



Department of
Transport

Adriaan Kok Australian Tour

October 16–18 2017



BACKGROUND INFORMATION

INTRODUCTION

In October 2017, the Department of Transport hosted world-renowned bridge designer, Adriaan Kok as part of an eight-week Australian tour.

Adriaan is best known for his work on the Hovenring, an iconic circular bridge in Eindhoven but has 17 years of experience designing bridges and other iconic structures for ipv Delft.

The Department was presented with an opportunity to host Adriaan for three days during his tour, and put together an extensive itinerary in order to maximize the opportunity for the State.

While in Perth, Adriaan met with a number of industry and government stakeholders where he was able to provide input and guidance on the current approach used to design pedestrian and cycling bridges as well as ideas for future infrastructure in Perth.

This document provides a summary of Adriaan's visit to Perth and the outcomes and activities that resulted.



The Hovenring, Eindhoven. Picture: Chris Keulen

ABOUT ADRIAAN

For the past 17 years, Adriaan Kok has been working as a senior designer and project manager for ipv Delft, a Dutch design company which specialises in bicycle bridge design.

Adriaan has worked on countless projects, many of which were multi-disciplinary, ranging from iconic bicycle infrastructure to moveable bridges and aqueducts. His focus is on bicycle bridges and bicycle infrastructure related research and feasibility studies. Adriaan believes in a structure that is fit for purpose and embraces the environment, the users and incorporating a 'story' for which the structure can tell. He takes pride in using designs and techniques that minimize costs and materials that are low maintenance.

He was the project manager for the construction of the internationally renowned Hovenring circular bridge in Eindhoven. The Hovenring is a suspended circular cycle bridge with a 70-metre high pylon in the middle. It was opened in 2012, and floats above a roundabout, servicing approximately 5,000 cyclists a day.

Given their extensive experience in designing bicycle bridges, Kok and his colleagues from ipv Delft were invited by the Dutch technology platform for transport, infrastructure and public space, CROW, to write the Dutch design guide for cycling and pedestrian bridges, which was published in 2014.

Next to infrastructural projects, Adriaan has also worked on several street furniture design projects, such as bicycle parking, benches, street lighting, underground waste collectors and signage to improve child safety in public spaces.

He has also co-authored a number of publications including,

- Bridging the Dutch Landscape – a design guide for bridges with twenty six real life examples of the theory put into practice. This book was sold worldwide and was also translated into Chinese, where it is used as a text book.
- Op de kaart (translated: On the map) – a chronological account of the costs and dimensions of selected key projects, including images. This book was published for the twenty year anniversary for ipv Delft.

Adriaan has an MSc in Industrial Design Engineering from Delft University of Technology.

THE TOUR

Planning for Adriaan's visit to Perth began in April 2017.

Stakeholders from the following agencies were invited to a range of meetings, workshops and presentations with Adriaan:

- Main Roads Western Australia (Main Roads)
- Public Transport Authority (PTA)
- Department of Transport (DoT)
- Tourism WA
- Department of Planning, Lands and Heritage (DPLH)
- Department of Biodiversity, Conservation and Attractions (DBCA)

- WA Police (WAPOL)
- Road Safety Commission (RSC)
- Western Australian Local Government Agency (WALGA)
- Royal Automobile Club (RAC)
- Australian Institute of Planning and Management (AITPM)
- Institute of Public Works and Engineering Australia (IPWEA)
- WestCycle
- Bicycling Western Australia (BWA)
- Committee for Perth
- Metropolitan local government authorities
- Bridge designers and project managers from Aecom, Aurecon, Cardno, Flyt, GTA, Jacobs and WSP

Cycling is an increasingly important mode of transport for both recreational and commuter trips. The Department of Transport is working with local governments to develop a 2050 Cycling Network which will present the vision of a fully integrated cycle network that provides high quality infrastructure to activity centres, local communities and places of work.

The aspirational network may include additional river and lake crossings that create much shorter cycling journeys between key destinations in the future. Adriaan's tour involved visiting a number of sites where these potential crossings could be built.

The following section provides a detailed summary of the activities undertaken during Adriaan's



The Hovenring, Eindhoven. Picture: Chris Keulen

ITINERARY & OUTCOMES

MONDAY 16 OCTOBER

Bridge site inspection

Point Walter

In attendance: Adriaan Kok
State President of AITPM
Manager Cycling, DoT
Cycling Team, DoT

Activities:

- The group inspected the Point Walter site from the Point Walter jetty.
- The group discussed:
 - the cost of comparable bridges designed in the Netherlands and internationally;
 - environmental complexities of the site in regards to the riverbed, landing points and water flows;
 - the needs of nearby yacht clubs (Claremont, East Fremantle, Freshwater Bay, Flying Squadron); and
 - the importance of liaising with the local Noongar Aboriginal peoples on any design.

Outcomes:

Adriaan gained a deeper understanding of the location, context, complexities and needs of the community in preparation for the round table discussion held on 17 October.



Adriaan and the group inspect Point Walter site

Bridge site inspection

Heirisson Island

In attendance: Adriaan Kok
Manager Cycling, DoT
Cycling Team, DoT

Activities:

- The group inspected the Heirisson Island site via the Causeway Bridge.
- The group discussed:
 - the heritage listing of the Causeway bridges; and
 - the unique relationship that the local Noongar Aboriginal peoples have with the island
- Adriaan queried the parameters of the heritage controls and whether it was feasible to retain the façade of the existing bridge by removing it intact, adding extra width to the existing bridge structure and re-affixing the façade once complete.
- Adriaan queried whether a tunnel had been considered as an alternative, and raised that there would be opportunities to activate the island space through the use of a tunnel that opens into an amphitheatre type area.

Outcomes:

Adriaan gained a deeper understanding of the location, context, complexities and needs of the community in preparation for the round table discussion held on 17 October. DoT undertook to investigate the heritage parameters for the existing Causeway bridges.



Adriaan and the group on the Causeway bridge

Bridge site inspection

Rotary Park and Neil Hawkins Park

In attendance: Adriaan Kok
Cycling Team, DoT

Activities:

- The group inspected the Lake Joondalup site from Rotary Park and Neil Hawkins Park.
- The group discussed the proximity of universities, health campuses, the WA Police Academy, commercial districts on the Joondalup side, and the residential catchment of Wanneroo.
- Given the transient nature of the water levels in the lake, Adriaan suggested a modular floating bridge would be less invasive to the environment and would reduce maintenance costs.
- Adriaan identified an opportunity for emergency vehicles to also use a bridge to quickly attend incidents on both sides of the lake and return to the Joondalup Health Campus.
- Adriaan suggested designing the bridge to be sensitive to the natural environment, incorporating elements such as bird perches.

Outcomes:

Adriaan gained a deeper understanding of the location, context, complexities and needs of the community in preparation for the round table discussion held on 17 October.



Inspecting Lake Joondalup from Neil Hawkins Park jetty



Adriaan presents 'The Hovering Experience' to industry, advocacy groups and government

Industry Presentation – 'The Hovering Experience'

140 William Street

Approximately 150 people from local and State Government agencies, industry and advocacy bodies were invited to attend a presentation conducted by Adriaan.

Activities:

- Adriaan shared his experience and lessons learnt during the design, planning and construction stages of the Hovering and explained how they could be applicable to the Perth context, in particular the sites he visited earlier in the day.
- A copy of Adriaan's presentation can be found on the [DoT website](#).

Outcomes:

A broad cross section of relevant stakeholders across local and State Government were informed of Adriaan's journey to becoming a global leader in bridge design. Adriaan shared his ideas on how to achieve efficient and effective outcomes through design in Perth.

TUESDAY 17 OCTOBER

Roundtable meeting

140 William Street

In attendance: Adriaan Kok
A/Director Network Planning, Moving People, DoT
Cycling Team, DoT
Manager Cycling, DoT
Tourism WA
PTA
City of Nedlands
City of Wanneroo

Apologies: WestCycle

Absent: Main Roads

Activities:

- The roundtable discussion considered Adriaan's international experience and his perspective on bridge proposals for the sites he had visited the previous day.
- Adriaan outlined a proposed design for a bridge at Point Walter. The design included dedicated and separated spaces for pedestrians and cyclists and viewing areas for tourists and spectators (for example, to take in yachting events and the river surrounds).
- Adriaan suggested a cable stay bridge which would significantly reduce the size and scale of anchor points required. A cable stay bridge would also spread the load throughout the entire structure rather than just at the anchor points on the abutments. In comparison to a suspension bridge, a cable stay bridge would need fewer materials and have a smaller footprint on the environment. This approach was received with strong support from the local governments, particularly the City of Nedlands.
- The group discussed the heritage controls on the Causeway Bridges and agreed that further investigation was required. The group also discussed whether the façade of the existing bridge could be removed intact and re-attached if the bridge was widened.
- Adriaan identified a floating bridge option for the Rotary Park and Neil Hawkins Park sites. Adriaan outlined his experience in creating modular structures that would be suitable for such an application. There are significant benefits in this approach, particularly on the environmental side as piles are not required to be driven into the bed of the lake. Adriaan referred to a floating art structure named "The Floating Piers" which was installed in Italy by world renowned environmental artist 'Christo.'
- Adriaan raised an additional bridge opportunity within the Perth CBD over the intersection of William Street and Mounts Bay Road leading to Elizabeth Quay, the Elizabeth Quay Station and Perth Convention Centre. Potential benefits could include:
 - Improved pedestrian and cyclist access to Elizabeth Quay and the Train Station;
 - Improved safety for pedestrians and cyclists not having to cross the intersection at-grade;
 - More efficient traffic flows along the Esplanade and William Street; and

- Creating an entry statement to the Elizabeth Quay precinct by way of a “window experience” as described by Adriaan.

→ Following the roundtable meeting, Adriaan had a series of one-one-one meetings with various stakeholders where specific queries could be explored and discussed in depth.

Outcomes:

Attendees received a greater insight into creative options and possibilities for designing and constructing bridges. In particular ideas to improve functionality for users, reduce environmental footprints and reduce the cost of not just the construction but ongoing maintenance costs.

All attendees were able to seek advice and gain a different perspective on cycling issues including cycle-tourism and bicycle count technology and analysis.



The Floating Piers by Christo in Lake Iseo, Italy 2016



Adriaan leads a discussion with staff across the Transport Portfolio

WEDNESDAY 18 OCTOBER

Safe active street site visits

Various sites

In attendance: Adriaan Kok
Cycling Team, DoT

Activities:

- Members of the Cycling Team took Adriaan out to inspect current and future safe active street sites.
- The site visits included both the completed and future stages of safe active streets along Shakespeare Street in Mount Hawthorn, and Leake and May Streets in Bayswater.
- The completed sections of the safe active streets made an immediate impression on Adriaan; who was able to instantly see the intent of the design.
- A lot of time was spent discussing the issue of major intersection crossings that exist along a safe active street route – especially where grade separation is not feasible. Given the intent of a safe active street is to provide a safe, attractive, local road connection (for active travel modes) to local attractors and other strategic cycle routes, the target user group is focused on less confident/experienced cyclists. With this in mind, the viability of safe active streets is also dependent on making it easy and safe for all people to cross busy streets with high speeds and traffic which intersect the route. Adriaan provided some valuable insights from projects he had worked on in the Netherlands that have helped address this issue through:
 - The use of 'tactical urbanism' (a phased approach offering local solutions for local challenges, involving the community and often culminating in site beautification and a sense of ownership with residents) as part of the design of critical crossing points – At difficult crossings, such as Whatley Crescent or Scarborough Beach Road, which are both located near schools, it is imperative that vulnerable users such as children, are guided to the correct crossing point. Adriaan mentioned that incorporating tactical urbanism at key crossings and decision points along the route is a valuable opportunity to gain community input to the design, therefore raising awareness and fostering a sense of ownership. He suggested that local features which the community can identify with, such as animals or geographic features can be incorporated into the local route wayfinding.
 - Items such as grab rails can be designed to appeal to children while helping them to be aware of their surroundings. In conjunction with this, these features can help raise the awareness of motorists crossing the safe active street route.

Outcomes:

Adriaan provided insight into ways of instilling creative processes into the design and activation of infrastructure. Some of his recommendations provide potentially low cost solutions to existing safety or functionality issues with the safe active streets projects in WA that have the benefit of providing an opportunity for community input to design features.

Committee for Perth meeting

London House, St Georges Tce

In attendance: Adriaan Kok
Cycling Team, DoT
Manager Cycling, DoT
Committee for Perth - Reshaping Perth team

Activities:

→ Adriaan presented to members of the Committee on the Hovenring and especially how he was able to find contextual benefits during the design process by thinking innovatively about problems. A particularly good example of this is the use of 'anti-collision portals' (which also carry required street signage) some distance from the Hovenring in order to halt any possible collisions at a safe distance, resulting in a lighter bridge design that does not require being able to withstand high-impact collisions. This can be seen in his presentation available on the [DoT website](#).

Outcomes:

Adriaan provided valuable insight to the Committee, inspiring all present to consider finding their own contextual benefits in future projects. The Committee was very appreciative of his time and expertise and thanked him and DoT for the opportunity.

Curtin University presentation and Q&A

Curtin University

In attendance: Adriaan Kok
Cycling Team, DoT
Dr Courtney Babb (Lecturer, Curtin University)
Curtin University (transport planning) faculty and students

Activities:

→ Adriaan reflected on his design practice in the Netherlands and discussed potential approaches to designing bicycle infrastructure in Perth.
→ Students participated in a question and answer session at the end of the presentation.

Outcomes:

Transport planning students from Curtin University were able to gain valuable experience and insight into the challenges and opportunities of other jurisdictions and how professionals are able to use a combination of creative thinking and technical knowledge to deal with these challenges and opportunities.

CONCLUSION

Well-informed infrastructure planning is essential as Perth grows to a city of 3.5 million residents over the next 30 years. Gaining insight from world-renowned professionals can be beneficial in providing a broader perspective to consider when planning and designing public works.

Adriaan provided not only this insight, but a new way of thinking about infrastructure design (particularly bridges) that could inform the design and construction process to incorporate contextual benefits, solving many issues at once.



Adriaan presents to Curtin University transport planning students and faculty

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This document is current as of April 2018

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