

EXPERT WITNESS REPORT

Name and Address

Associate Professor Nicholas Williams
School of Ecosystem and Forest Sciences
University of Melbourne, Burnley Campus,
500 Yarra Blvd Richmond, Victoria 3121

Qualifications and Experience

PhD. B.Sc. (hons) (Botany). BA (Economics and Geography)
Associate Professor Urban Ecology and Urban Horticulture, The University of Melbourne

I have 18 years of experience researching the impact of urban development on biodiversity. This has involved many thousands of hours of fieldwork and sampling most of which has been in Melbourne.

Declarations

1. I currently have a research proposal under consideration by the Melbourne Metro Rail Authority
2. My wife Robyn Mitchell works for the City of Melbourne.

My expertise to make this report

Although trained as a plant ecologist I have broad research interests and experience, having also investigated the effects of urbanisation on invertebrates, birds and mammals. I have achieved international recognition for my urban ecology research and how we can use green infrastructure to improve cities and adapt them to climate change. A major theme of my research has been to understand how urbanisation impacts the distribution of plant and animal species and what characteristics or traits of the species may mediate this. This has involved both empirical research and international collaborations which have developed influential syntheses and general principles. I have published 2 books, 53 peer reviewed journal articles, many in high impact international journals, and 7 peer reviewed conference papers. I also regularly present at national and international conferences.

I have worked at the University of Melbourne as a Lecturer, Senior Lecturer and now Associate Professor since 2007. Prior to 2007 I worked at the Royal Botanic Garden's Australian Research Centre for Urban Ecology for nine years where I undertook a variety of urban biodiversity research projects including mapping all remnant vegetation in 20 inner Melbourne LGAs according to the Ecological Vegetation Class typology and methods. I am currently the Urban Greening for Liveability and Biodiversity Project leader in the National Environmental Science Program's Clean Air and Urban Landscapes research hub.

EXPERT STATEMENT

Biological Values of the Arden Station Precinct

Given its long industrial history the site of the Arden station has low biological value. However, observations from the perimeter of the site and aerial photo analysis indicate that there are a number of trees within the Arden Siding area. The majority of these appear to be Peppercorns (*Schinus molle*). These are probably mix of planted trees, as the species is commonly associated with railway infrastructure in Melbourne, and spontaneous individuals as it is also a known environmental weed. There are also a number of medium sized Eucalypt species which, given the paucity of native trees in the local area, are likely to be providing locally important resources for native birds, particularly when they are in flower. Consequently these trees should be retained during construction if possible.

Biological Values of Moonee Ponds Creek adjacent to Arden Station Precinct

The Moonee Ponds Creek contains a number of areas of habitat including remnant vegetation communities. There are areas of saltmarsh and shrubland dominated by native species immediately adjacent to the Arden Station precinct and there are more extensive saltmarshes and reed beds dominated by *Phragmites australis* and *Juncus kraussiana* subsp. *australiensis* downstream. These remnant vegetation communities could be classified under the Victorian Ecological Vegetation Class typology as EVC 9 Coastal Saltmarsh and EVC 10 Estuarine Wetland which is considered endangered in the Victorian Volcanic Plain bioregion, in which the study area is situated. The remnant vegetation, which most likely has re-established following disturbance is complemented by areas of dense revegetation which is old enough to provide habitat value. There are also non vegetated habitats, such as mud flats which would provide important resources and feeding habitats for fauna, water birds in particular. Although the remnant vegetation communities present along Moonee Ponds Creek are not of conservation concern on a national or statewide basis, they are important on a regional and local context. EVC 10 Estuarine Wetland is considered endangered in the Victorian Volcanic Plain bioregion - the study area is situated on the eastern margin of this bioregion, while the Moonee ponds creek contains the largest area of remnant vegetation in the City of Melbourne.

Of critical importance to urban biodiversity is that there is a diversity of habitats along Moonee Pond Creek are that they are structurally complex and provide dense habitat close to ground level up to approximately 2 m. This characteristic is very important for urban biodiversity and our research in other areas of Melbourne has found that structurally complex native vegetation supports higher levels of native invertebrate, bird and microbat diversity (Threlfall et al 2015, 2016a, 2016b, unpublished data).

The structure and variety of different habitats present on Moonee Ponds Creek and their relative isolation in area of the city with few residents also means they are able to support fauna species that are relatively sensitive to disturbances. Consequently, the site is a hotspot for avian biodiversity within the City of Melbourne, and more widely inner city Melbourne. It is one of the most bird species rich localities with at least 76 species recorded in the vicinity. This includes a diverse community of both resident and migratory water birds and number of smaller insectivorous species rare in the inner city, such as Little Grassbird (*Megalurus gramineus*), Superb Fairy-wren (*Malurus cyaneus*), White-browed Scrubwren (*Sericornis frontalis*) and Golden headed Cisticola (*Cisticola exilis*). There are also records of 15 bird species on the Victorian Advisory List of Threatened Vertebrate Fauna occurring within 2.5 km of the Arden Station Precinct. These include large and publicly appealing wading birds

such as Nankeen Night Heron (*Mesophoyx intermedia*), Intermediate Egret (*Nycticorax caledonicus hillii*), Eastern Great Egret (*Ardea modesta*), Royal Spoonbill (*Platalea regia*) and the Intermediate Egret (*Mesophoyx intermedia*) as well as other waterbirds such as Caspian Tern (*Hydroprogne caspia*), Hardhead (*Aythya australis*) Australasian Shoveler (*Anas rhyncotris*) (van Dongen and Rogers 2016).

Analysis of water bird observation records from inner Melbourne indicates that Moonee Ponds creek is likely to be an important biodiversity corridor. Records suggest a number of species including Nankeen Night Heron, Royal Spoonbill, Pied Cormorant, and Eastern Great Egret are using Moonee Ponds Creek to travel between habitat in the lower Yarra at Stony Creek Backwash and Westgate Park to Trin Warren Tam-boore wetlands and the Royal Melbourne Zoo in Royal Park. This is because there is a large number of sightings of these species at all five sites.

Realising the Future Potential of Moonee Ponds Creek through Metro Rail

Of note is the future habitat potential of Moonee Ponds Creek and its value as a biodiversity and recreation corridor in what will be a rapidly developing area of inner Melbourne. This is evidenced by the unassisted colonisation of the site by the native saltmarsh and reed bed species as well as *Avicennia marina* subsp. *australasica* (Grey Mangrove) which has recently recorded as seedlings in Moonee Ponds Creek. It is important that the Melbourne Metro Rail project enhances and helps achieve is rather than preventing its realisation.

An aspect of the Arden Station precinct that should be considered in this regard is the location of the required new electrical substation. The MMRA's preferred location is vacant land between Langford Street and City Link north of Arden Street while the City of Melbourne has suggested that the new substation be consolidated with an existing rail substation on a triangle of land between railway tracks southwest of the station precinct. In my opinion the opportunity to remove the existing substation from the triangle of land and consolidate it with the new one at a site away from Moonee Ponds Creek should be pursued. This would enable the triangle of land to be released for revegetation, biodiversity conservation and passive recreation purposes. Because it is isolated from roads and buildings on two sides by multiple railway tracks, but borders the creek, it is ideally suited for this purpose and could also be the location of a wetland for flood mitigation or stormwater treatment.

Construction Impacts and Environmental Performance Requirements

The Arden Station Precinct will be the major staging area for construction of the western section of Melbourne Metro and will be operating 24 hours per day, 7 days per week for the duration of the project. As such noise, light and dust disturbance caused by construction activities and associated heavy vehicle movements has the potential to be highly disruptive to the local faunal biodiversity, while polluted stormwater runoff could potentially affect aquatic flora and fauna. The response of fauna to disturbance is a function of the frequency, duration and intensity of a disturbance as well as other factors such as a species or individual animals' temperament. There is evidence that repeated exposure to a disturbance can result in tolerance and habituation but the thresholds for individual species are largely unknown. The bird community of Moonee Ponds Creek, which has a high number of water bird species, may be susceptible to the additional noise and light associated with a 24 hours construction site.

The effects of urban noise, in particular traffic noise, on biodiversity is an active area of research both internationally and in Australia. However, in Australia it has concentrated on song birds and waterbirds have been largely ignored. The exception is Payne et al (2012) who investigated the effects of a noisy annual event (the Australian Formula Grand Prix) on Black Swans (*Cygnus atratus*) at Albert Park Lake. They found that the noise and visitor numbers did not affect population numbers, behaviour or physiological response of what was an already habituated urban population. These findings suggest that the bird community of Moonee Ponds Creek may not be significantly negatively affected by construction of the Melbourne Metro. However, given the length and intensity of the project it is advised that a bird monitoring program be devised and implemented and if there are significant declines from background occurrences (there should be enough existing data to detect these) additional mitigation actions implemented.

Terrestrial flora and fauna EPRs are adequate for the Arden Station site where biodiversity values are very low, but the impact of construction activities on terrestrial biodiversity outside of the station site are largely ignored. EPRs for noise and vibration concentrate on the effects on people and sensitive instruments but biodiversity is ignored in these sections. Relatively simple measures such as noise restrictions at times of particular importance for biodiversity (e.g. early morning, breeding periods) and noise walls around the Arden Station site should be investigated as additional EPRs.

Surprisingly light pollution is not considered in the EPRs when its detrimental impacts on biodiversity are well known (Gaston et al 2013). These include changes in animal behaviour, increased predation risk, and reduction in reproductive success (Newport et al 2014). There has been little Australian research conducted on the effects of urban light pollution on fauna (Newport et al 2014) but we do know that it will decrease the number of microbat species over wetlands and their activity levels (Straker et al 2016). Additional EPRs such as directional shielding, selecting lights that emit light wavelengths that least affect biodiversity (orange rather than blue light) and reducing the duration of site lighting should be considered.

References

- Gaston, K. J., J. Bennie, T. W. Davies, and J. Hopkins. 2013. The ecological impacts of nighttime light pollution: A mechanistic appraisal. *Biological Reviews* 88:912-927.
- Payne, C.J, Jessop, T.S, Guay, P-J, Johnstone, .M, Feore, M, and Mulder, R.A. (2012) Population, behavioural and physiological responses of an urban population of black swans to an intense annual noise event. *PLoS ONE* 7(9): e45014. doi:10.1371/journal.pone.0045014
- Straka, T. M., P. E. Lentini, L. F. Lumsden, B. A. Wintle, and R. van der Ree. 2016. Urban bat communities are affected by wetland size, quality, and pollution levels. *Ecology and Evolution* 6:4761-4774.
- Threlfall. C.G., Williams, N.S.G., Hahs, A.K. and Livesley S J (2016) Approaches to urban vegetation management and the impacts on urban bird and bat communities. *Landscape and Urban Planning* 153, 28-39
- Threlfall. C.G., Walker, K. Williams, N.S.G., Hahs, A.K., Mata, L. Stork, N, and Livesley, S.J. (2015) The conservation value of urban green space habitats for native bee communities. *Biological Conservation* 187, 240-248

Threlfall C.G., Ossola, A, Hahs, A.K, Williams, N.S.G., Wilson, L. and Livesley, S.J. (2016) Variation in vegetation structure and composition across urban green space types. *Front. Ecol.Evol.*4:66. doi: 10.3389/fevo.2016.00066

Van Dongen, W. and Rogers, A. (2016) Bird Survey at Moonee Ponds Creek June 2016. City of Melbourne Report

Gaston, K. J., J. Bennie, T. W. Davies, and J. Hopkins. 2013. The ecological impacts of nighttime light pollution: A mechanistic appraisal. *Biological Reviews* 88:912-927.

Newport, J., D. J. Shorthouse, and A. D. Manning. 2014. The effects of light and noise from urban development on biodiversity: Implications for protected areas in Australia. *Ecological Management and Restoration* 15:204-214.

Experts Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.

Signed

Two handwritten signatures in blue ink. The first signature is on the left and the second is on the right, both appearing to be in cursive script.

Level 26, 385 Bourke Street, Melbourne VIC 3000
GPO Box 1533N, Melbourne VIC 3001 | DX 252 Melbourne
T +61 3 8602 9200 | F +61 3 8602 9299



29 July 2016

Dr Nicholas Williams
Academic Ecosystem and Forest Services
The University of Melbourne

Our ref: TXR1/NXS
Matter no: 9613710

By Email: nsw@unimelb.edu.au

Dear Dr Nicholas Williams

**Melbourne Metro Rail Project
Environment Effects Statement Inquiry
Instructions for expert evidence**

We are assisting the City of Melbourne (CoM) finalise its submission to the Inquiry on the Environment Effects Statement (EES) and the Advisory Committee for the Planning Scheme Amendment (PSA), both in respect of the Melbourne Metro Rail Project.

Thank you for agreeing to prepare and present expert evidence at the joint Inquiry and Advisory Committee for CoM.

What is your evidence about?

CoM requires that you prepare and present expert evidence in relation to Consideration of the biodiversity impact of the project on Moonee Ponds Creek flora and fauna.

Timeline

The public hearing of the Inquiry will commence on 22 August 2016, running for approximately six weeks. You will be advised of the venue and the time that you will be required to attend the hearing in order to present your evidence, as soon as CoM receive the indicative timetable.

Any expert evidence to be presented at the Inquiry requires the submission of a detailed written report by **12 August 2016**.

CoM currently expects to call approximately 12 experts in 10 different fields. With the tight timeframes for preparation and submission of the evidence, this process requires considerable coordination to ensure that the legal team has sufficient time to review and comment on all evidence reports before finalisation and submission.

To assist in this process of finalising the evidence reports, **we ask you to have your draft evidence report submitted to us for review by 5pm 9 August 2016** and to be available in the following days to finalise your report.

Your draft report should be emailed in Word format to Karen Snyders Karen.Snyders@melbourne.vic.gov.au and Nick Sissons nsissons@huntvic.com.au as soon as it is ready for review.

What is required?

To assist you in preparing your evidence report we suggest that you review the Planning Panel Victoria's Guide to Expert Evidence

236041256v1NXS

Sydney (City and North Ryde) | Melbourne | Brisbane | Perth | Darwin | Shanghai
ABN 29 944 936 306 | www.hunthunt.com.au
Liability limited to a scheme approved under Professional Standards Legislation



http://www.dtpli.vic.gov.au/_data/assets/word_doc/0017/231263/G2-Guide-to-Expert-Evidence-April-2015.DOCX). This guide provides useful information to assist in preparing evidence reports. Other useful guides from Planning Panels Victoria about the general process are also available online (<http://www.dtpli.vic.gov.au/planning/panels-and-committees/planning-panel-guides>).

Please note that you are being asked to present expert evidence as a professional with suitable experience and qualifications in your field. This means that you must present your professional opinion on the matters that have been advanced by the CoM in its submission on the EES and PSA. You must also ensure that you comment only on matters that are within your field of expertise and matters that are within the EES and PSA. You can reference any existing publicly available material, reports, studies or policy as support or justification for your opinions.

The joint Inquiry and Advisory Committee requires that CoM provide it with copies of any referenced materials in any expert evidence statements. Accordingly, please provide a copy or external web link to any reports, studies or policy that you have referenced so that we can compile a complete list of reference materials for submission to the joint Inquiry and Advisory Committee.

Generally, you have a duty to the joint Inquiry and Advisory Committee to ensure that your report complies with the content and form requirements of Planning Panel Victoria's Guide to Expert Evidence.

Consistency of format for CoM staff expert evidence reports

You should have regard to the CoM submission on the EES and PSA. We ask that you structure your expert evidence in a manner that uses or aligns with the following precincts or subject areas where possible:

1. Fawkner Park and the Domain.
2. Tunnel Alignment and Emergency Access.
3. Western Portal (Kensington).
4. Arden Station Precinct.
5. Parkville Station Precinct.
6. CBD North Station Precinct.
7. CBD South Station Precinct.
8. Domain Station Precinct.
9. Noise and Vibration.
10. Planning Scheme Amendment.

Within each any given precinct we ask you to you need to then provide an opinion on the any relevant options, the issues and or deficiencies that have been raised in the CoM submission. If you intend to stray from the substance of the CoM submission, please only do so after confirming this with Karen or myself.

There may also be an obligation on witnesses to attend a conclave of like-minded experts in order to help draft a statement setting out where the respective witnesses agree and disagree. We will provide you with further information about this as it comes to hand.

Presentation to joint Inquiry and Advisory Committee

Generally it should be assumed that the joint Inquiry and Advisory Committee members and all other participants have read your statement.

CoM will be strictly limited in its time allocated to present its submission to the joint Inquiry and Advisory Committee.

Accordingly, we ask that you prepare a short 20 minute presentation of the key issues in your statement. If you believe that you need more than this time please see us as soon possible so that we can discuss requirements with you directly. You may wish to use an example to highlight any particular concerns. You will also be asked questions, so please keep your presentation short and concise.

If you intend to use PowerPoint to present your key points at the hearing, please discuss this with us. Any PowerPoint presentation you wish to use must be finalised at the same time as your draft statement of evidence as it will need to be submitted with your statement of evidence.

You should attend the hearing with your statement and all copies of any reference material that you have referenced. All documents will need to be tendered electronically in advance of the hearing.

Further information

You will find links to the documents of the EES and PSA as follows:

EES - <http://metro.tunnel.vic.gov.au/ees>

PSA - <http://metro.tunnel.vic.gov.au/ees/planning-scheme-amendment>

CoM Submission - will be sent by email with this letter.

Please do not hesitate to contact Karen Snyders Karen.Snyders@melbourne.vic.gov.au or Nick Sissons nsissons@huntvic.com.au if you require any further information about this process.

Yours faithfully

Hunt & Hunt



Nick Sissons
Associate

Contact:
Nick Sissons
D +61 3 8602 9357
E nsissons@huntvic.com.au

Level 26, 385 Bourke Street, Melbourne VIC 3000
GPO Box 1533N, Melbourne VIC 3001 | DX 252 Melbourne
T +61 3 8602 9200 | F +61 3 8602 9299



3 August 2016

Dr Nicholas Williams
Academic Ecosystem and Forest Services
The University of Melbourne

Our ref: TXR1/NXS
Matter no: 9613710

By email: nsw@unimelb.edu.au

Dear Dr Williams

**Melbourne Metro Rail Project
Environment Effects Statement Inquiry
Expert Evidence – Supplementary Instructions**

We confirm our request for you to provide expert evidence to the forthcoming Inquiry and Advisory Committee (IAC) in relation to the matters addressed in the City of Melbourne Submission to the Environment Effects Statement (**Submission, EES**).

Scope of your evidence

In the preparation of your evidence, please carefully consider the Terms of Reference for the IAC (http://www.dtpli.vic.gov.au/data/assets/pdf_file/0008/297107/Melb-Metro-ToR.pdf).

Your expert evidence should also have regard to the Environmental Performance Requirements (EPRs). The EPRs are located within each section of the EES (<http://metrotunnel.vic.gov.au/ees/documents>). Your expertise may relate to one or more of the sections of the EES and any number of EPRs. Please consider whether any of the matters addressed in the Submission will be adequately dealt with by the proposed EPRs, making recommendations for changes, where appropriate.

Please note that the MMRA has also started to provide "Technical Documents" to the IAC (<http://www.dtpli.vic.gov.au/planning/panels-and-committees/current-panels-and-committees/melbourne-metropolitan-rail-inquiry>). These might be said to vary the EES so it is important you read them carefully and comment on them as appropriate.

However, as the status of these Technical Documents is unclear, please do not assume that matters addressed in the Technical Documents necessarily resolve matters raised in the Submission.

Circulation of Evidence

We have now been advised that we must print and deliver 20 printed copies of your statement to Planning Panels Victoria Office by 10:00am on 12 August 2016, we will not be able to extend timeframes for circulation of your evidence. **This means that we will need your completed report by COB on 9 August to enable us sufficient time for review, print and circulate your report.**

Please provide your statement in Microsoft Word format for us to convert PDF format for circulation, including an electronic signature.

Hearing dates

The City of Melbourne has been allocated the following dates to present its case:

236041256v1NXS

Sydney (City and North Ryde) | Melbourne | Brisbane | Perth | Darwin | Shanghai
ABN 29 944 936 306 | www.hunthunt.com.au
Liability limited to a scheme approved under Professional Standards Legislation



1. 5 September 2016 (10:15 am – 1:00pm and 2:00pm – 4:30pm);
2. 6 September 2016 (10:15 am – 1:00pm and 2:00pm – 4:30pm); and
3. 22 September 2016 (10:15am – 12:30pm).

We will provide you with further information as to when you may be required to attend the hearing to present evidence, but **to the extent that is possible to do so, please keep these dates clear in your diary**. If you have any constraints please contact us immediately.

The hearing will be conducted in the conference room at the Mercure Treasury Gardens, 13 Spring Street, Melbourne.

Expert conclaves

You may also be required to attend a conclave of experts, to be held sometime between **15 August 2016** and before **22 August 2016**.

At a conclave, you may be asked to prepare a statement of matters where you agree or disagree with other expert witnesses. Such statements must be tabled at the hearing on the earlier of: 22 August 2016, or one clear business day prior a relevant witness being called.

Please indicate your availability to attend such a meeting in the week commencing 15 August 2016.

These meetings should be arranged by MMRA's experts, however, we will confirm with you if we are advised of any proposed meeting date and time.

Directions relating to expert reports

The Chair of the IAC has directed that expert witness reports should not refer to individual submitters by name, but by submission number. Please follow this direction if you are making reference to any submitter other than the City of Melbourne.

Please note that expert reports will be available to the public via publication on the Melbourne Metro Rail Project website.

Please do not hesitate to contact Karen Snyders Karen.Snyders@melbourne.vic.gov.au or Nick Sissons nsissons@huntvic.com.au if you require any further information.

Yours faithfully
Hunt & Hunt



Nick Sissons
Associate

Contact:
Nick Sissons
D +61 3 8602 9357
E nsissons@huntvic.com.au