

# Macarthur Memorial Park Design Statement October 2015



Catholic Cemeteries & Crematoria Care, Compassion, Choice

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### Concept

The Macarthur Memorial Park is a truly inspiring vision and project of great potential significance for Australia.

We have developed a design vision for a unique Memorial Park, a concept that will set a new standard for the integration of memorial landscape and architecture; uniquely Australian and comparable to the very finest international precedents. This is an Architecture of permanence and meaning, but also functional, flexible, affordable and extendable.

The architecture is inspired by the quality of the natural landscape and the depth of meaning of remembrance and the ritual of passing.

Landscape and built form are integrated and brought into harmony, with outdoor rooms, courtyards, gardens, terraces and water, framing and framed with an architecture that grows from the ground and hovers over sensitive landscape.

A memorial and ceremonial landscape marked through the gatehouse and centred on the chapel complex, is complimented by a recreational landscape and architecture with cafe and function centre poised over water and offering a beautiful and open park experience.

We have strived to create an architecture that is lasting, permanent and uniquely of this place. We have avoided any fashion of form, colour or material in favour of the timeless and lasting. Our proposal is founded on the universals of geometry, ground and sky as they frame our lives and our passing.

The multi-faith nature of the complex is well understood, the

need to serve well the unique ritual of the Catholic Liturgy, together with the many other faiths / religion as well as the purely secular, has lead us to propose an architecture of essentials. A form and material that is based on eternal themes common to all faiths:

The ground and earth of existence

The sacred geometries of nature

The sky, the heavens and the spirit

### Ground

The architecture is connection to the ground, the landscape, the earth. Association of permanence and the eternal are made in the stone and possibly rammed earth platforms and walls that frame views to the landscape. There is a strong sense of quality and permanence and yet also harmony with nature and with the natural landscape.

### Geometry

The most eternal geometry of nature and life is that of the Golden Mean, the rectangle and ratio that gives the continuous spiral found in the smallest constructs of nature and in the patterns of the universe. It is the universal geometry of our universe that extends across faiths and cultures, and brings a harmony of proportions with nature. This is the geometry and proportions upon which this concept is based, a quiet and peaceful geometry of natural and everlasting harmony.



### Roof

Complementing the grounded character of the walls and platforms is the light, organic and fluid forms of the folded and curvilinear timber roof profiles. These warm golden coloured forms lift up towards the sky and open to natural light. They float lightly above the gathering spaces seemingly weightless, aspiring and sheltering in form and meaning.

Together these interlocking elements of architectural form geometry and landscape will create a remarkable memorial park experience. An experience of peace, permanence and harmony that is unique to this place. A moving experience that through it's essential nature is timeless, lasting and assuring.

While most developed and potent in the Chapel Complex these element of essential character and timelessness are also present in the built form of the recreational landscape, the cafe and the function centre. So that while more secular, open and flexible these pavilion buildings create an overall landscape and architectural harmony, interest and appeal.





## Principle 1: Landscapes: Memorial & Recreation

A twofold approach to the site and the area of land that defines Stage 1 of the cemetery development defines this rich and complex landscape as a memorial landscape and a recreational landscape. By identifying these two distinctive landscapes, a clear strategy for delineating between the proposed uses of the site has been generated, while reinforcing the character and the opportunities that are possible.

The change in topography and character of the landscape has closely informed the development of the conceptual approach and the positioning and orientation of each building typology located on the site.

The approach is to locate the uses such as the cafe, function space and administrative facilities, which are more integrated with daily activities within the recreational landscape and to position the chapel and related operational spaces within the memorial landscape.

### Memorial Landscape

The memorial landscape is located further north east into the site and provides a destination that is central to the purpose of the site as a cemetery and a chapel. The landscape topography naturally changes to become more complex as the terrain steepens towards the northern boundary of the site. This landscape is largely characterised by grassed hills and scattered groups of trees



Contours of chapel roof positioned over site contours



### Recreation Landscape

The recreational landscape is the stretch of gently sloping topography that runs along St Andrews Road which provides a place set within a unique and dense natural environment the would integrate daily public activities with the amenity of the surrounding landscape and flora and fauna. This more gentle topography is largely characterised by a number of dams and lakes of varying sizes and more dense copse of trees.





## Principle 2: Elements in the Park

The character of the built form for the various building typologies proposed is generated from the positioning of a series of singular, simple building elements, the wall, the roof, and programme that are composed together to make each building.

As each building is positioned on the site these building elements define entry, threshold and the collective spaces which vary for each function of the brief. This hierarchy then enables a clear rational for how the buildings are positioned, their aspect and orientation in response to views, visibility of the buildings in the landscape and physical connections to the terrain.

The walls represent a permanence, deeply embedded in the earth and appear as independent grounded elements within the landscape. The roofs generated are an expressive embodiment and metaphor of the surrounding topography while the programme provides the destination and the physical connection to the landscape and the occupants.



Elements assembly

















## Principle 3: Axis, Orientation & Topography

The axis and orientation of each building has been carefully considered to optimise views, solar access, amenity, accessibility and connection to the landscape.

Each building position has generally been aligned with the topography of each specific location on the site and where possible has been located in close proximity to existing dams and lakes.

The orientation of the buildings within the Recreation Landscape have been largely determined by providing an optimised connection with the water, taking maximum advantage of this amenity for both the public and administrative buildings. Another important factor in determining orientation and location has been the consideration of how these buildings are experienced and accessed from the broader site. The building and associated courtyards of the Chapel have been positioned where the topography steepens and the orientation takes maximum advantage of the views to the south over the site. The chapel is the most elevated building in the most elevated position on the site. It is visible from most vantage points on the site and is a clear focal destination in the landscape. The chapel and associated courtyards have also been planned to give sufficient provision for asset protection zones around the chapel to increase the safety of occupants during an evacuation event. The proposed tree lined road to the north of the chapel and adjacent reflective pool assist in providing additional protection to the courtyard break out spaces and chapel.



## Principle 4: Entry, Circulation & Connectivity

The primary entry is from St Andrews Road. Three entry points have been established to provide access to the different areas of the site. The primary entry points identified are Processional, Administrative and General Public entries.

The Processional Entry is the primary entry for direct access to the Chapel and is the journey for the funeral procession. The Chapel and Gatehouse are immediately visible from this entry and are on direct axis with this journey.

The Administrative Entry provides a clear and direct entry and access to the Administration Building and the Ground Staff Facilities with both buildings being visible from St Andrews Road.



## Principle 5: Geometry & Tectonic

The varied geometry of the proposed buildings and in particular the roof profiles have been generated from an understanding and interpretation of the changing topography of the site and how each building has been positioned within the site, following the natural contours of the land.

The chapel is the spiritual and focal centre of the site and the plan has been developed using the Golden Mean to establish the desired overall size and subsequent smaller chapel and multi function spaces. The adjacent rectilinear courtyard spaces and the reflection pool to the north have also been located and sized proportionally to the main chapel space using the Golden Mean. The Golden Mean provides a sense of timelessness and calmness through the ultimate perfection of proportion.



The Golden Mean used in classical architecture to determine ideal proportions





Separation



The Golden Mean evident in natures formations



Arrival courtyard



Separation









Reflection pool

Side courtyards



### **Roof Geometries**

The roof to the Chapel has been developed as a series of geometrical progressions and transformations based on varied radii to generate an undulating form that is an expression of the topography of the site. This form has been manipulated and adjusted in response to its orientation to allow a series of progressive openings in the roof that face north and allow light to penetrate into the space at the location of the catafalque and alter. This space above the catafalque and alter is also the highest section of the roof and volume within the chapel.









Chapel roof section radial setout geometry

Generated 3d splines of chapel



Contours of the underside of the chapel root

Contours of the top surface of the chapel roof





The detailed resolution of these roof profiles have been defined as a series of repeating geometries that enable repetition and therefore an efficiency in the fabrication process. There is an opportunity to develop this system further to generate a prefabricated system that could easily be fabricated off-site and delivered to site with only assembly and minor required. This would provide significant benefits for quality and cost control.

The roof profiles generated for the buildings that form part of the recreational landscape are of equal quality and attention to detail and geometric study but are resolved to more closely suit the character, scale and locality of these buildings as compared to the chapel. A similar process has been used to generate the repetition of curvilinear geometry for these roofs to create an efficient structure that is equally dramatic and complimentary to the topography and adjacent water bodies.





Auckland Art Gallery timber roof construction and geometry of fabrication (FJMT)



Chapel north - south section



Prefabrication and on-site assembly of timber roof structure

Fabrication and repitition

Fabrication and assembly

Curvalinear timber form study

## Principle 6: Building Typologies

The approach for designing each of these buildings has been to understand the relationship they have to their immediate topography within the site. It is the intent to maintain low lying buildings that are single storey to minimise the visual impact they would otherwise have on the site.

A key design element to all the buildings are the light and organic curvilinear roof forms that purposefully draw inspiration from the surrounding topography and help to intentionally soften the forms against the landscape. In particular the chapel roof has been developed and represented as a series of contoured surfaces reminiscent of the undulating ground surface.

The buildings have been positioned sufficiently apart from each other and spread across the site to reinforce their individual settings within the landscape and to further minimise their perceived impact on the site as seen from short and long range views of the site. Areas of the site that have been identified as sensitive to long and close range views have been maintained free of any proposed buildings. Where buildings have been located on the site, additional tree planting and woodland is proposed to help further integrate the buildings in the landscape.

The location of the cafe and function buildings have minor encroachments into perimeter of designated riparian zones of the adjacent waterways. Under the Office of Water guidelines for Controlled Activities in Riparian Corridors this is an acceptable encroachment provided an offset is made. As part of the recreation landscape the intent as described is to provide an opportunity for the public to experience this natural creek setting and therefore provide the required offset.

The design concept includes opportunities to rehabilitate the riparian zones of existing dams and watercourse 3 & 5 and recreate pockets of Cumberland Plain Woodland and swamp schlerophyll forest in low lying areas, combined with walkways and raised boardwalks (where required over low lying / floodplain areas). These uses are acceptable for riparian corridors under the Office of Water's guidelines

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This area will be the subject of a future Vegetation Management Plan. Progressive revegetation of other degraded riparian zones is also proposed. The area of proposed riparian zone in the concept design is in excess of vegetated riparian buffer as identified by the Travers Report.

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### Masterplan

The placement of each building and the immediate related landscape elements has significant regard to the Landscape Master plan and respects the design principles and the project vision which informed the initial building placement and circulation networks.

A response to topography and landscape are enhanced by the creation of new vistas and relationships between each site. The buildings sit lightly within the landscape and engage carefully with the lakes and dams reinforcing the ecology of the site.

The unique qualities of the site, are understood, maintained and enhanced with the proposed design which draws from and develops the master plan base.











## Principle 7: Materiality

The material selection strategy aims to minimise the broader environmental impact of the development through selection and use of lower impact materials. The key aspects to the materials selection are:

Consider Life Cycle Impacts of material selections and choose materials that are durable and long lasting;

Select materials that are certified, reused, recycled content or have chain of custody agreements; and

Use offsite prefabricated construction where practical.

The buildings will utilise a considered palette of natural materials including sandstone and timber, to compliment the natural landscape, but also create an appropriate "timeless" contemporary expression through the use and assembly of carefully proportioned and expressive forms that embody the natural topography of the existing landscape.

There is the opportunity to explore the use of sustainably farmed, locally sourced timber species. There is also the possible reuse of materials from site such as sandstone or use "cut" material to form rammed earth walls. This will reduce construction waste and embodied environmental impact of the structure. For structural elements, timber will be used where practical. Where concrete is required an efficient design will be used to minimise material usage and consideration will be given to using lower carbon concrete (e.g. through reduced Portland cement) and recycled aggregate and water.

The use of modular construction fabricated off site will be investigated where possible. Modular constructions are fully transportable building components, factory built and delivered. Modular construction can help minimise site disturbance and provide significant savings in cost and embodied energy therefore leading to significant increased operational efficiency.

The selection of material alternatives would need to achieve the desired high standard and commitment to the permanence of the buildings consistent with the long term vision for the site and its intended use and also provide the desired levels required for bushfire impact.

The buildings will be full of fresh air, natural light, and open to views of the natural landscape. The spaces will have a level of comfort and warmth with the use of natural materials.

A holistic well-integrated approach is embraced that will provide a cost effective sustainable low-energy long term asset for the cemetery.









### Principle 8: Sustainability and Ecology

A detailed sustainability framework will be developed for the project. Initiated at project inception the framework would identify and prioritise the appropriate sustainability targets for the development. Its implementation will be facilitated and assessed against by the project's sustainability consultant through each of the key design and delivery stages.

Key Regulatory and Planning Policies

The design response will also reflect the following standards.

BCA Section J – Energy Efficiency

Campbelltown Local Environmental Plan – District 8 (Central Hills Lands).

Campbelltown Development Control Plan 2012

The design response would also seek to stretch beyond these standards in careful response to the site opportunities and sustainability objectives.

A number of sustainability initiatives for the proposed developed have been identified. These include:

Site + Surroundings strategies;

Energy conservation

Water Conservation and management strategies;

Transport strategies.

#### Passive design

The proposed passive design approach responds to the local climate, local sun path and wind profile, reducing the building's demand for active building-services systems to provide thermal comfort and lighting and reducing peak energy demand and annual energy consumption. The following passive design opportunities have been considered:

The thermal performance or the building glazing and envelope along with passive solar design features (such as optimised shading – particularly for western facing glazing) will be utilised to reduce the need for cooling and heating and improve thermal comfort;

The site's microclimate provides suitable conditions to support natural ventilation which can provide occupant comfort for significant periods of the year;

Evaporative cooling effects from adjacent water courses can provide additional cooling benefit.

Careful placement of thermal mass to stabilise air temperatures and reduce the need for heating and cooling, particularly during shoulder seasons;

Using thermal mass in conjunction with natural ventilation, night time purging, passive solar design and night cooling, the total air conditioning energy consumption can be significantly reduced.

A relatively narrow footprint coupled with an expanse of glazing will provide excellent levels of natural light. This can be further enhanced through distributed skylights / operable sun portals for increased daylight penetration and potential venting of warm air. This will however need to be balanced with additional heat loads introduced by direct solar penetrations.

#### Low carbon / renewable energy

Renewable technologies use free natural resources, such as the sun and the earth, as a fuel to generate energy. They typically have high capital costs compared to conventional generation technologies but low operational cost. The cost effectiveness of renewable technologies is, therefore, directly related to the effective utilisation of the equipment as well as any associated 'added value" benefits. Such system not only reduce energy use and greenhouse gas emissions, they can also contribute to reducing capacity and sizing of site infrastructure and can also reduce peak load which leads to further cost savings. Technologies potentially suited to the site / buildings include:

A solar air-conditioning system which uses heat generated from the sun's energy to drive a refrigeration cycle.

Geothermal Heat Pump/Air Conditioning System. A heating/cooling system that pumps heat to and from the ground. Ground source heat pumps use the relatively stable temperature of the ground to provide efficient space heating and cooling. They operate by using the stable temperature of the ground, relative to the air temperature, to exchange heat. Ground source heat pumps can effectively serve an in-slab heating system during winter and augment the space cooling in mixed mode and non-critical spaces during warmer months.

PV panels can be integrated into external landscape features such as the sculpture park;

Standalone external LED lighting system utilising wind (3D wind turbines) and/or solar (solar panels). This technology can also reduce electrical cabling and reticulation costs.

### Water

A water strategy has been developed using hierarchal sustainable design process to first minimise water consumption through design and selection of fixtures, fittings and through using xeriscaping to reduce need or limit the need for irrigation. To minimise use of potable water, measures to harvest and reuse waste water have also been considered. Opportunities for recycling have considered rainwater capture, grey water and Blackwater treatment.

Potable water demand reduction will be met through the use of water efficient fixtures such as toilets, showers and taps.



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Renewable water supplies from rainwater and stormwater harvesting are suited to the site and can be used for nonpotable uses such as toilet flushing and irrigation.

Grey water produced (from showers, wash hand basins etc) for a site of this nature is typically low volume and therefore a treatment system for reuse is not likely to be viable. Particularly with the availability of large catchment areas for rain and stormwater collection. As such a grey water treatment system is not expected to provide a cost effective mechanism of further reducing potable water consumption or waste water generation.

An onsite Blackwater treatment systems should however be considered as potential option to capture and treat all waste water. Water treatment can be completed to a level to that would allow re use for irrigation or discharge to the stormwater system, thereby reducing or eliminate the need for the site to connect and reticulate to the mains sewer system.

### Transport

A sustainable transport strategy will be developed to encourage and promote alternatives to cars at the site.

The park should provide a welcoming destination of walking tracks, footpaths and cycle routes for active modes of transport in and around the site. This would include not only visitors to the site but staff, using and accessign all parts of teh site on a daily basis.



Optimised shading and performance glazing will be utilised to reduce the need for cooling and improve thermal comfort

utilised to reduce the need for mechanical air-conditioning

from nearby water bodies can provide additional cooling







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