analysis, it should also be used due its environmental benefits. The technology is often suitable for locations where mains electrical infrastructure is not readily available.

Council has a detailed decision-making process in relation to the use of this technology when there is a lack of clarity as to its advantage. Any solar powered security lighting used must be of high quality and have minimal maintenance requirements. Any proposed required public lighting will require Council review and approval.

More Information

For more information on the use of solar powered security lighting please contact Council's environment officer on 1300 787 624 or mail@cardinia.vic.gov.au



Once solar powered lights are installed ongoing savings are realised as no electricity costs are incurred from the units.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Public place litter and recycling bin guidance

Reserves and linear trails

Reserves and linear trails designed and developed by developers must meet Council's guidelines. Council encourages park users to take their waste with them in low use areas and bushland reserves. Reserves of a neighbourhood standard and higher (which include barbeque facilities) will require public litterbins and recycling bins to be installed. The standard bin system options within reserves and linear trails are either:

- Pairs of mobile garbage bins (litter and recycling) on bin stands (security posts), on a concrete pad (see Figure 2) or
- Pairs of stainless steel bin enclosures with recycling and litter side by side (See Figure 3).

Table 3. Option 1 – bins on bin stands

	Litter	Recycling
Bin colour	Dark green	Dark green
Bin size	240L wheelie bin	240L wheelie bin
Bin lid colour	Red	Yellow
Signage	UV stable white gloss vinyl + Varnish stickers placed on 3 sides of bin. These should be A3 WASTE national branded signage*	UV stable white gloss vinyl + Varnish stickers placed on sides of bin. These should be A3 Co-mingled Plastic Cups, Cans, Paper, Glass and Cardboard national branded signage*
Twin bin stand specifications	Width: 520mm Height: 1130mm (to accommodate two x 240L bins back to back) Finish – galvanised Fixed to concrete slab using dynabolt or equivalent fasteners Table 4. Lockable – The appropriate keys for the bin enclosures or stands must be provided to council prior to final completion being granted.	
Concrete pad specifications	1900mm x 750mm x 120mm with reinforced concrete and circular lifting points as per concrete pit standards	

*Can be found at <http://www.packagingcovenant.org.au/resources.php/62/do-the-right-thing-bin-signage>

Figure 2. Example of Option 1 bin infrastructure



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Litter and recycling bin printing and signage (Option 1)

Mobile waste containers supplied must meet the Australian Standard AS4123 for mobile waste containers:

- body of the bins must be white hot stamped with the Cardinia Shire Council logo (contact mail@cardinia.vic.gov.au for PNG files and branding guidelines)
- the lids of recyclables containers shall be embossed with the words 'Cardinia Shire Council', 'Public recycling bin' and 'No commercial waste' and 'loose recycling only' in white hot-stamp at the point of manufacture
- the lids of litter containers shall be embossed with the words 'Cardinia Shire Council', 'Public litter bin' and 'No commercial waste' and 'No industrial waste' in white hot-stamp at the point of manufacture (see Figure 3).

Educational signage must be supplied as per the specifications in Table 3. Council can supply bin stickers for the bin infrastructure at a cost of \$80 per bin pair (six stickers). This cost must be paid prior to practical completion being granted and does not negate the maintenance responsibilities for the bins.

Alternatively, developers may choose to produce educational signage at their own cost. UV stable white gloss vinyl + varnish stickers must be sourced and branded with appropriate education signage (as above).

National signage designs can be found at: <http://www.packagingcovenant.org.au/resources.php/62/do-the-right-thing-bin-signage>

Figure 3. Sample litter bin artwork



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Table 4. Option 2 – bins within bin enclosures

	Litter	Recycling
Bin size	240L wheelie bin	240L wheelie bin
Enclosure Body Material and perforation	Stainless steel with square perforations (40mm)	Stainless steel with square perforations (40mm)
Enclosure size	Width 700mm, Depth 800mm, Height 1050mm (Body dimensions) Lockable – The appropriate keys for the bin enclosures or stands must be provided to council prior to final completion being granted.	
Bin lid type	Flat with canopy	Sloped/tapered with Recycling opening
Signage	UV stable vinyl gloss aluminium composite drilled onto 3 sides of bin enclosure. These should be A3 WASTE national branded signage*	UV stable vinyl gloss aluminium composite drilled onto 3 sides of bin enclosure. These should be A3 Co-mingled Plastic Cups, Cans. Paper, Glass and Cardboard national branded signage*
Concrete pad/hard stand surface	Appropriate size to fit bin enclosure – reinforced concrete and circular lifting points as per concrete pit standards	

*Can be found at <http://www.packagingcovenant.org.au/resources.php/62/do-the-right-thing-bin-signage>

Litter and recycling bin printing and signage (Option 2)

Mobile waste containers supplied must meet the Australian Standard AS4123 for mobile waste containers:

- body of the bins must be white hot stamped with the Cardinia Shire Council logo (contact mail@cardinia.vic.gov.au for PNG files and branding guidelines)

Educational signage must be supplied as per the specifications in Table 4. Council can supply bin enclosure signage at a cost of \$250 per bin pair (six signs). This cost must be paid prior to practical completion being granted and does not negate the maintenance responsibilities for bins.

Alternatively, developers may choose to produce educational signage at their own cost. UV stable vinyl gloss aluminium composite signs must be sourced and branded with appropriate education signage (as above).

National signage designs can be found at: <http://www.packagingcovenant.org.au/resources.php/62/do-the-right-thing-bin-signage>

Figure 4. Litter bin enclosure – flat lid with a canopy

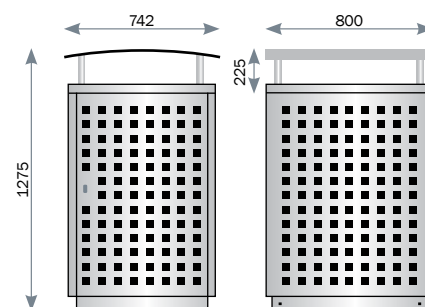
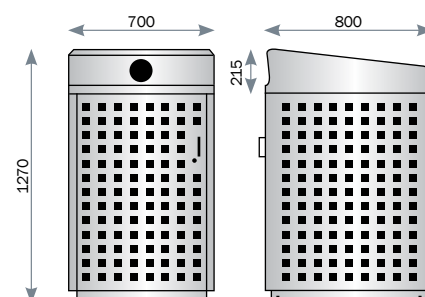


Figure 5. Recycling bin enclosure – Sloped/tapered with Recycling opening



Please note these images do not show the required signage

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Bin placement

In assessing bin placement, consideration must be given to:

- where the waste is likely to be created
- how much waste will be created
- where the nearest waste collection point is and how the bin will be collected.

Council's bin collection contractors operate heavy rigid vehicles with one driver. The driver will park the vehicle at a suitable and safe location and manually pull bins from the bin stand to the waste collection vehicle for emptying (waste collection point), before placing the bin back in the bin stand.

The distance that bins are pulled should ideally be less than 50 metres, and no more than 300 metres.

Where barbeque facilities are provided, bins should be located in an appropriate location convenient to these facilities, and within 300 metres of waste collection points. Where barbeque facilities are more than 300 metres from waste collection points, it is likely to be more appropriate to place the litter and recycling bins at the entry or exit point of the park, for example near the car park. Bin pairs should also be placed no closer than 50 metres from the next bin pair.

Option for Council to empty bins during maintenance period

Developers are responsible for ensuring bins are maintained and appropriately emptied for a two-year period after practical completion has been granted. It is recommended to plan for twice weekly collections for all new bins. Contents of recycling bins must be sent for recycling.

Understanding that engaging contractors for a two-year period can be difficult for developers to arrange, an option remains for developers to pay Council to undertake these emptying responsibilities. The cost for Council to provide collection of bin pairs (up to twice weekly for a two-year period) is \$5,000 per pair.

This cost is based on up to twice-weekly collections and does not include the initial supply and branding of the bin infrastructure. Advice will be given on application if collections are required to be more often, for which an amended cost can be provided. This cost must be paid prior to practical completion being granted and does not negate the maintenance responsibilities for bins. Council also reserves the right to change frequencies as appropriate.

Streetscapes and commercial areas

Council's standards for bin placement in streetscapes and commercial areas is not covered within these guidelines. For more information, please contact the waste management team on 1300 787 624 or mail@cardinia.vic.gov.au

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Streetscapes

All residential streets within Cardinia Shire are to be appropriately landscaped with street trees and turf. Street trees must be healthy at time of installation, free from obvious signs of pests and disease, or previous pest and disease infestation.

Trees must have good structure with a single defined leader present for the majority of species, with good branching structure and clean grafts as appropriate. Trees should be hardened to conditions and show healthy growth habits (new growth or buds for appropriate species) with appropriate trunk caliper relative to the tree species and size and ideally self-supporting.

No major scarring of branches or trunks, or removal and retraining of leaders should be evident. Roots should be healthy and not circling or girdling the tree. (AS2303:2015 *Tree stock for landscape use* can provide further guidelines on selecting quality tree stock).

Street trees within 200 metres of any natural feature (creek, bushland area, protected native vegetation patch, ridge-top) must be an indigenous species of local provenance (no cultivars) unless otherwise agreed by Council.

Unless otherwise agreed in writing, Council requires all proposed street trees to be in a 40cm container at the time of planting. Additional maintenance periods will be required for trees larger than this. The length of the maintenance period for advanced sizes will be determined on a case-by-case basis depending on the species chosen.

Council's street tree formula is as follows:

- one tree per lot on lots with a frontage of less than 20 metre
- additional tree (or trees) for lots with a frontage in excess of 20 metres
- additional two (or more) trees on corner lots along the side boundary.



All residential streets within Cardinia Shire are to be appropriately landscaped with street trees and turf.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Traffic management plans

If works are to be undertaken within the road reserve after statement of compliance has been issued a traffic management plan in accordance with the Road Management Act 2004 (and Code of Practice for Worksite Safety – Traffic Management 2010) must be submitted to Council two weeks prior to commencing works.

Schedule 7 of the Road Management Act places the responsibility to obtain consent from The Coordinating Road Authority, upon any persons undertaking works within a road reserve. Any traffic management undertaken needs to be conducted by suitably accredited persons/companies.

Guidelines for planting near intersections

Safe intersection sight distance (SISD) needs to be achieved at every intersection. The sight distances and sight triangles are set out in the *AustRoads Guide to Road Design* (Part 4A Table 3.2).

Various factors influence SISD, including (but are not limited to):

- speed of traffic in the major road at an intersection
- geometry/topography of the roads at the location
- set back of property boundaries
- trees/bushes and their proximity to
 - the side road intersection
 - offset from the major road.

To provide SISD in residential areas, Council provides the following guidelines.

- No naturestrip (tree) plantings are to be planted within 20 metres of the back of kerb of a side road, unless the plantings are under 400 millimetres in height and will not grow higher than 400 millimetres.
- The second naturestrip planting (tree) should be spaced a minimum of 12 metres from the first planting (tree).
- All tree plantings within 50 metres of an intersection should be uplifted to minimise the sightline issues created by leaves/branches below 2.5 metres in height.
- This guide is applicable to:
 - 50 and 60km/h local roads only; for higher speed roads, an individual assessment will need to be undertaken
 - tee, crossroad and roundabout type local road intersections
 - includes plantings on any traffic islands or roundabouts within the intersection
 - intersections on essentially straight, flat alignments with no other sightline constraints.
- The above guidelines if followed should allow SISD to be achieved at all local road residential intersections. Council's landscape surveillance officer will undertake a final assessment of the plantings before Council accepts responsibility/handover for any nature strip plantings.
- Any locations not meeting the above guidelines will need a safety assessment undertaken to determine the safety impact of any proposed planting.
- Contact Council's traffic engineers for further information or to discuss any plantings near intersections outside these guidelines.

More Information

For further information in relation to traffic management plans please contact Council's Infrastructure Services team on 1300 787 624 or mail@cardinia.vic.gov.au



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Other offsets for proposed street trees and garden bed planting

Unless otherwise agreed by Council trees should be positioned:

- 4 metres minimum from street lighting and signs; larger distances may be required if the canopy will obstruct when mature
- 3 metres from crossovers
- central location between kerb and footpaths but no closer than 1.5 metres to the kerb
- 1.5 metres from service pits or junctions
- a minimum of 12 metres apart
- any garden bed planting must be planted a minimum of 0.5 metre from the edge of the garden bed.

Minimum offset of trees in grassed areas

- Minimum distance between trees is to be not less than 3.5 metres to allow for mulch and mowing, unless planted in copses and in a mulched bed.

Street tree set-out and planting

- Council's landscape surveillance officer to approve:
 - street tree planting prior to installation
 - all street trees prior to planting
 - planting and staking of all street trees.

Note: Any replacement stock also needs to be inspected by Council's landscape Surveillance Officer prior to planting.

- Planting of horticultural assets, excluding grass, from 1 November to 31 March is discouraged. Practical completion may be granted during this period; however, final completion will not and as such the site will be subject to an extended maintenance period.
- Trees must not be replaced in the final 12 months of the maintenance period. Any trees deemed to be unsatisfactory by Council are to be removed and the ground made safe. Following final completion \$375.00 per tree will be deducted from the maintenance bond. Bonded trees will then be replaced as part of Council's ongoing tree planting schedule.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Staking for street trees

- In exposed sites all trees 45lt (and above) are to have three 50mm x 50mm x 2,400mm stakes.
- In protected sites 25lt –45lt trees are to have a minimum of two 50mm x 50mm x 2,400mm stakes.
- All stakes are to be hardwood with a pointed end driven a minimum 600mm into stabilised soil and not into the root ball of the tree.
- Stakes must be installed vertically straight and horizontally level, with the mesh ties positioned within the middle third of the tree.
- Stakes are to be fixed with 50mm-wide mesh tree ties, secure enough to prevent trees excessively bending but loose enough to provide controlled movement to encourage reaction wood and root growth.
- Stake ties should be assessed and adjusted at six months and removed from trees after around 12 months of establishment to promote stability, and no less than six months prior to handover.

See Figure 4 for typical tree planting detail and specification.

- All trees to be healthy well-grown specimens free of pests and disease with acceptable root shoot ratios. Ensure root balls are moist prior to planting. Trees are to be watered in well immediately after planting.
- If required, stake trees with 2–3 hardwood stakes driven in to 600mm below ground level. Tree ties to be positioned in middle third of tree.
- Top of root ball flush with or up to 25mm above ground level.
- Form soil ring berm approx. 75mm high beyond the circumference of the root ball to provide a watering saucer around the root plate of the tree able to hold approximately 40 litres of water.
- Spread 75–100mm layer of large particle size (20mm or greater) mulch. Mulch to be 25mm clear of trunk extending to diameter of 1 metre around trees.
- Set root ball on undisturbed soil to prevent settling. If required tease roots out without severely damaging the root structure.
- Excavated hole width at least three times root ball width. Break up sides and base, do not glaze edges. Pack backfill soil around base of root ball to stabilise and allow rest of backfill to settle naturally or tamp lightly.
- Put end of stakes into undisturbed soil without interfering with services.

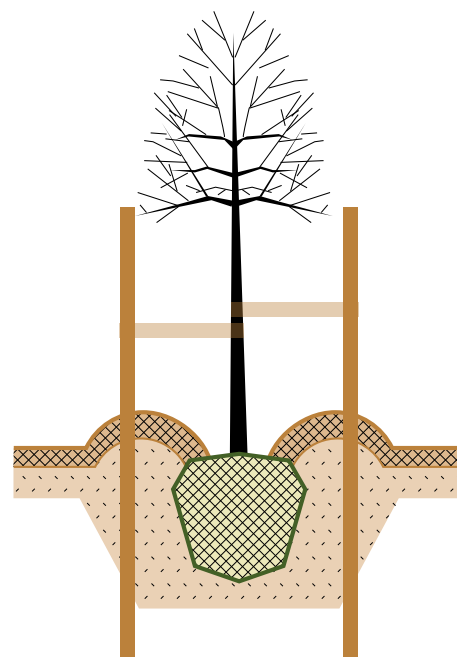
Streetscape garden bed planting

- All garden bed planting within streetscapes must be selected and planted so as not to obscure the sight lines of drivers when at full maturity. Plants chosen must be no higher than 0.6 metres at maturity.
- Variations from approved plans must be consistent with Council's Nature Strip Policy.
- WSUD treatments in streetscapes are generally discouraged.

Maintenance

Council's requires a program for tree establishment and after-care maintenance to run for a minimum of two years after planting and includes watering, mulching, weed control and formative pruning. Depending on the seasonal conditions and the tree's establishment, this period may need to be extended. After care maintenance is very important as it can increase the success of the planting if carried out rigorously.

Figure 6. Tree planting specifications



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

When maintaining trees, work crew or contractors should:

- Mulch
 - mulching reduces weed competition, enhances root growth, prevents soil compaction (improved aeration) and maintains a more constant moisture gradient by reducing evaporation
 - use mulch with a large particle size (20mm or greater); cover and maintain mulch to a radius of 1 metre around the tree, clear of the tree's stem and between 75mm and 100mm thick for the duration of the maintenance period.
- Water
 - monitor the site to determine watering requirements and frequency; this will depend on the species, climatic and site conditions and current water restrictions. Specific recommendations are impractical because even within individual road sections requirements are likely to vary.
- Control weeds
 - control weeds on and around the mulched area of the plant.
- Formative pruning
 - street trees are to be formatively pruned at the time of removing the stakes
 - pruning must be in line with the Australian Standard AS 4373-2007 *Pruning of amenity trees*
 - pruning to be conducted at a time when growth is most active (early spring or summer) to ensure that pruning wounds callus over quickly and adequate energy is available for this to occur
 - formative pruning is pruning a tree to provide good branch structure, to direct growth to a desired shape, accommodate site constraints and reduce encroachments on utilities, buildings, pedestrian and vehicular clearance spaces. Formative pruning also removes structural defects that can cause branch and stem failures in the longer term. Tree defects include co-dominant stems and dead, broken, split, rubbing and duplicate branches
 - Clause 8.5 of Australian Standard AS 4373-1996 *Pruning of amenity trees* recommends formative pruning for young trees of up to 6 metres high and 4 metres crown width.
 - where possible, and having regard for the aesthetic amenity of the individual tree and streetscape, prune trees to a single trunk, clear of branches to a height of 1.5 metres above ground level.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Grassed areas

Council requires either kikuyu or couch to be planted in streetscapes and reserves. Proposed grass species must be indicated on the landscape construction documentation submitted for approval. Council requires grades for grassed areas to be no greater ratio than 1 in 6.

Prior to grassing, all areas must be cultivated to a minimum of 200mm, treated, top-dressed with minimum 100mm approved topsoil soil and levelled. Levels should ensure flush transition from adjacent surfaces with appropriate grading, unless otherwise specified. Lawn starter fertiliser should also be applied at the time of laying.

At the point of practical completion, it is expected that grassed areas will have been levelled and hydro-seeded or turf laid but not necessarily fully established. A conditional PC will be granted for reserves where the grass is not established requiring establishment within 13 weeks. At the point of FC grassed areas must be level (any areas where soil has sunk or been dug out must be filled), 95 per cent weed free, and fully established. Transitions between grassed areas and adjoining hard surfaces must be even.

Witness and hold points

The schedule of required witness and hold points for each stage will be agreed upon at the pre-commencement meeting. If something is specified as a “hold point” a Council representative must be on site. If it is specified as a “witness point” then photos supplied to Council by the LA are sufficient.

Witness Point

Evidence is to be provided to Council where superficial works are being completed not overseen by Council, work may proceed beyond this point without a Council inspection. Photographic evidence must be forward to Council within 48 hours of the works being undertaken. Example of witness points are:

- Cultivation and preparation of sub-grade
- Subsequent Hold Point works (where approved by Council)
- Tree staking and tying

Hold Points

Works identified as a Hold point MUST be inspected by a Council representative before the specified works can continue. The set out inspection will be the first hold point and can be incorporated into the pre-commencement meeting if appropriate and agreed prior by Council's Landscape Surveillance officer. Other examples of Hold Points are:

- Approved tree protection fencing installation
- Tree Stock inspection (On-site)
- Preliminary set-out of lawn, garden beds, hard surfaces and structures
- Set-out of furniture
- Finished sub surface grading
- Underground drainage works prior to backfilling
- All concrete works prior to pouring

Contact Council's Landscape surveillance Officer a minimum of 48 hours prior to the requested hold point inspection date.

2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Compliance with A-SPEC

Before a practical completion certificate can be issued, the developer will be required to provide to Council:

- Survey enhanced 'as constructed' GIS data for the drainage and open space components of the subdivision, in accordance with the current version of D-SPEC, R-SPEC and O-SPEC. Council's preferred format for the submission of the graphical data is in 'MapInfo Native Format'. A secondary format is 'MapInfo MID/MIF'. Grid coordinates must be MGA zone 55 (GDA 94). Please refer to the A-SPEC website for further information: www.a-specstandards.com.au

Note: D-SPEC information will only be required for stages/reserves that include:

- more than five drainage pits
- water sensitive urban design elements.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Play space installation

Council must be provided by developers/installers with the following as a minimum.

- Certificate of compliance to AS 4685:2014 signed by an engineer or Playspace auditor
- Certification of Surfacing Compliance with AS/NZS 4422
- Certification by the installer that the equipment and surfacing have been installed in strict accordance with the manufacturer's instructions.
- Additional information regarding the need for special tools, templates, or lifting devices necessary for the safe usage of the equipment
- Additional information regarding the need for ongoing surface treatments necessary for the longevity of the equipment.
- Additional information regarding the need for instructional signage necessary for the safe usage of the equipment.
- The removal of all building debris and waste prior to the playground being opened to the public.

During the maintenance period, the developer or their contractor is required to have adequate insurance cover relative to the task.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Planning for bushland reserves

In planning for bushland reserves, the following needs to be considered.

- Paths must not be located within tree protection zones or canopies of existing trees unless agreed, paths must not be located within 30 metres of a designated waterway
- Overland flow of water along tracks will be managed to avoid track erosion
- Wooden structures are to be avoided, examples include the use for boardwalks or sleeper walls; recycled plastic can be used as an alternative
- Fencing should be permeable
- Signs – to all entrances; additional signage may be required depending on the size and shape of the reserve. To include reserve name, regulatory signage and interpretation and education to adequately convey the conservation significance of the reserve
- Revegetation – first 30 metres of all designated waterways to a simplified ecological vegetation class, one plant per square metre
- Any proposed planting to be indigenous plants of local provenance
- No planting of cultivars
- No planting of environmental weeds as listed in the planning scheme
- Fuel breaks to be implemented around the perimeter of all reserves where they back onto residential properties. The firebreak will be implemented to a standard sufficient for mowing
- Unless exceptional circumstances apply, residential properties must not back onto reserves but will be separated from reserves via a road
- Council encourages the installation of constructed habitat boxes where appropriate. Examples of habitat boxes can be found on Council's website www.cardinia.vic.gov.au/Page/Page.aspx?Page_Id=5085

Handover of bushland reserves

Prior to statement of compliance, all outstanding management actions for bushland reserves, offsets or threatened species management plans can be handed over to Council with full cost of works + 20 per cent management fee.

Prior to handover to Council of new bushland reserves/natural resource assets/creek reserves the following requirements must be met.

- Remove all environmental weeds to 1 per cent cover. Refer to Council's Pest Plant Strategy for species
- Manage all erosion to ensure no active movement of soil
- Handover in a state which doesn't present any liability to Council
- Must be free of rubbish and foreign debris
- All redundant fencing must be removed

More Information

For further information in relation to planning for and handover of bushland reserves, contact Council's Environment Unit on 1300 787 624 or mail@cardinia.vic.gov.au



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Fees and bonds

Any fees or bonds submitted to Council must be accompanied by a cover letter which states the following:

- who is submitting the fee or bond
- which estate and stage or stages it is applicable to
- exactly what it is for, i.e. plan checking fee, landscape surveillance fee, incomplete landscape works bond, or landscape maintenance bond.

Bank guarantees

If providing a bank guarantee in lieu of a cash bond, the bank guarantee must:

- have no expiry date
- specify the estate, and stage or stages applicable
- specify exactly what it is for, i.e. incomplete landscape works or landscape maintenance.

Plan checking and surveillance fee

In accordance with the *Subdivision Act 1988* and *Subdivision Fees Interim Regulations 2012*, a fee of 0.75 per cent of the estimated cost of landscape works will be charged for plan checking and must be paid prior to the approval of the detailed landscape works plans.

A fee of 2.5 per cent of the actual cost of landscape works will be charged for surveillance, based on the final landscape project delivery cost. This fee needs to be paid prior to requesting a practical completion meeting and is non-refundable.

Note: fees are subject to review in line with any Act changes.



2 Detailed design of landscape works plans and delivery of landscape projects (cont.)

Incomplete landscape works bond

If statement of compliance (SOC) is requested prior to practical completion of the landscape works being granted, then an incomplete landscape works bond must be provided to Council prior to SOC being granted.

For streetscapes, the incomplete landscape works bond is to be calculated at a rate of \$375 per street tree and 135 per cent of the value of all other landscape works. Where this is submitted as a bank guarantee, this is returned to the developer at such time that practical completion is achieved in return for a 35 per cent maintenance bond.

If the incomplete landscape works bond is submitted as a payment to Council, then the first 100 per cent is returned and only 35 per cent retained to cover the 24-month maintenance period.

For reserves, the incomplete landscape works bond is to be calculated at a rate of 135 per cent of the value of all works or the value specified in Table 4 below, whichever is lesser. Council does not wish to penalise developers who are willing to provide a standard above and beyond the minimum required, which is why a maximum bond amount has been specified. An opinion of probable costs must still be submitted to and approved by Council even if the value exceeds that specified below.

Table 4. Maximum outstanding landscape bond amounts

Reserve category	Incomplete landscape works bond value
District	\$4,800,000
Neighbourhood	\$475,000
Local	\$200,000

Landscape maintenance bonds

Streetscapes

A landscape maintenance bond must be paid to Council prior to Council granting practical completion of the landscape works. In calculating the value of the works, street trees are to be calculated at a value of \$375 each. This value includes the grassing of the naturestrip. Where the streetscapes include garden bed planting, these areas are to be calculated separately according to cost of works. The landscape maintenance bond is then calculated at a value of 35 per cent of the actual cost of all landscape works (street trees and garden beds).

Reserves

A landscape maintenance bond must be paid to Council prior to Council granting practical completion of the landscape works. In calculating the value of the maintenance bond, this is to be based on the **full opinion of probable cost amount** of the project regardless of whether that value was used to calculate the outstanding works bond. The landscape maintenance bond is then calculated at a value of 35 per cent of the actual cost of all horticultural assets and 5 per cent of all other costs (earthworks and hardscapes).

3 Checklists



Checklist 1

Landscape Site Analysis and Masterplan



Estate:		Stage		
Date:				
Address:				
Developer:				
Landscape Architect/designer		Telephone		
Company details		Email		
<p>The site analysis plan is to provide a clear and comprehensive summary of the feature of the site, and the opportunities and constraints presented by these which have impacted the design outcome.</p> <p>The Landscape Master plan is to address the constraints and opportunities of the Site Analysis and give a clear picture of the completed development. This will include its character, function and amenities.</p>				
Site Analysis				
Item	Applicable/ not applicable	Notes	Initial (LA)	Council
Context plan (including, where appropriate, points of community focus which the master plan area might connect with.)				
North arrow				
Scale				
Legend				
Site boundary				
Existing contours and levels including falls				
Easements				
Existing roads and road names				
Services (including surrounding roads)				
Structures				
Native Vegetation Precinct plan requirements				
Roadsides of conservation significance				
Ecological vegetation class of remnant vegetation				
Trees and other significant vegetation (including on adjacent sites to 10 metres)				
Adjoining land uses,				
Areas of cultural heritage significance				
Melbourne/South East Water assets				
Views to significant features,				
Land affected by planning overlays				
Other constraints				

Checklist 1

Landscape Site Analysis and Masterplan (cont.)

Landscape master plan				
Item	Applicable/ not applicable	Notes	Initial (LA)	Council
Context/location plan (including, where appropriate, points of community focus which the master plan area might connect with.)				
Text that is legible at A3 size				
North arrow				
Scale				
Staging diagram				
Proposed contours and levels including falls				
Clear and easy to understand legend				
Roads and road names				
An indicative plant schedule, with sub-headings indicating trees, shrubs, ground level species, wetland species and revegetation species				
Street tree themes				
Reserve boundaries with area in square metres.				
Vegetation being retained and vegetation protection measures				
Where remnant vegetation exists on roadsides that the roadside will be preserved and protected				
The proposed locations of any mounding				
View lines if relevant				
Existing and proposed easements				
Car park locations and car parking space and aisle dimensions				
The proposed location of: furniture, structures, garden beds, grassed areas trees, fences, barriers (including traffic control measures), walls, maintenance access points, drinking fountains, play spaces, paths and path hierarchies (design details of structures/infrastructure will be required as part of detailed design stage)				

Checklist 1

Landscape Site Analysis and Masterplan (cont.)

Landscape master plan				
Item	Applicable/ not applicable	Notes	Initial (LA)	Council
Indication of proposed character and material of fences, walls, paths, furniture and other hard landscape infrastructure (through description and images),				
Nomination of character of play spaces, including potential equipment, indicated through description and images				
Confirmation as to whether any public art will be commissioned as part of the development.				
Lighting if proposed				
Consideration of and compliance with Crime Prevention Through Environmental Design Principles (CPTED)				
Land affected by significant overlay or control eg. CHMP, LSIO				
Fuel management zones including fuel breaks				
Any items required to be delivered under the relevant Development Contributions Plan (DCP) clearly identified				
Permit conditions met (e.g) Condition 9 <ul style="list-style-type: none"> • A • B • C etc 				

Checklist 2

Landscape construction documentation

Estate:	Stage			
Date:				
Address:				
Developer:				
Landscape Architect/designer	Telephone			
Company details	Email			
Note: Landscape architect must confirm that landscape construction documents match civil engineering documents and indicate any departures from the approved landscape master plan.				
Site Analysis				
Item	Applicable/ not applicable	Notes	Initial (LA)	Council
Landscape fees paid (A fee of 0.75% will be charged for plan checking based on estimated construction cost of proposed landscape works)				
Context plan				
North arrow				
Clear and easy to understand legend at A1, A3 and in black and white.				
Noted scale and bar scale				
Text which is legible if resized to A3.				
Extent of works boundary and stage boundary.				
Location of existing services.				
Location of proposed services and service pits				
Existing and Proposed contours and spot levels with proposed grades and falls clearly displayed.				
Drainage pits and pipes, and, if required, the legal point of discharge.				
Definition of all surface treatments and reference to relevant details for all surfaces.				
Set-out plan. If set-out is to be undertaken through coordinates, plans should nominate all critical dimensions including path widths, offsets from roads and other features, dimensions of playing fields etc				
Tree removal and retention plan, with reference to relevant arborist report for definition of tree protection zones and location of tree protection fences				
Plans for future council reserves where these adjoin the proposed works.				

Checklist 2

Landscape construction documentation (cont.)

Site Analysis				
Item	Applicable/ not applicable	Notes	Initial (LA)	Council
Planting schedule with botanical names, height and width at maturity, size at planting, plant code, with sub headings indicating trees, shrubs, ground level species, wetland species and revegetation species				
Table of standard off-sets of street trees from services and other features				
Litter and recycling bin locations and distances to collection point				
Play space plan, showing locations of all equipment, all fall zones and supplier and product number of all equipment.				
Relevant details outlining profiles of all surface treatments, including pavements, lawn areas, planting beds and play space areas. (Note: lawn details to nominate seed mix and not refer to specification; planting bed details to nominate mulch and not refer to specification; reinforced path details to nominate reinforcement and not refer to engineers details)				
Relevant details indicating all interfaces/ junctions between different materials and surface treatments				
Relevant planting details				
Relevant details for all structures, including construction and footing details. All structural details are to be provided, either on landscape plans or as engineers' plans. Reference should not just be made to third party plans.				
Relevant details for all barriers, walls and fences (including tree protection fences). All structural and reinforcement details where appropriate are to be shown and not referred to third party plans.				
Details of all furniture including supplier and product details and fixing details where appropriate.				
Car park locations and car parking space and aisle dimensions.				
Sections (especially where there is a significant change in elevation)				
Elevations (for important entrance points), signage and structures.				
Planting within protected patches of native vegetation or scattered indigenous trees must only consist of indigenous species				

Checklist 3

Pre-commencement meeting

This form should be completed and submitted to Council 5 days prior to pre-commencement site meetings. The Landscape Supervisor should only make the request when all of the documentation has been approved.

Subdivision:	Stage:		
Reserve:	Asset no:		
Address:			
Proposed start date	Approximate finish date:		
Landscape supervisor	M:		
Landscape contractor	M:		
Emergency 24h	M:		
Landscape pre-commencement checklist	Yes	No	Comment
Detailed landscape plans approved			
If works are to be undertaken within the road reserve after statement of compliance has been issued a traffic management plan in accordance with the <i>Road Management Act 2004</i> (and Code of Practice for Worksite Safety – Traffic Management 2010) must be submitted to Council two weeks prior to commencing works.			
Site risk assessment completed			
Tree protection fencing installed			
Temporary perimeter fencing installed			
Landscape specification and schedule of works – submitted to Council.			
Schedule of hold points/witness points submitted to council.			
Site set-out verified against approved plans			
Pre-commencement checklist complete			
Pre-commencement site meeting requested			

Office use only:

Officer	Date:
Attachments/trim	

Checklist 4a

Practical completion reserves

Estate:		Stage		
Date:				
Address:				
Developer:				
Landscape Supervisor:		Mobile:		
Landscape Contractor:		Mobile:		
<p>All requirements set out in the approved landscape plans must be adhered to. Contact Council's landscape surveillance officer on 1300 787 624 for assistance. This checklist is to be used as a guide. Once initialled and submitted to Council, a practical completion meeting can be scheduled with Council's landscape surveillance officer. Practical completion will be granted at the discretion of the Council officer. If items in this list are installed and not deemed complete at practical completion by Council's landscape surveillance officer, a rescheduled meeting will be undertaken in the following month once the required remedial works are completed.</p>				
Item	Requirement	Inspected by LA or Developer Y/NA	Supporting Docs Submitted to Council Y/NA	Council Inspection S/NS
Fees and bonds	<p>A fee of 2.5% of the actual cost of landscape works must be paid for surveillance. This fee is required to be paid prior to practical completion being issued and is non-refundable.</p> <p>If not paid previously, payment of a maintenance bond is required prior to Practical Completion being issued. The maintenance bond is calculated at a value of 35% of the actual cost of all horticultural assets and 5% of all other costs (earthworks and hardscapes).</p>			
Drainage	All drains are clear of silt, debris and rubbish. No evidence of pooling or stagnant water			
Concrete path/ pavement	All concrete areas are clean, free from cracks, damage, trip hazards and installed to specification (photos may be required)			
Gravel path	All gravel paths have clean edges, no signs of erosion and free draining			
Edging	All edging is free from hazard and installed to suitable levels			
Fencing	All fencing is free from damage and treated as specified			
Bollards	All bollards are free from damage, installed to correct height, in suitable alignment and treated as specified			

Checklist 4a

Practical completion reserves (cont.)

Item	Requirement	Inspected by LA or Developer Y/NA	Supporting Docs Submitted to Council Y/NA	Council Inspection S/NS
Seating	All seats are free from damage, installed and treated as specified			
Drinking fountain	Drinking fountain(s) are connected, functioning and free from damage			
Walling	All walls are free from damage and engineers certificate provided where appropriate			
Play space	All play space areas have undertaken a Risk Assessment Audit by a suitably qualified Independent Risk Assessment Auditor. This report is to be submitted to Council. If remedial works are required, a follow up assessment will be required once all works are completed and submitted to Council.			
Soft fall	All soft fall areas are free of hazardous material and are topped up to Council's satisfaction			
Softfall certification	Softfall certification has been submitted to Council			
Public art	Sign off from the engineer to verify that the artist has installed the artwork in accordance with engineering specifications			
Toilets	Certificate of compliance to be provided from licenced plumber			
Structural elements	All structural elements are free from damage and treated as specified			
Structural certification	Structural certification inspection documentation has been submitted to Council			
Structural signoff	Certificate of Final Completion has been submitted to Council			
Structural permit	Building permits and final certificates in accordance with the building regulations 2006 provided to Council (shelters over 10m2, retaining walls over 1m etc).			
Barbeque	All barbeques are installed correctly, free from damage, clean, connected and functioning			
Rock placement	All rocks are stable, free from sharp edges and are firmly fixed			
Litter and recycling bins	Bin stands are free from damage and contain two 240L wheelie bins			

Checklist 4a

Practical completion reserves (cont.)

Item	Requirement	Inspected by LA or Developer Y/NA	Supporting Docs Submitted to Council Y/NA	Council Inspection S/NS
Tree planting	All trees are loosely tied with tree stakes, mulch bowls topped up and trees are showing signs of healthy growth			
Tree planting	All species are in accordance with approved plans/as constructed plans			
Garden beds	All garden beds are to be free of rubbish and weeds			
Garden beds	All species and densities are in accordance with approved plans/as constructed plans			
Mulch	All mulch areas are topped up to Council's satisfaction			
Grassed areas	Grass areas are installed as per the approved drawings			
Grassed areas	There is an even transition between grassed areas and adjoining hard surfaces			
Electrical works	Power is connected and certificate of compliance provided to Council			
Plumbing works	Water is connected and certificate of compliance provided to Council			
General	Site is clean, free from rubbish, weeds, and graffiti. Hardscape elements are as detailed, certified and free from cracks. Soft-scape elements are acceptable specimens and show healthy growth and vigour.			
General	The site is in accordance with the approved Landscape Construction Drawings, is ready for Practical Completion and the commencement of the maintenance period			
General	A complete set of as constructed drawings have been submitted to Council in CAD and PDF including A-SPEC data. Details on current A-SPEC requirements can be found at www.a-specstandards.com.au			
General	All relevant conditions of the associated planning permit have been met.			

Checklist 4b

Practical completion streetscapes

Estate:	Stage		
Date:			
Address:			
Developer:			
Landscape Supervisor:		Mobile:	
Landscape Contractor:		Mobile:	
<p>All requirements set out in the approved Landscape Plans must be adhered to. Contact Council's landscape surveillance officer on 1300 787 624 for assistance. This checklist is to be used as a guide. Once initialled and submitted to Council a practical completion meeting can be scheduled with Council's landscape surveillance officer. Practical completion will be granted at the discretion of the Council officer. If items in this list are installed and not deemed complete at practical completion by Council's landscape surveillance officer, a rescheduled meeting will be undertaken in the following month once the required remedial works are completed. If works include any structural elements please refer to Checklist 4a <i>Practical completion reserves</i>.</p>			
Item	Requirement	Initial (LA)	Council
Fees and bonds	<p>A fee of 2.5% of the actual cost of landscape works must be paid for surveillance. This fee is required to be paid prior to practical completion being issued and is non-refundable.</p> <p>If not paid previously, payment of a maintenance bond is required prior to Practical Completion being issued. The maintenance bond is calculated at a value of 35% of the actual cost of all landscape works.</p>		
Concrete path/ pavement	All concrete areas are clean, free from cracks, damage, trip hazards and installed to specification (photos may be required)		
Gravel path	All gravel paths have clean edges, no signs of erosion and free draining		
Edging	All edging is free from hazard and installed to suitable levels		
Bollards	All bollards are free from damage, installed to correct height, in suitable alignment and treated as specified		
Rock placement	All rocks are stable, free from sharp edges and are firmly fixed		
Tree planting	All trees are tied with tree stakes, bamboo stakes removed (Where appropriate), mulch bowls topped up and trees are showing signs of healthy growth		
Tree planting	All species are in accordance with approved plans unless otherwise agreed by Council.		
Garden beds	All garden beds are to be free of rubbish and weeds		

Checklist 4b

Practical completion streetscapes (cont.)

Item	Requirement	Initial (LA)	Council
Garden beds	All species and densities are in accordance with approved plans unless otherwise agreed by Council		
Mulch	All mulch areas are topped up to Council's satisfaction		
Grassed areas	All grass areas are to have minimum 90% germination		
General	Site is clean, free from rubbish, weeds, graffiti. Hardscape elements are as detailed, certified and free from cracks. Softscape elements are acceptable specimens and show healthy growth and vigour.		
General	The site is in accordance with the as constructed plans, is ready for Practical Completion and the commencement of the maintenance period		
General	All relevant conditions of the associated planning permit have been met.		
General	A complete set of as constructed drawings have been submitted to Council in CAD and PDF including A-SPEC data where appropriate. Details on current A-SPEC requirements can be found at www.a-specstandards.com.au		

Checklist 5

Interim inspections

Estate:		Stage
Date:		
Address:		
Developer:		
Landscape Supervisor:		Mobile:
Landscape Contractor:		Mobile:
Item	Requirement	Acceptable
General presentation	Site has generally maintained appearance	
Drainage	All drains are clear of silt, debris and rubbish. No evidence of pooling or stagnant water	
Concrete path/ pavement	All concrete areas are clean, free from all cracks, damage and trip hazards	
Gravel path	All gravel paths have clean edges, compacted, no signs of erosion, free draining and topped up to required levels	
Edging	All edging is free from hazard, level and securely fastened	
Fencing	All fencing is free from damage, stable and treated as specified	
Bollards	All bollards are free from damage are treated as specified. Any cable/ chain is re-tensioned to the specified heights	
Seating	All seats are free from damage and treated as specified	
Walling	All walls are free from cracks and damage	
Trees	All species and densities are in accordance with approved plans	
Trees	All trees are present, alive and in good health, appropriately pruned, staked, tied and mulched. Stake ties should be assessed and adjusted at 6 months and removed from trees after around 12 months of establishment to promote stability, and no less than 6 months prior to handover	
Gardens	All garden beds are free from weeds and rubbish.	
Gardens	All species and densities are in accordance with approved plans	
Mulch	All mulch is maintained to adequate levels	
Grassed areas	All grass areas are free from weed and foreign material with only desirable species of grass present	
Grassed areas	All grassed areas are mown and areas adjacent to surfaces, trees, garden beds are to be brush cut	
Boardwalks/bridges	Boardwalks and bridges are clean and safe from hazards	
Barbeque	All Barbeques are free from damage, clean and functioning	
Rubbish bins	All Rubbish bins are functioning, clean and free from damage	
Drinking fountain	Drinking fountain(s) are functioning, clean and free from damage	

Checklist 5

Interim inspections (cont.)

Item	Requirement	Acceptable
Play spaces	All play space areas are free from damage and hazards and meet Australian standards.	
Public art	The artwork is free from damage	
Vandalism	The reserve is free from graffiti and other vandalism	
Fitness	All Fitness equipment is working and free from damage and hazard	
Structural elements (fences, rotundas etc)	All structural elements are free from damage, hazard and treated as specified	
Floor surfacing/path (rubber, soft fall, mulch, sand or other)	Floor surfacing is maintained to appropriate condition/ depth	

Checklist 6a

Final completion reserves

Estate:		Stage	
Date:			
Address:			
Developer:			
Landscape Supervisor:		Mobile:	
Landscape Contractor:		Mobile:	
<p>All requirements set out in the 'as constructed Landscape Plans' must be adhered to. Contact Council's landscape surveillance officer on 1300 787 624 for assistance. This checklist is to be used as a guide. Once initialled and submitted to Council a final completion meeting can be scheduled with Council's landscape surveillance officer. Final completion will be granted at the discretion of the Council officer. If items in this list are not deemed satisfactory by Council's landscape surveillance officer, a rescheduled meeting will be undertaken in the following month once the required remedial works are completed.</p>			
Item	Requirement	Inspected by LA or Developer Y/NA	Council Inspection S/NS
Drainage	All drains are clear of silt, debris and rubbish. No evidence of pooling or stagnant water		
Concrete path/ pavement	All concrete areas are clean, free from cracks, damage, trip hazards and installed to specification (photos may be required)		
Gravel path	All gravel paths have clean edges, no signs of erosion and free draining		
Edging	All edging is free from hazard and installed to suitable levels		
Fencing	All fencing is free from damage and treated as specified		
Bollards	All bollards are free from damage, installed to correct height, in suitable alignment and treated as specified		
Seating	All seats are free from damage, installed and treated as specified		
Drinking fountain	Drinking fountain(s) are connected, functioning and free from damage		
Walling	All walls are free from damage		
Play space	All play space areas have undertaken a Risk Assessment Audit by a suitably qualified Independent Risk Assessment Auditor. This report is to be submitted to Council. If remedial works are required, a follow up assessment will be required once all works are completed and submitted to Council.		
Softfall	All soft fall areas are free of hazardous material and are topped up to Council's satisfaction		
Softfall certification	Softfall certification has been submitted to Council		
Public art	The artwork is free from damage and any latent defects in the work have been rectified		

Checklist 6a

Final completion reserves (cont.)

Item	Requirement	Inspected by LA or Developer Y/NA	Council Inspection S/NS
Toilets	Toilets are free from damage and graffiti and functioning		
Structural elements	All structural elements are free from damage and treated as specified		
Barbeque	All Barbeques are free from damage, clean, connected and functioning. Locks on barbeques to be changed to a Cardinia Shire Council 9.1 key at the developer's expense.		
Electrical boxes	Locks on electrical boxes to be changed to a Cardinia Shire Council PIR850 key at the developer's expense		
Rock placement	All rocks are stable, free from sharp edges and are firmly fixed		
Litter and recycling bins	Bin stands are free from damage and contain two 240L wheelie bins. The appropriate keys for the bin enclosures or stands provided to Council		
Tree planting	All tree stakes have been removed, mulch bowls topped up and trees are well established and in good health.		
Tree planting	All species are in accordance with the as constructed plans unless otherwise agreed by Council.		
Garden beds	All garden beds are to be free of rubbish and weeds		
Garden beds	All species and densities are in accordance with the as constructed plans		
Mulch	All mulch areas are topped up to Council's satisfaction		
Grassed areas	Grass areas are installed as per the approved drawings		
Grassed areas	Grassed areas must be level (any areas where soil has sunk or been dug out must be filled) 95% weed free, and fully established. There must also be an even transition between grassed areas and adjoining hard surfaces		
General	Site is clean, free from rubbish, weeds, and graffiti. Hardscape elements are as detailed, certified and free from cracks. Soft-scape elements are acceptable specimens and show healthy growth and vigour.		
General	The site is in accordance with the as constructed plans, is ready for Final Completion inspection and handover to Council.		
General	All relevant conditions of the associated planning permit have been met.		

Checklist 6b

Final completion streetscapes

Estate:	Stage		
Date:			
Address:			
Developer:			
Landscape Supervisor:		Mobile:	
Landscape Contractor:		Mobile:	
<p>All requirements set out in the 'as constructed' landscape plans must be adhered to. Contact Council's landscape surveillance officer on 1300 787 624 for assistance. This checklist is to be used as a guide. Once initialled and submitted to Council, a final completion meeting can be scheduled with Council's landscape surveillance officer. Final completion will be granted at the discretion of the Council officer. If items in this list are not deemed satisfactory by Council's landscape surveillance officer, a rescheduled meeting will be undertaken in the following month once the required remedial works are completed. If works include any structural elements please refer to Checklist 6a <i>Final completion reserves</i>.</p>			
Item	Requirement	Initial (LA)	Council
Concrete path/pavement	All concrete areas are clean, free from cracks, damage, trip hazards and installed to specification (photos may be required)		
Gravel path	All gravel paths have clean edges, no signs of erosion and free draining		
Edging	All edging is free from hazard and installed to suitable levels		
Bollards	All bollards are free from damage, installed to correct height, in suitable alignment and treated as specified		
Rock placement	All rocks are stable, free from sharp edges and are firmly fixed		
Tree planting	All tree stakes have been removed, mulch bowls topped up and trees are well established and in good health.		
Tree planting	All species are in accordance with the as constructed plans unless otherwise agreed by Council.		
Garden beds	All garden beds are to be free of rubbish and weeds		
Garden beds	All species and densities are in accordance with as constructed plans unless otherwise agreed by Council		
Mulch	All mulch areas are topped up to Council's satisfaction		
Grassed areas	Grassed areas must be level (any areas where soil has sunk or been dug out must be filled) 95% weed free, and fully established. There must also be an even transition between grassed areas and adjoining hard surfaces		
General	Site is clean, free from rubbish, weeds, graffiti. Hardscape elements are as detailed, certified and free from cracks. Softscape elements are acceptable specimens and show healthy growth and vigour.		
General	The site is in accordance with the as constructed plans, is ready for Final Completion inspection and handover to Council.		
General	All relevant conditions of the associated planning permit have been met.		

Attachment 1: Arboricultural vegetation risk assessment

Please note this form must only be completed by a qualified arborist.

Arborist details

Name:
Qualifications:
Date of inspection
Phone

Tree inspection checklist

Tree number:	Location:
Genus, species:	
DBH:	
Height and radial spread	
Service request number:	

Site factors and past history

Inspections	Observations
Intensity of use	
Soil condition, compaction, paving, grade changes	
Prevailing winds	
Exposure	
Previous mistreatments	
Construction injury	
Incorrect planting (girdling etc...)	

Target

Inspections	Observations
Buildings	
Other structures	
High/low pedestrian use	
High/low vehicle use	
Proximity to power lines	

Attachment 1: Arboricultural vegetation risk assessment (cont.)

Decay

Inspections	Observations
Cavities	
Holes	
Cankers	
Branch stubs	
Fruiting structures of decay organisms	
Stem bulge	
Stem swelling	
Amount of sound wood (%)	

Pest and disease

Inspections	Observations
Termites	
Other insects	
Vines or creepers	
Nutrient deficiencies	
Viral	
Fungal	
Canopy status	

Overall health

Refer to Appendix 1 for definitions. Please circle:

Dead Poor Stressed Good Excellent

Environmental features/assessment of significance

Refer to Appendix 2 for definitions and additional information.

Inspections	Observations
Presence of hollows	
Does the tree classify as a large or very large old tree?	
Connectivity to adjacent native vegetation	

Attachment 1: Arboricultural vegetation risk assessment (cont.)

Additional notes

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Structure

Inspections	Observations
Form	
Bifurcations	
Included bark	
Wound wood present	

Structural defects

Inspections	Observations
Branch attachment	
Epicormic	
Included bark	
Open cracks	
Decay	
Leaning	
Soil lifting/mounding	
Soil movement/cracks	
Compressed or buckled fibres at base on compression side	
Horizontal tension cracks on tension side	
Severed roots	
Cracks	
Extent of compromise to branch or stem	
Association with other defect	
Mould and cankers	
Dead wood	
Hangers	

Attachment 1: Arboricultural vegetation risk assessment (cont.)

Management options

Inspections	Observations
Can horticultural pruning be undertaken to retain the tree?	
Can target asset or the threatened audience be diverted away from tree?	
Can nest[??] boxes be installed to offset loss of habitat hollow(s)?	
Can offset planting be undertaken with indigenous plants?	

Risk assessment

Refer to Appendix 3 for Risk assessment table

Inspections	Observations
Assessment of likelihood	
Assessment of consequence	

Risk level

Please circle :

Severe

Very high

High

Medium

Low

State reason for selection:

Additional recommendations

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Declaration

This must be completed before assessment will be considered.

I, _____ declare that the information described above is true and accurate.

Arborist signature: _____

Date: _____

Appendix 1

Health descriptors

0 – DEAD: Tree is completely dead, non-functional crown (no green leaves), stem cambium completely dead, no evidence of root suckers or lignotuberous sprouts.

1 – POOR: Tree is presenting symptoms of strain, large quantities of crown dieback extending from tip dieback to major scaffold branches. Persistent infections of pathogens, borers, fungal cankers and root disease. Irreversible condition ultimately leading to premature death. Any treatments may only be seen as temporary to achieve hazard reduction prior to tree removal.

2 – STRESSED: Tree is presenting symptoms of stress that may be due to seasonal biotic or abiotic conditions, for example water stress, seasonal defoliators. The symptoms may include tip dieback (less than 25mm diameter), crown thinning, defoliation, leaf discolouration, reduced leaf and or internode length (less than 75 per cent normal average size of non-stressed specimen): up to 50 per cent of the crown is epicormic/ juvenile regrowth. These symptoms should be present over more than 25 per cent of the total tree parts concerned. The condition is reversible.

3 – GOOD: Tree is generally free of pests and disease. Symptoms of any biotic or abiotic stress should not be present over more than 25 per cent of the tree parts concerned. Internode length may be variable but generally consistent in length for the last three annual increments.

4 – EXCELLENT: Tree is virtually completely free from evidence of pest or disease organisms. Tree has no signs of abiotic stress such as tip dieback or loss of foliage. Growth is of typical colouration, size and quantity for that species at the location. Internode length is consistent or increasing in length from previous three annual increments. The tree crown appears complete and balanced.

Appendix 2

Significance

These definitions are subjective opinions based on the National Trust of Australia (Victoria) criteria used for the Victorian significant tree register.

Historical value: Any tree commemorating a particular occasion (including plantings by royalty) or having associations with an important historical event.

Rare or localised: Any tree of species or variety that is rare or of very localised distribution.

Horticultural value: Any tree, which is of horticultural or genetic value and could be an important source of propagating stock, including specimens that are particularly resistant to disease or exposure.

Curious growth form: Any tree which exhibits a curious growth form or physical feature such as abnormal outgrowths, natural fusion or branches, severe lightning damage, or unusually pruned forms.

Outstanding size: Any tree outstanding for its large height, trunk circumference, or canopy spread.

Outstanding example of species: Any tree that is an outstanding example of the species.

Particularly old: Any tree which is particularly old or vulnerable.

Aesthetic value: Any tree of outstanding aesthetic significance.

Aboriginal culture: Any tree associated with aboriginal activities.

Location or context: Any tree which occurs in a unique location or context and so provides a contribution to the landscape, including remnant native vegetation, important landmarks, and trees which form part of an historic garden, park or town.

Preservation value

In the context of any relevant significance values, make a subjective assessment on the preservation value of the tree.

Appendix 3: Risk assessment tables

Likelihood

Level	Descriptor	Indicative faults
A	Failure certain	Unsupported failure or imminent failure of scaffold branch or equivalent deadwood. Bifurcated structure of trunk or scaffold branch with visible movement indicating imminent failure, recent tree movement as a result of structural failure or imminent visual failure of the structural root plate indicated by apparent or visible heave.
B	Failure likely	Supported failure of a scaffold branch or equivalent deadwood. Scaffold branch or equivalent deadwood protruding into (>0.5 metres) the statutory clearance code, over-weighted limbs or unbalanced tree associated with a visible structural defect, disease or pathogens apparent that have a significance effect on structure (termites, borers, decay), or history of branch failure as a result of advancing senescence.
C	Failure possible	Tree in declining-average condition showing potential for branch drop due to branch over-extension, branch collar formation or developing structural faults. Scaffold branch or equivalent deadwood or major disease symptoms pathogens apparent that may over time (12 months) affect a tree's vigour or structure. Significant changes in growing environment such as the removal of adjacent trees (wind exposure), disease or pathogens apparent that may have effect on structure (termites, borers, decay, fungal fruiting body). Major obvious root activity (surface roots, damage asset etc).
D	Failure unlikely	Tree in average-good condition showing future potential for branch drop – due to branch over-extension, branch collar formation or developing structural faults. Through normal growth, the tree has the potential to develop over-extension of branches. Minor branch attrition collar development and deadwood (<50mm apparent) may be apparent. Minor obvious root activity.
E	No fault detected	The tree appears healthy with good open branch structure. No apparent sign of disease or damage that would lead to future failure.

Appendix 3: Risk assessment tables (cont.)

Consequence

Level	Descriptor	Example detail of description
5	Catastrophic	Tree is located in close proximity to dwelling or other high use non-portable asset. Fatality and/or severe injury/major damage would result from tree failure.
4	Major	Tree is in an area likely to attract people, such as low use or non-portable structures. Major property damage or minor personal injury would result from tree failure.
3	Moderate	Tree is in an area with a reduced likelihood of attracting people or low use area. Moderate property damage or minor personal injury would result from tree failure.
2	Minor	Tree is in an area unlikely to attract people or have any significant impact on portable or non-portable assets. Minor property damage or minor personal injury would result from tree failure.
1	Insignificant	Tree is in an out-of-the-way location with no significant assets or people attracting structures in close proximity. No significant impacts would result from tree failure.

Risk analysis matrix – level of risk

Likelihood	Consequence				
	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
A (Certain)	Low	Medium	Very high	Severe	Severe
B (Likely)	Low	Medium	High	Very high	Very high
C (Possible)	Low	Low	Medium	High	High
D (Unlikely)	Low	Low	Low	Medium	Medium
E (No faults)	Low	Low	Low	Low	Medium



Cardinia Shire Council
Civic Centre
20 Siding Avenue, Officer

PO Box 7
Pakenham 3810 (DX 81006 Pakenham)

Phone: 1300 787 624
Email: mail@cardinia.vic.gov.au
Web: cardinia.vic.gov.au

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TTY: 133 677 (ask for 1300 787 624)
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