



CRC for  
Water Sensitive Cities

## Variation Agreement Project B2.4

THIS AGREEMENT is made on the \_\_\_\_\_ day of \_\_\_\_\_ 2017  
THE CRC FOR WATER SENSITIVE CITIES, Building 74, Monash University, Clayton, Victoria, 3800 (CRC)  
AND the parties named in Item 1 of the Schedule (Other Parties)

### BACKGROUND:

- A. CRC and the Other Parties entered into the Document named in Item 2 of the Schedule (Document).
- B. CRC and the Other Parties wish to vary the Document in accordance with this Agreement.

### IT IS AGREED AS FOLLOWS:

- |  |  |
|--|--|
| <p><b>1. Definitions</b></p> <p><b>1.1</b> Terms which are defined in the Document and used in this Agreement have the meaning given to them in the Document, unless stated otherwise.</p> <p><b>2. Effective date of variation</b></p> <p><b>2.1</b> The effective date of this Agreement is the date set out in Item 3 of the Schedule (Effective Date).</p> <p><b>2.2</b> Clause 2.1 does not affect any right or obligation arising before the Effective Date.</p> <p><b>3. Variation</b></p> <p><b>3.1</b> The parties agree that from the Effective Date the Document will be varied in accordance with Item 4 of the Schedule.</p> <p><b>3.2</b> Save for varying the Document as specified in this Agreement, all other provisions in the Document remain unchanged.</p> | <p><b>4. General</b></p> <p><b>4.1 Costs:</b> Each party remains responsible for its own costs and expenses in entering into this Agreement.</p> <p><b>4.2 Signatories:</b> The signatories to this Agreement warrant that they have the authority to enter into this Agreement on behalf of the party they are stated to represent.</p> <p><b>4.3 Counterparts:</b> This Agreement may be executed in any number of counterparts. All counterparts taken together will constitute the one Agreement.</p> <p><b>4.4 Electronic Signatures:</b> Each party may communicate its execution of this Agreement by successfully transmitting an executed copy of this Agreement by facsimile or email to each other party.</p> |
|--|--|

EXECUTED as an Agreement

SIGNED for and on behalf of [CRC]  
by its authorised officer:

Signature: 

Name: BEN FORRAGE

Date: 2/9/17



SIGNED for and on behalf of UNIVERSITY OF WESTERN AUSTRALIA  
by its authorised officer:

Signature:.....

Name: Christine Casey.....

Date: 22 September 2017.....

Item	Description
1. Other Parties	THE UNIVERSITY OF WESTERN AUSTRALIA ABN 37 882 817 280 of Crawley in the state of Western Australia (UWA).
2. Document	Project Variation Agreement: B2.4 Hydrology and Nutrient Transport (processes in groundwater/surface water systems). Executed 16 September 2016.
3. Effective Date	01 July 2017
4. Variations	<p>The Agreement Variation provides additional funding of \$73,874 for the following activities up to 30 June 2018:</p> <ol style="list-style-type: none"><li>1. Masters Scholarship for the Eric Singleton Wetland project (\$30,000 per annum- Yemaya Smythe McGuinnes commenced 1 August 2017)</li><li>2. 0.1 FTE of Carlos salary for July-Dec 2017 (\$7,500) for supervising Masters students (Fraser Eynon and Yemaya Smythe McGuinnes),</li><li>3. PhD scholarship up to June 2018 (\$36,374) for Benya Wang. Note that this scholarship was mentioned in the Variation 16 September 2016, however the amount was inadvertently omitted from the budget table.</li></ol> <p>Revised expenditure budget is provided in Budget Table below:</p>

#### Budget Table

Information shown here is restricted.



## Variation Agreement Project B2.4

THIS AGREEMENT is made on the 16<sup>th</sup> day of September 2016

THE CRC FOR WATER SENSITIVE CITIES, Building 74, Monash University, Clayton, Victoria, 3800 (CRC)

AND the parties named in Item 1 of the Schedule (Other Parties)

### BACKGROUND:

- A. CRC and the Other Parties entered into the Document named in Item 2 of the Schedule (**Document**).
- B. CRC and the Other Parties wish to vary the Document in accordance with this Agreement.

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|---|--|

EXECUTED as an Agreement

SIGNED for and on behalf of [CRC]  
by its authorised officer:

Signature: [Signature]

Name: Tony Wang

Date: 16/09/16



SIGNED for and on behalf of **THE UNIVERSITY OF WESTERN AUSTRALIA**  
by its authorised officer:

Signature: \_\_\_\_\_

Name: Debra O'Neil

Date: 16/9/16

## SCHEDULE

Item	Description																						
1. Other Parties	THE UNIVERSITY OF WESTERN AUSTRALIA (ABN 37 882 817 280) of Stirling Highway, Crawley, Western Australia																						
2. Document	Project Agreement B2.4 Hydrology and Nutrient Transport																						
3. Effective Date	1Jul16																						
4. Variations	<p>Project Agreement extended to provide for:</p> <ul style="list-style-type: none"> <li>Extension of RF engagement (Carlos Ocampo) for one year at 0.8 FTE</li> <li>Completion of PhD by Benya Wang by Q3 FY1718</li> <li>Provision for Sediment Task Force Research Scholarship externally-funded Masters student (to be recruited) for 2 years commencing as soon as possible after 1Jul16.</li> </ul> <p>Milestones</p> <table> <tr> <td>31 Dec 2016</td><td>Two manuscripts on Tranche 1 research (Ocampo as lead author) submitted to international journals.</td></tr> <tr> <td>31 Oct 2016</td><td>One industry engagement workshop: on Monitoring Protocols and Glade Biofilter.</td></tr> <tr> <td>30 Nov 2016</td><td>Sampling and analysis program and water balance for the Eric Singleton Bird Sanctuary.</td></tr> <tr> <td>31 Mar 2017</td><td>Complete Literature Review of impact of urban in-fill on hydrology of areas with high groundwater.</td></tr> <tr> <td>31 Mar 2017</td><td>Tranche 2 Groundwater Project detailed work plan completed.</td></tr> <tr> <td>30 Jun 2017</td><td>Final Report summarising project achievements</td></tr> </table> <p>Milestones for masters student:</p> <table> <tr> <td>1. Detailed research work plan/proposal</td><td>3 mths</td></tr> <tr> <td>2. Progress report</td><td>6 mths</td></tr> <tr> <td>3. Mid-project progress report</td><td>12 mths</td></tr> <tr> <td>4. Progress report</td><td>18 mths</td></tr> <tr> <td>5. Thesis submitted for examination</td><td>24 mths</td></tr> </table> <p>In kind contributions</p> <ul style="list-style-type: none"> <li>Carolyn Oldham - 0.2 FTE p.a. to 30Jun18</li> </ul>	31 Dec 2016	Two manuscripts on Tranche 1 research (Ocampo as lead author) submitted to international journals.	31 Oct 2016	One industry engagement workshop: on Monitoring Protocols and Glade Biofilter.	30 Nov 2016	Sampling and analysis program and water balance for the Eric Singleton Bird Sanctuary.	31 Mar 2017	Complete Literature Review of impact of urban in-fill on hydrology of areas with high groundwater.	31 Mar 2017	Tranche 2 Groundwater Project detailed work plan completed.	30 Jun 2017	Final Report summarising project achievements	1. Detailed research work plan/proposal	3 mths	2. Progress report	6 mths	3. Mid-project progress report	12 mths	4. Progress report	18 mths	5. Thesis submitted for examination	24 mths
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# Cooperative Research Centre for Water Sensitive Cities



## Project Agreement

Project Number: B2.4

Project Name: Hydrology and nutrient transport processes in  
groundwater/surface water systems

Project Participants:

The University of Western Australia

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An Australian Government Initiative

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## THIS AGREEMENT IS MADE BETWEEN

**CRC FOR WATER SENSITIVE CITIES LTD ABN 19 158 409 137** of Clayton in the state of Victoria (**Company**).

**AND**

**The Project Participants set out in Schedule 1**

## Recitals

- A. The Company is responsible for the governance, management and operation of the Centre.
- B. The Centre's Activities include the conduct of Projects. Projects are grouped into one of four Research Programs, with each Research Program having a designated Program Leader who is responsible for the coordination and conduct of the Research Programs.
- C. The Project Participants are participants in the Centre, under a Participants Agreement.
- D. The Project has been approved by the Board as a Project to be carried out by the Company and the Project Participants as part of the Activities of the Centre.
- E. By signing this Project Agreement, the Parties acknowledge their agreement to carry out the Project in accordance with the following terms.

## PROJECT DETAILS

### 1 Dictionary

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- 1.1 In this Project Agreement, unless the context otherwise requires, the following definitions apply:
  - (a) **BIP Participant** means the Party that has made the relevant Project BIP available to the Project.
  - (b) **Centre** means the Cooperative Research Centre for Water Sensitive Cities.
  - (c) **Centre IP** means the Centre IP arising from the Project.
  - (d) **Contributed Personnel** means the persons identified in Schedule 1 as the personnel who will conduct or be involved in the Project.
  - (e) **Participants Agreement** means either the Essential Participants Agreement or an Other Participant Agreement, entered into by the Company and a participant in the Centre.
  - (f) **Parties** means the Project Participants and the Company and **Party** means any one of them.
  - (g) **Project** means the project set out in Schedule 1.

- (h) **Project BIP** means the Background Intellectual Property of the Parties described in Schedule 1 or that is subsequently made available to the Project under the Participants Agreement.
- (i) **Research Project Proposal** means the proposal for the Project attached as Annexure B.

1.2 Words and phrases used in this Project Agreement that also appear in Schedule 1 [Definitions and Interpretation] of the Participants Agreement, and that are not specifically defined in this Project Agreement, will have the meaning given to those words and phrases in Schedule 1 of the Participants Agreement.

## **2 Paramountcy**

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If there is an inconsistency between this Project Agreement and a Participants Agreement, this Project Agreement will prevail to the extent of that inconsistency.

## **3 Application of Participants Agreement**

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The Project Participants acknowledge and agree that:

- (a) the conduct of the Project forms part of the Centre Activities;
- (b) all the provisions of the Participants Agreement that, expressly or by implication, apply to the conduct of Projects, will with any necessary amendment, be deemed to form part of this Project Agreement; and
- (c) this Project Agreement will be read with and deemed to form part of the Participants Agreement.

## **4 Project**

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In consideration of:

- (a) the payment of the Project Funds to the Project Participants by the Company; and
- (b) the making available of the Project Contributions to the Project by the Parties,

the Parties will conduct the Project in accordance with this Project Agreement and the Participants Agreement.

## **5 Term**

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- 5.1 The Project will commence on the Project Commencement Date and will be completed on the Project Completion Date unless terminated earlier or otherwise agreed by the Parties.
- 5.2 A Project Participant may terminate this Project Agreement upon thirty days written notice to the other Parties, if another Project Participant:
  - (a) abandons the Project; or
  - (b) fails to achieve a Milestone or deliver a Deliverable within 60 days of the time specified in this Project Agreement,and the Project Participant seeking to terminate has fully documented the work that it has completed and for which it has been funded before it gives notice of termination to the other Parties.

## **6 Payment and Project Contributions**

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- 6.1 Each Project Participant must make available to the Project, its Project Contributions in accordance with the Participants Agreement and Schedule 1.
- 6.2 The Company will:
  - (a) pay to the Project Participants the Project Funds; and
  - (b) distribute the Project Contributions,in accordance with the Participants Agreement and Schedule 1.
- 6.3 In addition to its rights under the Participants Agreement, the Company may withhold some or all of the Project Funds and Project Contributions from a Project Participant that has not complied with the Project Agreement or the Participants Agreement in conducting the Project.

## **7 Performance**

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- 7.1 The Responsible Participant must ensure that the Project Leader fulfils the responsibilities and duties set out in Annexure A, in addition to any obligations set out in the Participants Agreement. The Responsible Participant must notify the Company upon becoming aware that the Project Leader is unable or is likely to become unable to fulfil the requirements in Annexure A for the duration of the Project.
- 7.2 In addition to any obligations under the Participants Agreement, each Project Participant must, and must ensure its Contributed Personnel, cooperate with the Project Leader, act in accordance with the Participants Agreement, and carry out its part of the Project to enable the Project to be conducted in accordance with this Project Agreement.

## **8 Meetings**

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- 8.1 The Project Leader must attend the following minimum number of meetings for the duration of the Project and for a period of up to [6] months following the Completion Date, either in person or using technology available to the meeting:
  - (a) two Centre workshops (industry focus) each Financial Year;
  - (b) two Centre workshops (research focus) each Financial Year; and
  - (c) all program meetings relevant to the Research Program to which the Project relates, as scheduled by the relevant Program Leader,provided that the Project Leader has been provided with reasonable prior notice of the meeting.
- 8.2 The Project Leader may be excused from attending a meeting personally if:
  - (a) he or she has notified the CRC Executive of the reasons why they cannot attend, and suggested a nominee to attend in his or her place; and
  - (b) the CRC Executive consents to the nominee attending in the Project Leader's place.If consent is provided and the nominee attends the meeting, the Project Leader will be deemed to have attended the meeting for the purposes of clause 8.1.
- 8.3 The Centre may vary the number and timing of workshops specified under clause 8.1(a) or (b) by notice to the Project Leader.

## **9 Reporting**

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- 9.1 In addition to its obligations under the Participants Agreement, the Responsible Participant must report, or ensure that the Project Leader reports:
- (a) as required by Item 10 of the Research Project Proposal;
  - (b) to the Company when requested, in the Approved Form notified by the Company from time to time;
  - (c) to the Program Leader of the Research Program for the Project, in relation to any issues adversely affecting or likely to adversely affect the Project (including any matter that the Project Leader considers will, or may, affect the ability of the Project to satisfy the Milestones or deliver the Deliverables, or to be completed within the Project Budget) as soon as practicable after that matter or issue comes to the attention of the Project Leader; and
  - (d) to the CRC Executive or Research Advisory Sub-Committee when requested.
- 9.2 The Quarterly reports required under Clause 21 of the Essential Participants Agreement must also contain a summary of the research progress made and expenditure of cash and in-kind contributions for the Project.
- 9.3 If requested by the CRC Executive or CRC Advisory Committee, the Project Participants must provide the CRC Executive or CRC Advisory Committee with any information reasonably requested in relation to the Project.

## **10 Milestones and Deliverables**

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- 10.1 Subject to this clause, the Milestones must be achieved, and the Deliverables must be delivered to the Company at the times specified in this Project Agreement.
- 10.2 A Project Participant is not required to achieve Milestones or deliver Deliverables to the extent that its failure to do so is attributable to the acts or omissions of other Project Participants or circumstances beyond its reasonable control.

## **11 Project Review**

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- 11.1 The Project will be reviewed by the CRC Executive and Research Advisory Sub-Committee in accordance with the Participants Agreement.
- 11.2 The Board may, on the recommendation of the CRC Executive or otherwise:
- (a) implement variations to the Project; or
  - (b) terminate the Project, if following a review, the Board reasonably forms the view that the Project will not achieve its objectives,
- provided the Board acts in accordance with the Participants Agreement.

## **12 Intellectual Property**

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- 12.1 Each BIP Participant makes available its Project BIP to the Project in accordance with the Participants Agreement.
- 12.2 All Centre IP will be owned by the Company. Each Project Participant will do all things reasonably necessary, including the signing of documentation, to vest the Centre IP in the Company.

- 12.3 Each Project Participant will on request from the Company provide the Company with information in relation to the Centre IP created by its personnel.

### **13 Contributed Personnel**

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- 13.1 Each Project Participant will make available its Contributed Personnel to conduct the Project in accordance with Schedule 1.
- 13.2 Subject to this clause, the Contributed Personnel of Project Participants remain subject to the terms and conditions of employment under which they are employed by Project Participants.
- 13.3 Each Project Participant will:
- (a) take all reasonably practical steps to ensure that any working environment where:
    - (i) its Contributed Personnel work; or
    - (ii) the Project is conducted, is safe and without risk; and
  - (b) be responsible for the health and safety of:
    - (i) its Contributed Personnel at all times when they are at work; and
    - (ii) all other persons whose health or safety may be adversely affected by the conduct of the Contributed Personnel's actions.
- 13.4 Each Project Participant covenants and undertakes to procure that Centre IP created by any of its Contributed Personnel will be owned and dealt with according to this Project Agreement.



### **14 Commonwealth Obligations**

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The Parties acknowledge and agree that at any reasonable time any person designated by the Commonwealth Cooperative Research Centre Program may view the progress of the Project and that the Parties will give all assistance reasonably requested by such designated person.

Executed as an Agreement

EXECUTED by CRC FOR WATER  
SENSITIVE CITIES LTD ABN 19  
158 409 137 by its duly authorised  
signatory

)  
)  
)  GEO/COO  
)  
) ROBYN MCLACHLAN Print full Name  
)  
)  Witness  
)  
) RACHELLE ADAMOWICZ Print Full Name  
)  
) 6th March 2013 Date



## SCHEDULE 1 PROJECT DETAILS

<b>Project Title</b>	Item 1 of the Research Project Proposal.	
<b>Research Program</b> (Recital B)	Item 4 of the Research Project Proposal.	
<b>Project Parties</b>	The Company Name: Professor Tony Wong Position: Chief Executive Officer Address: P.O.Box 8000, Monash University LPO, Clayton Campus VIC 3800 Telephone: +61 (0) 3 9905 9717 Email: <a href="mailto:tony.wong@crcwsc.org.au">tony.wong@crcwsc.org.au</a>	
	The University of Western Australia Name: Dr Campbell Thomson Position: Director, Research Services Address: Registrar's Office, The University of Western Australia, 35 Stirling Highway, Crawley, WA 6009 Telephone: +61 (0) 8 6488 3027 Email: <a href="mailto:campbell.thomson@uwa.edu.au">campbell.thomson@uwa.edu.au</a>	
<b>Responsible Participant</b> (clause 9)	Item 7 of the Research Project Proposal.	
<b>Contributed Personnel</b> (clause 13)	Item 11 of the Research Project Proposal.	
<b>Project Funds</b> (clause 4 and 6)	See Annexure C. As per EPA	
<b>Project Contributions</b> (clause 4 and 6)	See Annexure C.	
<b>Background IP</b> (clause 12)	None	
<b>Project Plan</b>	<i>Project Leader</i> (clauses 8 and 9)	Item 7 of the Research Project Proposal.
	<i>Project Commencement Date</i> (clause 5)	Item 2 of the Research Project Proposal.
	<i>Project Completion Date</i> (clause 5)	Item 2 of the Research Project Proposal.

	<i>Project Objectives</i>	Items 3 and 8 of the Research Project Proposal
	<i>Proposed strategy</i>	Item 9 of the Research Project Proposal.
	<i>Milestones</i> (clause 10)	Item 10 of the Research Project Proposal.
	<i>Deliverables</i> (clause 10)	Item 10 of the Research Project Proposal.
	<i>Project Budget</i>	Item 11 of the Research Project Proposal.
	<i>Third party contributions</i>	Item 11 of the Research Project Proposal.
	<i>Resources</i>	Item 11 of the Research Project Proposal.
	<i>Student requirements</i>	Item 11 of the Research Project Proposal.
	<i>New Assets or Capital Items</i>	Item 11 of the Research Project Proposal.
	<i>Analysis of Project risk</i>	Item 12 of the Research Project Proposal.
	<i>Analysis of Utilisation of Project outcomes</i>	Items 13 & 14 of the Research project proposal

## **ANNEXURE A PROJECT LEADER RESPONSIBILITIES**

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Project Leaders have responsibility for and must fulfil the following duties in relation to the Project:

- (a) Supervision of Project Activities in accordance with the Research Project Proposal.
- (b) Managing the utilisation of Contributions provided by the Company and Project Participants and any other resources made available for the Project Activities.
- (c) Ensuring the quality and timely delivery of Project Deliverables according to Milestones.
- (d) Actively fostering and facilitating the research collaboration amongst Project Participants.
- (e) Fostering integration of research outputs and insights across the Research Program and supporting the relevant Program Leader(s) in integrating research outputs across the Research Programs in the Centre.
- (f) Identifying and effectively managing and mitigating Project risk and raising any risk or performance issues concerning the Project in a timely manner with the Program Leader.
- (g) Attendance and active participation in Centre industry partner and research workshops.
- (h) Preparation of timely quarterly reports to the CRC Executive (suitable to be shown to the Board) on Project progress and Project Budget expenditures.
- (i) Identifying any Centre IP developed within the Project, maintaining proper records of the Centre IP developed and its use within the Project and notifying the Program Leader of such Centre IP and any potential future use of Centre IP within the Centre.

## RESEARCH PROJECT PROPOSAL

*(max. 10 pages – excluding References)*

### Summary Details

**1. Title of research project proposal:** *(Project Number/Project Title – max. 20 words)*

Project B2.4 Hydrology and nutrient transport processes in groundwater/surface water systems

**2. Proposed Project Commencement Date:** *(month/year): July 2012*

**Project Duration (years):** 4

**3. Project Abstract:** *(Objectives, Outputs and Outcomes)*

In many urban regions of Australia, groundwater – surface water interactions strongly impact on urban hydrology, contaminant flow pathways and transformation, and the effectiveness of water sensitive urban design.

This project aims to define hydrological responses to the urbanization of areas where groundwater - surface water interactions are pronounced, including those areas with high or perched groundwater tables and to define the impact of changing hydrological regimes on the fate and transport of nutrients in areas with significant groundwater - surface water interactions;

The primary outcome of this project will be an improved understanding of urban hydrology and contaminant flow pathways, which will inform water sensitive urban design and improve the management of shallow groundwater in the urban environment.

All outputs relate to areas with significant groundwater – surface water interactions and include water and nutrient mass balances for urban catchments, a meta analysis of existing urban water monitoring datasets from the Swan Coastal Plain, an identification of urban water data gaps, a protocol for urban water monitoring, and practitioner knowledge transfer workshops in WA. The knowledge generated from this system will be assessed for transferability to other urban settings (Melbourne and Brisbane).

**4. Number and name of CRC research program**

<input type="checkbox"/> Program A – Society	<input checked="" type="checkbox"/> Program B – Water Sensitive Urbanism
<input type="checkbox"/> Program C – Future Technologies	<input type="checkbox"/> Program D – Adoption Pathways

**5. ANZSRC Field of Research (FoR) classification**

090509 Water Resources Engineering

**6. Keywords:** (max 6)

Urban hydrology	Contaminant fate and transport	Water sensitive urban design
Groundwater surface water interactions	Urban water monitoring	Water balance

**7. Project Leader(s)**

**Name:** Professor Carolyn Oldham

**Institution:** The University of Western Australia

**Department:** School of Environmental Systems Engineering

**Research Proposal****8. Objectives and background****Objectives**

This project aims to:

- a) Define hydrological responses to the urbanization of areas where groundwater - surface water interactions are pronounced, including those areas with high or perched groundwater tables;
- b) Define the impact of changing hydrological regimes on the fate and transport of nutrients in areas with significant groundwater - surface water interactions; and
- c) Use this improved understanding to inform water sensitive urban design and how to best manage shallow groundwater in the urban environment.

The specific objectives are

1. Define eco-hydrological typologies across Swan Coastal Plain as a model for groundwater dominated systems.
2. Define hydrological regimes and develop water balances to quantify the impact of urbanisation on eco-hydrology as a function of physical setting, land use and stormwater management.
3. Develop mass balances of specific pollutant pathways and transformations and conceptualize how these change with urbanization.
4. Identify key monitoring sites (for mapping of a) urban hydrology, b) nutrient pathways and c) BMP performance) across the different ecohydrological typologies.
5. Collate data and conduct meta-analysis to identify data gaps to facilitate the development of future monitoring programs.
6. Establish working relationships with monitoring agencies/bodies to facilitate testing of models against data.
7. Develop a protocol for urban water monitoring in areas of significant groundwater – surface water interactions, covering both pre – and post-development scenarios.
8. Assess the transferability of results to other urban settings in Australia.

#### **9. Research plan** *(methods, timelines and outputs – do not include annual workplans)*

The research program requires strong links to industry for both knowledge transfer and to ensure relevant data are located. This link will be consolidated by the establishment of a project reference group. This group will oversee related Project B2.1. This group will be established prior to the appointment of the post doctoral research staff (December 2012). Following the appointment of the CRC post-doctoral fellow (July 2013), data secured by the project reference group will be analysed and ecohydrological typologies defined (July 2014). The output will be a classification and a series of maps to show how typologies are distributed in urban landscapes (July 2014). Available data from the Swan Coastal Plain will be used to develop semi-quantitative water balance models (December 2014) (Hamilton and Oldham 2001). Where key knowledge gaps exist, identify suitable monitoring sites to further develop the models (July 2015) particularly the nature of surface-groundwater linkages (Ocampo, C.J.,

Sivapalan, M., Oldham, C.E. 2006). Following the development of semi-quantitative water models, initial nutrient budgets will be developed (see Loveless and Oldham 2009) (December 2015).

#### **10. Project Deliverables and Milestones** *(list quarterly, half-year or annual milestones as appropriate)*

Project Deliverables	Milestone dates
1. Project stakeholder group established.	Dec 2012
2. Initiate discussions with stakeholders to increase project operational budget.	Dec 2012
3 Post-doctoral researcher appointed and in place	July 2013

Project Deliverables	Milestone dates
4. Literature review completed, on urbanization in areas with significant groundwater – surface water interactions.	Dec 2013
5. Ecohydrological typologies defined.	July 2014
6. Knowledge transfer workshop with practitioners completed.	July 2014
7. Water balances established for areas with strong groundwater – surface water interactions.	Dec 2014
8. Key monitoring sites identified and liaison established with monitoring bodies.	July 2015
9. Framework for meta-analysis of monitoring data established.	July 2015
10. Knowledge transfer workshop with practitioners completed.	July 2015
11. Draft nutrient budgets developed for areas with strong groundwater – surface water interactions.	Dec 2015
12. Existing data gaps identified.	July 2016
13. Protocol for pre- and post-development monitoring developed.	July 2016
14. Knowledge transfer workshop with practitioners completed.	July 2016

**11. Resources** *(include anticipated annual cash and in-kind budget over the duration of the project)*

See budget breakdown in the last page

**12. Risk and Risk Management** *(identify risks to the successful completion of the project and risk management measures adopted)*

Risk	Management Measures
Unavailability of post doctoral research fellow with necessary expertise and skills	Proactive recruitment strategy with personal approaches
Loss of key staff	Broad understanding of project focus and deliverables amongst all researchers
Floods and droughts	These may represent opportunities to address specific research questions related to greatly changed hydrology.

## Adoption Pathways

### **13. Linkages to other Projects** *(linkages to other research activities within the Program and across other Programs within the CRC)*

By providing fundamental hydrological information, Project B2.4 will have links to Project A1, Project A21, Project B1, Project B2, Projects B3, B5a/b and B6.

### **14. Linkages to Adoption Pathways activities** *(outline possible adoption pathways activities to disseminate and encourage industry adoption of project outputs.*

Project reference groups established in Perth, Melbourne and Brisbane (for the initial conceptual model development). These PRGs will liaise with the Project B researchers to provide advice about the demonstration sites (issues/sites/management). These demonstration sites will provide a clear link to adoption. These reference groups will address Project B2.1, 2.2 and 2.4 to ensure integration.

## References

### **15. References**

Hamilton, D.P., Oldham, C.E. 2001, 'Integration of ecology and engineering in the aquatic environment', *Ecological Engineering*, 16, 3, pp. 319-433.

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