

5 February 2018

Greener Places
Government Architect New South Wales
GPO Box 39
Sydney NSW 2001

Dear Sir/Madam

SUBMISSION: GREENER PLACES

Cement Concrete & Aggregates Australia (CCAA) is the peak industry body representing the heavy construction materials industry in Australia. CCAA members operate cement manufacturing and distribution facilities, concrete batching plants, and hard rock quarries and sand and gravel extraction operations across NSW.

The heavy construction materials industry is vital to the nation's building and construction sector and underpins the development of Australia's physical infrastructure. CCAA's aim is to promote policies that recognise the importance of these materials to Australia's sustainable future.

CCAA has enjoyed a constructive and collaborative relationship the NSW Government Architect, Peter Poulet and we look forward to continuing this relationship in 2018. CCAA welcomes the draft Greener Places policy and is grateful for the opportunity to provide feedback.

CONCRETE SUPPORTS AND ENHANCES GREEN INFRASTRUCTURE

Concrete is often seen as forming part of "grey infrastructure", but in reality it is a major contributor and enabler of "green infrastructure". Concrete is also produced locally and made up of locally sourced materials, providing jobs and contributing to the NSW economy.

This highly versatile construction material delivers the resilience and durability required for structures exposed to the harsh Australian environment and when coupled with good design and construction practices, can be used to create beautiful urban landscapes built to last.

With its ability to be coloured, textured and moulded into an endless variety of features and forms, concrete offers a superb canvas for the building of durable, functional and attractive urban landscapes. Concrete applications in the urban landscape include footpaths, cycleways, art installations, recreational facilities, retaining walls, water features, and numerous other structures that complement the natural environment.

The use of concrete in green infrastructure can provide a number of benefits that support healthy populations, reduce biodiversity loss, and improve climate change resilience:

- Concrete's high albedo means more light is reflected and less heat is absorbed, resulting in cooler communities.
- In concrete roads and footpaths, concrete's high albedo also has the added benefit of lower energy costs for night lighting comparative to darker surfaces.

- The strength and durability of concrete means it is resistance to aggressive exterior environments (i.e. extreme weather events) and has excellent fire resistance properties.
- Concrete structures are durable, long lasting and have very low maintenance requirements.
- Concrete has relatively low embodied energy.
- Concrete has a high thermal mass (the ability of a material to absorb and store heat) increasing the energy efficiency of structures and buildings.
- At the end of a structure's life, concrete can be recycled into other useful applications.

Concrete is an essential partner to green infrastructure, supporting all four principles outlined in the draft policy paper, namely integration, connectivity, multi-functionality, and participation. CCAA recommends that the Greener Places policy paper positively reflect concrete's importance to green infrastructure.

For your information I have attached CCAA's Brochure – *Concrete the Fabric of Our Urban Landscape* and supporting case studies which are available on CCAA's website via the following link:
http://www.ccaa.com.au/iMIS_Prod/CCAA/Applications/Case_Studies/Case%20Studies/CCAA/Public_Content/APPLICATIONS/Urban_Landscapes/Case_Studies.aspx?hkey=b563884f-83a0-4bb6-8b41-8fd27bc11271

NEXT STEPS AND INDUSTRY CONSULTATION

CCAA would welcome the opportunity to discuss these benefits in more detail and in particular the ways in which they can contribute the NSW government's objectives to create a networked urban ecosystem of green space.

We look forward to working with the office of the Government Architect New South Wales to demonstrate the versatile nature of concrete, and the role it can play in enhancing green infrastructure throughout NSW.

Yours sincerely

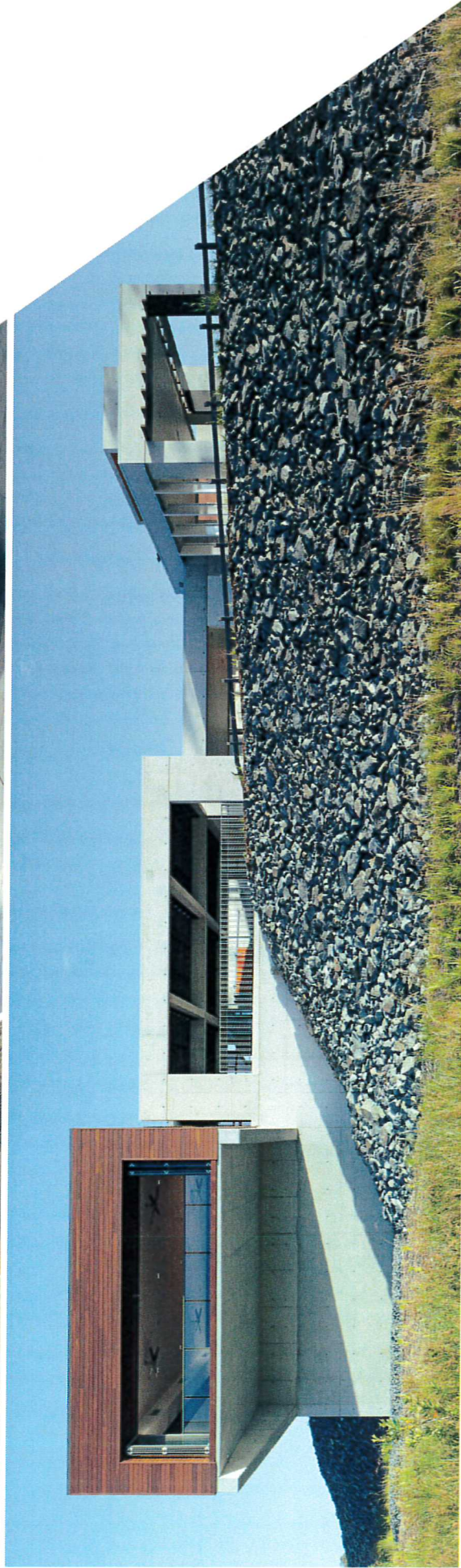


MONIQUE ANDREW
State Director NSW
CEMENT CONCRETE & AGGREGATES AUSTRALIA

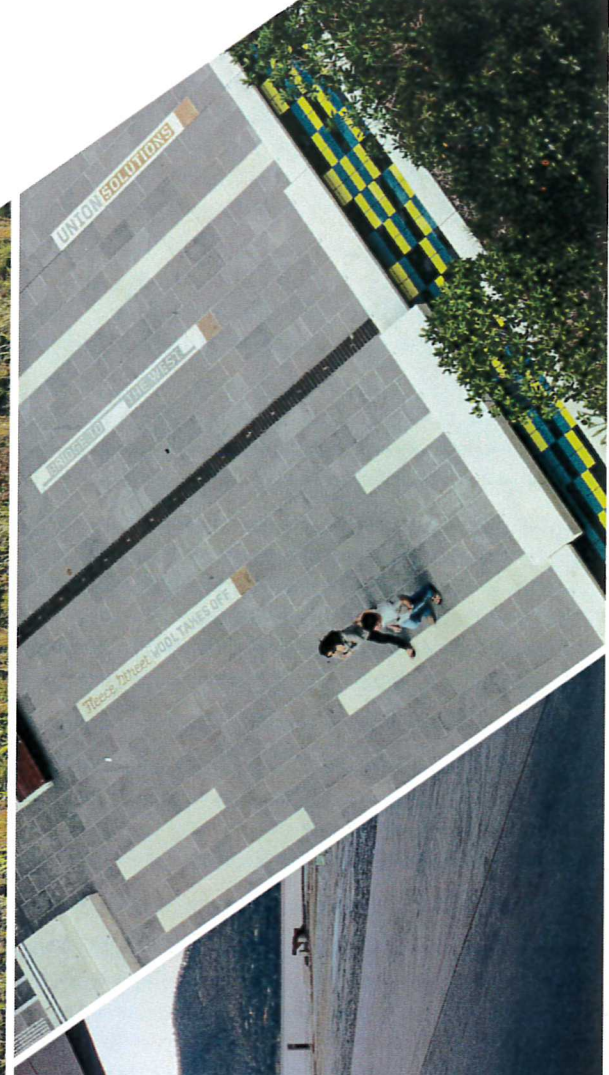
Attached: Concrete the Fabric of Our Urban Landscape



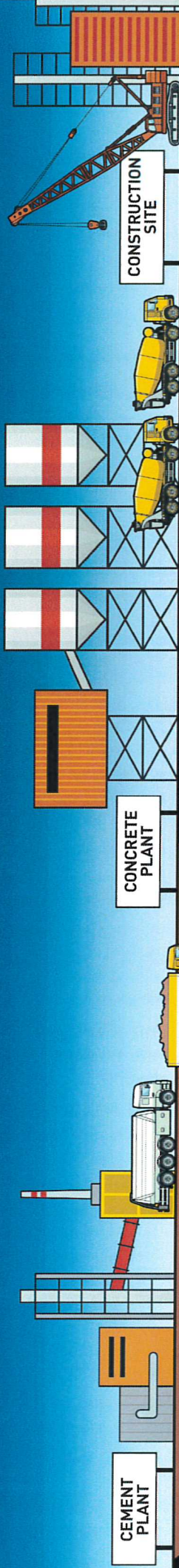
CEMENT CONCRETE
& AGGREGATES AUSTRALIA



Concrete the fabric of our urban landscape.



AGGREGATES & SAND FROM QUARRIES AND CEMENT FROM CEMENT PLANTS > TRANSPORTED TO CONCRETE PLANTS > CONCRETE DELIVERED TO CONSTRUCTION SITE



QUARRY

CEMENT
PLANT

CONCRETE
PLANT

CONSTRUCTION
SITE

FROM THE EARTH TO STUNNING DESIGN.

THE CREATION OF CONCRETE -
THE FABRIC THAT SHAPES OUR URBAN LANDSCAPE

Take a look at just about any public space in Australia today – be it an iconic CBD precinct like Melbourne's Federation Square or Sydney's Darling Harbour, or the local council reserve, town plaza, skate park or beachside esplanade. They typically feature a common element – concrete.

It's hard to imagine a world without concrete. It's in our roads and bridges, our schools, hospitals, workplaces and homes. In fact, next to water it's the most consumed material on the planet. And that's because concrete ticks so many boxes – strong, durable, economical and sustainable, to name a few. But concrete is much more than just functional.

It's a material that can be shaped and sculpted to express ideas, to create and define beautiful public spaces, and to add layers of texture and context to our urban environments. When a material like concrete is so common place, it's easy to take it for granted.

But like everything, it has a story to tell. And the story of concrete is largely about process and people.

Concrete is essentially a local product – mixed in batching plants right across Australia, creating local jobs and fuelling local and regional economies.

Concrete batching facilities are located close to their markets making economic sense. A shorter supply chain reduces costs. The same applies to concrete's main constituent parts – aggregates and cement.

Aggregates (sand and gravel) are sourced from quarries all around Australia, most located on our outer urban fringes. There are more than 2,000 quarries operating in Australia and together they produce over 150 million tonnes of construction aggregates each year.

The location of quarries is dictated by geology and the materials themselves are finite. You can't just dig anywhere and find sand and gravel. Further, transport costs are a major factor in their pricing. That's why it's important we source materials as close

to their end-markets as possible, protecting our existing quarry reserves from further urban encroachment – not just for now, but for future generations.

It's estimated that more than 18,000 Australians are directly employed in the heavy construction materials industry and indirectly is responsible for another 80,000 jobs. Together, the cement, quarrying and concrete industries generate over \$72 billion in revenues for the Australian economy and contribute \$12 billion to GDP. It's a big business, but it's also local business. Concrete really is a local product that's produced in partnership with communities.

It supports local industry, employs local people and builds our neighbourhoods. So next time you look at a beautiful concrete building or public space, or even a concrete factory or road, think about the processes that brought it to life and the tens of thousands of Australians behind those processes.

And when you do, you'll see concrete in a new light.



CEMENT CONCRETE & AGGREGATES AUSTRALIA IS THE PEAK BODY FOR THE HEAVY CONSTRUCTION MATERIALS INDUSTRY IN AUSTRALIA

Our members operate cement manufacturing and distribution facilities, concrete batching plants, hard rock quarries and sand and gravel extraction operations throughout the nation. CCAA membership is made up of the majority of material producers and suppliers, and ranges from large global companies, to SMEs and family operated businesses.

The heavy construction materials industry generates over \$7.2 billion in annual revenues and employs approximately 18,000 Australians directly and a further 80,000 indirectly. This industry is vital to the nation's building and construction and underpins the development of Australia's physical infrastructure.

We represent our members' interests through advocacy to government and the wider community, assistance to building and construction industry professionals, development of market applications, and as a source of technical and reference information.



CEMENT CONCRETE
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CONCRETE: THE FOUNDATION FOR THE URBAN LANDSCAPE

Exploring two premier projects that demonstrate the flexibility, durability and permanence of concrete.

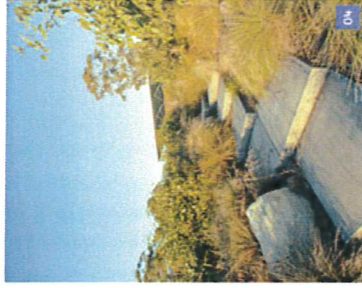
Concrete is a highly versatile construction material that delivers the resilience and durability required for projects in the harsh Australian environment. When used with good design and construction practice, concrete can form beautiful urban landscapes built to last.

Concrete can be coloured, textured and moulded to construct an unlimited array of buildings and structures. It is an important contributor to sustainable development and enjoys an outstanding reputation for durability, efficiency and architectural flexibility.

Glenorchy Art and Sculpture Park
Located by the River Derwent, the Glenorchy Art and Sculpture Park (GASPI) by Room 11 Architects and McGregor Coxall consists of a public walkway, pavilion and courtyard. The architecture responds to the scale of the surrounding landform with blunt forms that frame and command the superlative Tasmanian landscape.

The public walkway is a colourful path that links previously marginalized but surprisingly beautiful sections of foreshore. Its gentle arc links an existing school, playground, major entertainment centre and rowing club. Punctuating the arc is a carefully crafted pavilion that offers shelter, seating and a location to pause and consider the water plane and sky.

The concrete pavilion and courtyard are the penultimate gestures of GASPI. The pavilion has a twelve-metre cantilever that hangs over the Derwent Estuary, and the concrete walling is a key element in achieving this



gesture. The seeming improbability of a solid cantilever in concrete is a vital part of the architectural joy of the project. Concrete is the "language" of this project. At the entry to the building, it is the monolithic qualities of concrete that are expressed, while at the cantilever it is the athleticism of concrete that is displayed.

Concrete was selected as a robust, economic and sustainable material solution for the project. For the design practices involved, a key component to the sustainable strategy was to make a project that would last, and concrete fulfills this requirement exceptionally. Concrete has not just been added to the architecture, but rather, this project is a pure expression of the qualities of the material. The building has become a landmark architectural feature of Hobart and has been embraced by the local community.

Lizard Log park
Lizard Log is a playground and park designed by CHROFI and McGregor Coxall. The functional elements of the park are woven together by interconnecting, winding

concrete paths. Set within the ecologically and historically significant Cumberland Plain woodlands of Sydney's outer west, the project exemplifies a self-sustaining, integrated approach to regional public parklands.

Due to the modest budget and high-use nature of the site, the design required a durable, cost-efficient material that could sit comfortably within the woodland setting. The designers also needed a product that could be used to sculpturally respond to the natural changes and curvature of the landscape. Concrete provided a robust material solution.

The flexibility of concrete allowed for a simple material palette to be employed across a variety of applications. For a textured finish, the interior shell of the structures was created using an in situ off-form method, with the surfaces faced with hefty recycled rope. The effect provides a beautiful juxtaposition with the smooth surrounding in situ pads and pathways. The second in situ application includes elegant edging to the water-efficient swales, which

feed and filter water run-off from the carpark to the on-site dam. And a pre-cast method was adopted to provide custom functional responses to on-site facilities, such as water spout wheel stops (which aid water filtration), barbecues and seating. Not only did the use of concrete achieve a high-end result, but it also allows for low maintenance costs. The design outcome also sets new benchmarks for sustainability in parks, with a self-generating solar power supply, water recycling and all concrete elements in Green Star-rated concrete.

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CONCRETE: THE FOUNDATION FOR OUR URBAN LANDSCAPE

Three premier projects demonstrate the versatility, durability and permanence of concrete.

Concrete – with its ability to be coloured, textured and moulded into an endless variety of features – offers a superb canvas for the building of durable, functional and attractive urban landscapes. This highly versatile construction material delivers the resilience and durability required for projects in the harsh Australian environment. With good design and construction practice it can be used to create urban landscape features with a lasting presence.

The following projects exemplify the beauty, adaptability and functionality of concrete.

Jack Evans Boat Harbour – Stage One

Concrete was chosen to enrich the existing shoreline park and create a unique new civil space for the upgrade of Jack Evans Boat Harbour – Stage One by Aspect Studios.

The "spine" of this reinvented public space in Tweed Heads, New South Wales is a recreational and aquatic promenade that incorporates thoughtfully designed and defined elements to provide access to the water's edge.

These elements are made predominantly from concrete. They include in-situ water platforms with varying degrees of exposed aggregate to create a non-slip surface; tessellated precast platforms that create a distinctive visual matrix; and a headland feature that combines natural rocks with in-situ concrete platforms to create tidal pools.

The main paths are also made from in-situ concrete, with a heavily exposed aggregate finish and warm pigment colouring, which both complement the coastal setting. The

waterfront has been designed with concrete to cater for the site's changing environmental conditions, frequent tidal variations and intermittent storm surges.

This project demonstrates the aesthetic design qualities of concrete, as well as the material's high flexibility, durability and suitability for use in negotiating the topographies of natural and cultural environments.

Hinze Dam Visitor Centre and Parkland

Concrete has been used at Hinze Dam Visitor Centre and Parkland to underpin this vantage point and recreation space for visitors. As well as serving functional and social purposes, the concrete design also reinterprets the powerful engineering concept of the dam wall and its rock form.

The project, designed by Malcolm Middleton Architects with AECOM, with landscape architecture by Andrew Neighbour and John Donoghue, is located in Advancetown, Queensland. It features off-form Class 2 concrete above ground for the walls, columns and beams of the visitor centre. The concrete was batched on site and placed by the same workers involved in the construction of the dam wall.

Finishes are minimal and robust, right down to the raw, fibrous treatments inside the amenity areas and the lightly honed surfaces of the pathways. The natural tones of the materials sourced on site are expressed in the finished project – an ochre colour references the clay lining of the dam itself, and is applied as an accent to the necessarily over-scaled concrete

portals competing for a presence against the massive dam structure.

Lakeside Stadium

Extensive use of white structural concrete was incorporated into the refurbishment of Lakeside Stadium, a major Australian sporting facility in Melbourne, to create a striking visual identity. White concrete was used to create the wall cladding for the Hall Bounce Courts, as well as the structure, seating platforms, roof support and walling of the new North Stand.

H2o Architects devised a highly articulated wall element, employing concrete as a structural, form-making and textured material to define the contemporary development of this historic sporting ground. The finish of the concrete walling is largely influenced by the pattern of soccer goal netting, while the expressive diamond shapes and "v" supports in the North Stand are a subtle reference to the motif of the South Melbourne football club, which once called the ground home.

Concrete was also chosen for its durability, self-finished properties, cost-effectiveness and the fact that it's easy to maintain.

These three significant Australian landscape projects have used concrete in a versatile and creative manner, demonstrating the permanence and durability of a material that is truly the foundation of our urban landscape.



Above left: Concrete was chosen for Jack Evans Boat Harbour – Stage One in Tweed Heads, New South Wales to create the desired design and add provide flexibility and durability in the harsh coastal environment. Photos: Simon Wood

Above: Off-form concrete elements are used at the Hinze Dam Visitor Centre and Parkland in Queensland to unify the built and natural environments. Concrete seats, raw stone mounds and rock base treatments further demonstrate the use of materials found on site. Photos: Christopher Frederick Jones

Left: The playful, repetitive precast concrete panels used at Melbourne's Lakeside Stadium create a distinctive graphic identity for this major Australian sporting facility. Photos: Trevor Mein



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CONCRETE: THE FABRIC OF OUR URBAN LANDSCAPE

Three remarkable urban landscape projects demonstrate the versatility, durability and permanence of concrete.



Opposite: The Adelaide Airport landscapes by Taylor Cullity Associates. The terminal building and the four concourses are the focus of the airport's sophisticated spatial planning. Photos: Ben Wrigley

Right and below: Located in Milsons Point, Sydney, Harry's Park by Harry Seidler and Associates commemorates the life and work of the late architect Harry Seidler. The park features a variety of concrete forms and textures. Photos: Dirk Meinicke

Concrete – manufactured from the natural materials of sand, stone, limestone, clay and water – offers a world of opportunity for the building of durable, functional and attractive urban landscape projects.

Concrete can be coloured, textured and moulded into an endless variety of landscape features, making it a highly dexterous and versatile construction material. Its resistance to the natural erosion of water, wind and fire gives concrete the permanence, resilience and durability that is often required in the harsh Australian environment. When coupled with good design and construction practice, concrete can be used to create beautiful urban landscapes that are built to last.

Darling Quarter

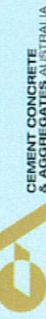
Concrete was used extensively in the award-winning Darling Quarter urban park and play space by Aspect Studios in Sydney. The combination of water erosion and heavy traffic from the borders of excited children who play in the water playground make for a demanding environment. Concrete was able to

deliver the project the permanence and durability it needed to withstand the pressures of daily use. Concrete also allowed the design's incredibly complex forms to be realized without compromise. As a result, this project has successfully revitalized a post-industrial area of inner Sydney, offering an iconic landscape that showcases the wonder of water.

Adelaide Airport

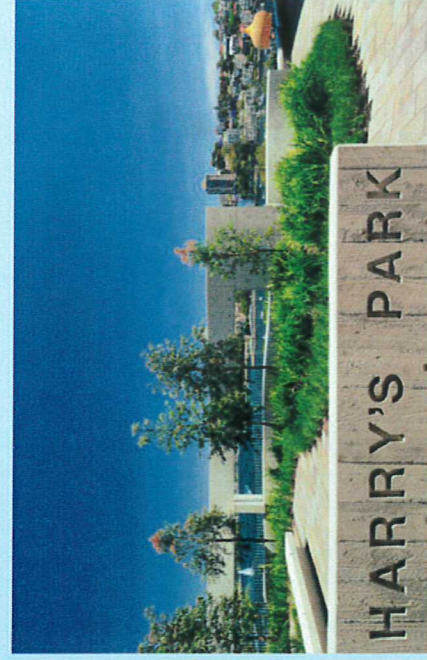
At Adelaide Airport, designed by Taylor Cullity Architects, concrete has been used artfully as the foundation for the sophisticated spatial and material planning of this important public space. Concrete was used extensively within the airport concourse, plaza and porte-cochère, the last featuring an in situ coloured concrete road suitable for heavy traffic. Through colour, variety and contrast, concrete creates interesting patterns in the pavement surface, producing a landscape vista that warmly welcomes visitors to the airport vicinity.

In our urban landscape, concrete enables the landscape architect to create shape, texture and form. It can also be coloured to a wide range of shades and delivers robust performance and structure to permanent urban landscape features.



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Right: Concrete delivers strength and durability to Darling Quarter by Aspect Studios, a landscape that must endure heavy use. Photo: Florian Grodin