

Annual progress report to the Department of Regional Development for July 2017 to January 2019:  
Employment of a Senior Scientist to provide science leadership and better integrate science into  
the management of the Peel-Harvey Catchment

## Executive Summary

### Background

The Department of Primary Industries and Regional Development (DPIRD) provides funding to the Peel-Harvey Catchment Council according to a Grant Agreement to employ a Senior Scientist for four years to provide leadership and better integrate science into the management of the Peel-Harvey Catchment.

The Grant Agreement was executed in April 2014 and PHCC recruited a Senior Scientist, Dr Ryan Hooper, who commenced employment in October 2014 but subsequently left the position, by mutual agreement with the PHCC, in March 2015. The PHCC subsequently recruited, Dr Steve Fisher, who commenced employment in the position now described as Science Advisor, on 20 July 2015.

As a result, the funding for this project ceased at the end of the 2017/18 Financial Year, with the final payment received in January 2018 following receipt of the annual progress report for 2016/17 in October 2017. The Grant Agreement specifies the following 10 *Key Duties* to be performed by the Senior Scientist:

1. Establish networks with relevant researchers and research institutions in public and private sectors
2. Review Peel-Harvey Estuary Science Strategy (2010) and research efforts in the Peel-Harvey Catchment, including literature review
3. Establish a portal for future access to research
4. Prepare a gap analysis for research and monitoring and strategies to reduce the implementation gap
5. Prepare an updated Science Strategy for the Peel-Harvey, incorporating broader catchment issues as well as estuarine and riverine
6. Using updated Science Strategy facilitate collaborative research programs to address priority research needs
7. Develop the Peel-Harvey Catchment reporting framework
8. Prepare and communicate Annual Report/s based on agreed reporting framework
9. Provide sound and timely scientific advice to PHCC
10. Be an advocate for science and scientific research in the Peel-Harvey Catchment

In accordance with the Grant Agreement, in October 2015 a project plan and a schedule of deliverables was submitted to the then Department of Regional Development (DRD), showing how the *Key Duties* will be delivered through the life of the project. This report summarises the progress towards achieving the deliverables for the financial year ending 30 June 2018. The audited financial report showing expenditure for this period was previously provided in October 2018, but is also attached to this report (see Attachment 1).

### Key Achievements July 2017 to January 2019

Key achievements realised by the project since the previous progress report are summarised as follows

- Continued provision of scientific leadership to inform our scientific, political and local community about the state of the Peel-Harvey Catchment, fostering adaptive management and encouraging greater protection and investment, based on scientific evidence.
- New partnerships formed and funding secured:

- to implement projects to improve the health of the Peel-Harvey Estuary through the WA State Government Royalties for Regions Proj-1217-0508-2 – Peel-Harvey Estuary – Grants (\$750,000 to Sep 2021)
  - for an officer to drive the process of rehabilitation of the Peel-Harvey Estuary through the WA State Government Royalties for Regions Proj-1017-0487-2 – Peel Harvey Estuary 1 FTE (\$345,000 to Sep 2021)
  - to improve the health of the Serpentine River through the Alcoa Foundation *Connecting Corridors and Communities: Restoring the Serpentine River* (US \$750,000 to Dec 2020)
  - to restore and reduce threats to the Ecological character of the Peel-Yalgorup Ramsar Site through implementation of priority actions through the National Landcare Program (2) Regional Land Partnerships (NLP2/RLP), *Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands* (approx. \$5M to June 2023). This includes establishment and recruitment of a Coordinator of Wetlands Science and Management to facilitate collaborative management of the Ramsar 482 Site, assess its ecological character and address key knowledge gaps.
  - to investigate the threats of acidification and terrestrialisation of Lake McLarty, a freshwater lake component of the Ramsar 482 Site through the State NRM program, Saving Lake McLarty Phase 1: addressing acidification, hydrology and habitats (\$350,859)
- Developed a Draft report card for the Assessment of the Condition of the Peel-Yalgorup Ramsar Site.
  - Facilitated science networking across Universities, Government departments and Industry to stimulate research, primarily through active involvement in two collaborative research projects:
    - *“Balancing estuarine and societal health in a changing environment”*, funded through the Australian Research Council (ARC) Linkage Program and
    - *“Community Community-based Assessment of Migratory Shorebird Disturbance on the Peel-Harvey Estuary”* with Birdlife Australia through the State NRM Office Community Action Grants.

Collectively these involved six universities and four partners from local and state government investigating the health of the waterways in the region

- As a member of the steering committee, supported Peel Bright Minds in its mission to encourage and inspire participation by the community in Entrepreneurship, Science, Technology, Engineering Arts and Mathematics (ESTEAM) as a Regional Hub to Inspiring Australia.
- Continued participation in and to have influence on the Marine Stewardship Council Certification process to achieve best environmental outcomes, including participation in the annual audit
- Participated in six excursions and three incursions with the school and teaching community
- Provided on-going expert advice to 10 Technical Advisory Groups, working groups, steering committees and Project Advisory Teams, the Environmental Protection Authority and all tiers of government.
- Made 32 presentations including lectures, seminars and radio interviews as well as preparing two magazine articles on the state of the Peel-Harvey Estuary and Catchment and current research initiatives
- Presented three master classes on the values of the Peel-Yalgorup Wetlands System Ramsar Site to local businesses (Mandurah Cruises, Mandurah and Peel Tourism Organisation) and the City of Mandurah.
- Awarded Peel Bright Minds 2018 Science Communicator of the Year

## Progress against Milestones and Key Performance Indicators

The achievements and progress against the various *Milestones and Key Performance Indicators* (KPIs) from commencement of the project to 15 January 2019 is shown in Attachment 1. In summary, 28 of the 36 *Milestones and KPIs* designated for completion by 30 June 2018 have been completed. In addition, three of the 11 Milestones for 2018/19 have been completed (#40, #44 & #45) with substantial progress made to completing four others (#37, #38, #39 and #42).

Progress (or otherwise) towards the partially or incomplete milestones is provided in Table 2 below. Currently, the project is on-track to meet all deliverables by 20 Oct 2019 with the exception of the following.

### **Milestone #41: Prepare final (draft) updated Science strategy for the Peel-Harvey, incorporating broader catchment issues as well as estuarine and riverine.**

As detailed in Table 2, it is premature to update the Science Strategy until the Australian Research Council (ARC) Linkage Project LP1500100451 *Balancing estuarine and societal health in a changing environment* is completed. This research project, focused on the Peel-Harvey Estuary and catchment is scheduled to be completed in 2019. Led by Dr Fiona Valesini from Murdoch University, one of the authors of the *Science Strategy for the Peel Harvey Estuary* published in 2010, this research project was conceived and implemented to fill the priority knowledge gaps identified in the 2010 Science Strategy to better understand the condition and threatening processes to the Peel-Harvey Estuary. Further, The Department of Water and Environmental Regulation is currently preparing an Estuary Protection Plan and a Water Quality Improvement Plan, both of which will be completed by 2020 and will inform the Science Strategy.

PHCC is committed to completing the update of the Science Strategy. We have been closely involved in both the ARC Linkage Project through the Science Advisor as a Partner Organisation and the protection plans with DWER. We will discuss with the Principal Investigators how to best proceed with updating the Science Strategy upon completion of these projects and initiatives. This might involve contracting Murdoch University to complete the update, however it will not be completed before October 2019.

As shown in Table 2, in lieu of updating the Science Strategy, funding has been secured to implement priority actions and fill key knowledge gaps identified through the review of the existing Science Strategy and through building collaborative networks. Securing this funding would not have been possible without the funding for the *Employment of a Senior Scientist to provide science leadership and better integrate science into the management of the Peel-Harvey Catchment* (i.e. this project).

### **Milestone #47: Maintain and communicate website portal updates**

While much of the content has been collected and organized, the most effective form and function of the web portal is still to be determined. This will be discussed in detail at the next meeting of the Project Steering Committee meeting scheduled for March 2019.

## Completion of the Project

In June 2018, funding was secured through a Royalties for Regions grant to meet a 2017 State Election Commitment by the McGowan Labor Government to drive the process of rehabilitation of the Peel-Harvey Estuary i.e. (Royalties for Regions Project-1017-0487-2 – Peel Harvey Estuary 1 FTE). This funding has and will be used to extend the Science Advisor position for a further three years to September 2021. The list of duties and deliverables is compatible with this project and so the above-mentioned Milestones that have not yet been completed and other Milestones and initiatives which have or will be implemented (e.g. Milestone 42 *Prepare and communicate of annual reports of estuary and catchment condition*) will be delivered and extended beyond October 2019 through this funding mechanism.

## Recommendations

PHCC proposed that we complete a final report for the project in October 2019 with the financial acquittal report. Any milestones and deliverables that have not been met at that time will be delivered through the Royalties for Regions and reported to DPIRD accordingly.

I trust this meets the requirements of the annual report for the project as specified in the agreement and am happy to discuss in more detail if required.



Steve Fisher

**PHCC Science Advisor**

20 Jan 2019

*We acknowledge the Noongar people as Traditional Custodians of this land and pay our respects to all Elders past and present*

Table 1: Schedule of Deliverables -*Employment of a Senior Scientist to provide science leadership and better integrate science into the management of the Peel-Harvey Catchment*

Fin Year	No.	Milestone / KPI	Key Duties of Senior Scientist addressed by Milestone / KPI	Date for completion (on or before)	Output	Status as of 15 January 2019
2014/15	1	Senior Scientist recruited, employment contract signed and officer commenced	Key Milestone	13 Oct 2014	Proof of appointment of Science Advisor to PHCC	Completed
	2	Invoice DRD for Payment: Year 1 (\$100,000)	Key Milestone	31 Oct 2014	Invoice	Completed
	3	Resignation / cessation of employment of Senior Scientist		6 Mar 2015	Notification of cessation	Completed
	4	Senior Scientist (Science Advisor) recruited, employment contract signed and officer commenced	Key Milestone	20 Jul 2015	Proof of appointment of Science Advisor to PHCC	Completed
	5	Project Steering Group established and first meeting held	Key Milestone	11 Aug 2015	Provide minutes of meeting	Completed
	6	Submit project plan to DRD within 3 months of commencement of Science Advisor	Key Milestone	20 Oct 2015	Submit plan	Completed
	7	Invoice DRD for Payment: Year 2 (\$100,000)	Key Milestone	31 Oct 2015	Invoice	Completed
	8	Conduct Steering Group Meetings including summary of advice to PHCC, register of meetings and summary of collaborations with key researchers (KPI).	Key Performance Indicator (1, 9 & 10)	Quarterly 2015/16	Provide minutes of Steering Group meetings for 2015/16 as they are completed	Completed
	9	Produce a draft gap analysis for research and monitoring.	4 (5, 7 & 1)	31 Mar 2016	Produce draft gap analysis document	Completed
	10	Organise and conduct workshop (#1) to (i) explore and ground truth knowledge gaps for research and monitoring and (ii) develop indicators of catchment condition	4 (5, 7 & 1)	30 June 2016	Provide record of workshop attendance and outcomes	Completed

Table 1 (cont.): Schedule of Deliverables

Fin Year	No.	Milestone / KPI	Key Duties of Senior Scientist addressed by Milestone / KPI	Date for completion (on or before)	Output	Status as of 15 January 2019
	11	Prepare draft reporting framework for Peel-Harvey Catchment based on review of current indicators	7 (8, 1 & 4)	30 June 2016	Produce draft framework document	Completed
2015/16 (cont.)	12	Establish a web portal for future access to research	3 (1, 10 & 4)	30 June 2016	Provide link to portal	Partially achieved
	13	Complete literature review and review of current activities in Peel-Harvey catchment	2 (5, 4 & 3)	30 June 2016	Produce draft literature review document	Completed
	14	Communicate science on behalf of PHCC: Represent PHCC at conferences and seminars to facilitate linkages across community, industry and researchers (KPI)	10 (1, 8 & 9)	30 June 2016	Deliver two presentations and provide record e.g. meeting minutes, conference program	Completed
2016/17	15	Conduct quarterly Steering Group Meetings including summary of advice to PHCC, register of meetings, summary of collaborations with key researchers (KPI).	Key Performance Indicator (1, 9 & 10)	Quarterly 2016/17	Provide minutes of quarterly Steering Group meetings for 2016/17 as they are completed	Partially achieved
	16	Produce reporting framework discussion paper and draft template for reporting catchment condition	7 (8, 1 & 4)	30 Sep 2016	Produce discussion paper	Completed
	17	Develop research project briefs for potential uptake by university students	4 (1, 6 & 10)	31 Oct 2016	Provide at least one research project brief	Completed
	18	Submit annual report for 2015/16 financial year	Key Milestone	31 Oct 2016	Annual report	Completed
	19	Invoice DRD for Payment: Year 3 (\$100,000)	Key Milestone	31 Oct 2016	Invoice	Completed
	20	Report annual progress of ARC-Linkage Project (KPI)	1 (6, 7 & 10)	31 Oct 2016	Provide DRD with excerpt from annual report to ARC	Completed
	21	Prepare and communicate annual report of estuary and catchment condition	8 (7, 4 & 1)	31 Dec 2016	Reports completed and submitted	Partially achieved

Table 1 (cont.): Schedule of Deliverables

Fin Year	No.	Milestone / KPI	Key Duties of Senior Scientist addressed by Milestone / KPI	Date for completion (on or before)	Output	Status as of 15 January 2019
2016/17 (cont.)	22	Produce review of Peel-Harvey Estuary Science Strategy document	2 (5, 4 & 6)	31 Mar 2017	Provide draft review document	Completed
	23	Maintain and communicate website portal updates (KPI)	3 (1, 10 & 9)	30 Jun 2017	Provide links to portal	Partially achieved
	24	Communicate science on behalf of PHCC: represent PHCC at conferences and seminars to facilitate linkages across community, industry and researchers (KPI)	10 (1, 6 & 3)	30 Jun 2017	Deliver two presentations in 2016/17 and provide e.g. meeting minutes, conference program	Completed
	25	Deliver one science seminar to facilitate linkages across community, industry and researchers (KPI)	10 (1, 6 & 3)	30 Jun 2017	Deliver one seminar in 2017/18, provide record of attendance	Completed
2017/18	26	Conduct quarterly Steering Group Meetings including summary of advice to PHCC, register of meetings, summary of collaborations with key researchers (KPI).	Key Performance Indicator (1, 9 & 10)	Quarterly 2017/18	Provide minutes of quarterly Steering Group meetings for 2017/18 as they are completed	Partially achieved
	27	Hold Science Workshop (#2) to refine Peel Harvey Catchment reporting framework and report format	6 (4, 7 & 8)	30 Sep 2017	Provide workshop attendance record and summary of outcomes	Completed
	28	Develop research project briefs for potential uptake by university students	4 (1 & 10)	31 Oct 2017	Provide at least one research project brief	Completed
	29	Submit annual report for 2016/17 financial year	Key Milestone	31 Oct 2017	Annual Report	Completed
	30	Report annual progress of ARC-Linkage Project (KPI)	1 (6, 7 & 10)	31 Oct 2017	Provide DRD with excerpt from annual report to ARC	Partially achieved

Table 1 (cont.): Schedule of Deliverables

Fin Year	No.	Milestone / KPI	Key Duties of Senior Scientist addressed by Milestone / KPI	Date for completion (on or before)	Output	Status as of 15 January 2019
2017/18 (cont.)	31	Invoice DRD for Payment: Year 4 (\$100,000)	<b>Key Milestone</b>	31 Oct 2017	Invoice	<b>Completed</b>
	32	Prepare and communicate annual reports of estuary and catchment condition	8 (7, 4 & 1)	31 Dec 2017	Provide reports and communication plan	<b>Partially achieved</b>
	33	Produce a draft discussion paper to inform Science Strategy	4 (5, 6 & 1)	31 Mar 2018	Provide draft discussion paper	<b>Not commenced</b>
	34	Communicate science on behalf of PHCC: Represent PHCC at conferences and seminars to facilitate linkages across community, industry and researchers (KPI)	10 (1, 8 & 9)	30 Jun 2018	Deliver two presentations in 2017/18 and provide e.g. meeting minutes, conference program	<b>Completed</b>
	35	Deliver a science seminar to facilitate linkages across community, industry and researchers (KPI)	10 (1, 8 & 9)	30 Jun 2018	Deliver a seminar in 2017/18, provide record of attendance	<b>Completed</b>
	36	Maintain and communicate website portal updates (KPI)	3 (1, 10 & 9)	30 Jun 2018	Provide links to portal	<b>Partially achieved</b>
2018/19	37	Conduct quarterly Steering Group Meetings including summary of advice to PHCC, register of meetings, summary of collaborations with key researchers (KPI).	<b>Key Performance Indicator</b> (1, 9 & 10)	Quarterly 2018/19	Provide minutes of quarterly Steering Group meetings for 2018/19 as they are completed	<b>Partially achieved</b>
	38	Submit annual report for 2017/18 fin. year	<b>Key Milestone</b>	31 Oct 2018	Annual report	<b>Completed</b> (this report)
	39	Report annual progress of ARC-Linkage Project (KPI)	1 (6, 7 & 10)	31 Oct 2018	Provide DRD with excerpt of annual report to ARC	<b>Partially achieved</b>



Table 1 (cont.): Schedule of Deliverables

Fin Year	No.	Milestone / KPI	Key Duties of Senior Scientist addressed by Milestone / KPI	Date for completion (on or before)	Output	Status as of 15 January 2019
2018/19 (cont.)	40	Develop research project briefs for potential uptake by university students	4 (1, 6 & 10)	31 Oct 2018	Provide at least one research project brief	Completed
	41	Prepare final (draft) updated Science Strategy for the Peel-Harvey, incorporating broader catchment issues as well as estuarine and riverine	5 (4, 1 & 6)	31 Dec 2018	Science Strategy document	Not commenced
	42	Prepare and communicate annual reports of estuary and catchment condition	8 (7, 4 & 1)	31 Dec 2018	Provide reports and communication plan	Partially achieved
	43	Hold science workshop (#3) to prioritise research, interventions and BMPs for catchment management	6 (7, 1 & 10)	31 Mar 2019	Workshop attendance record and summary of outcomes	
	44	Communicate science on behalf of PHCC: Represent PHCC at conferences and seminars to facilitate linkages across community, industry and researchers (KPI)	10 (1, 8 & 9)	30 Jun 2019	Deliver two presentations in 2018/19 and provide e.g. meeting minutes, conference program	Completed
	45	Deliver a science seminar to facilitate linkages across community, industry and researchers (KPI)	10 (1, 8 & 9)	30 Jun 2019	Deliver a seminar in 2018/19, provide record of attendance	Completed
	46	Report outcomes of ARC-Linkage Project (KPI)	1 (6, 7 & 10)	30 Jun 2019	Provide DRD with excerpt of final report to ARC	
	47	Maintain and communicate website portal updates (KPI)	3 (1,10 &9)	30 Jun 2019	Provide links to portal	
2019/20	48	Submit annual report for 2018/19	Key Milestone	20 Jul 2019	Annual report	
	49	Submit acquittal report for project	Key Milestone	20 Oct 2019	Acquittal report	

Table 2: Summary of progress for Milestones and Key Performance Indicators that have been only partially or not met by the due date (to 15 Jan 2018).

Milestone / KPI	Date for completion	Status at 15 Jan 2019	Comments
12. Establish a web portal for future access to research.	30 June 2016	<b>Partial</b>	<p>The web portal is not sufficiently developed or readily accessible to be made widely available to those outside PHCC and so these milestones have only been partially completed. It was initially envisaged that the database would be accessible through the PHCC server to selected external researchers, however this approach is being revised on recommendation of the Steering Committee (Nov 2018) and feedback from researchers as this may not be the most effective way of communicating this information.</p> <p>In the meantime, significant progress has been made in collecting and organising content for the web portal. Collection of information will be ongoing throughout the life of the project and beyond.</p> <p>The FileMaker databases of literature relevant to research in the Peel-Harvey Catchment, have been extended as follows:</p> <ul style="list-style-type: none"> <li>• The database setup and administrated by Rob Summers and Dave Weaver (DPIRD) now contains &gt; 5947 records, with each record consisting of the citation, abstract, keywords and electronic copy of the reference material.</li> <li>• A clone database containing created from the reference material held at PHCC, augmented with material from various sources including private collections and CSIRO and Waroona Public libraries has also been revised and updated. Reference materials from the grey literature or otherwise difficult to locate materials were prioritised for inclusion. Some records have also been deleted as they were inappropriate for inclusion into the database as a result the database now includes 1357 records.</li> </ul> <p>The PHCC website has been redesigned with functionality built in to enable the web portal.</p>
23. Maintain and communicate website portal updates	30 June 2017		
36. Maintain and communicate website portal updates	30 June 2018		

Table 2 (cont.): Summary of progress for Milestones and Key Performance Indicators that have been only partially or not met by the due date (to 15 Jan 2019).

Milestone / KPI	Date for completion	Status at 15 Jan 2019	Comments
15. Conduct quarterly Steering Group Meetings including summary of advice to PHCC, register of meetings, summary of collaborations with key researchers (KPI).	Quarterly 2016/17	Partial	<p>The Steering Committee did not meet in 2017/2018 however meetings have resumed at a regular 6-monthly frequency as of November 2018.</p> <p>As in 2016/17, , the Steering Committee was kept informed of progress towards building research networks, provision of advice to PHCC and external stakeholders and science communications throughout 2017/18 through the Science Advisor reports to bimonthly General Meetings of PHCC Board in Aug 2017, Oct 2017, Dec2017, Feb 2018, Apr 2018, and June 2018.</p> <p>These reports are shown in <b>Attachment 2</b>.</p>
26. As above	Quarterly 2017/18		
37. As above	Quarterly 2018/19		
21. Prepare and communicate annual report of estuary and catchment condition	31 Dec 2016	Partial	<p>Production of the report card will be on-going over the remainder of this project and so this Milestone has been designated as only being partially achieved.</p> <p>In 2017/18 major progress has been made towards this milestone through production of the <i>Draft Ramsar 482 Report Card 2018</i>, where the condition of the Ramsar Site (including the Peel-Harvey Estuary) is assessed communicated by comparison with Limits of Acceptable Change specified in the Ecological Character Description. This report card will include links to the catchment nutrient reports currently being prepared by the Department of Water and Environmental Regulation.</p>
32. As above	31 Dec 2017		
42. As above	31 Dec 2018		

Table 2 (cont.): Summary of progress for Milestones and Key Performance Indicators that have been only partially or not met by the due date (to 15 Jan 2019).

Milestone / KPI	Date for completion	Status at 15 Jan 2019	Comments
30. Report annual progress of ARC-Linkage Project (KPI)	31 Oct 2017	Partial	<p>The research team has not produced a written progress report for the ARC Linkage Project <i>“Balancing estuarine and societal health in a changing environment”</i> since April 2017. The research team has presented updates to Partner Organisations and others through a series of oral presentations and workshops organised and facilitated by the PHCC Science Advisor on:</p> <ul style="list-style-type: none"> <li>• 28 Sep 2017</li> <li>• 24 Nov 2017</li> <li>• 7 June 2018 and</li> <li>• 18 Dec 2018</li> </ul> <p>The Science Integration Steering Committee has been invited to each of these presentations as well as representatives from all of the partner Organisations.</p> <p>An information repository for the ARC Linkage Project Balancing estuarine and societal health in a changing environment was established by the research team, accessible through the link <a href="http://peel.science.uwa.edu.au/">http://peel.science.uwa.edu.au/</a>.</p> <p>Although these actions meet the intent of the annual progress reports, i.e. to keep stakeholders and partners informed of the progress, this Milestone has been designated as having been only partially met.</p>
39. As above	31 Oct 2018		
38. Submit annual report for 2017/18 financial year	31 Oct 2018	Partial	<p>The annual audited financial report was submitted to DPIRD 26 Oct 2018.</p> <p>The annual report of progress against Milestones (this report submitted Jan 2017) will complete this Milestone.</p>

Table 2 (cont.): Summary of progress for Milestones and Key Performance Indicators that have been only partially or not met by the due date (to 15 Jan 2019).

Milestone / KPI	Date for completion	Status at 15 Jan 2019	Comments
33. Produce a draft discussion paper to inform Science Strategy	31 March 2018	Not commenced	<p>No progress has been made on producing an updated Science Strategy since completion of the draft review of the existing strategy (Rogers, Hall &amp; Valesini 2010) in 2016/17 (i.e. Milestone #22). The intent was for the review to inform a discussion paper (Milestone #33) which would in turn would be used to produce an updated Science Strategy (Milestone #41).</p> <p>It is premature to update the Science Strategy until the Australian Research Council (ARC) Linkage Project LP1500100451 <i>Balancing estuarine and societal health in a changing environment</i> is completed. We have been closely involved in ARC Linkage Project through the Science Advisor as a Partner Organisation and will discuss with the Principal Investigators (including Dr Fiona Valesini, the author of the Science Strategy for the Peel-Harvey Estuary) how to best proceed with updating the Science Strategy upon completion of the project. PHCC is committed to completing the update of the Science Strategy through the Royalties for Regions Project-1017-0487-2 – Peel Harvey Estuary 1 FTE, which provides a continuation of the funding for a Science Advisor at PHCC until 2021.</p> <p>Instead the knowledge and implementation gaps identified in the review were used to identify priority actions and securing funding for these through the following successful submissions:</p> <ul style="list-style-type: none"> <li>• Australia Government NLP/RLP tender, <i>Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands</i></li> <li>• WA State Government (Royalties for Regions), <i>Peel-Harvey Estuary Grants</i></li> <li>• WA State Government (Royalties for Regions), <i>1-FTE Peel-Harvey Estuary</i></li> <li>• Alcoa Foundation, <i>Connecting Corridors and Communities: Restoring the Serpentine River</i> and</li> </ul>
41. Prepare final (draft) updated Science Strategy for the Peel-Harvey, incorporating broader catchment issues as well as estuarine and riverine	31 Dec 2018		

Table 2 (cont.): Summary of progress for Milestones and Key Performance Indicators that have been only partially or not met by the due date (to 15 Jan 2019).

Milestone / KPI	Date for completion	Status at 15 Jan 2019	Comments
			<ul style="list-style-type: none"> <li data-bbox="1077 276 2101 347">• WA State Government (State NRM Office Community Stewardship Grants) <i>Saving Lake McLarty Phase 1: Addressing acidification, hydrology and habitat</i></li> </ul> <p data-bbox="1025 400 2072 515">The opportunity to secure this funding to protect the natural assets of the Peel-Yalgorup System Ramsar site and upstream waterways and fill knowledge gaps was considered a higher and more immediate priority than producing a strategy for the future to do so.</p>

## Attachment 1: Audited Financial Report for the 2017/18 Financial Year

Employment of a Senior Scientist to provide science leadership and better integrate science into the management of the Peel-Harvey Catchment



**AMD**  
CHARTERED ACCOUNTANTS

T +61 (8) 9780 7555  
F +61 (8) 9721 8982

E [amd@amdonline.com.au](mailto:amd@amdonline.com.au)  
[www.amdonline.com.au](http://www.amdonline.com.au)

**AMD Audit & Assurance Pty Ltd**  
ACN 145 719 259 t/a AMD

Unit 1, 28-30 Wellington Street,  
Bunbury, WA 6230  
PO Box 1306, Bunbury, WA 6231

14 August 2018

**J O'Malley**  
**Executive Manager**  
**Peel-Harvey Catchment Council Inc**  
**58 Sutton Street**  
**MANDURAH WA 6210**

Dear Jane

**PEEL – HARVEY CATCHMENT COUNCIL – SCIENCE ADVISOR ACQUITTAL AUDIT**

Please find enclosed the audited Financial Statement for Peel-Harvey Catchment Council Inc – Science Advisor project for the year ended 30 June 2018.

If you have any queries in relation to this matter, please contact our office.

Yours sincerely  
**AMD Chartered Accountants**

**MARIA CAVALLO CA**  
**Director**



# AUDITED FINANCIAL STATEMENT

Project No:

Project Title: Peel-Harvey Catchment Council Science Advisor

Organisation: Peel-Harvey Catchment Council Inc

Project Duration: July 2017 to June 2018

## STATEMENT OF INCOME AND EXPENDITURE FOR THE FINANCIAL YEAR 2017-2018 ENDING 30<sup>TH</sup> JUNE 2018.


Please state if the report is exclusive of GST

Income	\$	Expenditure	\$
<b>Grant received</b>		<b>Employment:</b>	<b>\$116,870.85</b>
Carryover Funding F16-17	\$49,219.78	Salary	\$91,367.00
<b>Department of Regional Development</b>	\$100,000.00	Salary Oncosts	\$25,503.85
<b>Interest earned</b>	\$151.00	<b>Operations:</b>	<b>\$650.00</b>
<b>PHCC Contribution</b>	\$16,153.00	Audit	\$650.00
<b>PHCC Contribution re-allocation surplus funds</b>	-\$25,815.24	<b>Overheads:</b>	<b>\$22,187.69</b>
		Corporate Overheads	\$16731.69
		OMO Overheads	\$5,456.00
		<b>Unspent funds</b>	<b>\$0.00</b>
<b>Total*</b>	<b>\$139,708.54</b>	<b>Total*</b>	<b>\$139,708.54</b>

\*Totals on both sides must be equal

We certify that this Statement is correct in accordance with the relevant books and accounts and that the expenditure from the grant was incurred for the purpose of the approved project.

  
 Auditor \*\* Maria Cavallo  
 AMD Chartered Accountants  
 Date: 14 August 2018

  
 Proponent's Delegated Officer  
 MARILYN GRAY PHCC (TREASURER)  
 Date: 12 July 2018

\*\* Tick appropriate box

Registered as an Auditor under the Corporations Law # 308 235

A member of The Institute of Chartered Accountants in Australia or CPA Australia #160071

A State or Local Government Officer who exercises an appropriate delegation under the Financial Management or Local Government Acts

Attachment 2: Science Advisor reports to General Meetings of PHCC  
(August 2017 to December 2018)

# SCIENCE ADVISOR REPORT

General Meeting to be held on 17 August 2017

## Building Research Networks

1. ARC-Linkage project: Balancing estuarine and societal health in a changing environment
  - I continued the role of facilitating research activities and acting as the conduit between researchers and industry partners by meeting with the project Team on 28 June to listen to updates from the various components of the project i.e. modeling, hydrology, source- to-fate nutrient tracing and ecology.
  - The team from Southern Cross University team (SCU, Dr Naomi Wells and Mustefa Reshid) undertaking tracing nutrients from source to fate using isotopes of nitrogen and oxygen was also present, so I had the opportunity to influence planning and selection of monitoring sites as follows:
    - In June, prior to the arrival of the SCU Team, Luke Rogers and I obtained permission from six landholders previously engaged through the REI Fertilise the Farm project for further collection and testing of soil and water and greenhouse gas emissions from streams on their properties. This work was completed by the SCU Team over a four week period during July.
    - worked with Nat Lees and Neil Carrol (City of Mandurah) to identify eight sites representative of urban drainage to the estuary, then organized for Jesse Rowley to assist SCU with sample collection (August 8). Analysis of the isotopic composition of nutrients at these sites will provide a signature for urban nutrient input to the estuary.
    - arranged access to the Waroona Waste Water Treatment Plant (WWTP) and Drakes Brook Drain through Water Corporation, and provided assistance in sampling through Jesse Rowley. Analysis of these samples will give a signature representative of nutrients in waste water. Access to and sampling of the Gordon Rd WWTP could not be arranged during this round of sampling but will be pursued in August.
    - suggested and supported sampling of water from the Peel Main Drain, groundwater bores at the Regional Estuaries Initiative Peel Main Drain site and surface water from Punrak Drain.
  - The Research Team will provide an update of progress to the Partner Organisations in September or October when the results from this sampling should be available.
2. Disturbance of birds by human activity the Peel-Yalgorup Ramsar System
  - I worked with Helen Bryant and Mike Bamford (Birdlife WA) and Dr Nic Dunlop (Conservation Council WA) to complete and submit a proposal for funding to the State NRM Office via the Community Action Grants round on 6 July. The proposed project would assess the physical disturbance of birds by (human) users of the Ramsar system, including recreational fishers. This would provide useful information for the audit of the MSC Certification (see 3 below) and would overlap with the 2018 Shorebird 2020 count.
3. Marine Stewardship Council (MSC) Certification of the Peel-Harvey Estuarine Fishery
  - In participating in the first annual audit of the MSC Certification, I:
    - submitted written comments to the Conformity Assessment Body (CAB) on 25 July. The comments were mostly regarding Conditions 8 and 9 to the MSC Certification for the commercial and recreational fisheries respectively, namely: *By the 1st surveillance audit DoF to demonstrate that consultation processes have been amended to provide opportunity for all interested and affected parties to be involved.* Generally DoF (now DPIRD) have consulted extensively with PHCC.

- queried Condition 3 *By the 3rd surveillance audit provide evidence that the harvest strategy for sea mullet is achieving its objectives* and Condition 4 *By the 3rd surveillance audit, provide evidence that well defined harvest control rules are in place for sea mullet that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached*, with regards to management response to the exceedance of the threshold for yellowfin whiting.
  - made the CAB aware of the proposal by Birdlife Australia and supported by PHCC and Conservation Council WA to monitor bird disturbance in the estuary (see above); an unsuccessful proposal by DoF to monitor recreational fishing activity using a roving night vision camera; and the component of the ARC-Linkage project led by Murdoch University monitoring submerged aquatic vegetation, sediment quality and benthic infauna and how they will assist in meeting Condition 7 of the MSC Certification *By the 4<sup>th</sup> Surveillance audit provide evidence that the scoop net sector is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. This should include consideration of overlap with habitat for bird species with emphasis on listed threatened species.*
- The CAB represented by Dr Sabine Daume and Dr Sandy Morrison followed up by interviewing me on 3 August when I expanded on my comments.

#### 4. Peel Knowledge Council

I attended two further meetings of the Steering Group (18 July and 11 August) organised by Regional Development Australia (Peel Region) and facilitated by Rhys Williams (The Makers) to discuss and shape the function, form and name of the Peel Knowledge Council.

#### 5. Others

- The Nature Conservancy:
  - Jane O’Malley and I met with Dr Chris Gilles (Marine Manager) and Simon Habel (Associate Director of Development) on 5 July as part of continuing discussions regarding potential for partnership or complementary projects. In particular we discussed the proposal to the Alcoa Foundation *Connecting Corridors and Communities: Restoring the Serpentine River.*
- WA Biodiversity Science Institute
  - Similar to the above, Luke and I met with Peter Zurzolo (CEO) on 1 August to discuss the potential to partner on projects and enter into a collaborative agreement with PHCC and/or NRM WA.
- Recfishwest
  - I met with Michael Tropiano (Habitat Officer) on 7 July to discuss the potential for a *Fish Friendly Farms* initiative on the Murray River. This initiative would involve on ground work on demonstration properties owned by landholders with an interest in sustainable fishing as well as an education component to engage recreational fishers in habitat restoration in the Peel Region.

### **Advice (Integrating Science into PHCC Projects)**

#### 1. Regional Estuaries Initiative (REI)

- Neil Dixon (PHCC Healthy Waterways Program Manager) manages these projects with my role to provide advice, especially regarding water quality. Here I:
  - proposed a sampling and analysis plan to monitor the effectiveness of the Peel Main Drain project in removing nutrients from the drain. The plan includes analysis of regular grab samples and event-

based samples of surface water using autosamplers and sampling and analysis of groundwater, sediments and soils. Analytes include nutrients, suspended solids, metals, and indicators of drainage from acid sulfate soils. This SAP was used to estimate the costs of monitoring and evaluation, used in final negotiation of the funds allocated to the project on 6 July.

- attended a meeting of the Peel Main Drain Technical Working Group (TWG) on 19 July with Neil Dixon to present alternative scenarios for diverting the water from the main drain to the wetland to increase the volume of water treated and to avoid the Claypans of the Swan Coastal Plain TECs at the southern end of the site. Hydraulic models of these scenarios have been produced by DWER but the TWG has not yet met to consider these.
- met with Peter Sandilands (Water Information, DWER) on 8 August to negotiate the process for PHCC to submit samples from the "Mayfield Project" to the laboratory and DWER to enter the results into the WIN Database. This process is very important as it ensures ongoing custodianship and curation of the data after the project is complete.
- attended the Nutrient Summit in Mandurah on 15 August, organised by DWER through the Sustainable Agriculture theme.

## 2. Lake McLarty Technical Advisory Group

- I attended the meeting of this TAG on 22 June where we discussed:
  - the hydrology of Lake McLarty (presented by Peter Muirden)
  - the feasibility of diverting water from Coolup Drain and McLarty Drain into Lake McLarty according to the review of the hydrology performed by Peter Muirden
  - strategies to manage expressions of acid sulfate drainage (with Steve Appleyard (DWER), Michael Craig (UWA) and others.
- A subset of this TAG will meet again in August to develop a sampling and analysis plan for the lake and catchment

## 3. Alcoa Foundation proposal for funding: Connecting Corridors and Communities: Restoring the Serpentine River(see also CEOs report)

- I helped Thelma Crook write this submission, especially regarding the monitoring and evaluation of the effectiveness of the project. Specific contributions were:
  - including River Health Assessments for the Serpentine River using Lowlands farm as a near-pristine reference site through collaboration with DWER Water Science Branch (Dr Tim Storer).
  - considering outcomes of, and explicitly referring to, current projects and initiatives that would complement the proposed works, e.g. REI Drainage projects in the Serpentine River catchment; Transform Peel Food Zone and Peel Integrated Water Initiative; The Nature Conservancy.

## 4. Preparation of report cards of estuary and catchment health

- I updated Draft Framework for the Assessment of Catchment and Estuarine Health in the Peel-Harvey Region as a precursor to producing report cards. This framework is a work in progress, updated as more information becomes available. It now includes information from:
  - The assessment of condition against the Limits of Acceptable Change set for the Peel-Yalgorup System Ramsar site (Ramsar TAG)
  - Catchment water quality reports (DWER)
  - Peel region environmental measures study: measuring trends in environmental condition in the Peel Region (Ironbark Environmental 2013)

- Biotic indicators of estuarine condition (ARC-Linkage Project :Balancing estuarine and societal health in a changing environment and MSC Certification)
- Estuarine sediment quality (ARC-Linkage Project)
- Integrated Ecological Condition Assessment (IECA) – Peel-Yalgorup Case Study (see CEO’s report for detail)

## 5. Others

- SAPPR -Drainage Intervention Workshops
  - I attended a teleconferences on 14 June and 26 July with Matt Giraud and Neil Dixon to discuss potential drainage intervention sites in the Peel-Harvey Catchment. These were organised by DPC and attended by DWER, DPIRD and BC&A. The purpose of the workshops is to identify and prioritise sites in the SAPPR footprint in the Peel-Harvey catchment at which drainage interventions can be implemented to achieve a water quality improvement. We have maintained throughout both meetings that the approach should be to identify sites based on their potential suitability to intervention technology / practices then to perform a cost benefit analysis.
- Drainage Management Partnership Agreement with DWER and Water Corporation
  - I participated in a Drainage action mini-workshop with Andrew Del Marco and Jane on 26 June to discuss how to proceed with the partnership, in particular through collaboration on drainage interventions to improve water quality.

## Science Communications

### 1. Oral Presentations

- *“The Peel-Harvey Catchment: Geomorphology, Landuse and Threats”* presented at the Estuary Guardians - Dolphin stranding seminar, Make Place 21 June.
- *“The Peel-Yalgorup Ramsar Site”* presented to staff and management of Mandurah Cruises as a professional development session. MAPTO was also present. Mandurah Cruises are interested in incorporating information about the ecological character of the Ramsar Site into their tours.

### 2. Media releases

- *State Funding to Boost Peel-Yalgorup Ramsar Project:“Saltmarshes of Ramsar 482: Understanding our Peel-Yalgorup Ramsar Values”* project (11 July).

Steve Fisher

### Science Advisor

*We acknowledge the Noongar people as Traditional Custodians of this land and pay our respects to all Elders past and present*

# SCIENCE ADVISOR REPORT

General Meeting to be held on 19 October 2017

## Building Research Networks

1. ARC-Linkage project: Balancing estuarine and societal health in a changing environment
  - Attended confirmation of candidature seminar by Sorcha Cronin Reilly at Murdoch University on 21 Sep. Sorcha is undertaking a PhD investigating the benthic invertebrate ecology and sediment biogeochemistry of the Peel-Harvey Estuary System, funded through the ARC-Linkage Project. This is an important component of the report card for the estuary.
  - Organised and facilitated presentations by Fiona Valesini (Murdoch University), Matt Hipsey (UWA) and Karl Hennig (Department of Water and Environmental Regulation, DWER) to explain the water chemistry, modelling and biotic indicators of estuarine health components of the project to our community at the SHARE event on 28 Sep (see also Communications below)
2. Measuring impacts of the Waroona and Yarloop bushfires on water quality in the Harvey Basin
  - Met with the project team on 14 Sep and 3 Oct to progress a final report and Executive Summary for presentation to Stakeholders.
  - Chaired a meeting with project stakeholders on 10 October at Alcoa Regional Office, Pinjarra.
    - Jane Townsend (HRRT) organized the meeting with the research team (DWER; PHCC; HRRT, ECU and Melbourne University) and representatives from Alcoa, Harvey Water, Shire of Waroona, Shire of Harvey, Water Corporation, Department of Primary industries and Regional Development (DPIRD); Department of Health attending. (Department of Biodiversity Conservation and Attractions (DBCA) was an apology).
    - Pierre Horwitz (Edith Cowan University) presented the Executive Summary after which the group discussed the usefulness of the research and suggestions for future work.
    - The project will conclude in October 2017 and in the interim the research team will finalise the report.
    - I presented a case for funding an extension of the project to develop a protocol in response to bushfire that is focused on the Harvey River basin but also applicable to other catchments. Funding is proposed via an ARC-Linkage project with Partner Organisations contributing a total of \$300K matched by the ARC.
    - There was sufficient interest amongst the stakeholders and research team to warrant developing a selection of project briefs.
3. Peel Knowledge Council (Peel Bright Minds)
  - Inspiring Australia at Scitech has invited the Peel Knowledge Council to submit a proposal for funding for 2017/18 as a Regional Hub. Regional Development Australia Peel Region (RDA) has accepted the invitation on behalf of the Knowledge Council. If successful:
    - Inspiring Australia will provide \$25000 in 2017/18 to implement the hub provided other cash commitments totaling a minimum \$12,500. Other cash contributions committed to the hub are RDA (\$7500); Peel Development Commission (PDC, \$5000) and PHCC (\$2500 )
    - the funding will be used to employ an Executive Officer and conduct a minimum of five events / initiatives driven by Peel Bright Minds
4. Recfishwest and Department of Fisheries (now DPIRD)

- Jane O'Malley and I met with Andrew Rowland (CEO Recfishwest) , Tim Nicolas (DPIRD) and Brett Dunn and Andrew Ward (PDC) on 12 Oct to discuss:
    - the implications of a buyback of commercial fishing licences on the sustainability of fishing and the Marine Stewardship Council Certification of the Peel-Harvey estuarine fishery
    - where possible, embedding good outcomes for fishers and fisheries management into projects we deliver. For example the Recfishwest *Fish Friendly Farms* initiative on the Murray River, involving on ground work on demonstration properties owned by landholders with an interest in sustainable fishing as well as an education component to engage recreational fishers in habitat restoration in the Peel Region.
  - Met with Andrew Rowland, Brett Dunn, Bob Pond and Michael Kenrick (DWER) on 12 Oct to discuss potential changes to the Fish Kill Response Protocol regarding communication with the community (see also response to Action Item 1 from August meeting).
5. **Investment Framework for Environmental Resources (Inffer)**
- Attended a training course on 28 & 29 Aug. organized by Jane Townsend and the Harvey River Restoration Taskforce.
    - Inffer is a decision support tool based on a benefit to cost analysis of an environmental project and accordingly enables prioritisation of projects.
    - used the Peel Main Drain project as a worked example for the benefit to cost analysis.
    - the tool has useful supporting information e.g. what value to place on an environmental asset.
    - Potential application of Inffer to prioritisation of drainage intervention sites in the Peel-Harvey Catchment (see SAPPR Drainage Intervention Working Group below)
6. **Other**
- Attended the following events:
    - *Threatened Species Forum*, Geraldton 7 & 8 Sep organized by Northern Agricultural Catchments Council
    - Meeting to discuss the extension of the (Swan-Canning) River Guardians Dolphin Watch™ initiative to the Peel-Harvey Estuary System, 16 Oct, with DBCA, Mandurah Cruises, John Tonkin College Estuary Guardians, City of Mandurah, GAIA Resources and others.

### **Advice (Integrating Science into PHCC Projects)**

1. Point Grey Marina Proposal met with Tom Hatton, Anthony Sutton and Dave Anthony (Environmental Protection Authority, EPA) regarding the proposed change to condition to extend the Time Limit of Authorisation for implementation of the Point Grey Marina proposal (1 Sep).
- At the invitation of the EPA, prepared a submission on behalf of PHCC detailing information published since 2011 (when the proposal was initially approved) and relevant to the proposal which showed a decline in the health of the estuary and/or led to a better understanding that implementation of the proposal would further exacerbate the poor condition of the estuary (see correspondence 26 Sep for the complete submission). Information sources included excerpts from:
    - The Draft Framework for the Assessment of Catchment and Estuarine Health in the Peel-Harvey Region (PHCC) showing a decline in water quality



- PhD Thesis and publications by Morgan (2012) and the ARC-Linkage Project with Southern Cross University (Bush et al, 2012) detailing risks from disturbance of sulfidic materials
  - The Shorebird 2020 count (Birdlife Australia) showing our failure to meet limits of acceptable change and the listing of new Threatened and Endangered Species
  - Conservation advice for the Subtropical and Temperate Coastal Salt Marsh Ecological Community as a threatened ecological community (TEC).
2. Alcoa Foundation proposal for funding: Connecting Corridors and Communities: Restoring the Serpentine River(see also CEOs report)
    - Finalised the (successful) project submission through completion of the charitable organization Equivalency Determination (23 Aug).
    - Met with Tim Storer, Dom Heald Bob Pond (DWER) on 16 Oct to negotiate to include two sites in the Serpentine River (Lowlands and at confluence with the Peel Main Drain) for ongoing River Health Assessments. This will support the Monitoring and Evaluation programs for the Connecting Corridors and Communities project and the Peel Main Drain project (see below).
  3. East Keralup Future Landuses Working Group
    - Represented PHCC at various meetings with this group and a subset of the group on 22 August; 30 August and 4 October to discuss and influence the environmental and water management strategy for the site. This strategy will underpin the compatibility of future landuses at the site and closely links with the Connecting Corridors and Communities: Restoring the Serpentine River project (see above)
  4. Regional Estuaries Initiative (REI)
    - Neil Dixon (PHCC Healthy Waterways Program Manager) manages these projects with my role to provide advice, especially regarding water quality. Here I attended various meetings of the Peel Main Drain Technical Working Group (12 Sep); with DBCA (29 Sep) and the Project Advisory Team (10 Oct) to help present the latest concept for the project. In a staged approach, the first stage to be implemented in 2017/18 entails diverting the water from the drain to (clay-lined) swales to remove phosphorus then returning the water to the drain. In the second stage (beyond 2018), treated water from the swales may be diverted to the wetlands at the southern end of the site. This stage would also involve a study of the effect of changing hydrology on the Claypans of the Swan Coastal Plain TECs conducted through a PhD program based at Edith Cowan University.
  5. SAPPR -Drainage Intervention Working Group
    - Represented PHCC at the third teleconference of this group on 26 Sep to continue discussions about potential drainage intervention sites in the Peel-Harvey Catchment. The purpose of the workshops is to identify and prioritise sites in the SAPPR footprint in the Peel-Harvey catchment at which drainage interventions can be implemented to achieve a water quality improvement.
    - I provided information about catchment modelling, water quality, landuses; the approach to developing the Peel Main Drain project; the Subcatchment Implementation Plan (Nambeelup, Dirk Brook-Punrak and Mayfield) as an example of how drainage projects have be developed and suggested the use of Inffer (see above) to prioritise drainage intervention sites.
    - DBCA (Rivers and Estuaries) are sharing their experience and learnings from the Swan-Canning e.g. Ellen Brook and other constructed wetlands and are working with PHCC in developing a prioritisation framework.

## Science Communications

1. SHARE in the Shed (28 Sep)
  - Organised (with Julie MacMile) and facilitated the SHARE in the Shed with the *ARC-Linkage project: Balancing estuarine and societal health in a changing environment* as the theme.
    - The event was attended by approximately 30 people.
    - Dr Fiona Valesini (Murdoch University); Dr Matt Hipsey (UWA) and Karl Hennig (DWER) described the objectives, activities and proposed outcomes from the project.
    - I gave a summary of PHCCs motivation to be involved in the project and how it links to other initiatives including the Regional Estuaries Initiative, Transform Peel, Science Integration, Shorebird 2020 Count and the MSC Certification.
2. Other
  - Prepared the following written communications
    - *The ARC-Linkage Project SHARE and link to the Point Grey Marina proposal* (Draft Media Release prepared 5 Oct)
    - *Global tourists flock to Ramsar 482, Steve Fisher, Thelma Crook & Kim Wilson*: a short article submitted 29 Sep for Wetlands Australia Magazine (to be published World Wetlands Day, 2018)

Steve Fisher

### Science Advisor

*We acknowledge the Noongar people as Traditional Custodians of this land and pay our respects to all Elders past and present*

# SCIENCE ADVISOR REPORT

General Meeting to be held on 14 December 2017

## Building Research Networks

1. ARC-Linkage project: Balancing estuarine and societal health in a changing environment
  - Facilitated a meeting of the research team and Partner Organisation representatives (City of Mandurah, Shire of Murray, and PHCC) on 24 November at PHCC to discuss progress since the previous meeting in April 2017. The research team gave the following presentations:
    - Fiona Valesini (Murdoch University): Project overview
    - Chris Hallett (Murdoch): Fish community diversity and sediment quality investigations
    - SORCHA Cronin-O'Reilly (Murdoch): Investigation of benthic macroinvertebrate communities
    - Oliver Krumholtz (Murdoch): Investigation of macrophyte (submerged aquatic vegetation) communities
    - Matt Hipsey and Peisheng Huang (UWA): Estuary model update
    - Fiona Valesini: Assessing and predicting socio-ecological health of the estuary; Summary of progress of whole of project and next steps.
  - The components investigating the ecological health of the estuary and the coupled hydrological models of the catchment and estuary are on-track and meeting expectations of PHCC. These will provide much of the information required to complete a report card of catchment and estuarine health, one of the deliverables of the PHCC Science Integration project funded mostly by the Department of Primary Industries and Regional Development (DPIRD).
  - The social science aspects of assessing socio-ecological health and developing scenarios to predict future impacts on estuarine health are not as advanced. The initial intent was to create scenarios based on the Strategic Assessment of the Perth and Peel Region (SAPPR) and the updated Water Quality Improvement Plan for the Peel-Harvey Estuary (WQIP, delivered by the Regional Estuaries Initiative) but neither of these is likely to be complete before the end of the ARC Linkage project. Fiona Valesini demonstrated an alternative approach that should instead inform the modelling for SAPPR and the WQIP rather than be informed by them.
2. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat.
  - Developed a suite of eight project briefs (see Table 1 below) that align with PHCC's NRM Strategy and have tangible outcomes for improvements in fish habitat in the Peel-Harvey estuary and rivers. The briefs were based on discussions with Peel Development Commission (PDC), Recfishwest, WA Fishing Industry Council (WAFIC), Department of Primary Industries and Development (Fisheries), The Nature Conservancy (TNC) and Murdoch University Centre for Fish and Fisheries Research.
  - The projects briefs and estimates of costings for each were presented to a meeting of PDC, Recfishwest, WAFIC and MLFA. on 5 December 2017, who endorsed five projects (highlighted in Table 1 below) for further consideration for funding through a 2017 Election Commitment to improve the Health of the Peel-Harvey Estuary (refer to CEOs report for detail).
  - The *Key Enabler* project would be led by PHCC and would provide a portion of an FTE for Program Management, stakeholder engagement and delivery of some on-ground works. This project is essential to implementation of the other component projects together with which comprise a program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat

- Next steps are to secure the funding for the projects (\$750K) by working with PDC to complete a Summary Investment Proposal (SIP), to work with the project leads / partners to refine deliverables and costs and to look for opportunities for leverage against this funding.
- Irrespective of whether the SIP is successful, this process has extended PHCCs science and research collaboration to include TNC and Recfishwest as well as extending existing collaboration with Murdoch University and Department of Fisheries.

*Table 1: Titles of a proposed key enabling project and component projects to improve the ecological health of Peel-Harvey waterways to enhance fish habitat.*

No.	Project name	Project lead or partner	Timeframe
Key Enabler	Restoring our Rivers	PHCC	3 years
1	Fish Friendly farms on the three rivers	Recfishwest	3 years
2	Restocking of bream in the Murray River	Murdoch University	2 years
3	Harvey River Restoration – Implementation of Demonstration Reach Project	Harvey River Restoration Taskforce	3 years
4	Measuring Effectiveness of Restoration 1: River Health Assessments in the Murray, Serpentine and Harvey Rivers	PHCC	3 years
5	Measuring Effectiveness of Restoration 2: Assessment of Estuarine Health	Murdoch University	3 years
6	Establishment of Blue Mussels in the Peel-Harvey Estuary	Murdoch University	2 years
7	Bivalves for Clean Canals	Murdoch University	2 years

### 3. Alcoa Foundation: Connecting Corridors and Communities: Restoring the Serpentine River

- Assisted Dom Heald, Gillian White and Bronte Grant (DWER) on 13 & 14 December to perform River Health Assessments on two sites in the Serpentine River, namely Lowlands Reserve (see Figure 1) and at the confluence with the Peel Main Drain (See Figure 2). These sites represent reaches of the Serpentine in near pristine and degraded condition respectively. The results, based on the South West Indicator of River Condition (SWIRC) will be used for baseline monitoring and evaluation of the river condition before any restoration works commence. Our aspirational goal is for the ecological health of waterways at our restoration sites to resemble that at Lowlands reserve.
- Punrak Drain near the outflow to Lake Amarillo was similarly assessed (see Figure 3) which will provide useful baseline information for the project. It will also be useful when considering the future land uses at East Keralup (see below), in assessing the ecological condition of the drain. Two other River Health Assessment sites on the Murray River will be assessed in December. These will inform the activities in the Murray River as part of the proposed program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat components (see 2 above).



*Figure 1: The Serpentine River at Lowlands*



*Figure 2: The Serpentine River near the confluence of the Peel Main Drain*



*Figure 3: Punrak Drain near the outlet to Lake Amarillo*

- Met with Blair Parsons and Anne Smith (Greening Australia, GA) and Chris Gillies (TNC) on 16 November to: present our proposed works and discuss the other two projects (GA's *Three Rivers Initiative* and TNC's *Revitalising the Peel-Harvey through nature-based solutions* project) funded by the Alcoa Foundation to avoid repetition and to take advantage of synergies.
  - Also discussed the *Key Enabler* project and components 6 & 7 of the program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (see 2 above) with TNC to ensure it aligned with their proposed feasibility study of establishing shellfish in the Peel-Harvey Estuary as part of their project.

4. Peel Bright Minds (Peel Knowledge Council)
  - Peel Bright Minds were successful in their application to Inspiring Australia at Scitech for funding for 2017/18 as a Regional Hub
    - PHCC, Regional Development Australia (RDA Peel), and PDC are inaugural sponsors who together with Inspiring Australia have contributed \$40,000 cash to launch PBM and support operations until June 2017.
    - RDA Peel has advertised for a coordinator based at Make Place to manage activities including the launch in January or February 2018, 5 or 6 other STEM-based events and management of the website which is currently under construction.
    - The structure and governance of PBM is yet to be decided. In the interim, Mayor Rhys Williams is the inaugural ambassador for PBM, supported by a Steering Committee with representatives from education, government organisations and non-government organisations.
5. Environment, Community, Health Observatory (ECHO) research program in the Peel-Harvey Catchment
  - Organised a tour of the region for Prof. Pierre Horwitz (ECU) and Prof. Margot Parkes (University of British Columbia, Canada) on 26 October to assist Pierre in participating in a large research program that Margot is leading called Environment, Community, and Health Observatory (ECHO). This program investigates the links between effective natural resource management and the benefits to human health. The intent of the visit was to showcase the landscape and meet with the people of the Peel Region with a longer term goal of adding the Peel Harvey system to their network of catchments participating in the ECHO program. My role was to arrange a series of informal interviews with:
    - Jan Star (NRM Champion),
    - Alan (Jack) Neil (Coolup Landholder).
    - Coral Richards (Peel Preservation Society and various other affiliations)
    - Harry and Franklin Nannup (Noongar elders)
    - Steve Fisher, Thelma Crook and Jane O'Malley (PHCC)
    - City of Mandurah
  - Pierre was grateful for our help and happy with the result. I need to follow up with Pierre for our next steps to collaborate on ECHO.
6. Other
  - Attended the following launch of the WA Marine Science Institute *Research and information priorities for estuary management in southwest Western Australia – 2017 Report* (DWER, Perth 12 December 2017). Jan Star and I commented on a consultation draft in Nov 2016.

### **Advice (Integrating Science into PHCC Projects)**

1. Robert's Bay Wetland Basic Hydrology Report (Peter Muirden, Kareela WA Oct 2017)
  - Reviewed the report (9 November) which investigates the likely extent and frequency of inundation of the wetlands by estuarine water before and since the drain to the estuary was constructed in the 1960s. Will meet with Peter and PHCC Staff (on 13 December) to discuss the recommendations and PHCCs role in any actions.
2. East Keralup Future Landuses Working Group
  - Attended a meeting of the working group on 26 October to discuss proposed water and environmental work packages designed to improve the ecological character of East Keralup. Also met with a smaller sub-group on 12 December to further discuss in the context of eco-tourism potential.

3. Regional Estuaries Initiative (REI)
  - Attended a meeting of the Peel Main Drain Technical Working Group on 15 November and a (PHCC) REI Steering Group meeting on 1 December to help guide the projects.
4. Lowlands Advisory and Scientific Committee
  - Attended a meeting of this committee on 8 November at Lowlands where I:
    - presented an overview of our proposed works under the Alcoa Foundation Restoring the Serpentine River project with particular emphasis on Lowlands as a reference site and our proposed monitoring (SWIRC) in collaboration with DWER
    - agreed to co-host a science symposium and site visit with Joe Fontaine (Murdoch) and Kate Brown (DBCA) in the first quarter of 2018 to try to attract interest and buy-in to the committee from relevant researchers
    - agreed to extract relevant water quality and quantity data and the protocol for maintaining environmental flows at Lowlands from DWER (Renee Rowling).
5. Other
  - Participation in planning for National Landcare Program 2 (NLP 2) funding proposal through the PHCC Ramsar (NLP 2 Outcome (a)) subcommittee and the PHCC Prioritisation subcommittee.

## Science Communications

1. Oral Presentations:
  - Guest speaker to approx. 180 Year 8 students and teachers at Santa Maria College on 8 November as part of their Explore8 program to inspire inquisitive minds. Here I spoke about my passion for watery science.
  - Guest speaker at an excursion to North Dandalup Dam and Dwellingup with approx. 60 students, parents and teachers from Greenfields Primary School on 23 November. Here I spoke about drinking water supplies, the importance of maintaining environmental flows, the ecosystem services delivered by the forest, and the science of forestry and silviculture.
  - With Sharon Meredith, presented an overview of the ecological character of the Peel-Yalgorup System Ramsar Site (Ramsar 101) to staff from Mandurah and Peel Tourist Organisation (MAPTO) on 28 November. This was similar to the presentation to Mandurah Cruises in August, but tailored to MAPTO's interest in the Ramsar site.
2. Written communications
  - As per the funding agreement, submitted the *Annual progress report to the Department of Regional Development for the 2016/17 Financial Year: Employment of a Senior Scientist to provide science leadership and better integrate science into the management of the Peel-Harvey Catchment* to DPIRD on 2 November. Followed up with a meeting with Greg McAuliffe and Martin Clifford on 7 December. In summary, DPIRD are happy with progress and have agreed to pay the final tranche of funding.

**Steve Fisher**  
**Science Advisor**

*We acknowledge the Noongar people as Traditional Custodians of this land and pay our respects to all Elders past and present*

# SCIENCE ADVISOR REPORT

General Meeting to be held on 15 February 2018

## Building Research Networks

1. Investigating the hydrological regimes of Lake Clifton (with CSIRO, UWA, Department of Water and Environmental Regulation)
  - Prepared a sub-project as part of the “*Ramsar 482: People Working Together to Restore the Ecological Character of the Peel-Yalgorup System*” to be considered for inclusion into our NLP2 Tender submission. The sub-project entitled “*Addressing key knowledge gaps*” will, amongst other actions, improve the understanding of the ecological character of Lake Clifton through:
    - investigating groundwater levels and quality (Years 1 to 5)
    - *Thrombology*: undertaking biological investigations to establish condition of the Lake Clifton Thrombolite Threatened Ecological Community and help design recovery actions (Years 2 to 5)
    - Implementing a field trial of diversion of groundwater to the thrombolites to inform Recovery Actions (Years 4 and 5)
  - Through this process, I met with John Rayner (CSIRO, Research Team Leader Pollutant Fate and Remediation) and contacted Henning Prommer (UWA, Senior Principal Research Fellow, School of Earth Sciences) for advice. Both showed an interest in extending the works proposed in the NLP2 Tender submission to include a research program by multiple post-graduate students. I will meet with John and Henning and Geoff Turner and Greg Davis (CSIRO) and Sarah Bourke (UWA) in the coming weeks to progress.
2. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat.
  - In my report from December 2017, I reported that representatives from Peel Development Commission (PDC), Recfishwest, WA Fishing Industry Council (WAFIC) and Mandurah Licensed Fishermen’s Association (MLFA) had endorsed a suite of 5 projects for further consideration for funding through a 2017 Election Commitment to improve the Health of the Peel-Harvey Estuary (see Table 1 below). A Summary Investment Proposal (SIP) to fund the projects was submitted to DPIRD by Brett Dunne (PDC) on 9 February and we are awaiting finalisation through a Financial Assistance Agreement (FAA). The projects would commence in May 2018 and end in 2020.
  - On 18 January I met with James Tweedley, Chris Hallett, Alan Cottingham and Clara Obregón LaFuente (all from Murdoch University Centre for Fish and Fisheries Research) to discuss
    - progressing the *Restocking of bream in the Murray River* (Project #2 below, led by Alan and Chris);
    - links to the *Golden Fish* Project and the *Stock enhancement of the Western School Prawn (Metapenaeus dalli) in the Swan-Canning Estuary; evaluating recruitment limitation, environment and release strategies* (led by James); and
    - Clara’s PhD research program on the ecological, social and economic values of recreational fishing.

There is obvious synergy between these projects and great opportunities for collaboration between PHCC, Murdoch University, DPIRD (Fisheries), John Tonkin College and Recfishwest on which I’ll follow up after the FAA is finalised.



Table 1: Summary of approximate costs of delivering the key enabling project and additional component projects aimed at enhancing fish abundance and habitat quality in Peel-Harvey Waterways. Each component commences May 2018 unless otherwise specified

Priority	Project name	Project lead	Approx. cost	Timeframe
Key	Key Enabler: Restoring our Rivers	PHCC	\$250K	3 years
1	Component 1: Fish Friendly farms on the three rivers	Recfishwest	\$150K	3 years
2	Component 2: Restocking of bream in the Murray River	Murdoch University	\$150K	2 years (From 2019)
3	Component 3: Harvey River Restoration – Implementation of Demonstration Reach Project	Harvey River Restoration Taskforce	\$150K	3 years
4	Component 4: Measuring Effectiveness of Restoration 1: River Health Assessments in the Murray, Serpentine and Harvey Rivers	PHCC	\$50K	3 years

### 3. Alcoa Foundation: Connecting Corridors and Communities: Restoring the Serpentine River

- Thelma Crook (PHCC) and I organised and facilitated a meeting of Key Stakeholders in the three Alcoa Foundation - funded projects in the Peel Region, held at PHCC on 18 January. The event was attended by 31 representatives from the community, “Friends of” groups, WA State Government, Local Government, universities, schools, Peel Bright Minds, The Nature Conservancy (TNC), Greening Australia (GA), Alcoa and PHCC. The purpose of the meeting was to raise awareness of the projects and how they might complement each other, and in particular to provide a forum for TNC to explain the objectives of their project to potential stakeholders in more detail. The objectives of the projects were described in a series of presentations followed by a Question and Answer session. Presentations were made by:
  - Steve Fisher (PHCC) – *“Connecting Corridors and Communities: Restoring the Serpentine River”*,
  - Blair Parsons (GA) – *“The Three Rivers Project: ecological restoration with the local Peel Harvey Community”*,
  - Chris Gillies (TNC) – *“Revitalizing the Peel-Harvey Estuary Through Nature-based Solutions”*.
- Next steps:
  - PHCC will conduct a workshop specific to the *Restoring the Serpentine River* project, most likely in April 2018.
  - TNC will be doing similarly in March 2018. GA and PHCC will attend and present as appropriate.
  - Planning is underway for a combined launch of the three projects sometime in March / April 2017

### 4. Peel Bright Minds (formerly known as Peel Knowledge Council): Inspiring a Curious Community

- I attended the launch of Peel Bright Minds as a member of the inaugural Steering Committee on 8 February 2018. Rhys Williams (Mayor, City of Mandurah); Paddi Creevey (Chair, RDA & PDC), Charlee Jones (Coordinator, Peel Bright Minds) and Lynne Beazley (former Chief Scientist of WA, now Science Ambassador) addressed approximately 30 attendees with inspiring speeches. There was a lot of positive energy in the room.

- There are some good opportunities for PHCC to collaborate with Peel Bright Minds to promote awareness of Ramsar values and wise use of wetlands through our Wetlands and People Plan initiatives.

#### 5. Other

- WA Biodiversity Science Institute (18 December 2017 and 24 January 2018): I and others met with Peter Zurzolo (CEO), Lesley Gibson (Program Director, Biodiversity Survey) and Guy Boggs (Program Director, Restoration and ex-situ Conservation).
- Murdoch University Centre for Fish and Fisheries Research (18 January 2018): I met with Clara Obregón LaFuente to discuss her PhD research investigating the values of recreational fishing in South west estuaries (see also 2 above). Clara will be presenting a summary of her PhD proposal at today's meeting (see Item 9).
- Birdlife Australia (13 February 2018): Sharon Meredith (PHCC), Thelma Crook and I met with Vicki Stokes (WA Program Manager) to discuss PHCC's role in implementation of their successful project proposal *Community-based monitoring of migratory shorebird disturbance on the Peel-Harvey Estuary* funded through the State NRM Community Action Grants. The proposal was supported by Conservation Council of WA on submission but they have since withdrawn their support.

### Advice (Integrating Science into PHCC Projects)

1. National Landcare Program 2 / Regional Land Partnerships (NLP 2)
  - I participated in planning for Program Logic and funding proposals including participation in the PHCC Prioritisation subcommittee.
2. Friends of Lake McLarty (FoLM)
  - I attended the FoLM meeting on 16 January 2018 to provide advice on the proposed actions to investigate the hydrology of Lake McLarty to ensure it aligned with the Action Plan developed for the lake by PHCC, FoLM and the Lake McLarty working group.

### Science Communications

1. Oral Presentations:
  - *Connecting Corridors and Communities: Restoring the Serpentine River, Alcoa Foundation Workshop* on 18 January 2018 (see above).
2. Written communications
  - The article "*Global tourists flock to the Peel-Yalgorup Ramsar site*", (by Fisher, Crook and Wilson) submitted in 2017 was published in *Wetlands Australia 2018, Commonwealth of Australia 2018* – see <http://www.environment.gov.au/system/files/resources/b0f30409-2d92-4ec6-a57d-35e59b765be0/files/wa30-full.pdf>

This short article describes the importance of the Peel-Yalgorup System to migratory shorebirds and PHCC's role in the Shorebird 2020 Count.

Steve Fisher

#### Science Advisor

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# SCIENCE ADVISOR REPORT

General Meeting to be held on 19 April 2018

## Building Research Networks

1. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (2017 State Election Commitment).
  - On 29 March PHCC received a draft Financial Assistance Agreement (FAA) for \$750K from the Department of Primary Industries and Regional Development to undertake a suite of five projects to improve the health of the Peel-Harvey, namely:
    - Key Enabler: Restoring our Rivers
    - Component 1: Fish Friendly farms on the three rivers
    - Component 2: Restocking of bream in the Murray River
    - Component 3: Harvey River Restoration – Implementation of Demonstration Reach Project
    - Component 4: Measuring Effectiveness of Restoration 1: River Health Assessments in the Murray, Serpentine and Harvey Rivers
  - For Component 2, I assisted Alan Cottingham (Murdoch University) in applying to DPIRD (Fisheries) for preliminary assessment against their stocking policy. Alan received a positive response from Fisheries and so we will proceed to continue to a full proposal to restock bream into the Murray River.
  
2. Alcoa Foundation *Connecting Corridors and Communities: Restoring the Serpentine River*
  - Following on from the stakeholder meeting on 18 January, Thelma Crook (PHCC) and I organized, hosted and acted as Master of Ceremonies for the launch for the Three Rivers, One Estuary Initiative, a collective of the three Alcoa Foundation - funded projects in the Peel Region. The event was held at the Mandurah Performing Arts Centre on 18 January. The event was attended by approximately 45 representatives from the community, “Friends of” groups, WA State Government, Local Government, universities, schools, Peel Bright Minds, The Nature Conservancy (TNC), Greening Australia (GA), Alcoa and PHCC.
  - Following the launch, Dr Christine Shepard (Director of Science, Gulf of Mexico Program), Zac Ferdana (Lead Coastal Resilience Manager) and Dr Chris Gillies (Marine Manager) all from TNC presented examples of the work they have completed elsewhere (mostly the USA) that may be applied in the Peel-Harvey estuary through their *“Revitalizing the Peel-Harvey Estuary Through Nature-based Solutions” projects*.
  - Next steps:
    - Thelma and I will host Rosa Garcia (President, Alcoa Foundation), Suellen Jerrard and Jodie Read (Alcoa Corporate Affairs) for a short visit to the Serpentine River at Lowlands Nature Reserve and downstream from the Peel main drain confluence on 18 May.
    - We will conduct a workshop specific to the *Restoring the Serpentine River* project, most likely in May 2018 to better define the on ground works for the project and to recruit landholders to the project .
    - We will commence developing a River Action Plan for the Serpentine River below lowlands using a drone followed by ground-truthing on foot and by boat.

### 3. Peel Bright Minds: Inspiring a Curious Community

- I attended the Steering Group meeting on 28 March
- I represented Peel Bright Minds at Crab Fest on 18 March. Charlie Jones (Program Coordinator) did a fantastic job of organising activities to engage children (e.g. crab origami; a jigsaw puzzle representing the food web of the Peel Harvey estuary) while we engaged with their parents
- I attended the annual Regional Hub Workshop organized by Dr Carmen Smith (Inspiring Australia) at Scitech on 22 March. Highlights included:
  - a briefing by the new CEO of Scitech (Deb Hancock) on Scitech’s new strategic directions
  - networking with the other regional hubs
  - a behind the scenes look at the workshop at Scitech where they design and build the displays
  - attending a masterclass on how to design and deliver persuasive presentations, presented by Emma Bannister (Visual Story Training)
- I didn’t attend the *The Science Café* in March, also organized by Charlie Jones, but have been informed that it was a great success.
- Visit the Peel bright minds website ([www.peelbrightminds.com.au](http://www.peelbrightminds.com.au)) for upcoming events, including the inaugural ESTEAM Awards.

### 4. Lowlands Advisory and Scientific Committee

- In response to Actions arising from the December meeting of this group, I:
  - discussed environmental water provisions for the Serpentine River with Renee Rowling, Department of Water and Environmental Regulation (6 March) and reviewed water quality and quantity monitoring activities
  - met with Kate Brown (Ecologist, Department of Biodiversity, Conservation and Attractions) and Dr Joe Fontaine (Terrestrial Ecology, Murdoch University) on 9 March for an initial planning for a science symposium to discuss past present and future scientific investigations at Lowlands. This is intended as a strategy to reinvigorate the scientific input to the Advisory Committee.
- Attended the meeting of this committee on 13 March and reported against the above actions.

### 5. Other

- **BirdLife Australia (20 March):** Sharon Meredith (PHCC), Thelma Crook and I met with Vicki Stokes (BirdLife Australia, WA Program Manager) and John Graff (Consultant to BirdLife Australia) to progress planning for their *Community-based monitoring of migratory shorebird disturbance on the Peel-Harvey Estuary* funded through the State NRM Community Action Grants. This meeting followed a bird identification workshop for volunteers who will participate in the project, marking the commencement of the project.
- **Hotham River Assessment for Newmont Mining –funded project(27 March):** I met with Luke Rogers, Thelma Crook and Mel Durack (all PHCC) to discuss initial scoping and resourcing for an Assessment of the Hotham River.
- **Edith Cowan University (ECU, 10 April):** I liaised with Prof. Pierre Horwitz on a pre-proposal for an ARC Linkage project investigating exacerbation of soil erosion in south Western Australian catchments following bushfires. This builds on the initial investigations from the previous project Designing water quality monitoring protocols in catchments after severe wildfires: the 2016 Harvey River Basin case study in partnership with ECU, Department of Water, the Harvey River Restoration Taskforce funded

through the ECU Industry Collaboration Grant Scheme in 2016/17. PHCC's role in the ARC Linkage project is yet to be determined.

### **Advice (including Integrating Science into PHCC Projects)**

1. National Landcare Program 2 / Regional Land Partnerships (NLP 2)
  - I participated in completing the Program Logics and detailed Project Design for the Ramsar Site
2. East Keralup Future Landuses Working Group
  - Attended a meeting of this group on 2 March to discuss land and water management strategies for the future uses of the East Keralup site
  - Attended a meeting with John Savell (Department of Communities), Adrian Parker (Peel Development Commission) and John Gallucio (GMPM Consultants) on 29 March to confirm PHCCs position from the previous meeting.
3. Peel-Yalgorup System Ramsar Technical Advisory Group (Ramsar TAG)
  - Contributed to the organization of, and actively participated in the meeting of the Ramsar TAG on 8 March at The Shed, PHCC (see also below)
4. Dredge spoil management
  - From 30 March to 6 April I fielded concerns and complaints by community members in response to the issue of a Clearing Permit and subsequently a Dredging Licence allowing the in-estuary disposal of dredge spoil from the proposed dredging operations at the Zig zag channel and South Yunderup entrance channel.
  - During this process I consulted with DWER, DPIRD (Fisheries Research); Shire of Murray and Murdoch University Centre for Fish and Fisheries Research and reviewed the dredge strategy for the South Yunderup Entrance Channel. From this I concluded that in- estuary disposal is most likely the best of a bunch of poor options for disposal and that the monitoring undertaken by Murdoch University would help us better understand the impact of disposal on sea grass and benthic infauna.
  - With Kim Wilson and Andrew Del Marco, I drafted a briefing note recommending that we meet with the Director General of DWER and possibly the Peel-Harvey Estuary Management Committee to better manage the issue.
5. Feral fish in the catchment at Byford
  - I contacted DWER, DPIRD (Fisheries), Murdoch University and Shire of Serpentine Jarrahdale on 8 March in response to the report of pearl cichlids (a species introduced from South America as an aquarium fish) in Glades Lake, an artificial lake in Byford that drains into the Serpentine River via the Birrega drain.
  - Alternatives for the removal of these fish are currently being assessed by the developer of the site, a housing development, in consultation with the shire.
  - To date I have offered verbal advice based on my experience in attempts to eradicate this species from the Swan Estuary while working at Department of Fisheries. I will keep a watching brief until it is resolved.
6. Other
  - Assessed a proposal for construction of a bioreactor to remove oxalate from the bauxite process stream at Alcoa's Pinjarra Refinery. This proposal involved the clearing of a small area of land at the refinery that had been previously revegetated and compliance with the Dangerous Goods Safety Act 2004 to prevent spills of the oxalate stream.

## Science Communications

### 1. Oral Presentations:

- Provided commentary on the estuary cruise during the visit by the Governor of Western Australia, Her Excellency the Hon. Kerry Sanderson on 20 February, organized by PDC.
- **Projects Proposed by PHCC to Meet 2017 State Election Commitments** presented to the Peel Development Commission Board meeting 21 February.
- Presented the following to the Ramsar TAG meeting on 8 March:
  - **PHCC Activities 2017/18:** an update of activities undertaken by PHCC in 2017
  - **Other reports:** a summary of progress on the ARC Linkage Project (on behalf of Industry Partner organisations) and a summary of the findings from the first annual audit of the Marine Stewardship Council certification of the Peel-Harvey Estuarine Fishery
- **Introduction to the Peel-Harvey Estuary: Good and Bad News** presented at the Dolphin Watch information and training session on 21 March. This session was organized by DBCA and attended by approximately 150 -200 volunteers who registered to participate in the dolphin watch program in the Peel-Harvey estuary. This will be an annual event.
- **Introduction to the Peel Harvey Estuary: where does the water come from and what lives in the water,** presented to approx. 50 students and 10 parents and teachers from Greenfields Primary School at the Mandurah foreshore, 28 March
- I organised the following presenters for the SHARE in the Shed to be held on 17 May with the working title **Fish Tales** (note that this completes an action arising from the August and October 2017 PHCC General Meetings):
  - Dr Tim Storer and/or Bob Pond (DWER) – Causes of fish kills in the Peel-Harvey Estuary System
  - Clara Obregon LaFuentes (Murdoch University PhD candidate) – Social science of small scale fisheries
  - Dr Alan Cottingham (Murdoch university) – Restocking of bream in the Murray River

### 2. Written communications

- Various briefing notes and speaking points for the launch of the Three Rivers, One Estuary Initiative (see *Building Research Networks* above)
- Developed a series of project briefs for funding through federal election commitments.

### 3. Other meetings / communications

- Met with Sally Talbot (MLA), Jane O'Malley, Andy Gulliver and Paddi Creevy (all PHCC) on 13 February to discuss potential (Labor) election commitments for the next federal election.
- Met with Federal (Liberal) Senators Dean Smith and Linda Reynolds and Andrew Hastie (Member for Canning) and Marilyn Gray, Andy Gulliver and Jan Star on 11 April. Here I delivered a short primer on the environmental and economic significance of the Ramsar site and discussed potential commitments for the next federal election.

Steve Fisher  
Science Advisor

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# SCIENCE ADVISOR REPORT

General Meeting to be held on 21 June 2018

## Building Research Networks

1. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (also known as *Restoring our Rivers* 2017 State Election Commitment)
  - PHCC received Financial Assistance Agreement (FAA) for \$750K from the Department of Primary Industries and Regional Development (DPIRD) to undertake a suite of five projects to improve the health of the Peel-Harvey (13 June 2018).
  - I prepared a Draft Project Plan for the five component projects. Detailed project plans will be developed in consultation with project partners during June and July.
  - I convened the inaugural meeting of the RiverCare Steering Committee (7 June) which will oversee the progress of the projects funded by the Alcoa Foundation and WA State Government as summarized in Figure 1 below. The steering committee endorsed the Draft Project Plan



Figure 1: The inter-relationship between RiverCare projects managed by PHCC

- Jo Garvey and I met (11 June) with:
  - Alan Cottingham, Fiona Valesini (Murdoch University Centre for Fish and Fisheries Research), Ben Roennfeldt (South Metropolitan (Challenger) TAFE), Barbara Sing, Kim Davies, Nick Rust and laboratory technicians (John Tonkin College) to discuss John Tonkin College’s involvement in the Murray River black bream stock enhancement project and visit their existing aquaculture facility at their Tindale campus. This was a follow up to an earlier meeting with Alan, Kim, Barbara and Kim Savins (Principal, JTC) on 1 May.

- Jane Townsend to discuss the Harvey River demonstration reach component project and how this could be complemented by Greening Australia’s activities on the Harvey River through the *Three River’s project*
  - Tim Storer (DWER, Water Science) to discuss how best to collaborate on the River Health Assessment component project across both the *Restoring the Serpentine River* project and the *Restoring our Rivers* component projects.
2. Alcoa Foundation Connecting Corridors and Communities: Restoring the Serpentine River
- Thelma Crook and I hosted Rosa Garcia (President, Alcoa Foundation) and Kate Garfinkel (Vice President and Chief Ethics and Compliance Officer at Alcoa (Pittsburg)), Suellen Jerrard and Jodie Read (Alcoa Corporate Affairs) for a short visit to the Serpentine River at Lowlands Nature Reserve and downstream from the Peel Main Drain confluence on 18 May. The purpose of the visit was to give them a snapshot of the Serpentine River at its best (Lowlands) and in degraded state (downstream of Peel Main Drain) and provide a vision of what we aspire to.
  - We will complete our first progress report to Alcoa Foundation by 30 June.
  - I accepted an invitation from Rosa and Jodie to attend a session of the Aluminium Stewardship Initiative (ASI) Annual General Meeting on 22 May at the Sebel, Mandurah. This meeting included members of the ASI who represent all parts of the aluminium supply chain, including producers, users and stakeholders to *foster responsible production, sourcing and stewardship of aluminium*. The session I attended included:
    - Keynote presentations on the world-wide supply of aluminium, modelling global mass flows of aluminium and lessons from water stewardship initiatives
    - Panel sessions on biodiversity and mine site rehabilitation, indigenous peoples and the aluminium industry and human rights and business.
3. Peel Bright Minds: Inspiring a Curious Community
- I attended the Steering Group meeting on 14 May and 18 June and represented Peel Bright Minds at the Stretch Arts Festival on 5 May.
  - I attended the Naked Scientist event (Dr Chris Smith), Mandurah Performing Arts Centre on 3 May
  - I nominated the following people for the Inaugural Peel Bright Minds ESTEAM awards to be held 28 June at Contemporary Art Spaces Mandurah:
    - Barbara Sing and Kim Davies (John Tonkin College Estuary Guardians) jointly for the Citizen Scientist of the Year
    - Lee-Anne Walley (Greenfields Primary School) for ESTEAM Champion of the Year
  - Visit the Peel bright minds website ([www.peelbrightminds.com.au](http://www.peelbrightminds.com.au)) for upcoming events, including the ESTEAM Awards.
4. ARC Linkage project: *Balancing estuarine and societal health in a changing environment*
- On 7 June I helped Fiona Valesini to organise a meeting of some members of the Research Team (Fiona Valesini, Chris Hallett, Sorcha Cronin-O’Reilly (Murdoch University) Matt Hipsey and Peisheng Huang (UWA) Karl Hennig (DWER)); Partner Organisations (PHCC, Shire of Murray, City of Mandurah) and other interested stakeholders (Fisheries Research, Birdlife Australia, Peel Development Commission). At this meeting hosted by PHCC :
    - The Research Team provided a brief update of progress on each of the component projects.



- All participated in a workshop activity to identify future scenarios of development and changing land use in the catchment and how this might impact on the socio economic and ecological health of the Peel-Harvey Estuary.
- The scenarios will be prioritised and approximately three or four will be modelled by DWER. Note that Jane O’Malley and I were briefed by Malcolm Robb (DWER) on 2 May about a proposed Estuary Protection Plan (EPP) and Water Quality Improvement Plan (WQIP) under development by DWER. The modelling of scenarios for the WQIP / EPP and the ARC Linkage scenarios will be undertaken as a single exercise by DWER and so the methodology will be identical and the model outputs comparable.

## 5. Other

- BirdLife Australia and DPIRD (Fisheries):
  - I met with Vicki Stokes (BirdLife Australia, WA Program Manager), Emily Fisher, Steve Taylor and Cameron Desfosses (Fisheries research) on 16 May to discuss progress on the surveillance program that Fisheries are undertaking to assess the spatial and temporal extent of scoop netting by recreational fishers. This program will partially meet Condition 7 of the Marine Stewardship Council (MSC) certification of the blue swimmer crab fishery, regarding harm to habitat and disturbance of birds by recreational fishers scoop netting for blue swimmer crabs. We also discussed how this work will be complemented by, and not duplicated by, the planned *Community-based monitoring of migratory shorebird disturbance on the Peel-Harvey Estuary* funded through the State NRM Community Action Grants.
- Drainage in the Peel-Harvey Mini-symposium
  - I attended this mini-symposium hosted by PHCC on 9 May. The symposium brought together representatives from all of the agencies involved in projects in the Peel-Harvey Catchment with a drainage component to share information and (hopefully) promote reduction in nutrient loads to the waterways and estuary through improved drainage practices e.g. use of phosphorus-adsorbing amendments; constructed wetlands to remove nitrogen; maintenance of drains.
- WA Feral Cat Symposium
  - I attended this symposium, organised by the PHCC, on 31 May at the Mandurah Performing Arts Centre. A diverse range of presenters spoke about current and potential initiatives for the future to control feral cats in WA, one of the major threats to our native species.

## **Advice (including Integrating Science into PHCC Projects)**

1. Marine Stewardship Council Certification of Peel-Harvey Estuarine Fishery – Audit process
  - I provided written comments to the Conformity Assessment Body (CAB) on 16 May for the second annual audit of the MSC certification. I advised the CAB of the variation in the number and severity of fish kills in 2017 and 2018 and the proposed dredging operations in 2018, and how these might impact the catch and catch rate of Blue Swimmer Crabs and finfish. I followed up by attending a stakeholder meeting with representatives of the CAB (Sabine Daume and Sandy Morison) on 24 May.
2. National Landcare Program 2 / Regional Land Partnerships (NLP 2)
  - I participated in planning for the implementation of the Project Design *Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands* (ongoing throughout May and June)

3. Lake McLarty: Technical Advisory Group (TAG) and subgroups; Friends of Lake McLarty
  - I attended a series of meetings with the following groups to develop a strategy for the restoration Lake McLarty, in particular to address the decline in water levels:
    - Sub-group of the Lake McLarty TAG (8 May)
    - Friends of Lake McLarty (15 May)
    - Information session by Deb Slater-Lee (State NRM Program) regarding the imminent opening of the Community Stewardship Grants applications (7 June)
    - Sub-group of the TAG to develop a program logic for priority action and strategy for applying for funds (15 June)
    - Lake McLarty TAG (19 June)
4. Regional Estuaries Initiative
  - I met with Brad Degens, Karl Henning, Jennifer Stritzke, Bob Pond (DWER) and Neil Dixon (PHCC) to discuss revision of the Sampling and Analysis Plan (SAP) for the Peel Main Drain Project and to devise a SAP for the Mayfield projects (25 May).
5. Other
  - I met with John Loney, John Roberts and Bill Marchbank (Strickland Park Economics) and Bill Marchbank (Bill Marchbank Waste Management Services) who have been contracted by Water Corporation to investigate options for disposal / recycling of sludge from Waste Water Treatment Plants in the Peel Region (17 May).

## Science Communications

### 1. Oral Presentations:

- *An Introduction to the Peel-Harvey Estuary: Good and Bad News* presented as an after dinner speech to approx. 20 members of the Mandurah Rotary Club at Sunbreakers Restaurant on 30 April
- *The Peel-Yalgorup System Ramsar Site: Ecological Character, Threats and Condition* presented as a 2 hour lecture to approx. 20 members of the Mature Aged Learning Association (Peel) on 14 May at the Mandurah Seniors and Community Centre
- Interview on Radio 6MM with Peter Rowe (6MM) and Paddi Creevey on 14 May promoting the *Fish Tales* SHARE in the Shed
- Facilitated the *Fish Tales* SHARE in the Shed on 17 May, completing an action arising from the August and October 2017 PHCC General Meetings. This event had approx. 50 attendees, setting a new World Record for SHARE attendance.
- Provided a brief commentary on an estuary cruise for
  - selected participants following the Feral Cat Symposium (31 May)
  - Gemma Nisbet from the Weekend West Australian Travel Magazine (12 June) for her visit to the Peel Region organised by the Mandurah and Peel Tourism Organisation and also involving Mandurah House Boats.

Steve Fisher  
**Science Advisor**

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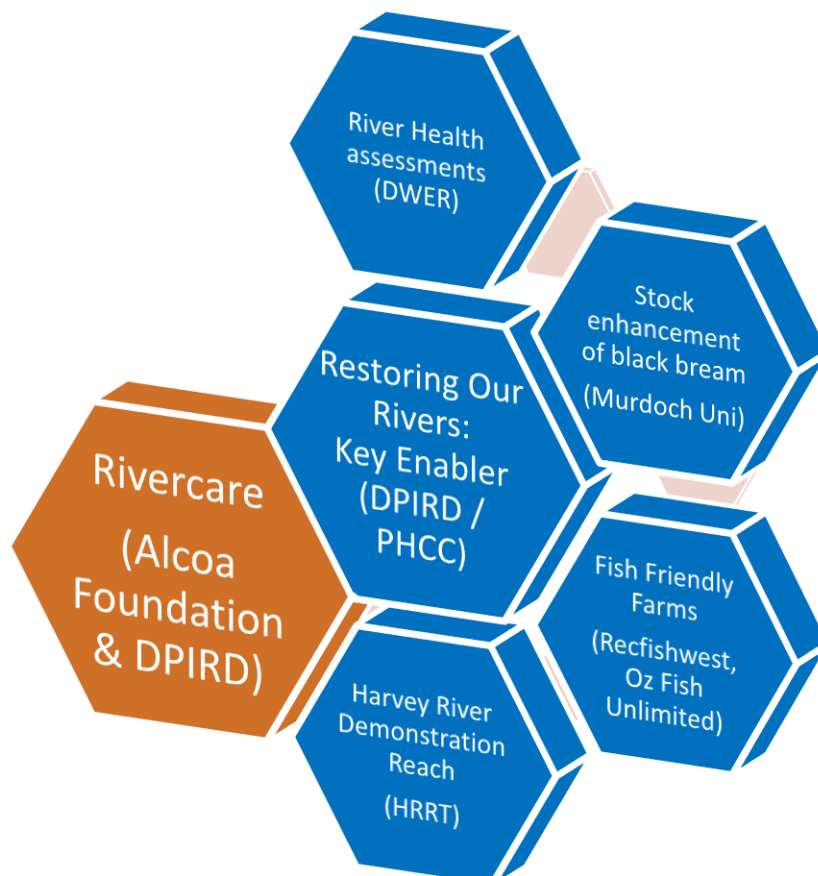
# SCIENCE ADVISOR REPORT

General Meeting to be held on 16 August 2018

## Building Research Networks

1. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (also known as Restoring our Rivers 2017 State Election Commitment) – see Figure 1 below.
  - Developed a framework for the delivery of these projects and submitted (July 31) to Department of Primary Industries and Regional Development (DPIRD) according to the Financial Assistance Agreement
  - Met with:
    - Andrew Rowland (CEO Recfishwest) and Andrew Matthews (Senior Program Manager, Ozfish Unlimited) to discuss how best to collaborate on the Fish Friendly Farms component project across both the Restoring the Serpentine River project and the Restoring our Rivers component projects. Ozfish Unlimited is a not-for-profit organisation “dedicated to helping millions of Aussie recreational fishers take control of the health of their rivers, lakes and estuaries and shore up the future of the sport that we all love.” (9 August). Both Recfishwest and Ozfish Unlimited are keen to engage in the project and offer their expertise.
    - DPIRD to discuss measurement and evaluation plans to measure the success of the projects against the election commitment to improve the health of the estuary for recreational fishing. (14 August). The River Health Assessments were included as a component project for this purpose.

Figure 1: The 2017 State Election Commitment projects managed by PHCC. Key partners for each project are shown in parentheses



2. Alcoa Foundation Connecting Corridors and Communities: Restoring the Serpentine River
  - Jo Garvey and Jesse Rowley attended National Tree day (29 July) to raise awareness in the community about the project and commence engagement with landholders on the Serpentine River. Jo, Jesse, Jordon Garbellini and I also attended the Serpentine-Jarrahdale Community Fair (11 August) to do similarly.
3. Peel Bright Minds: Inspiring a Curious Community
  - Attended the Inaugural Peel Bright Minds ESTEAM awards held 28 June at Contemporary Art Spaces Mandurah (CASM) where I won the award for Science Communicator of the Year. The following people with whom we collaborate closely also won awards:
    - Barbara Sing and Kim Davies (John Tonkin College Estuary Guardians) joint Citizen Scientist of the Year
    - Lee-Anne Walley (Greenfields Primary School), ESTEAM Champion of the Year
  - Attended the Steering Group meeting on 30 July.
  - Represented Peel Bright Minds (and PHCC, see above) at the Serpentine - Jarrahdale Community Fair (11 August) to raise awareness of Peel Bright Minds mission and activities among the community
4. Potential ARC Linkage project: Predicting water quality impacts from wildfire and prescription burns
  - Participated in preparing a proposal to be submitted to the Australian Research Council Predicting water quality impacts from wildfire and prescription burns". The Water Corporation will be the Partner Organisation committing the majority of the funds to the project.
  - This project stems from the previous Edith Cowan University (ECU) Industry Collaboration Project "Designing water quality monitoring protocols in catchments after severe wildfires: the 2016 Harvey River Basin case study" completed in 2017 in partnership with ECU and DWER.
  - The proposed research team comprises Prof. Pierre Horwitz (limnology, fire, and water resource management), Dr Dave Blake (GIS, sediment erosion modelling, fire), and Associate Prof Mary Boyce (analytical chemistry) all from Edith Cowan University; Prof. Gary Sheridan and Dr Petter Nyman (University of Melbourne), both of whom have relevant research experience in South Eastern Australia. Partner Investigators are Ms Jacquie Belhouse (water resource management) and Dr Emma Plant (water chemistry), both from Water Corporation and Dr Lachie McCaw (fire impacts, fire management) from DBCA (Parks and Wildlife Services).
  - PHCC has not committed cash to the project nor have a nominated Partner Investigator on the proposal. If the proposal is successful, we will contribute through stakeholder engagement, facilitating meetings and workshops and providing local knowledge where appropriate in our catchment and so will be engaged in the project.
5. Other
  - Collaborated with DWER (Water Science) to provided information to Brett Moloney (DPIRD, Fisheries Research) about monitoring programs for water quality in South West and South Coast estuaries of Western Australian for the National Marine Baselines and Monitoring Working Group Workshop. The workshop, held in Canberra 12 & 13 July, was attended by Brett and was organised by the Australian Institute of Marine Science to progress toward establishing a national framework monitoring and baselines to support the delivery of the National Marine Science Plan.

## **Advice (including Integrating Science into PHCC Projects)**

1. National Landcare Program 2 / Regional Land Partnerships (NLP 2)
  - Planning for the implementation of the Project Design Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands (ongoing throughout July and August), including running recruitment processes for:
    - A Wetlands Restoration Officer to deliver the on-ground component of the project, and
    - A Coordinator of Science and Management to oversee the science, monitoring, collaborative management and management and evaluation component of the project.
2. MZI Resources Keysbrook site visit
  - Visited the MZI Mineral sands mining and processing site at Keysbrook (26 June). The operations take place on private landholding, mostly used for beef cattle grazing. During mining operations the upper layer of soil (approx. 0.5 to 5 m below ground level) is removed and processed to recover leucoxene, an ore containing titanium and zircon. After separation of the heavy mineral concentrate, the sand and clay is returned to the land, presenting opportunities to increase the phosphorus retention characteristics of the topsoil and reform the landscape to reduce nutrient loss.
3. SAPPR Review
  - Actively participated in the SAPPR Review panel visit to the Peel Region hosted by PHCC and PDC on 24 July. The visit included a guided tour of the coastal plain via light aircraft and bus, followed by a presentation and discussion of the challenges we all face in protecting and restoring the natural environment and PHCC's views on the importance of the SAPPR to the health of the environment on the Swan Coastal Plain.
  - Met with Mike Rowe (Director General, DWER) with Jane O'Malley and Jan Star on July 30 to discuss reconvening the Peel-Harvey Estuary Management Committee in the context of the review of the SAPPR.
4. Lake McLarty: Technical Advisory Group (TAG) and subgroups; Friends of Lake McLarty
  - Worked with Andrew Del Marco to develop an application (submitted 6 August) to the State NRM Program Community Stewardship Grants "Saving Lake McLarty Phase 1: Addressing acidification, hydrology and habitats". The proposal includes funding for on-ground works and project management costs to understand the decline in water levels and mitigate risks of formation and oxidation of acid sulfate materials (approx. \$352K over three years 2019-2021). The proposed works are in accordance with the Lake McLarty Action Plan, developed by PHCC in collaboration with the Friends of Lake McLarty and the Lake McLarty TAG.
5. Newmont Community Investment
  - Met with representatives of Newmont Boddington Gold and Mel Durack at the quarterly meeting on 15 August to discuss the Community Investment Partnership with PHCC, in particular incorporating River Health Assessments as a measurement and evaluation component to measure the effectiveness of restoration activities at investment sites on the Hotham-Williams Rivers.

## **Science Communications**

1. Oral Presentations:
  - "An Introduction to the Peel-Harvey Estuary: Good and Bad News (Part 2)" presented as an after dinner speech to approx. 20 members of the Mandurah Rotary Club at Bendigo Stadium on 25 June

- “PHCC: Science and Waterways” presented as a 1 hour lecture to approx. 20 members of the University of the 3rd Age on 24 July at the Mandurah Seniors and Community Centre
  - Impromptu presentation to approx. 30 students at Greenfields Primary School on 31 July to inspire them to be curious about their surroundings
  - “The Peel-Harvey Estuary System: Lifeblood of our Region”, presented as a breakfast speech to approx. 15 community members as part of the Morning Glory series, hosted by The Makers at Make Place on 6 August.
2. Written
- The manuscript “Assessment of post-wildfire erosion risks on water quality in southwestern Australia” was submitted to “International Journal of Wildland Fire” on 1 Aug. I am a co-author on this paper with Dave Blake, Pierre Horwitz and Chris Kavazos (Edith Cowan University); Petter Nyman (University of Melbourne); and Helen Nice and Frances D’Souza (DWER). The paper is an outcome from the ECU Industry Collaboration Project “Designing water quality monitoring protocols in catchments after severe wildfires: the 2016 Harvey River Basin case study” completed in 2017.
3. Other
- Interviewed by Charlie Jones (Peel Bright Minds) for a podcast about the Dolphin Watch citizen science initiative.

**Steve Fisher**  
**Science Advisor**

*We acknowledge the Noongar people as Traditional Custodians of this land and pay our respects to all Elders past and present*

# SCIENCE ADVISOR REPORT

General Meeting to be held on 18 October 2018

## Building Research Networks

1. Report Cards for the Peel-Harvey Estuary
  - Met with Frances D'Souza and Catherine Thomson (DWER, Water Science Branch) on 12 October to discuss progress on the DWER report cards describing the condition of the Peel-Harvey Estuary and how these might complement/ be complemented by PHCC's Condition report cards for the Ramsar Site (based on comparison with Limits of Acceptable Change, LACs).
  - The (DWER) Estuary Report Cards do not necessarily reflect the LACS but are based on an extensive analysis of water quality data collected over the past two decades. They currently exist in a draft form.
  - We agreed that the Ramsar Report Card would refer to the DWER Estuary Report Cards if and when they were published. The Estuary Protection Plan is one opportunity to produce and publish these report card.
  - DWER are hosting the National Estuaries network meeting in Mandurah in early November. I will follow up with DWER to see how many representatives from PHCC can attend.
  
2. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (also known as Peel-Harvey Estuary Grants 2017, State Election Commitment).
  - Continued to work with Murdoch University and Harvey River Restoration Taskforce (HRRT) to develop project plans for the Stock enhancement of Black Bream (Murray River) and Harvey River Restoration: component projects respectively. Contracts for each are currently being negotiated.
  - Organised a meeting with Tim Storer and Gill White (DWER); Jane Townsend (HRRT); Jo Garvey, Jesse Rowley and Mel Durack (PHCC) to discuss the approach to implementing coordinated River Health Assessments in the Serpentine River (Alcoa Foundation); Murray River and Harvey River (Peel-Harvey Estuary Grants) and Hotham-Williams River System (Newmont Boddington Gold). A follow up workshop will be held on 22 October to establish site selection and monitoring priorities.
  
3. Alcoa Foundation Connecting Corridors and Communities: Restoring the Serpentine River
  - In addition to the above, on 11 October I reviewed and provided comment on the River Condition Summary Reports prepared by DWER for two sites assessed in the Serpentine River in November 2017, namely Lowlands Reserve (MR127SERP1) and below the confluence of the Peel Main Drain (MR83SERP1).
  - Facilitated the Serpentine River Forum, and event planned and organized by the project team, and in particular Jesse Rowley. The purpose of the forum was to:
    - inform landholders with properties abutting the Serpentine River downstream of Lowlands Reserve about the Restoring the Serpentine River project and how it fits with other initiatives to improve the health of the Peel-Harvey Estuary and waterways that drain in to it.
    - encourage landholders to participate in on ground activities funded through our devolved grants scheme and assist them in filling out an expression Of Interest to do so.
  - The event was attended by approximately 10 landholders, 6 of whom completed an Expression of interest; 2 PHCC Board members (Andy Gulliver and Jan Star) and Suellen Jerrard (Corporate Affairs Manager, Alcoa Australia).

- The following people made presentations:
  - Harry Nannup (Local Elder of the Noongar People)
  - Steve Fisher (PHCC)
  - Christine Allen (Senior Project Officer, Greening Australia)
  - Alex Hams (Marine Project Coordinator Australia Project, The Nature Conservancy)
  - Natalie Lees (City of Mandurah, Water Projects Officer)
  - Rupert Richardson (Landholder)
  - Neil Kentish (Landholder)
  - Jesse Rowley (PHCC)
  
- 4. Peel Bright Minds: Inspiring a Curious Community
  - Attended the Steering Group Meetings on 8 October. Charlie Jones (Coordinator, Peel Bright Minds) continues to do a great job organizing various events designed to promote ESTEAM throughout the region. Charlie’s position is funded through contributions from Inspiring Australia at Scitech, PHCC, Regional Development Australia, Peel Development Commission; City of Mandurah; Shire of Waroona; Shire of Murray; Shire of Serpentine-Jarrahdale and Shire of Boddington. Events have been held in each of these shires.
  
- 5. SHARE in the Shed - Migratory Shorebirds theme
  - I facilitated the event “Winged Travellers” on 25 September, attended by approximately 35 community members. The event included the following presentations:
    - Vicki Stokes (WA Program Manager, Birdlife Australia) who spoke about a project she is leading in partnership with PHCC to investigate migratory shorebird disturbance (see 5. Below for more detail)
    - Sharon Meredith (Wetland and People Officer, PHCC) who presented on her upcoming attendance at the East Australasian Asian Flyway Partnership Communications, Capacity Building, Education, Participation and Awareness (CEPA) Working Group Workshop (What I call, the “Thrilla in Manila 2”).
    - Milly Formby (Winged Threads) who spoke about her planned flight around Australia in her microlight aeroplane to promote awareness of migratory shorebirds.
  - Milly also brought her microlight aeroplane with her which she assembled in the courtyard outside the shed, which created a lot of interest and was a big drawcard for the evening.
  
- 6. Disturbance of Migratory Birds (with Birdlife Australia)
  - In 2017 Birdlife Australia was successful in obtaining a grant from the (then) State NRM Office through the Community Action Grants to fund a project investigating the disturbance of shore birds by various activities through a series of surveys throughout the summer of 2018/19. This project complements studies undertaken by Department of Primary Industries and Regional Development (Fisheries) investigating the disturbance caused by recreational crabbing.
  - PHCC committed to assisting with recruitment of volunteers and hosting bird identification workshops for these volunteers to enable these surveys. One such workshop was held on 6 September and was attended by approximately 20 members of the community. In addition to those recruited at similar events held earlier in 2018, we have sufficient volunteers to support the surveys.
  - The project was also promoted at the SHARE in the Shed Event described in detail above.



## 7. Other

- Migratory Birds agreement
  - On 17 August, I met with Alex Gardner, (Professor, UWA Law School); Carina Bury (Potential PhD Candidate; Masters in International Economic Law from Université Paris II Panthéon-Assas) and Prof Feng Chunping (Professor of Law, Hainan Normal University Law School, Regulation on Wetland Conservation in Hainan Province) to discuss a potential regarding international migratory bird agreements and their effectiveness in protecting bird habitat (*30 years of China-Australia Migratory Birds Agreements: Time to take Stock*).
  - The meeting was also attended by Sharon Meredith (PHCC) as it has clear links to our Ramsar CEPA Plan.
- Discussion with Sora Marin Estrella (Edith Cowan University, 6 September) regarding a potential future research project identifying and mapping the distribution of prey / diet of migratory shorebirds throughout the Peel-Yalgorup System Ramsar Site through carbon and nitrogen isotope analysis of gut content.
- Participated in a survey by Kirsten Abernethy (Sea Change Consulting) investigating the relationships or perceived relationships between recreational fishers, commercial fishers and the community and general with respect to commercial fishing activities in the Peel-Harvey Estuary and commercial fisher's social licence to operate i.e. what are the things a fishery needs to do, to get support from society. This interview is part of an information gathering component of a Fisheries Research Development Commission (FRDC) project, comparing the Peel-Harvey Estuarine Fishery as one case study with another in Port Phillip Bay.

### **Advice (including Integrating Science into PHCC Projects)**

1. Point Grey Marina proposal
  - In 2011, the Minister for Environment granted approval for construction of a marina located at Point Grey and a channel to connect the marina to the Dawesville Cut. In 2017, the proponent requested a change to a condition of the approval to extend the (then) Time Limit of Authorisation for implementation of the Point Grey Marina proposal from 1 August 2017 (when it was due to lapse) to 28 July 2019 to align with the Commonwealth approval timeframe under the EPBC Act...
  - On 26 September 2017, at the invitation of the EPA, I prepared a submission on behalf of PHCC detailing information published since 2011 and relevant to the proposal which showed a decline in the health of the estuary and/or led to a better understanding that implementation of the proposal would further exacerbate the poor condition of the estuary and recommending that the extension not be granted.
  - After considering PHCC's submission and those by others, the EPA advised the Minister that the information provided was not sufficient to stop the Minister from approving an extension to the (now) Time Limit for Substantial Commencement to the proponent. Furthermore, in response to a request by the proponent, the EPA recommended that the Time Limit be extended for a further 5 years to 2022 i.e. beyond the Commonwealth time frame as there was unlikely to be any new information provided in the interim.
  - On 10 September, I drafted a letter to the Minister reiterating our concerns (see 0084\_2018\_0910\_S Dawson\_PointGrey\_SF\_JS), drawing attention to the flawed logic applied by the EPA to considering our proposal and recommending that the Time Limit not be extended beyond 2017 and as a compromise not beyond July 2019.
  - On 21 September 2018, the Minister granted an extension to the Time Limit for Substantial Commencement to 1 August 2022. Stay tuned.....

## 2. SAPPR Review

- Attended a meeting with the Senior Policy Advisors and Principal Policy Advisors for each of the Minister for Environment and Minister for Planning on 20 September to discuss how planning and environmental issues would be progressed while the SAPPR was under review. Jane O'Malley, Andrew Del Marco and Jan Star were also present and led the discussion with occasional input from me regarding the impact of dredging on estuarine values.
- The same representatives from PHCC met with the SAPPR Review panel on 20 September as a follow up to their visit to the Peel-Harvey in August and reiterate PHCCs view on the importance of considering the environment in planning decisions.

## 3. National Landcare Program 2 / Regional Land Partnerships (NLP 2)

- Planning for the implementation of the Project Design Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands (ongoing throughout September and October).
- Following an initial unsuccessful recruitment process, a second recruitment processes for A Coordinator of Science and Management to oversee the science, monitoring, collaborative management and management and evaluation component of the project was started in September. Applicants are currently being assessed for shortlisting for interview.

## Science Communications

### 1. Oral Presentations:

- “Technology Applied to Catchment Management” presented to approximately 20 Community members at the Bill Hicks Reserve Hall in Byford on 23 August. This event was one of the series of Science Cafes organized by Peel Bright Minds.
- Facilitated the “Winged Travellers” SHARE in the Shed on 25 September. (see above) with presentations by Vicki Stokes (BirdLife Australia, WA Program Manager); Sharon Meredith (PHCC Wetlands and People Officer) and Milly Formby (Winged Threads)
- “Our Magnificent Ramsar Wetlands: Values, Threats and Actions” presented to approx. 100 members of the Combined Probus Club of Mandurah at their meeting at Bendigo Stadium on 16 October

### 2. Other

- Interviewed by Paddi Creevey and Darren de Mello on the on the “Focus on Peel” radio slot on 6MM on 10 September to promote our “River Care Projects” i.e.: Connecting Corridors and Communities: Restoring the Serpentine River (Alcoa Foundation) and the Peel-Harvey Estuary Grants (2017 State Election Commitment)
- Organised and attended an incursion with 6 students and their teacher at Mandurah Baptist College on 17 August to discuss a long-term student project to protect and improve a patch of bush at the school through the Land for Wildlife initiative. Vicki Groves (BirdLife Australia) also attended.

Steve Fisher

### Science Advisor

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# SCIENCE ADVISOR REPORT

General Meeting to be held on 13 December 2018

## Building Research Networks

1. Report Cards for the Peel-Harvey Estuary
  - Produced a Draft Report Card for the Peel-Yalgorup Ramsar Site based on a comparison of measured data with the Limits of Acceptable Change (LACs) described in the Ecological Character Description for the Peel-Yalgorup Ramsar Site. I presented this to the Science Integration Steering Committee at the meeting on 15 November
  - The National Estuaries Network meeting proposed to be held in Mandurah in early November has been postponed until sometime in early 2019. I will stay in contact with DWER Water Science Branch to make sure we are represented at the meeting.
  
2. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (also known as Peel-Harvey Estuary Grants 2017, State Election Commitment).
  - Presented an update of progress of these projects as well as the 1FTE project (Science Integration) to the Peel Development Commission, Recfishwest, DWER (Water Science) and DPIRD (Fisheries) at a meeting at PDC on 27 November. This presentation included the Draft Ramsar Report Card (see 1 above) as one of the deliverables the Science Integration project. Jane and I also received an update on progress of the other initiatives of the State Election Commitments.
    - Voluntary Fisheries Adjustment Scheme (Tim Nicholas, DPIRD (Fisheries)) including a discussion regarding the proposed changes in management arrangements for the south west crab fisheries.
    - The Peel-Harvey Estuary Protection Plan – Water Quality (Malcolm Robb, DWER Water Science)
  - Finalised (through Jo Garvey) an agreement with HRRT to deliver the Harvey River Restoration – Implementation of the Demonstration Reach component project and continued to negotiate with Murdoch University on an agreement to deliver the Stock enhancement of Black Bream (Murray River) component.
  - Facilitated a workshop on 22 October to develop a strategy for performing River Health Assessments for the following projects:
    - the Peel-Harvey Estuary Grants (with Jane Townsend)
    - Connecting Corridors and Communities: Restoring the Serpentine River (Jo Garvey, Jesse Rowley, Rick James)
    - Newmont Boddington Gold Community Investment Agreement: (Mel Durack, Avril Baxter)
  
3. Alcoa Foundation Connecting Corridors and Communities: Restoring the Serpentine River
  - Jo Garvey continues to manage this project with some oversight from me. As a result of a community forum we conducted on 13 August, we received 12 Expressions of Interest from landholders whose properties adjoin the Serpentine River for our Community Environment Grants round. Of these eight progressed to full applications which have been assessed by the Independent Assessment Panel and another two have been given a time extension to collect more information. The overall value of these 10 projects is expected to be between \$150K and \$200K.

#### 4. ARC Linkage Project: *Balancing Estuarine and Societal Health in a Changing Environment*

- Helped organize a workshop scheduled for 18 December at PHCC to discuss the work done by the project team to date in understanding the economic health of the region and how that may impact the estuary via land-use changes accompanying development and relates to the societal health aspect of the investigations. The team, led by Fiona Valesini (Murdoch University) and Paul Plummer (UWA) has undertaken “an economic evaluation of the Peel region as a whole, and also each of its Local Government Areas to assess the competitive and comparative advantage of the region and LGAs compared to the rest of WA, as well as the key drivers of employment growth and the influence of local factors”. Invitees include City of Mandurah; Peel Development Commission; Shire of Waroona; Shire of Boddington; Shire of Serpentine-Jarrahdale; Shire of Harvey. The workshop will also be promoted at the Peel Regional Leader’s forum on 7 December.
- There are strong links between this piece of work and the Community Values section of the Peel-Harvey Estuary Protection Plan.

#### 5. Other

- Attended a workshop and training exercise on 22 October organized by FORM (Lamis Sabra) in partnership with UWA as a professional development for approximately 15 school teachers on Creative Learning. This workshop and training was delivered by Paul Collard (Creativity, Culture and Education) Newcastle, UK) - see also <https://www.form.net.au/2018/02/creative-learning-paul-collard/> and <https://www.creativitycultureeducation.org/>
- Peel-Harvey Estuary Protection Plan – Water Quality
  - Met with Sarah Larsen and Romeny Lynch (DWER) on 30 October to discuss the Estuary Protection Plan, and in particular documents and other means through which PHCC could contribute to the *Community Values* section of the plan.
- Non-point source nutrient management
  - Participated in a focus group interview on 2 November to discuss the problem of nutrient losses to water resources from agricultural practices in our catchment and understand the political hurdles to reducing the threat. This interview was organized by Jeanette Jensen (UWA Law School) under supervision of Alex Gardner to assist her in her PhD research project which investigates the usefulness of regulatory solutions to nutrient losses. The study includes other areas in addition to the Peel-Harvey Catchment including Queensland, where a focus interview was also organized. Other organisations involved in the interview were included the City of Canning; Western Dairy; Pastoralists and Grazers Association; South West Catchments Council; Department of Water (South West)
- Peel Bright Minds: Inspiring a Curious Community
  - Attended the Steering Group Meeting on 20 November.
- Dolphin Forum
  - Attended the Dolphin Forum organized by The Estuary Guardians at PHCC’s Shed on 29 November where Krista Nicolson and Martin van Aswegen (Murdoch University Cetacean Research Unit) presented results from their research on the dolphin stock assessment for the Peel-Harvey and novel technique for measuring the length of dolphins using laser photogrammetry respectively. Nat Goddard from Mandurah Cruises also spoke about how the data they collect contributes to the research effort.

- Common Cause
  - Attended an introductory training session on 29 November delivered by Common Cause at PHCC's Shed on how to engage people's values to motivate community action

### **Advice (including Integrating Science into PHCC Projects)**

1. Fisheries Management Paper No. 288 – proposed changes to management arrangements for the blue swimmer crab resource in the South West
  - Attended a meeting on 19 November with representatives from City of Mandurah, Mandurah Licensed Fishermen's Association, Peel Development Commission and Mandurah Cruises to provide advice on the proposed changes to the management arrangements of the Peel-Harvey Estuary blue swimmer crab fishery. One of the proposed changes involved extending the closure of the Peel-Harvey Estuary to crab fishing by commercial and recreational fishers, currently from 1 September to 31 October inclusive each year to protect mated pre-spawning female crabs.
  - As a result of this meeting, on 23 November I made a submission on behalf of PHCC to DPIRD (Fisheries), supporting an extended closure for at least one month to include November, especially to recreational fishing, to provide additional respite for migratory shorebirds from disturbance as they re-provisioned. **PHCC is supportive of management actions that protect crab and fish stocks as these are important features of the ecological character of the Ramsar site. To this end the submission also recommended that:**
    - the sustainability principals upon which the Marine Stewardship Council Certification are based, including the Harvest Strategy for blue swimmer crabs are used to guide management of the fishery and are consistent with the proposed changes to management arrangements
    - regulations for commercial fishers did not necessarily need to be identical to those for recreational fishers.
    - A monitoring program be re-implemented to monitor the effects of an extended closure.
    - Developing fisheries operating in Areas 1 (Comet Bay) and 2 (Mandurah to Bunbury) outside of the Peel-Harvey Estuary should be subject to similar management arrangements to protect breeding stock levels of blue swimmer crabs.
  - See outgoing correspondence 0110\_2018\_1123 for the full submission which was endorsed by PHCC's Executive on 23 November as PHCC's position on the matter. City of Mandurah and Mandurah Licensed Fishermen's Association and Recfishwest also made a submission.
2. National Landcare Program 2 / Regional Land Partnerships (NLP 2)
  - Helped Kim Wilson and Sharon Meredith finalise the MERI Plan for the Project Design Wetlands and People – A community restoring the Ecological Character of the Peel-Yalgorup Ramsar 482 Wetlands, also known as the Ramsar Project. As a result PHCC received an executed work order from the Australian Government on 22 November and so can now proceed in implementing the project.
  - Completed a successful recruitment process for the Coordinator, Wetland Science and Management to oversee the science, monitoring, collaborative management and management and evaluation component of the NLP2 Ramsar Project.
3. Collaborative Management of the Ramsar Site
  - Teleconference with Kim Wilson and Mike Coote and Heidi Bucktin (DBCA) on 28 November regarding:

- Extending the boundaries of the Peel-Yalgorup System Ramsar Site to include lakes Goegrup and Black as per the submission by PHCC in 2008 (and Map 2 of the PYS Ramsar Site Management Plan) as well as other landholdings that have since come under the management control of DBCA. This discussion was in response to a request for advice from the Minister of Environment to Mike following our meeting with ministerial advisors (for Planning and for Environment) on 20 September. Here we raised our concerns about the suspension of SAPPR and including how it would affect issues currently in abeyance, including changes to the Ramsar Site Boundary. DBCA agreed to progress this.
- Collection of monitoring data for comparison against the limits of acceptable change (LAC). Mike was looking to PHCC to provide monitoring data for DBCA's annual report to the Australian Government regarding the ecological health of the Ramsar Site. There was also some discussion over how to interpret the data collected and what constituted a frequent breach of a LAC.
- PHCC's invitation to join the EAAFP CEPA Working Group and the process for the nomination of the Peel-Yalgorup Ramsar Site as an East Asian Australasian Flyway Site
- a briefing regarding the NLP2 Ramsar Project

#### 4. Federal Election Commitments

- Accompanied Jane, Caroline Knight and Neil Dixon for a site visit to the Peel Main Drain with Tony Burke (Shadow Environment Minister) and Melissa Teede (Labor Party candidate for Canning) to:
  - describe the Connecting Corridors and Communities: Restoring the Serpentine River and Peel-Harvey Estuary Grants projects
  - discuss potential election commitments to improve the ecological health of the Ramsar Site and thereby promote tourism and jobs, including rescuing the Lake Clifton thrombolites and establishing Stage 1 of the Peel Waterways Institute

### Science Communications

#### 1. Oral Presentations:

- "Peel-Harvey Estuary System: Lifeblood of Our Region" presented to approximately 180 employees of the City of Mandurah Works and Services Directorate at Mandurah Offshore Sailing Club as a keynote at their professional development and wellness day on 24 October.
- "2017 State Election Commitments: Peel-Harvey Estuary Grants & 1 FTE Projects" presented to Andrew Ward, Adrian Parker, Kristie Tonkin and Simone Hutton (PDC); Malcolm Robb (DWER); Leyland Campbell (Recfishwest) and Tim Nicolas (DPIRD (Fisheries)) on 27 November at PDC Offices. See also Building Research Networks 2. Program to improve the ecological health of Peel-Harvey waterways to enhance fish habitat (also known as Peel-Harvey Estuary Grants 2017, State Election Commitment) above.
- Greenfields Primary School Excursion to Coodanup (22 November): with Lee-Anne and George Walley, I led an excursion with 62 Year 4 and 5 students and 6 parents and teachers to the estuary foreshore and wetlands at Coodanup Reserve. In two 1 hour sessions, I led the students along the foreshore, describing the Ramsar values of both the estuary and wetlands, especially as feeding habitat for migratory shore birds, the threats to these values and what actions they could take to protect the values from these threats.
- Greenfields Primary School Excursion to Riverside Gardens (29 November): with Lee-Anne and George Walley and Thelma Crook, I led an excursion with 90 students and 9 parents and teachers to the Serpentine River foreshore and wetlands at Riverside Gardens Reserve. In three 30 minute sessions, I spoke to the students about the values of the Serpentine River and the threat of nutrient export from the catchment; the ecology of wetlands and the function they perform in filtering nutrient runoff into the rivers and estuary.

Steve Fisher  
**Science Advisor**

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