

# **Business Papers**

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## **Environment & Infrastructure Committee Meeting**

Tuesday, 22 November 2016  
5:00pm



# Notice of Meeting

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To the Lord Mayor and Aldermen

You are invited to attend a Environment & Infrastructure Committee Meeting to be held in the Council Chambers, Level 1, Civic Centre, Harry Chan Avenue, Darwin, on Tuesday, 22 November 2016, commencing at 5.00 pm.

**MARK BLACKBURN**  
**ACTING CHIEF EXECUTIVE OFFICER**

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Removed from Public Notice Board: \_\_\_\_\_

# OPEN SECTION

E&I11/1

## CITY OF DARWIN

### ENVIRONMENT & INFRASTRUCTURE COMMITTEE

**TUESDAY, 22 NOVEMBER 2016**

MEMBERS: Member G A Lambert (Chair); The Right Worshipful, The Lord Mayor, Katrina Fong Lim; Member R K Elix; Member R Want de Rowe; Member E L Young.

OFFICERS: Chief Executive Officer, Mr B Dowd; General Manager Infrastructure, Mr L Cercarelli; Executive Manager, Mr M Blackburn; Manager Technical Services, Mrs N Nilon; Manager Design, Planning & Projects, Mr D Lelekis; Manager Infrastructure Maintenance, Mr K Smith; Manager Climate Change & Environment, Ms B Rankmore; Committee Administrator, Mrs P Hart.

**Enquiries and/or Apologies: Penny Hart**

**E-mail: [a.smit@darwin.nt.gov.au](mailto:a.smit@darwin.nt.gov.au) - PH: 89300 685**

**OR Phone Committee Room 1, for Late Apologies - PH: 89300 519**

### ***Committee's Responsibilities***

- |                                   |  |
|-----------------------------------|--|
| • Asset Management                | • Infrastructure Projects                  |
| • Building Services               | • Infrastructure Maintenance               |
| • Cemeteries                      | • Design                                   |
| • Mosquito control                | • Planning                                 |
| • Operations                      | • Road Construction and Traffic Management |
| • Parks & Reserves                | • Urban Enhancement                        |
| • Pathways                        | • Climate Change and Environment           |
| • Road maintenance                | • Waste Management                         |
| • Sporting Areas                  | • Outdoor Dining                           |
| • Stormwater Drainage Maintenance | • Signage                                  |
| • Street Cleaning                 |  |
| • Urban Forest Management         |  |

*THAT effective as of 16 April 2012 Council, pursuant to Section 32 (2)(b) of the Local Government Act 2008, hereby delegates to the Environment & Infrastructure Committee the power to make recommendations to Council and decisions relating to Environment & Infrastructure matters within the approved budget.*

# OPEN SECTION

E&amp;I11/2

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# OPEN SECTION

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# OPEN SECTION

E&I11/4

## Environment & Infrastructure Committee Meeting – Tuesday, 22 November 2016

### 1. MEETING DECLARED OPEN

### 2. APOLOGIES AND LEAVE OF ABSENCE

Common No. 2695036

#### 2.1 Apologies

#### 2.2 Leave of Absence Granted

- A. THAT it be noted Member G A Lambert is an apology due to a Leave of Absence previously granted on 16 August 2016 for the period 20 November 2016 to 7 December 2016.
- B. THAT it be noted Member R Want de Rowe is an apology due to a Leave of Absence previously granted on 25 October 2016 for the period 18 to 28 November 2016.

### 3. ELECTRONIC MEETING ATTENDANCE

### 4. DECLARATION OF INTEREST OF MEMBERS AND STAFF

Common No. 2752228

#### 4.1 Declaration of Interest by Members

#### 4.2 Declaration of Interest by Staff

### 5. CONFIDENTIAL ITEMS

# OPEN SECTION

E&I11/5

## Environment & Infrastructure Committee Meeting – Tuesday, 22 November 2016

### **6. WITHDRAWAL OF ITEMS FOR DISCUSSION**

THAT the Committee resolve under delegated authority that all Information Items and Officers Reports to the Environment & Infrastructure Committee Meeting held on Tuesday, 22 November 2016 be received and considered individually.

### **7. CONFIRMATION OF MINUTES PERTAINING TO THE PREVIOUS ENVIRONMENT & INFRASTRUCTURE COMMITTEE MEETING**

THAT the Committee resolve that the minutes of the previous Environment & Infrastructure Committee Meeting held on Tuesday, 18 October 2016, tabled by the Chair, be received and confirmed as a true and correct record of the proceedings of that meeting.

### **8. BUSINESS ARISING FROM THE MINUTES PERTAINING TO THE PREVIOUS ENVIRONMENT & INFRASTRUCTURE COMMITTEE MEETING**

#### **8.1 Business Arising**

### **9. DEPUTATIONS AND BRIEFINGS**

# OPEN SECTION

E&I11/6

Environment & Infrastructure Committee Meeting – Tuesday, 22 November 2016

## 10.1 OFFICERS REPORTS (ACTION REQUIRED)





<b>ENCL:</b> <b>YES</b>	<b>ENVIRONMENT &amp; INFRASTRUCTURE COMMITTEE/OPEN</b>	<b>AGENDA ITEM:</b> 10.1.1
<b>DARWIN BIKE PLAN - REVISED IMPLEMENTATION PLAN 2016-2021</b>		
<b>REPORT No.: 16TS0156 PH:lf</b>	<b>COMMON No.: 3184808</b>	<b>DATE: 22/11/2016</b>

**Presenter:** Manager Design Planning & Projects, Drosso Lelekis

**Approved:** General Manager Infrastructure, Luccio Cercarelli

### **PURPOSE**

The purpose of this report is to provide Council with an updated Darwin Bike Plan Implementation Plan 2016 – 2021 for endorsement.

### **LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

#### **Goal**

2 Vibrant, Flexible and Tropical Lifestyle

#### **Outcome**

2.1 Improved access and connectivity

#### **Key Strategies**

2.1.1 Improve the pathway and cycle networks and encourage cycling and walking

### **KEY ISSUES**

- Council adopted a revised Darwin Bike Plan Implementation Plan 2016 – 2021 (Implementation Plan) in May 2016.
- There have been changes to programs and works that will have an impact on the Darwin Bike Plan - Implementation Plan, being:
  - The Smith Street/Daly Street signalised intersection project deferral, and
  - 2015/2016 Shared Paths Program budget carry forward.
- The Implementation Plan has been amended to reflect these changes.

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 REPORT NUMBER: 16TS0156 PH:lf  
 SUBJECT: DARWIN BIKE PLAN – REVISED IMPLEMENTATION PLAN 2016 - 2021

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## **RECOMMENDATIONS**

THAT it be a recommendation to Council:-

- A. THAT Report Number 16TS0156 PH:lf entitled Darwin Bike Plan - Revised Implementation Plan 2016 – 2021, be received and noted.
- B. THAT Council adopt the revised five year Darwin Bike Plan - Implementation Plan provided at **Attachment A** to Report Number 16TS0156 PH:lf entitled Darwin Bike Plan – Review of Implementation Plan 2016 – 2021 and review the Implementation Plan annually as part of Council's budget deliberations.

## **BACKGROUND**

At the Ordinary Council Meeting of 31 May 2016, Council endorsed a revised Darwin Bike Plan - Implementation Plan 2016-2021.

At the Ordinary Council Meeting of 14 June 2016, Council resolved to defer the upgrade of the Smith Street/Daly Street intersection to traffic signals, which will be subject to a separate report. The impact of this on the Bike Plan is the upgrade included on-road protected cycle lanes that were scheduled to occur this financial year.

There is a carry forward amount from the 2015/2016 shared path of approximately \$148,488. The breakdown of this amount is \$108,791 for the Infrastructure Projects component and \$39,697 for the Education, Encouragement and Evaluation Initiatives component of the Implementation Plan.

The Implementation Plan has been updated to reflect the changes described and is included for Council's endorsement at **Attachment A** to this report.

## **DISCUSSION**

The deferral of the Smith Street/Daly Street signalised intersection project and the carry forward from the 2015/2016 Shared Paths Program budget has been incorporated into the updated Implementation Plan (**Attachment A**).

There have been several changes to the Infrastructure Projects component of the Implementation Plan over the five year program which includes an increased allocation in the proposed Year 1, being this current financial year. These are summarised in a table at **Attachment B** to this report.

The changes have been determined based on the existing plans and updated condition information. This has included increasing funding in Year 1 for the Dick Ward Drive maintenance program and including funding for the implementation of the priority findings of hot spot investigations on Ross Smith Avenue.

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 SUBJECT: DARWIN BIKE PLAN – REVISED IMPLEMENTATION PLAN 2016 - 2021

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The Sabine Road project that was in Year 2 has been brought forward to Year 1 as it is a key route identified to allow a further part of the municipality to be within 400 metres of a cycling facility, a school route and also aligns with the adopted Northern Territory Planning Commission's Darwin Mid Suburbs Area Plan. The remaining years have been brought forward and budgets reallocated with similar consideration, including updated external works programs, and will be subject to an annual review.

There are no changes to the scope and allocations to the complementary facilities component within the Implementation Plan.

There are amendments to Year 1 of the Education, Encouragement and Evaluation Initiatives component within the Implementation Plan with an increased allocation, also summarised in **Attachment B**.

It is recommended that Council endorse the revised Implementation Plan provided at **Attachment A** to this report and continue to review the Implementation Plan annually as part of Council's budget deliberations.

### **CONSULTATION PROCESS**

In preparing this report, the following City of Darwin officers were consulted:

- Civil Engineering Officer
- Manager – Climate Change & Environment
- Manager – Recreation, Events & Customer Service
- Recreation & Healthy Lifestyles Coordinator
- Senior Climate Change & Environmental Officer
- Assets Officer

### **POLICY IMPLICATIONS**

Nil

### **BUDGET AND RESOURCE IMPLICATIONS**

The total revised budget for Year 1 of the proposed Implementation Plan has increased from \$560,865 to \$709,353 to reflect the addition of the \$148,488 in carry forward funding from the 2015/2016 Shared Paths Program budget.

The total values of Years 2 to 5 (inclusive) budgets have not changed and reflect the current Long Term Capital Works Plan allocations.

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### **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

The safety of bicycle riders travelling along routes within the municipality is improved through the provision of on and off-road cycling facilities. The increased safety and connectivity of the cycle network promotes cycling as an alternative and viable mode of transport.

A condition survey along Dick Ward Drive has identified a larger portion of the shared path as being in poor condition and requiring renewal.

### **ENVIRONMENTAL IMPLICATIONS**

Supporting alternative modes of transport to the motor vehicle, such as cycling, would have positive environmental implications.

Continuous improvement to the City of Darwin's shared path network provides improved access and connectivity for the community.

### **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**DROSSO LELEKIS**  
**MANAGER DESIGN PLANNING &**  
**PROJECTS**

**LUCCIO CERCARELLI**  
**GENERAL MANAGER**  
**INFRASTRUCTURE**

For enquiries, please contact Drosso Lelekis on 8930 0414 or email:  
 d.lelekis@darwin.nt.gov.au.

### **Attachments:**

**Attachment A:** Proposed Darwin Bike Plan Implementation Plan 2016 – 2021  
**Attachment B:** Summary of Changes

## DARWIN BIKE PLAN 2016 - 2021 IMPLEMENTATION PLAN

**YEAR 1**                      **2016/2017**

**LTCWP Allocation**                      **\$ 709,353**

### Infrastructure Projects

Project	Details	Construction Cost
Sabine Road	McMillans Road to Trower Road Remove existing footpath on western side and replace with 2.5m wide shared path	\$ 350,000
Ross Smith Avenue Crash Hot Spot	Dick Ward Drive to East Point Road. Investigation, concept design and cost estimate development and implementation of priority actions.	\$ 89,656
Progress Drive / Dick Ward Drive Crash Hot Spot	Concept design and cost estimate development for further consideration and programming	\$ 20,000
Dick Ward Drive	Orchard Road to Ostermann Street Remove and replace existing Shared Path	\$ 140,000
<b>Total</b>		<b>\$ 599,656</b>

### Complementary Facilities

	Lead Agency/Partners	Estimated Facility Cost	Estimated Installation		Indicative Order of Costs
Bike Racks					
Minimum 20 new bike racks - approximately 20 bike parking spaces	City of Darwin and local organisations	\$500	\$500	\$1,000 per rack	\$ 20,000
Wayfinding and Signage Implementation (including Share the Path messages)					\$ 15,000
<b>Total</b>					<b>\$ 35,000</b>

### Education, Encouragement and Evaluation Initiatives

		Lead Agency/Partners	Indicative Contribution from City of Darwin
Share the Road	Campaign Delivery	Northern Territory Government/City of Darwin	\$ 46,697
Ride to the Markets	Campaign Delivery	City of Darwin, Bicycle Groups and Market Organisers	\$ 10,000
Ride to Work Day Activities/Breakfast	Ongoing (existing budget)	City of Darwin/Northern Territory Government and partners such as Bicycle Network	Existing Budget
Encouragement Initiatives	Promotional Budget	City of Darwin	\$ 10,000
Rider Surveys	Super Tuesday/Sunday	City of Darwin	\$ 8,000
<b>Total</b>			<b>\$ 74,697</b>

## DARWIN BIKE PLAN 2016 - 2021 IMPLEMENTATION PLAN

**YEAR 2**                                      **2017/2018**

**LTCWP Allocation**                      \$     **569,278**

### Infrastructure Projects

Project	Details	Construction Cost
Dinah Beach Road (Stage 1)	Construction of a shared path from Tiger Brennan Drive to Stuart Highway	\$        149,278
Parer Drive	Trower Road to Lee Point Road Remove existing footpath on southern side and replace with 2.5m wide shared path	\$        350,000
<b>Total</b>		<b>\$        499,278</b>

### Complementary Facilities

	Lead Agency/Partners	Estimated Facility Cost	Estimated Installation	Indicative Order of Costs
Wayfinding and Signage Implementation (including Share the Path messages)				\$        15,000
<b>Total</b>				<b>\$        15,000</b>

### Education, Encouragement and Evaluation Initiatives

		Lead Agency/Partners	Indicative Contribution from City of Darwin
"Ride Darwin Bikefest" Event (possibly coordinated with Gran Fondo)	Concept Development and Delivery	City of Darwin/Northern Territory Government and a range of stakeholders	\$        20,000
Share the Road	Campaign Delivery	Northern Territory Government/City of Darwin	\$        10,000
Ride to the Markets	Campaign Delivery	City of Darwin, Bicycle Groups and Market Organisers	\$        10,000
Ride to Work Day Activities/Breakfast	Ongoing (existing budget)	City of Darwin/Northern Territory Government and	Existing Budget
Encouragement Initiatives	Promotional Budget	City of Darwin	\$        7,500
Rider Surveys	Super Tuesday/Sunday	City of Darwin	\$        7,500
<b>Total</b>			<b>\$        55,000</b>

## DARWIN BIKE PLAN 2016 - 2021 IMPLEMENTATION PLAN

**YEAR 3**                                      **2018/2019**

**LTCWP Allocation**                      \$     **577,817**

### Infrastructure Projects

Project	Details	Construction Cost
Dinah Beach Road (Stage 2)	Construction of a shared path from Tiger Brennan Drive to Stuart Highway	\$            250,000
East Point Shared Path	Path upgrade to address issues identified during audit	\$            48,000
Daly Street (Stage 1)	Provide on-road cycle lanes and improve connectivity for using off-road space	\$            229,817
<b>Total</b>		<b>\$            527,817</b>

### Complementary Facilities

	Lead Agency/Partners	Estimated Facility Cost	Estimated Installation	Indicative Order of Costs
Wayfinding and Signage Implementation (including Share the Path messages)				\$            15,000
<b>Total</b>				<b>\$            15,000</b>

### Education, Encouragement and Evaluation Initiatives

		Lead Agency/Partners	Indicative Contribution from City of Darwin
Share the Road	Campaign Delivery	Northern Territory Government/City of Darwin	\$            10,000
Ride to the Markets	Campaign Delivery	City of Darwin, Bicycle Groups and Market Organisers	\$            10,000
Ride to Work Day Activities/Breakfast	Ongoing (existing budget)	City of Darwin/Northern Territory Government and partners such as Bicycle Network	Existing Budget
Encouragement Initiatives	Promotional Budget	City of Darwin	\$            7,500
Rider Surveys	Super Tuesday/Sunday	City of Darwin	\$            7,500
<b>Total</b>			<b>\$            35,000</b>

## DARWIN BIKE PLAN 2016 - 2021 IMPLEMENTATION PLAN

**YEAR 4** **2019/2020**

**LTCWP Allocation** **\$ 586,484**

### Infrastructure Projects

Project	Details	Construction Cost
Daly Street (Stage 2)	Provide on-road cycle lanes and improve connectivity for using off-road space	\$ 511,484
<b>Total</b>		<b>\$ 511,484</b>

### Complementary Facilities

	Lead Agency/Partners	Estimated Facility Cost	Estimated Installation	Indicative Order of Costs
Wayfinding and Signage Implementation (including Share the Path messages)				\$ 20,000
<b>Total</b>				<b>\$ 20,000</b>

### Education, Encouragement and Evaluation Initiatives

		Lead Agency/Partners	Indicative Contribution from City of Darwin
"Ride Darwin Bikefest" Event (possibly coordinated with Gran Fondo)	Concept Development and Delivery	City of Darwin/Northern Territory Government and a range of stakeholders	\$ 20,000
Share the Road	Campaign Delivery	Northern Territory Government/City of Darwin	\$ 10,000
Ride to the Markets	Campaign Delivery	City of Darwin, Bicycle Groups and Market Organisers	\$ 10,000
Ride to Work Day Activities/Breakfast	Ongoing (existing budget)	City of Darwin/Northern Territory Government and partners such as Bicycle Network	Existing Budget
Encouragement Initiatives	Promotional Budget	City of Darwin	\$ 7,500
Rider Surveys	Super Tuesday/Sunday	City of Darwin	\$ 7,500
<b>Total</b>			<b>\$ 55,000</b>



## DARWIN BIKE PLAN 2016 - 2021 IMPLEMENTATION PLAN

**YEAR 5** **2020/2021**

**LTCWP Allocation** **\$ 595,282**

### Infrastructure Projects

Project	Details	Construction Cost
Daly Street (Stage 3)	Provide on-road cycle lanes and improve connectivity for using off-road space	\$ 520,282
<b>Total</b>		<b>\$ 520,282</b>

### Complementary Facilities

	Lead Agency/Partners	Estimated Facility Cost	Estimated Installation	Indicative Order of Costs
Wayfinding and Signage Implementation (including Share the Path messages)				\$ 30,000
<b>Total</b>				<b>\$ 30,000</b>

### Education, Encouragement and Evaluation Initiatives

		Lead Agency/Partners	Indicative Contribution from City of Darwin
"Ride Darwin Bikefest" Event (possibly coordinated with Gran Fondo)	Concept Development and Delivery	City of Darwin/Northern Territory Government and a range of stakeholders	\$ 20,000
Share the Road	Campaign Delivery	Northern Territory Government/City of Darwin	\$ 12,500
Ride to the Markets	Campaign Delivery	City of Darwin, Bicycle Groups and Market Organisers	\$ 12,500
Ride to Work Day Activities/Breakfast	Supplementary Funding to Existing CoD Budget	City of Darwin/Northern Territory Government and partners such as Bicycle Network	\$ 5,000
Encouragement Initiatives	Promotional Budget	City of Darwin	\$ 12,500
Rider Surveys	Super Tuesday/Sunday	City of Darwin	\$ 7,500
<b>Total</b>			<b>\$ 45,000</b>

**Darwin Bike Plan Implementation Plan**  
**Summary of Changes**  
**Infrastructure Component – All years**  
**Education, Encouragement and Evaluation Initiatives Component – Year 1 only**

Original Project	Original Allocation	Revised Project	Revised Allocation	Summary of Changes
<b>Year 1 – 2016/17</b>				
<b>Infrastructure Component</b>				
Daly Street (Stage 1) – Provision of protected cycle lanes at the new signalised Smith Street / Daly Street intersection	\$387,000			<ul style="list-style-type: none"> <li>The installation of signals at the intersection has been deferred hence the installation of protected cycle lanes has also been deferred.</li> </ul>
Ross Smith Avenue Crash Hot Spots – Dick Ward Drive to East Point Road – Investigation concept design and estimate development	\$60,000	Ross Smith Avenue Crash Hot Spots – Dick Ward Drive to East Point Road – Investigation concept design and estimate development and implementation of priority actions	\$89,656	<ul style="list-style-type: none"> <li>Scope has been expanded and cost increased to allow for the implementation of priority items identified in the investigation.</li> </ul>
Progress Drive / Dick Ward Drive Crash Hot Spot – Concept design and cost estimate development for further consideration and programming	\$20,000	Progress Drive / Dick Ward Drive Crash Hot Spot – Concept design and cost estimate development for further consideration and programming	\$20,000	<ul style="list-style-type: none"> <li>No change.</li> </ul>
Dick Ward Drive Stage 1 – Path Renewal	\$23,865	Dick Ward Drive – Path Renewal	\$140,000	<ul style="list-style-type: none"> <li>Scope extended and cost increased to reflect findings of City of Darwin's recent asset condition survey.</li> <li>Works involve the removal and replacement of asphalt shared path and also seven driveways.</li> </ul>

Original Project	Original Allocation	Revised Project	Revised Allocation	Summary of Changes
				<ul style="list-style-type: none"> <li>Extent of works is 50m north of Ostermann Street to Orchard Road.</li> </ul>
		Sabine Road – McMillans Road to Trower Road – replacement of existing footpath on western side of road with new 2.5m wide shared path	\$350,000	<ul style="list-style-type: none"> <li>Year 2 project brought forward and scope expanded to extend full length of road (as opposed to only being from Trower Road to Tong Luck Street).</li> <li>Includes the replacement of 19 driveways.</li> <li>Addresses a gap identified in Figure 1-2 of Appendix E of the “Pedalling at the Top – Bicycle Baseline Report” and allows a further area of the municipality to be within 100m of a bicycle facility.</li> <li>Provides connectivity to a school in the area.</li> <li>Aligns with the link identified in the NT Planning Commission’s Darwin Mid Suburbs Area Plan.</li> </ul>
<b>Year 1 Totals</b>	<b>\$490,865</b>		<b>\$599,656</b>	
<b>Education, Encouragement and Evaluation Initiatives Component</b>				
Share the Road / Share the Path	\$10,000	Campaign Delivery	\$46,697	<ul style="list-style-type: none"> <li>Increase in funding to allow for development of additional media material, promotional time on television, bus back advertising, social media, etc.</li> </ul>
Ride to the Markets	\$10,000	Campaign Delivery	\$10,000	<ul style="list-style-type: none"> <li>No change</li> </ul>
Ride to Work Day Activities / Breakfast	Existing Budget	Ongoing (Existing Budget)	Existing Budget	<ul style="list-style-type: none"> <li>No change [completed October 2016]</li> </ul>
Encouragement Initiatives	\$7,500	Promotional Budget	\$10,000	Increase in budget to include: <ul style="list-style-type: none"> <li>Adult Learn to Ride &amp; Bike With Confidence</li> </ul>

Original Project	Original Allocation	Revised Project	Revised Allocation	Summary of Changes
				<ul style="list-style-type: none"> <li>• Bike Maintenance Sessions</li> <li>• Youth Skills Training</li> </ul>
Rider Surveys	\$7,500	Super Tuesday/Sunday	\$8,000	<ul style="list-style-type: none"> <li>• Minor change to reflect actual cost</li> </ul>
<b>Year 1 Totals</b>	<b>\$35,000</b>		<b>\$74,697</b>	
<b>Year 2 – 2017/18</b>				
<b>Infrastructure Component</b>				
Sabine Road – Tong Luck Street to Trower Road	\$276,450			<ul style="list-style-type: none"> <li>• This project has been brought forward to Year 1 and the scope increased to extend from McMillans Road to Trower Road.</li> </ul>
Parer Drive (Stage 1) – Trower Road to Malay Road	\$222,828	Parer Drive – Trower Road to Lee Point Road	\$350,000	<ul style="list-style-type: none"> <li>• Project was initially divided into two stages with Stage 2 from Malay Road to Lee Point Road to be delivered in Year 3.</li> <li>• Stage 2 has now been brought forward to remove the existing footpath on the southern side of the road and replace with a new 2.5m shared path.</li> <li>• Includes the replacement of 20 driveways.</li> <li>• Addresses a gap identified in Figure 1-2 of Appendix E of the “Pedalling at the Top – Bicycle Baseline Report” and allows a further area of the municipality to be within 100m of a bicycle facility.</li> <li>• Provides connectivity to a school in the area.</li> </ul>
		Dinah Beach Road (Stage 1) – Tiger Brennan Drive to Stuart Highway	\$149,278	<ul style="list-style-type: none"> <li>• Staged construction of a shared path as part of the Dinah Beach Road upgrade (Roads to Recovery project).</li> <li>• This includes the removal and replacement of</li> </ul>

Original Project	Original Allocation	Revised Project	Revised Allocation	Summary of Changes
				<p>the existing shared path between Tiger Brennan Drive and Ruddick Circuit because of ground level changes required as part of the road upgrade project.</p> <ul style="list-style-type: none"> <li>Brought forward from Year 5 to align with the proposed delivery program of the road upgrade project over a two year period.</li> </ul>
<b>Year 2 Totals</b>	<b>\$499,278</b>		<b>\$499,278</b>	
<b>Year 3 – 2018/19</b>				
<b>Infrastructure Component</b>				
Parer Drive (Stage 1) – Malay Road to Lee Point Road	\$177,555			<ul style="list-style-type: none"> <li>This second stage of the project has been brought forward to Year 2 to deliver the full shared path link from Trower Road to Lee Point Road.</li> </ul>
		Dinah Beach Road (Stage 2) – Tiger Brennan Drive to Stuart Highway	\$250,000	<ul style="list-style-type: none"> <li>Continuation of the Year 2 project.</li> <li>Brought forward from Year 5.</li> </ul>
		East Point Road Shared Path – Path upgrade to address issues identified during audit	\$48,000	<ul style="list-style-type: none"> <li>Project brought forward from Year 5.</li> <li>No change to scope or allocation.</li> </ul>
Daly Street (Stage 2) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$350,262	Daly Street (Stage 1) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$229,817	<ul style="list-style-type: none"> <li>Allocation has been reduced in Year 3 to align with budget allocations.</li> </ul>
<b>Year 3 Totals</b>	<b>\$527,817</b>		<b>\$527,817</b>	
<b>Year 4 – 2019/20</b>				
<b>Infrastructure Component</b>				

Original Project	Original Allocation	Revised Project	Revised Allocation	Summary of Changes
Daly Street (Stage 3) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$511,484	Daly Street (Stage 2) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$511,484	<ul style="list-style-type: none"> <li>Allocation remains the same.</li> </ul>
<b>Year 4 Totals</b>	<b>\$511,484</b>		<b>\$511,484</b>	
<b>Year 5 – 2020/21</b>				
<b>Infrastructure Component</b>				
Daly Street (Stage 4) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$250,000	Daly Street (Stage 3) – Provide on-road cycle lanes and improved connectivity for using off-road space	\$520,282	<ul style="list-style-type: none"> <li>Allocation has been increased to align with the scale of works planned for Year 5.</li> </ul>
Dinah Beach Road Shared Path – completion of current shared path alignment from Ruddick Circuit to Stuart Highway	\$222,282			<ul style="list-style-type: none"> <li>Project has been brought forward to Years 2 and 3 to align with the delivery schedule of the Dinah Beach Road upgrade (Roads to Recovery project).</li> <li>Scope has been increased to include the removal and replacement of the existing shared path between Tiger Brennan Drive and Ruddick Circuit because of ground level changes required as part of the road upgrade project.</li> </ul>
East Point Road Shared Path – Path upgrade to address issues identified during audit	\$48,000			<ul style="list-style-type: none"> <li>Project has been brought forward to Year 3.</li> </ul>
<b>Year 5 Totals</b>	<b>\$520,282</b>		<b>\$520,282</b>	

<b>ENCL: NO</b>	<b>ENVIRONMENT &amp; INFRASTRUCTURE COMMITTEE/OPEN</b>	<b>AGENDA ITEM: 10.1.2</b>
<b>GARDENS PARK LAKE - DESILTING</b>		
<b>REPORT No.: 16TS0042 NK:jg</b>	<b>COMMON No.: 1467616</b>	<b>DATE: 22/11/2016</b>

**Presenter:** Manager Capital Works, Nik Kleine

**Approved:** General Manager Infrastructure, Luccio Cercarelli

### **PURPOSE**

The purpose of this report is to inform Council of the investigations undertaken into Gardens Park Lake.

### **LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

#### **Goal**

1. Collaborative, Inclusive and Connected Community

#### **Outcome**

- 1.2 Desirable places and open spaces for people

#### **Key Strategies**

- 1.2.1 Enhance places and open spaces

### **KEY ISSUES**

- Gardens Park Lake is not naturally occurring and is a non-engineered lake, as a result of a historically excavated borrow pit used to supply gravel when Sky City Casino was constructed in the 1980's.
- In September 2015 approximately 1600 cubic metres of silt was removed to clear a major drainage channel, at the time a geotechnical investigation and survey of the lake was undertaken.
- An investigation into the function and role of the lake in managing stormwater has been undertaken.

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## **RECOMMENDATIONS**

THAT the Committee resolve under delegated authority:-

- A. THAT Report Number 16TS0042 NK:jg entitled Gardens Park Lake - Desilting, be received and noted.
- B. THAT Council write to Perry Park Pty Ltd advising that Council is planning for rehabilitation works including desilting of the Gardens Park Lake in the 2018/19 financial year, as proposed in Council's Long Term Financial Plan.

## **BACKGROUND**

Council staff received a request from the Gardens Park Golf Links lessee to dredge Gardens Park Lake to address a reduction in water depth and amenity as a result of sediment levels in the lake.

The lease states "the owner will dredge the lake from time to time and at such times as the owner deems necessary".

The Gardens Park Lake is not naturally occurring and is a non-engineered lake. Its existence is the result of a historically excavated borrow pit, used to supply gravel for Sky City Casino which was constructed in the 1980's.

The lake is charged via stormwater during the wet season and water levels are controlled via a weir at the western end of the lake, that discharges under Gilruth Avenue into Little Mindil Creek.

The lake also serves as a stormwater retention basin and sediment trap, and is a landscape feature to the Gardens Park Golf Links.

In determining whether dredging is required, consideration is given to:

- Stormwater flows in the system and the role of the lake for stormwater retention.
- Lake survey including lake bathymetry and estimation of the volume of sediment requiring removal.
- Quality of sediment present and subsequent determination of disposal options.

## **DISCUSSION**

In September 2015 the lake was drained to enable some dredging. An engineering and geotechnical survey and waste classification investigations were also conducted. Approximately 1600 cubic metres of sediment was removed via mechanical excavation to clear a drainage channel, prior to the lake being filled by early wet season storms.



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Difficult conditions were encountered when undertaking the dredging operations. It was identified that specialised equipment will be needed to undertake further desilting. A robust methodology for the management of removal, storage and disposal of the dredged material requires further development.

Analysis of the sediment in the lake revealed that it would be required to be disposed of in the landfill at Shoal Bay Waste Management Facility (SBWMF).

Survey and geotechnical investigations undertaken identified that the lake does not have a clay liner and therefore does not have a defined bottom. It is estimated from analysis of the geotechnical survey and original draft plans for the lake, that it has an average depth of 2.7 metres and the current average depth of water is 1.2 metres. Therefore, the average depth of sediment is estimated at 1.5 metres and the accumulated volume of sediment is approximately 23,000 cubic metres.

Sediment capture in the lake reduces the volume of sediment being discharged to the sea, which has an environmental benefit. The capture and build-up of sediment reduces the amenity of the lake by reducing the water depth thus allowing reed and algal growth.

Silt loads entering the system since the 1980's have been reduced through urbanisation of the upstream area, improved environmental controls and restrictions placed on developers when developing land.

A report into the hydrologic and hydraulic role of the lake and above stream stormwater system undertaken by Jacobs Pty Ltd identified the following:

- The lake has a function as a stormwater retention basin.
- Sediment levels within the lake do not have a direct effect on the lakes function as a retention basin.
- The downstream water surface conditions are the main factor in controlling the water surface level of the lake.

Based on the above conclusions, removal of sediment is not required at this time to improve the lakes function in regards to stormwater management. However, removal of sediment would serve to provide an increased water depth, resulting in an improved amenity in the lake.

Any desilting methodology employed will require the drying of the removed material prior to disposal at SBWMF. The drying process will take several months and an appropriate area will be required on site to achieve this.

Further analysis is being undertaken to identify the level of sediment to be removed to improve the lakes amenity and how best to manage the lakes water quality.

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Council's adopted Long Term Capital Works Plan has identified \$500,000 over three years for rehabilitation of Gardens Park Lake.

Based on the investigations undertaken, the need for de-silting the lake is not driven by the hydrological or hydraulic function of the lake. Rather, the de-silting will increase the water depth/amenity of the lake.

It is recommended that Council defer the dredging of the lake at this time, until the 2018/19 financial year, as:

- there are currently no requirements to stormwater management, and
- Insufficient funding is available to use specialised equipment.

### **CONSULTATION PROCESS**

In preparing this report, the following City of Darwin officers were consulted:

- Manager Environment and Climate Change
- Manager Technical Services
- Manager Business Services

In preparing this report, the following External Parties were consulted:

- Mark Cundall Earthmoving
- Jacobs Pty Ltd

Prior to the sediment removal from the lake, consideration of the methodology for the removal and the area required for storage (until the sediment is at a condition where it can be received at SBWMF) will require consultation and negotiation with Perry Park Pty Ltd.

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### **POLICY IMPLICATIONS**

All works undertaken to remove sediment from the lake will conform to Council's policies and procedures.

### **BUDGET AND RESOURCE IMPLICATIONS**

The 2016/17 Capital works program has \$100,000 identified for rehabilitation of the lake. \$400,000 has been identified for rehabilitation of Gardens Park Lake in Council's adopted Long Term Capital Works Plan. A breakdown of the funding is identified in the following table:

<b>Year</b>	<b>Funding</b>
2016/17	\$100,000
2017/18	\$150,000
2018/19	\$250,000

Funding approved by Council for rehabilitation of Gardens Park Lake is recommended to be placed into the Asset Refurbishment Reserve until the 2018/19 financial year, or until such time as the full funding amount is achieved.

### **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

Appropriate approvals for the works will be sought from authorities and agencies prior to commencement of any dredging works.

The land around Gardens Park Lake currently provides an additional storage area for stormwater during large rain events coinciding with high tides, when flooding is most likely to occur. With the dominant land use being a golf course with key infrastructure located above current calculated flood levels, inundation of the area is considered to be of an acceptable risk to infrastructure and the public.

### **ENVIRONMENTAL IMPLICATIONS**

An appropriate desilting/disposal methodology and environmental management plan for the works will be developed prior to works being undertaken.

The material removed from the lake has been classified as general solid waste and will require disposal to landfill at Shoal Bay Waste Management Facility.

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SUBJECT: GARDENS PARK LAKE - DESILTING

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### **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**NIK KLEINE**  
**MANAGER CAPITAL WORKS**

**LUCCIO CERCARELLI**  
**GENERAL MANAGER**  
**INFRASTRUCTURE**

For enquiries, please contact Nik Kleine on 8930 0586 or email:  
n.kleine@darwin.nt.gov.au.

**ENCL: ENVIRONMENT & INFRASTRUCTURE  
YES COMMITTEE/OPEN**

**AGENDA ITEM: 10.1.3**

**CITY OF DARWIN POLICY NO. 045 - LAKE ALEXANDER MANAGEMENT**

**REPORT No: 16TS0185 KS:jh**

**COMMON No: 1789837**

**DATE: 22/11/2016**

**Presenter: Manager Infrastructure Maintenance, Kerry Smith**

**Approved: General Manager Infrastructure, Luccio Cercarelli**

**PURPOSE**

The purpose of this report is to recommend to Council to rescind City of Darwin Policy No. 045 – Lake Alexander Management and note that the policy will be adopted as an administrative procedure.

**LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

**Goal**

2 Vibrant, Flexible and Tropical Lifestyle

**Outcome**

2.2 A sense of place and community

**Key Strategies**

2.2.3 Improve the landscaping, streetscape, infrastructure and natural environment

**KEY ISSUES**

- The current City of Darwin Policy No. 045 – Lake Alexander Management was adopted in February 2010 and is due for review.
- The policy includes detailed description on management practices.
- The policy includes operational issues that are managed at officer level.
- It is recommended that this policy be rescinded and become an Administrative Procedure delegated to the Chief Executive Officer.
- All management practice items will be retained within the proposed administrative procedure.
- One section of the policy has been identified as a duplication of By Law Enforcement and will be removed from the Administrative Procedure.

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## **RECOMMENDATIONS**

THAT it be a recommendation to Council:-

- A. THAT Report Number 16TS0185 KS:jh entitled City of Darwin Policy No. 045 - Lake Alexander Management, be received and noted.
- B. THAT Council rescind the current City of Darwin Policy No. 045 – Lake Alexander Management at **Attachment A** to Report Number 16TS0185 KS:jh entitled City of Darwin Policy No. 045 – Lake Alexander Management.
- C. THAT Council note that the current City of Darwin Policy No. 045 – Lake Alexander Management will become an Administrative Procedure.

## **BACKGROUND**

Council's website includes the following statement in regard to policies:

*"Policies are a representation of the values that Council will take into consideration during its decision making process. It is the Elected Members role to weigh Council matters and decide upon policies which the council administration will carry through. Policies are in place to fulfil the community's needs and are continually being reviewed and updated."*

The current City of Darwin Policy No. 045 - Lake Alexander Management (**Attachment A**) was identified for review. This policy has been reviewed and is presented within this report.

## **DISCUSSION**

City of Darwin Policy No. 045 - Lake Alexander Management contains specific information on the management of the lake water and surrounding reserve. The reserve surrounding the lake is managed in accordance with service levels applied to all Parks and Reserves within the municipality. The lake is currently managed in accordance with regulations and standards that govern water quality management for the provision of water bodies for recreational purposes. The policy includes two main sections:

- Facilities/Management.
- Restrictions.

In reviewing the current policy it was identified that the background section duplicates asset data not relevant to the management of the Lake Alexander and surrounding reserve. As a result, this section will be removed from the Administrative Procedure.

The current policy is operational and therefore it is recommended that this policy be rescinded and adopted as an Administrative Procedure through the Chief Executive

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Officer's delegation. The main changes to be implemented in the Administrative Procedure are detailed as follows:

- Background

This section will be replaced with a more relevant description of the background information on the facility, with the detailed asset data removed.

- Facilities/Management

This section will be updated to better reflect the actual management practices applied to the lake and surrounding reserve. Practices that relate to the management of the water quality are updated in accordance with the Australian/ New Zealand Water Quality Sampling Standard AS/NZS 5667.4 (1998).

- Restrictions

The title of this section will be removed to reflect a more positive approach to the management of the reserve. The items within this section are a continuation of the facilities and management practices identified within the section above. The items in this section will be edited and updated in line with the document review and better reflect actual management practice.

Once completed, the Administrative Procedure will be reviewed and adopted by the Executive Leadership Team.

## **CONSULTATION PROCESS**

This report was considered by the Executive Leadership Team on 14 November 2016 and is now referred to the Environment & Infrastructure Committee for consideration.

In preparing this report, the following City of Darwin officers were consulted:

- Acting Team Coordinator Parks and Reserves
- Acting Team Leader Parks Central Precinct Team

## **POLICY IMPLICATIONS**

The current policy has an operational focus and therefore it is recommended that this policy be rescinded and then adopted as an Administrative Procedure.

## **BUDGET AND RESOURCE IMPLICATIONS**

The changes to this policy will not present any change in current budgeted activities within the reserve.

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### **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

Nil

### **ENVIRONMENTAL IMPLICATIONS**

Nil

### **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**KERRY SMITH**  
**MANAGER INFRASTRUCTURE**  
**MAINTENANCE**

**LUCCIO CERCARELLI**  
**GENERAL MANAGER**  
**INFRASTRUCTURE**

For enquiries, please contact Kerry Smith on 8930 0654 or email:  
 k.smith@darwin.nt.gov.au.

### **Attachments:**

**Attachment A:** Current City of Darwin Policy No. 045 – Lake Alexander Management



Title: *Lake Alexander Management Plan*  
 Policy No: *045*  
 Adopted By: *Council*  
 Next Review Date: *23/02/2014*  
 Responsibility: *General Manager Infrastructure*  
 Document Number: 2118497

Version	Decision Number	Adoption Date	History
1	20\2501	23/02/10	Adopted
2			
3			
4			

## 1 Policy Summary

Council will maintain a management plan for the Lake Alexander. The Plan will address facility management, conditions of use, permitted activities and related matters.

## 2 Policy Objectives

To provide for the free use of the community a saline lake facility suitable for bathing and non-motorised water based recreation within a landscaped fringe reserve suitable for picnicking and general passive recreation.

## 3 Background

- The lake is a 3.5 hectare salt water lake.
- Maximum depth of 2.8 metres.
- Top water level of the lake is 3.9 metres AHD (Australian Height Datum) which is equivalent to a tide of 7.9 metres admiralty.
- 70% of the lake's foreshore area has been established as a beach.
- The beaches have a depth of 300mm sand gently grading into the lake bed.
- The lake is divided into two separate areas, with swimming allowed at the northern end and water craft at the southern end.
- The Lake's development includes: barbecue facilities, toilets, cycle paths, boat ramp and seating.

## 4 Policy Statement

### 1 Facilities/Management

#### 1.1 Water Quality

The lake would be circulated regularly by intake pumping from Fannie Bay to provide algae free salt water consistent with standards of water quality for bathing beaches on Darwin foreshores.

##### Management

The water to be sampled and analysed for biological quality and suspended solids once each month.

#### 1.2 Beaches

The lake is provided with graded sand sloping beaches over approximately 70% of the foreshore.

##### Management

The beaches would be surface cleaned at least three days per week. Raking of beaches to remove any subsurface objects to be undertaken at least once every three months.

#### 1.3 Stormwater

The lake will be provided with a stormwater runoff system minimising brackishness during the Wet Season.

##### Management

All stormwater drains to be inspected annually prior to the Wet Season to ensure their function remains in accordance with design.

Grated structure in the stormwater drain at the fence line location to be cleared of any debris once a week or as required.

#### 1.4 Filtration

The filtration system will ensure that under normal operating conditions box jellyfish could not enter through the intake system.

##### Management

Pump and filters to be regularly inspected and serviced in accordance with manufacturer's requirements.

#### 1.5 Pump Failure

In the event of extended power/pump failure causing deterioration of water quality, the public will be warned against bathing by appropriate signs.

### Management

In the event of pump failure involving several days, additional water quality testing is to be undertaken and, if quality falls to unacceptable levels, signs warning the public against bathing to be erected.

#### 1.6 Surveillance

Council does not provide continuous surveillance of the area, but an Authorised Officer is in attendance at East Point Reserve between the hours of 7.30am until 4.15pm on weekdays, weekends and public holidays.

#### 1.7 Caretaker

The duties of the East Point caretaker to be reviewed to include appropriate functions at Lake Alexander, as well as part-time shift caretaker.

#### 1.8 Signage

The public will be guided on site by appropriate signage as to the appropriate By-Law applying, limitations for usage, speeds, types of vehicles and craft size.

### Management

Signage where possible will be achieved through international standard symbols. Where this is not possible, signs must be in English and other languages as per Northern Territory Conservation and National Parks and Wildlife Conventions currently applying.

#### 1.9 Buoyancy line

A buoyancy line runs from east to west across the lake, separating the watercraft area from the swimming area.

### Management

Daily visual inspection to ensure serviceability.

#### 1.10 Weir

The weir is located at the northern end of the lake.

### Management

Trash collection bars to be inspected and any debris to be removed on a daily basis.

#### 1.11 Relief Valve

### Management

Relief valve to be fully opened once a week to ensure it functions satisfactorily.

The opening and closing of the valve should be carried out in one action to ensure minimal water loss.

## 2 Restrictions

### 2.1 By-Laws of City of Darwin

Authority to enable Council or other Authorised Officers to act under Part 9.6 of the Local Government Act.

The Authorised Officers will have power to do all things appropriate to ensure the provisions of the City of Darwin By Laws are upheld.

#### 2.1.1 Authorised Officers

Are authorised to issue on-the-spot notices or fines as appropriate under the By-Laws.

#### 2.1.2 Vehicles

No vehicles are permitted in the lake grounds except within the marked car park areas.

#### 2.1.3 Dogs

No dogs are permitted within the foreshore areas constituting the catchment of the lake.

#### 2.1.4 Horses

No horses or other animals are to be brought within the foreshore areas constituting the catchment area of the lake.

#### 2.1.5 Motorised Vessels

No motorised vessels (other than model vessels) are permitted to use the lake unless specific and written authorisation is given by City of Darwin.

#### Paddle or Other Vessels

All vessels will be under effective control and not permitted to drift unmanned.

#### 2.1.6 Speed limit for all vessels is 5 knots.

#### 2.1.7 Any commercial activity to be practised only with the approval of Council and the use of an appropriate licence.

#### 2.1.8 No roadside hawkers will be permitted to operate within the Reserve unless by specific approval of City of Darwin.

#### 2.1.9 No camping is permitted on the Reserve.

#### 2.1.10 The introduction of fish, box jellyfish or any other organism or object into the lake other than those for authorised recreation usage is prohibited.

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2.1.11 Use of the lake by children without adult supervision is prohibited.

## **5 Legislation, terminology and references**

Chapter 12 of the Local Government Act gives the Council the care, control and management of land and reserves.

General Conditions applying to all permits granted by the Council will also apply including the requirement for hirers to indemnify the Council and hold public liability insurance.

## OPEN SECTION

E&I11/7

Environment & Infrastructure Committee Meeting – Tuesday, 22 November 2016

### 10.2 OFFICERS REPORTS (RECEIVE & NOTE)



**ENCL: ENVIRONMENT & INFRASTRUCTURE  
NO COMMITTEE/OPEN**

**AGENDA ITEM: 10.2.1**

### **LAKESIDE DRIVE PRECINCT MASTER PLAN UPDATE**

**REPORT No.: 16TS0197 DL:lf**

**COMMON No.: 2952242**

**DATE: 22/11/2016**

**Presenter: Manager Design, Planning & Projects, Drosso Lelekis**

**Approved: General Manager Infrastructure, Luccio Cercarelli**

### **PURPOSE**

The purpose of this report is to provide Council with an update on the development of the Lakeside Drive Precinct Master Plan, Lakeside Drive Community Garden Master Plan and Northern Ovals Access and Parking Plan.

### **LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

#### **Goal**

1. Collaborative, Inclusive and Connected Community

#### **Outcome**

- 1.2 Desirable places and open spaces for people

#### **Key Strategies**

- 1.2.4 Provide for diversity of uses and experiences in public places and open spaces

### **KEY ISSUES**

- Council has resolved to support the relocation of The Patch from the old Leanyer Depot to the site of the Lakeside Drive Community Garden.
- A new initiative was approved in the 2014/2015 budget process for the development of the Lakeside Drive Precinct Master Plan.
- A Precinct Master Plan for Lakeside Drive (Master Plan) is being developed and will be submitted to Council for endorsement to proceed to community consultation in early 2017.
- Consultation with key stakeholders is underway and will inform the Master Plan.
- Some of the land covered by the Master Plan is leased to the Charles Darwin University (CDU).
- Key stakeholder consultation to date has identified the installation of a water supply for the future combined Lakeside Drive Community Garden/The Patch site as an important inclusion in the Master Plan.

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 SUBJECT: LAKESIDE DRIVE PRECINCT MASTER PLAN UPDATE

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- Other important issues identified are:
  - Implementation of the one-way flow at the ingress/egress to the northern ovals car parking area (including shared path re-alignment).
  - A revised access to a future combined Lakeside Drive Community Garden/The Patch site.
  - Fencing around the combined site and connectivity between the land use in the Master Plan area.

## **RECOMMENDATIONS**

THAT the Committee resolve under delegated authority:-

THAT Report Number 16TS0197 DL:lf entitled Lakeside Drive Precinct Master Plan Update, be received and noted.

## **BACKGROUND**

In 2013, Council resolved to support the relocation of The Patch to the Lakeside Drive Community Garden.

An Elected Member new initiative was submitted and approved in the 2014/2015 budget process for the development of a master plan for Lakeside Drive, Alawa.

The key driver for this new initiative was as follows:

*"The Patch will be moving to Lakeside Drive next to the Community Garden. Both projects are at the development stage with the intention of creating a space that allows the community to interact and provide programs that promote engagement. There are also many other users of the facilities, the three council owned ovals, as well as the community hall. The main issue of concern here is the access from Lakeside drive which has not been planned for the current growth. It does not meet the current needs of the users and has resulted in using dangerous manoeuvres to access the area. Additionally adequate parking and toilet facilities will need to be considered for current and future user groups."*

Preliminary work, including key stakeholder consultation, is currently underway to inform the development the Lakeside Drive Precinct Master Plan and this report provides an update on the development of this Master Plan.

## **DISCUSSION**

In response to Council's decision to support the relocation of The Patch from its present location at the old Leanyer Depot site to the Lakeside Drive Community Garden site, plus the concerns raised regarding access from Lakeside Drive, preliminary work and key stakeholder consultation, is being undertaken to develop a Master Plan for the area.



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 SUBJECT: LAKESIDE DRIVE PRECINCT MASTER PLAN UPDATE

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This work will ascertain the user demands within the study area, opportunities and constraints, servicing requirements, access and car parking, to prepare a precinct master plan to facilitate user demands and future development.

The work so far has identified the following as key elements of any Master Plan for the area:

- a new shelter and toilet for the shared use of a future combined Lakeside Drive Community Garden/The Patch site,
- formalised car parking and turnaround facilities,
- shared vehicle/pedestrian path connectivity,
- a front boundary fence and pedestrian access point facing Lakeside Drive, and
- a new water supply and access off Lakeside Drive for the future combined facility.

The implementation of one-way flow at the ingress/egress to the northern ovals car parking area (including shared path re-alignment) to address traffic issues, is also under consideration for inclusion in the Master Plan.

Other considerations are the reconfiguration and rationalisation of the existing oval parking areas and the removal and replacement of the existing playground in the area and the possible inclusion of a future dog park within the subject area. The area covered by the Master Plan is entirely owned by Council (with a portion under lease by CDU).

The Master Plan is currently under development and will be a high level strategic document. It is envisaged that it will be submitted to Council for endorsement to proceed to community consultation in early 2017.

### **CONSULTATION PROCESS**

In preparing this report, the following External Parties were consulted:

- Northern Planning Consultants
- The Patch
- Lakeside Drive Community Garden
- Charles Darwin University
- Department of Education

Consultation with these key stakeholders and adjoining land owners including Power and Water Corporation, the CDU, NTG (which lease a portion of land to the Scout Association of Australia NT Branch) is ongoing.

Once the draft Master Plan is developed and endorsed by Council for the purposes of broader community consultation, an appropriate community consultation plan will be developed and implemented.

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### **POLICY IMPLICATIONS**

The expanded community consultation associated with any Master Plan would be undertaken in accordance with Council Policy Number - 25 – Community Consultation.

### **BUDGET AND RESOURCE IMPLICATIONS**

A new initiative to the value of \$25,000 was approved in the 2014/2015 budget process for the development of the Lakeside Drive Precinct Master Plan.

The preliminary estimated cost of the sewerage, water, access and electrical servicing of the future combined Lakeside Drive Community Garden/The Patch is of the order of \$80,000.

### **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

The implementation of all works included in the Master Plan must be in accordance with the relevant standards or guidelines.

Charles Darwin University currently holds a 30 year lease with Council over Lots 8640 and 8712, Town of Nightcliff.

Any redevelopment of the lease area would need to be conducted in conjunction with Charles Darwin University.

### **ENVIRONMENTAL IMPLICATIONS**

The Master Plan will consider any limitations or conservation obligations presented by the proximity to Rapid Creek and the adjoining mangroves in its development.

### **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**DROSSO LELEKIS**  
**MANAGER DESIGN, PLANNING**  
**& PROJECTS**

**LUCCIO CERCARELLI**  
**GENERAL MANAGER**  
**INFRASTRUCTURE**

For enquiries, please contact Drosso Lelekis on 8930 0414 or email:  
 d.lelekis@darwin.nt.gov.au.

**ENCL: ENVIRONMENT & INFRASTRUCTURE  
YES COMMITTEE/OPEN**

**AGENDA ITEM: 10.2.2**

### **EAST POINT AND NIGHTCLIFF FAUNA ASSESSMENT**

**REPORT No.: 16TC0061SG:nj**

**COMMON No.: 2415691**

**DATE: 22/11/2016**

**Presenter: Manager Climate Change & Environment, Brooke Rankmore**

**Approved: Executive Manager, Mark Blackburn**

### **PURPOSE**

The purpose of this report is to inform Council on the outcomes of the East Point Reserve and Nightcliff Foreshore fauna surveys.

### **LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

#### **Goal**

3 Environmentally Sustainable City

#### **Outcome**

3.3 Conserve and protect the Darwin environment

#### **Key Strategies**

3.3.1 Advocate for the conservation of natural systems

### **KEY ISSUES**

- Key findings of the report are:
  - East Point Reserve remnant vegetation and revegetated monsoon rainforest patches prove to be similar in regards to species abundance.
  - Key threats to biodiversity in Darwin includes; cats, cane toads, dogs and human interference.

### **RECOMMENDATIONS**

THAT the Committee resolve under delegated authority:-

THAT Report Number 16TC0061SG:nj entitled East Point and Nightcliff Fauna Assessment, be received and noted.

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 SUBJECT: EAST POINT AND NIGHTCLIFF FAUNA ASSESSMENT

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## **BACKGROUND**

At the 2<sup>nd</sup> Ordinary Council Meeting of 25 August 2015 Council confirmed the decision:

- A. *THAT Report Number 15TC0048 SG:nj entitled East Point Biodiversity Plan Quarterly Report - April To June 2015, be received and noted.*
- B. *THAT Council endorse the reviewed actions for the East Point Reserve Biodiversity 5 Year Management Plan 2014 2018 given in **Attachment B** to Report Number 15TC0048 SG:nj entitled East Point Biodiversity Plan Quarterly Report - April To June 2015*

The *East Point Reserve Biodiversity 5 Year Management Plan* contains the action to undertake fauna surveys on a biennial basis within the Reserve.

City of Darwin engaged the Northern Territory Government Flora and Fauna Division to undertake this fauna assessment, and also extended the process to include a baseline survey of the Nightcliff foreshore. The Nightcliff foreshore was chosen as an additional site as it is an area where Council has not previously undertaken a formal fauna assessment, yet the area is known to be home to several threatened species such as the Floodplain monitor, and a variety of migratory shorebirds. Nightcliff foreshore is an important linkage between East Point Reserve and Casuarina Coastal Reserve two large biodiverse areas along the Darwin coastline.

## **DISCUSSION**

### *East Point*

The survey of East Point identified several newly recorded and relative rare species for the Reserve including the Rufous Owl and the Northern Blossom Bat.

The number of species detected at East Point increased including three species of concern for conservation and listed as near threatened by the Northern Territory Government; the Northern Brown Bandicoot, Common Brushtail Possum and the Bush Stone Curlew.

East Point Reserve is deemed to have healthy populations of near threatened species and hence is an important refuge for native fauna including small mammals and birds in the municipality.

Revegetation sites showed similar species richness and abundance of wildlife to mature vegetation. The increased number of species suggests the current revegetation regime is providing critical habitat for species and should be continued, with revegetation plans encouraged and supported.

The lack of introduced species was also a positive finding for this area with the Asian House Gecko and the Cane Toad the only two species detected at the Reserve. Of particular note cats were not detected at East Point despite extensive camera trapping.

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### *Nightcliff Foreshore*

The baseline data for the Nightcliff foreshore survey was also positive, identifying 82 species, eight of which are deemed by the Northern Territory Government to be of conservation concern. Species of conservation concern are species that are categorised as 'near threatened' or are at threat of becoming listed in the near future. Having these species present in our reserves and parklands is testament to our management strategies. Continued best practice management should continue to be implemented, including pest species control.

Five introduced species were detected at Nightcliff including Cats, Asian House Geckos, Black Rats, House Mice and Cane Toads. Of most concern was the presence of Cats as many of these appear to be 'un-owned' or wild. Cane Toads were however only observed in low numbers.

In conclusion, both East Point Reserve and the Nightcliff foreshore contribute significantly to supporting biodiversity and provide important refuge to threatened species in the otherwise highly urbanised environment that is Darwin.

## **CONSULTATION PROCESS**

In preparing this report, the following City of Darwin officers were consulted:

- Team Coordinator Parks and Reserves

In preparing this report, the following External Parties were consulted:

- Graeme Gillespie, Flora and Fauna Division, Northern Territory Government

## **POLICY IMPLICATIONS**

This report and associated fauna surveys are in keeping with all relevant Council policies including the *East Point Reserve Biodiversity 5 Year Management Plan 2014 2018*, *City of Darwin Strategic Plan Evolving Darwin Towards 2020* and *Climate Change Action Plan 2011-2020*.

## **BUDGET AND RESOURCE IMPLICATIONS**

This survey was conducted as part of the East Point Biodiversity Plan which is undertaken within the operational budgets.

## **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

This survey aligns to both National and Northern Territory Government legislation including *Wildlife Conservation Act 2000*.

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## **ENVIRONMENTAL IMPLICATIONS**

These surveys aim to increase our understanding of the biodiversity of East Point Reserve and Nightcliff foreshore to implement the most appropriate management for these areas and will provide positive environmental benefits for Darwin.

## **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**BROOKE RANKMORE**  
**MANAGER CLIMATE CHANGE &**  
**ENVIRONMENT**

**MARK BLACKBURN**  
**EXECUTIVE MANAGER**

For enquiries, please contact Brooke Rankmore on 89300530 or email:  
 b.rankmore@darwin.nt.gov.au.

### **Attachments:**

**Attachment A:** East Point Reserve and Nightcliff Foreshore Vertebrate Fauna Survey

## **East Point Reserve and Nightcliff Foreshore Vertebrate Fauna Survey**

**Prepared for the City of Darwin**

*September 2016*



### **Flora and Fauna Division**

Department of Land Resource Management

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[landresources.nt.gov.au](http://landresources.nt.gov.au)

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## Citation

Buckley, K.A., Parkin, T., Einoder, L. and Gillespie, G. R. (2016). East Point Reserve and Nightcliff foreshore vertebrate fauna survey. Report prepared for City of Darwin by Flora and Fauna Division, Department of Land Resource Management, Northern Territory Government, Palmerston.

## Acknowledgements

Many thanks to Jasmin Gray, Tess Cooper, Alice Donne and Jade Leask for valued assistance in the field. Also thanks to Dani Stockeld, Jenni Risler and Tim Gentles for advice and comments that greatly improved this manuscript.

**Cover photo: Rufous Owl in the monsoon forest at East Point Reserve**

## Executive summary

The City of Darwin commissioned the Department of Land Resource Management to undertake a survey to reassess the status of vertebrate fauna at the East Point Reserve, and a baseline survey of fauna for the Nightcliff foreshore. Both the East Point Reserve and the Nightcliff foreshore are within the Darwin Harbour Site of Conservation Significance and are part of a network of coastal reserves in the Darwin metropolitan area. Darwin Harbour is considered to be of international conservation significance, largely due to high species and habitat diversity, and records of 15 threatened species, including 9 terrestrial vertebrate species (TNRM 2011).

Surveys were undertaken using standardised methods, consistent where possible with the previous survey undertaken in 2013. In addition sampling included camera traps and nocturnal owl censuses (at East Point), and a desktop study was undertaken for shorebirds. In total 89 vertebrate species were detected at East Point Reserve, comprising 70 birds, 6 mammals, 11 reptiles and 2 amphibians. This included several species previously not recorded, Australian Bockadam, Top End Mulch-skink, Red-sided Rainbow Skink, Grey Shrikethrush, Rufous Owl and Northern Blossom Bat; bringing the total number of vertebrate species recorded at East Point Reserve to 254. Along the Nightcliff foreshore 82 vertebrate species were recorded, including 66 birds, 7 mammals, 8 reptiles and 1 amphibian species. Seventeen of these species had previously not been recorded within the foreshore area; bringing the total number of vertebrate species recorded to date to 141.

Species of concern for conservation detected during this survey at both the East Point Reserve and the Nightcliff foreshore were Bush Stone-curlew, Northern Brown Bandicoot and Common Brushtail Possum. Additional species of concern detected at the Nightcliff foreshore (including migratory shorebirds) were Ruddy Turnstone, Whimbrel, Red Knot, Eastern Curlew, Common Greenshank, Common Sandpiper, Floodplain Monitor and Mitchell's Water Monitor.

A total of 26 migratory shorebird species have been recorded from the East Point Reserve. Twenty-three migratory shorebird species have been recorded from the Nightcliff foreshore. Both the East Point Reserve and the Nightcliff foreshore are important parts of the network of available habitat for migratory shorebirds in Darwin Harbour.

This survey has contributed new information about the vertebrate biodiversity of East Point and the Nightcliff foreshore area. However, inferences about changes in vertebrate biodiversity at East point since the previous 2013 survey must be made with caution as more sample points in time are needed to evaluate trends. The remnant monsoon forest and mature revegetated monsoon forest provide habitat for a range of vertebrate species (small mammals and frogs in particular) suggesting that protection and further recovery of these habitats is beneficial to vertebrate biodiversity in the area.

Key threats to the vertebrate biodiversity of the East Point Reserve and Nightcliff foreshore are identified, which include: Cats, Cane Toads and human interference. Cane Toads were recorded during this survey at both the East Point Reserve and Nightcliff foreshore while the Cats were recorded only at the Nightcliff foreshore. The relative merits and options for mitigating these threats to help protect various biodiversity values are discussed.

## 1. Introduction

This vertebrate fauna survey was commissioned by the City of Darwin to provide a reassessment of the East Point Reserve, and a baseline survey for the Nightcliff foreshore. Both the East Point Reserve and the Nightcliff foreshore are within the Darwin Harbour Site of Conservation Significance and are part of a network of coastal reserves in the Darwin metropolitan area. Darwin Harbour is considered to be of international conservation significance, largely due to high species and habitat diversity, and records of 15 threatened species, including 9 terrestrial vertebrate species (TNRM 2011).

East Point Reserve is a multi-use recreational, educational, environmental and commercial facility. The nearly 200 hectare reserve encompasses a small peninsular 6 km NNW of Darwin City and is bordered by mangroves, beaches, rocky headlands and the suburb of Fannie Bay (Fig. 1). Historically, East Point was covered mostly by monsoon forest with a low-lying swamp at the isthmus (Franklin *et al.* 2010) but today the area incorporates many cycling and walking paths, an artificial lake (Lake Alexander), a museum and historical buildings, several leased areas, cleared grassland and approximately 20 % of remnant monsoon forest (Franklin *et al.* 2010). A total of 242 native birds and terrestrial vertebrate fauna species and 6 introduced species have historically been recorded at the East Point Reserve (Appendix I). Notably, the Floodplain Monitor (*Varanus panoptes*) (EPBC Act, Vulnerable) was observed at East Point in 2013 (EcOz 2013).

The Nightcliff foreshore is a popular recreational area in the suburbs of Nightcliff and Rapid Creek. The foreshore is a highly modified environment but does provide access to mangroves, beaches and claystone rock platforms and bluffs. Along the coastline the northern section adjoins the Casuarina Coastal Reserve (Fig. 2). The NT Fauna Atlas holds records of 111 native bird and terrestrial vertebrate species and 1 introduced species from the Nightcliff foreshore area (DLRM 2016a; Appendix II).

This report provides a summary of results of a vertebrate fauna survey of the East Point Reserve using standardised composite fauna sampling at the same sites as a vertebrate fauna survey undertaken in 2013 (EcOz 2013). Resampling the same sites allows for a comparison of survey results through time, to inform City of Darwin of major changes and threats. Such information may then be used to inform future biodiversity management and monitoring, and evaluation requirements for East Point Reserve. Additionally we provide a baseline vertebrate fauna survey for the Nightcliff foreshore and provide City of Darwin with information regarding key threats recommendations for future biodiversity management and future monitoring and evaluation requirements.



Figure 1. Location of East Point Reserve in relation to Darwin City and neighbouring reserves.



Figure 2. Location of the Nightcliff foreshore in relation to Darwin City and neighbouring reserves.

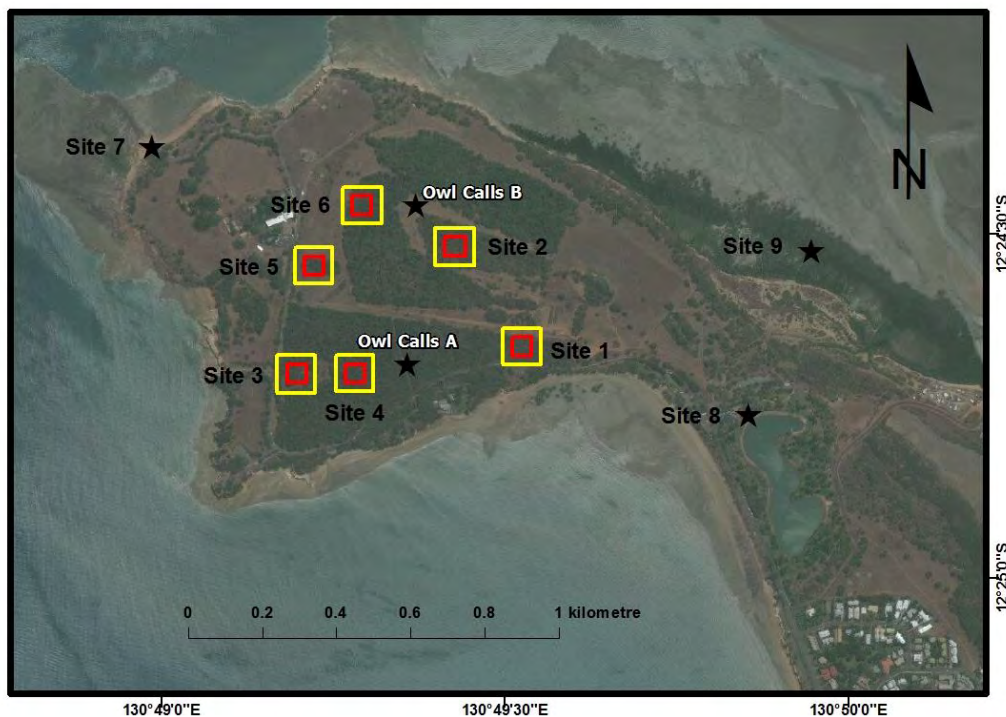


## 2. Methods

### 2.1 East Point Reserve

#### *Surveys: Site Selection*

Six quadrats for standardised composite fauna sampling were established at East Point reserve using the coordinates of the six EcOz fauna survey sites as quadrat centres (EcOz 2013). A core 50 x 50m quadrat for fauna trapping was established within a 100 x 100m bird and spotlight sampling quadrat. All six quadrats were located within monsoon forest habitats, with Sites 1 and 4 representing remnant monsoon forest; Sites 2 and 6 representing mature revegetated monsoon forest; and Sites 3 and 5 representing immature revegetated monsoon forest and edge habitats (Fig. 3).



**Figure 3. East Point Reserve fauna sampling sites. Yellow square indicates 100 x 100m bird and spotlight sampling quadrat; red square indicates 50 x 50m fauna trapping quadrat.**

In addition to the six sites for standardised sampling, three supplementary diurnal bird surveys were conducted to ensure representation of non-monsoon forest sites and habitats at the beach and rock platform (Site 7), Lake Alexander and the associated lawn area (Site 8), and the mangroves (Site 9). Spotlight surveys of established walking tracks were undertaken at remnant (Site 1) and revegetated (Site 2) monsoon forest patches and the mangroves (Site 9). Finally, two owl call broadcasting stations were selected approximately central to the remnant and revegetated monsoon forest patches (Owl Calls A and B; Fig. 3).



### *Standardised composite fauna sampling*

Standardised composite fauna sampling at each monsoon forest site consisted of an array of cage traps, Elliot traps, pit traps, funnel traps and camera traps, combined with bird surveys, diurnal active search surveys and nocturnal surveys. This fauna sampling method, used by the Department of Land Resource Management (DLRM), is intended to maximise the probability that a wide range of species present at a site are detected, and also provides the opportunity to draw comparisons with other regions in the Northern Territory where the method has been used.

Each 50 x 50m fauna trapping quadrat consisted of a perimeter of eight cage traps and 16 Elliot traps. Traps were left closed during the day, set in the late afternoon and baited with a mixture of oats, honey and peanut butter. Traps were set for four consecutive nights at each site. All traps were checked prior to 0800 hrs the following morning, with captured animals identified and released at the point of capture.

Four pit traps were established within each 50 x 50m fauna trapping quadrat. Each pit trap consisted of a 20 litre plastic bucket dug into the ground with 10 metres of drift fence set across it to channel ground-dwelling fauna into the bucket. At each site, the drift fence of one pit trap was teamed with a funnel trap on either side. Pit traps and funnel traps were checked in the morning and afternoon and all trapped animals were identified and released at the point of capture.

Eight bird surveys were carried out in each 100 x 100m sampling quadrat; four morning surveys prior to 1100 hrs and four afternoon surveys after 1500 hrs on consecutive days. These surveys commenced at dawn. Bird surveys consisted of an active 10 minute meander search through the sampling quadrat, recording all birds seen and heard and noting whether they were on or off the quadrat. Birds seen outside the survey periods were recorded as incidental records. Four spotlight surveys were also conducted on consecutive nights within the 100x100 m sampling quadrat. Each survey consisted of an active 15 minute spotlight search after 1930 hrs, recording species and numbers of individuals including calls on plot and off plot.

Arrays of five temperature and motion sensitive Reconyx cameras were deployed at Sites 2, 4 and 6. The camera arrays were set in a standardised design to maximise detections of rare species, dogs and feral cats (Gillespie *et al.* 2015). Due to Sites 1, 3 and 5 being in close proximity to areas of frequent public access and/or in highly visible areas, a single Reconyx camera was deployed at the centre of these sites. Cameras were deployed for four weeks.

### *Supplementary sites and nocturnal transect surveys*

Supplementary diurnal sampling sites (Sites 7, 8 and 9) were surveyed with an active 10 minute meander search over three consecutive mornings at each site, recording birds both seen and heard at the site. Birds seen at the sites outside the survey periods were recorded as incidental records. The three walking tracks at Sites 1, 2 and 9 were spotlighted for three consecutive nights after 1930 hrs. Each survey lasted for ten minutes,

covering approximately 200 m of walking track. Species and numbers of individuals were recorded, including calls on plot and off plot.

#### *Owl call surveys*

The occurrence of owls in the remnant and regrowth sections of the monsoon forest was ascertained from owl responses to broadcast pre-recorded vocalizations at two broadcasting stations. At each station recordings of owl vocalisations were broadcast for one minute, being played for 15 seconds in four different directions, over three consecutive nights. Each broadcast was followed by four minutes of listening for a call back and then a one minute spotlight scan of the vicinity. Four species of owl calls were played in the following order: Southern Boobook, Barking, Rufous and Barn Owl. If an owl was detected in the remnant or regrowth sections of the monsoon forest, vocalisations were not played at the associated broadcast station again in order to minimise disturbance to any owls.

## **2.2 Nightcliff foreshore**

#### *Surveys: Site Selection*

The linear and fragmented nature of available habitat at the Nightcliff foreshore restricted the selection of fauna sampling sites. Additionally, sites were highly visible and accessible which greatly limited the scope of sampling methods that could be employed and consequently standardised composite fauna sampling was not possible. Instead, three 100 x 100 m bird sampling quadrats were established to represent major habitat types at the foreshore: the mangroves (Site 1), the parkland and rock platform (Site 2) and the parkland and beach (Site 3) (Fig. 4). Three, 1 km long transects were established along the foreshore for active diurnal surveys targeting monitors and other reptiles (Fig. 4). Nocturnal surveys were conducted along the entire length of the foreshore from the Rapid Creek Footbridge to the mangroves at the end of Hickory Street (Fig. 2).

#### *Bird Surveys*

Eight bird surveys were carried out in each 100 x 100 m bird sampling quadrat; four morning surveys prior to 1100 hrs and four afternoon surveys after 1500 hrs on consecutive days. Tidal inundation restricted access to Site 1 until 1050 hrs on the final day of surveys but all other sites were surveyed in the early morning. Each survey consisted of an active 10 minute meander search through the quadrat, recording birds both seen and heard on the quadrat. Additionally, birds were recorded seen and heard off the quadrat during this time. Birds seen outside the survey periods were recorded as incidental records.

#### *Active diurnal surveys*

Eight active diurnal transect surveys targeting monitor lizards and other reptiles were undertaken; four surveys in the morning prior to 1100 hrs and four surveys in the afternoon after 1500 hrs. All reptiles seen or heard along the transect line were recorded and the GPS locations of monitors were recorded. Any observations of

monitors outside the survey periods or previously unrecorded species of any taxonomic group were recorded as incidental records.

#### *Nocturnal surveys*

Nocturnal transect spotlight surveys along the length of the foreshore were conducted over three consecutive nights. Each survey commenced between 1940 hrs and 2000 hrs and lasted approximately 1.5 hrs. All observed species were recorded and the GPS locations of cats recorded.



**Figure 4. Nightcliff foreshore fauna sampling sites. Sites 1, 2 and 3 are bird sampling quadrats. Transect 1, 2 and 3 are reptile sampling transects.**

### **2.3 Migratory shorebirds**

#### *Desktop study*

Most of the migratory shorebirds that visit the Darwin region arrive from Siberia and Northern China for the north Australian wet season (November to April) (McCrie and Noske 2015). As the timing of this study coincided with the dry season when the majority of migratory shorebirds are breeding in the Northern Hemisphere, field surveys were not undertaken. Instead a desktop study of migratory shorebirds was conducted to identify all relevant literature on the species composition and habitat use of migratory shorebirds at East Point Reserve and the Nightcliff foreshore.

### 3. Results

#### 3.1 East Point Reserve

In total 89 vertebrate species (70 birds, 6 mammals, 11 reptiles and 2 amphibians) were detected at the nine East Point Reserve sampling sites, using all survey methods (Appendix I). Species previously not recorded at the East Point Reserve included the Australian Bockadam, Top End Mulch-skink, Red-sided Rainbow Skink, Grey Shrikethrush, Rufous Owl and Northern Blossom Bat; bringing the total number of vertebrate species recorded at East Point Reserve to 254 (Appendix II). Three of the species detected in the surveys are of concern for conservation. The Bush Stone-curlew, Northern Brown Bandicoot and Common Brushtail Possum are all listed as Near Threatened in the Northern Territory (NT GOV 2016). During this survey, Bush Stone-curlews were detected at five of the six monsoon forest sites at East Point Reserve (Fig. 5). Northern Brown Bandicoots were detected at five of the monsoon forest sites, while Common Brushtail Possums were detected at all of the monsoon forest sites as well as the mangroves.



**Figure 5. Bush Stone-curlews on the edge of the monsoon forest at East Point Reserve.**

Two of the species detected at the East Point Reserve were introduced species. The Asian House Gecko was found at all monsoon forest sites sampled as well as the mangroves, while the Cane Toad was detected in the monsoon forest at Sites 1, 2, 5 and 6. No cats or dogs were detected during the surveys.

Similar patterns of species richness were detected by standardised composite fauna sampling at the six monsoon forest sites (Fig. 6). Fauna at all sites were dominated by bird species, with a maximum of 28 species recorded at one site. Mammals and reptiles showed comparable richness, with between two and seven

species detected at each site. Only two amphibian species were detected during the surveys – Cane Toads and Green Tree-frogs.

Standardised composite fauna sampling at the six monsoon forest sites revealed greater amphibian species richness in mature revegetated forest than any other monsoon forest habitat type, due to the presence of Green Tree-frogs which were absent elsewhere (Fig. 7). Similarly, mammal richness was greatest in remnant and mature revegetated monsoon forest. Agile Wallabies, Northern Brown Bandicoot and Common Brushtail Possums were found in all habitats, but Grassland Melomys, Flying-foxes and unidentified small bats were also detected in remnant and mature revegetated monsoon forest.

In contrast bird richness was slightly greater at immature revegetated monsoon forest or edge habitats than remnant monsoon forest habitats, but this did overlap with richness found in mature revegetated monsoon forest (Fig. 7). In terms of species composition, 20 of the 46 bird species (43 %) recorded during standardised composite fauna sampling were found across all monsoon forest. Twenty percent (9) of the bird species were only detected in remnant monsoon forest, which was a greater proportion than detected only in mature revegetated monsoon forest, and immature revegetated monsoon forest or edge habitats (4 % and 7 % in respectively).

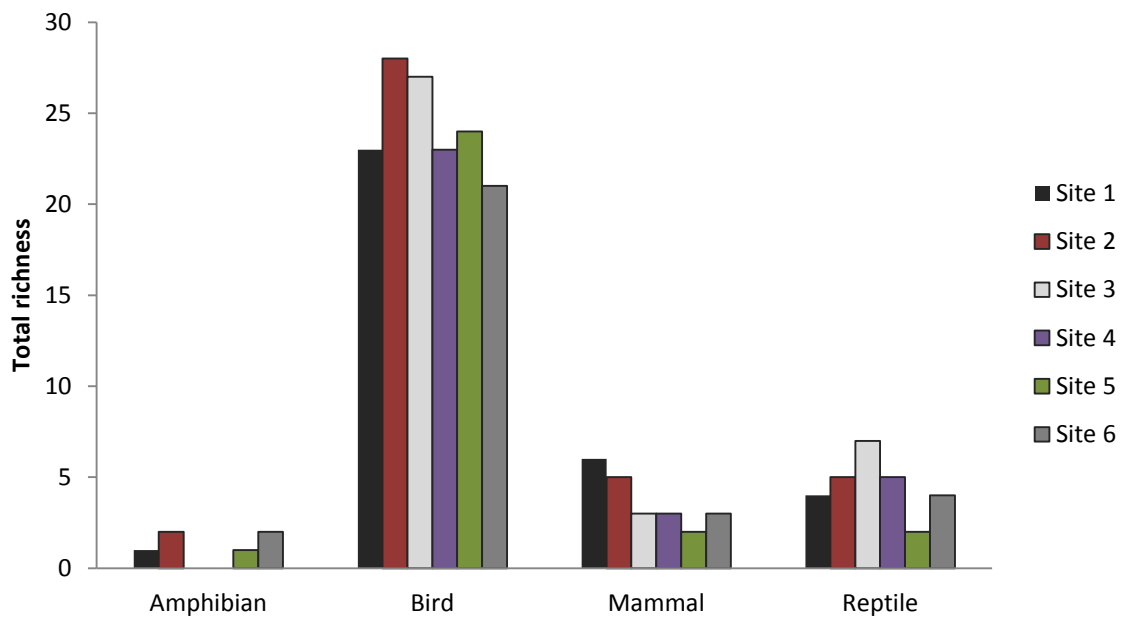


Figure 6. Total species richness for six monsoon forest survey sites at East Point Reserve.

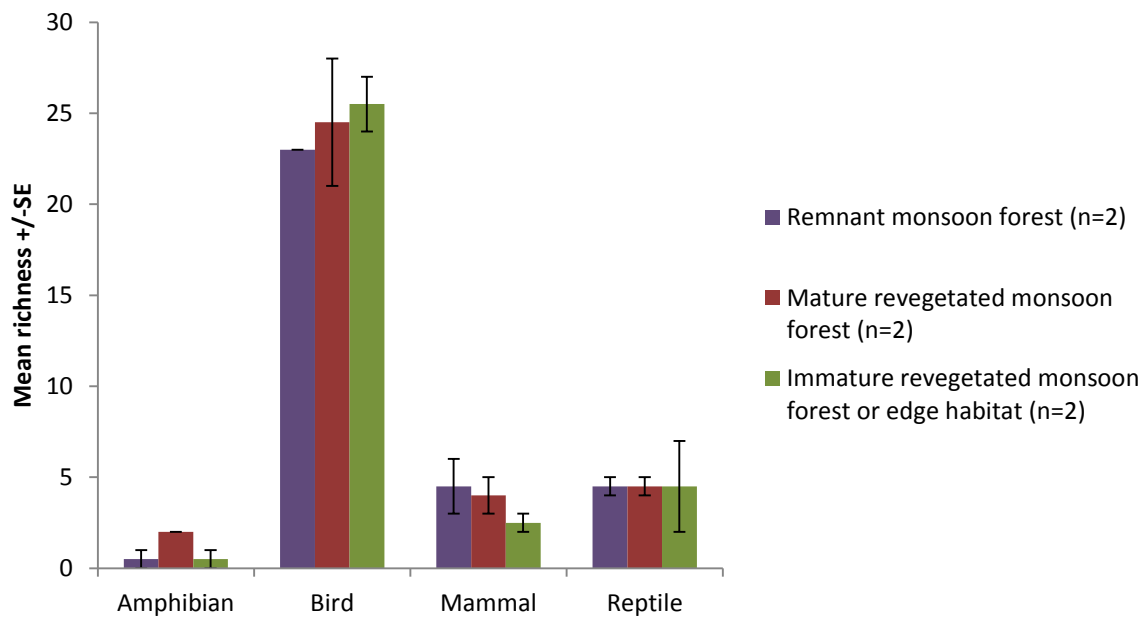


Figure 7. Mean species richness for three monsoon forest habitat types at East Point Reserve.



There was no difference detected in reptile species richness between remnant monsoon forest, mature revegetated monsoon forest and immature revegetated monsoon forest or edge habitats. Of the ten reptile species recorded during standard fauna sampling, four (Carpet Python (Fig. 8), Frilled Lizard, Slaty-grey Snake and Top End Mulch-skink) were restricted to monsoon forest habitat; but all of these species were also found in very low abundances.

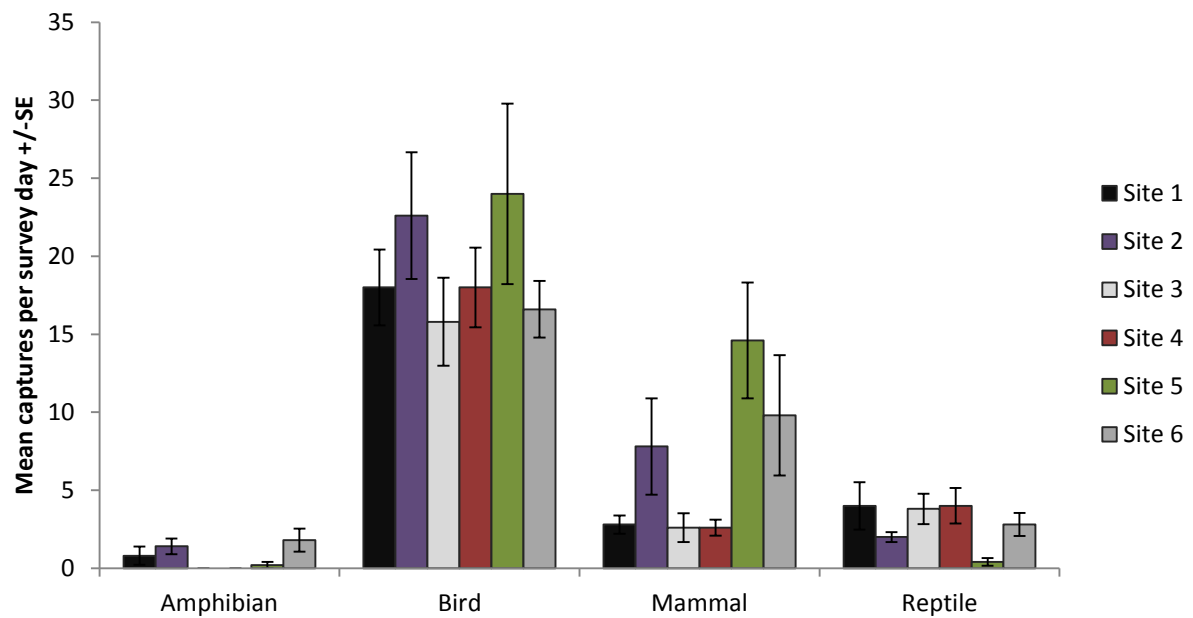


**Figure 8. Carpet Python found at one site in the remnant monsoon forest.**

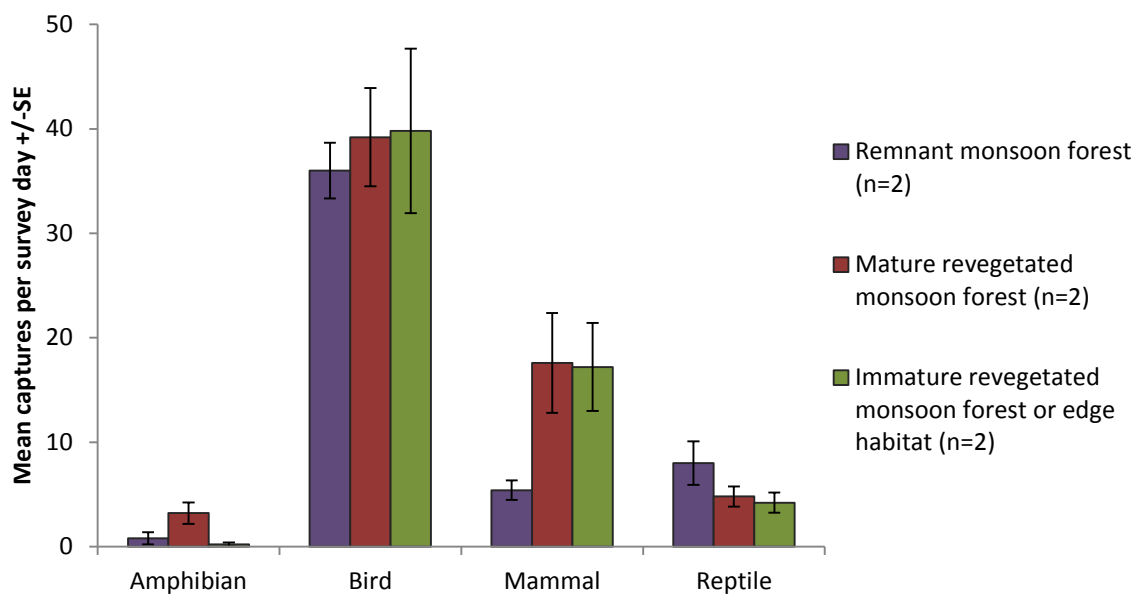
Estimates of abundances excluded camera trap data as it is difficult to identify individuals using this method. Standardised composite fauna sampling revealed a low abundance of amphibians across all sites and at two sites no amphibians were recorded (Fig. 9). The greatest abundance of birds was recorded at Sites 2 and 5 but this was not clearly different to the abundance at any other site. There was considerable variability in mean abundance of mammals between the six monsoon forest sites. Sites 2, 5 and 6 recorded the greatest number of mammals due to large numbers of Agile Wallaby at these sites. Fewer reptiles were recorded at Sites 2 and 5 than any other site.

Overall, remnant rainforest habitats hosted a greater abundance of reptiles and fewer mammals than any other habitat (Fig. 10). Mature revegetated monsoon forest had the highest abundance of amphibians, having more Cane Toads and Green Tree-frogs than any other sites. All habitats shared similar abundance of birds.

The mean number of mammal captures per trap night across the six trap sites at East Point Reserve was 1.21  $\pm$  0.22 SE (standard error) per trap night, with Common Brushtail Possum averaging 0.79  $\pm$  0.22 SE and Northern Brown Bandicoot averaging 0.29  $\pm$  0.09 SE captures.



**Figure 9. Mean detections per survey day for six monsoon forest survey sites at East Point Reserve.**



**Figure 10. Mean detections per survey day for three monsoon forest habitat types at East Point Reserve.**



### 3.2 Nightcliff foreshore

In total, 82 species were identified during all surveys at the Nightcliff foreshore, including 66 birds, 7 mammals, 8 reptiles and 1 amphibian species (Appendix III). Twenty-nine of these species were not recorded previously within a 50 metre buffer of the foreshore area, bringing the total number of species recorded from this area to 141 species (Appendix IV, Table 1).

**Table 1. New species records for the Nightcliff foreshore.**

Common Name	Scientific Name
<b>Birds</b>	
Brown Goshawk	<i>Accipiter fasciatus</i>
Red-winged Parrot	<i>Aprosmictus erythropterus</i>
Intermediate Egret	<i>Ardea intermedia</i>
Bush Stone-curlew	<i>Burhinus grallarius</i>
Torresian Crow	<i>Corvus orru</i>
Black Butcherbird	<i>Cracticus quoyi</i>
White-throated Honeyeater	<i>Melithreptus albogularis</i>
Barking Owl	<i>Ninox connivens</i>
Mangrove Golden Whistler	<i>Pachycephala melanura</i>
Striated Pardalote	<i>Pardalotus striatus</i>
Tawny Frogmouth	<i>Podargus strigoides</i>
Long-tailed Finch	<i>Poephila acuticauda</i>
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>
<b>Mammals</b>	
House mouse	<i>Mus musculus</i>
Black Flying-fox	<i>Pteropus alecto</i>
Little Red Flying-fox	<i>Pteropus scapulatus</i>
Black Rat	<i>Rattus rattus</i>
Common Brushtail Possum (Top End)	<i>Trichosurus vulpecula arnhemensis</i>
Cat	<i>Felis catus</i>
Unidentified small bat	
<b>Reptiles</b>	
Friiled Lizard	<i>Chlamydosaurus kingii</i>
Swanson's Snake-eyed Skink	<i>Cryptoblepharus cygnatus</i>
House gecko	<i>Gehyra australis</i>
Northern Water Dragon	<i>Gowidon temporalis</i>
Asian House Gecko	<i>Hemidactylus frenatus</i>
Slaty-grey Snake	<i>Stegonotus cucullatus</i>
Mitchell's Water Monitor	<i>Varanus mitchelli</i>
Floodplain Monitor	<i>Varanus panoptes</i>
<b>Amphibians</b>	
Cane Toad	<i>Rhinella marina</i>

Eight of the species detected in the Nightcliff foreshore surveys are of concern for conservation. The Bush Stone-curlew, Common Brushtail Possum, Ruddy Turnstone and Whimbrel are listed as Near Threatened in the Northern Territory; while the Red Knot, Eastern Curlew, Floodplain Monitor and Mitchell's Water Monitor are all listed as Vulnerable (NT GOV 2016). The maximum recorded abundance detected in any single survey for each of these species is given in Table 2.

**Table 2. Maximum recorded abundances of species of concern for conservation at the Nightcliff foreshore.**

Common Name	Maximum recorded abundance
Bush Stone-curlew	11
Common Brushtail Possum	5
Ruddy Turnstone	4
Whimbrel	3
Red Knot	7
Eastern Curlew	2
Floodplain Monitor	1
Mitchell's Water Monitor	3

Five of the new species detected were introduced species - the Asian House Gecko, Cane Toad, Cat, Black Rat and House Mouse. The maximum recorded abundance from any single survey for each of these species is given in Table 3; except for the two cats which, although detected on different surveys, were able to be identified individually due to size and colour differences. Notably, both cats were without collars and unapproachable. One was seen on the clifftop adjacent to the Nightcliff pool, and the other was seen in the parkland at the eastern end of Aralia Street. The majority of the Black Rats and House Mice recorded inhabited the rock wall between the Site 1 and Site 2 (see Fig. 4).

**Table 3. Maximum recorded abundances of introduced species at the Nightcliff foreshore.**

Common Name	Maximum recorded abundance
Asian House Gecko	10
Cane Toad	3
Cat	2
Black Rat	6
House Mouse	4

Floodplain Monitors and Mitchell's Water Monitors were detected at Transects 1 and 2 only, and were associated with the Rapid Creek end of the Nightcliff foreshore (Fig. 11, Appendix IV).

Both mean species richness and abundance per survey of birds were greatest at Site 2, largely due to the presence of shorebirds on the rock platform and flocks of Australasian Figbirds and Friarbirds in fruiting trees in the parkland (Fig. 12). Total species richness was also greatest at Site 2, with 31 species of birds were recorded compared to 20 and 19 species respectively recorded at Sites 1 and 3 (Appendix III).



Figure 11. Location of Floodplain Monitors and Mitchell’s Water Monitors detected at the Nightcliff foreshore.

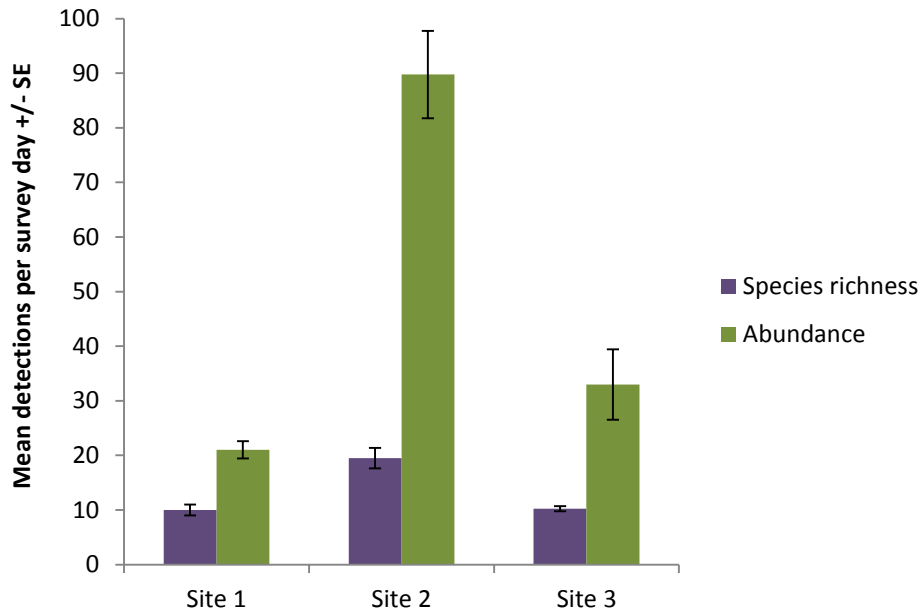


Figure 12. Mean detections of birds (abundance) and bird species (richness) per survey day for three sites at Nightcliff foreshore.

### 3.3 Migratory shorebirds

A high diversity of shorebirds occur in the Darwin region, with at least 39 species recorded from East Point and the Nightcliff foreshore alone (Table 4). Shorebirds fed on benthic macroinvertebrates such as burrowing tubeworms, molluscs, and crabs, and often feed in large mixed-species flocks targeting mudflats in coastal areas. Numerous sheltered bays and waterways around the Darwin region, including East Point and Nightcliff foreshore, provide extensive areas of mudflats exposed at low tides. Shorebirds typically utilise a network of mudflats, moving between feeding areas depending on tide times, local conditions, and food availability. At mid or high tides shorebirds either retreat to muddy river banks to feed, or simply roost on sandy beaches, rock headlands, or rocky reefs.

Although shorebirds of Darwin Harbour include several resident species, most species are migratory travelling along the East Asian Flyway from Siberia and Northern China to arrive in September, October or November (McCrie and Noske 2015). The vast majority of individuals of the migratory species continue on to other parts of Australia, but several thousand spend the north Australian wet season in Darwin Harbour. A second peak in numbers occurs in February and March as shorebirds move through the region on their return journey (Garnett 2012). The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) migratory species list (the “EPBC Act”) protects migratory shorebirds and waders in order to satisfy Australia’s obligations under international migratory species agreements. Consequently all migratory shorebirds in the Darwin region are protected, and a number of species are also considered to be threatened under the EPBC Act.

Mudflats along the coastline between East Point and Nightcliff are at the centre of a network spanning from East Arm to Lee Point. Although fewer shorebirds utilise the mudflats around East Point than mudflats at Ludmilla Bay, Sandy Creek and Buffalo Creek, East Point satisfies EPBC criteria and is recognised as an important habitat for migratory shorebirds (EcOz 2013, Lilleyman *et al.* 2015). In 2013 EcOz recognised a total of 21 migratory shorebird species recorded at East Point, with Great Knot, Greater Sand Plover, Grey-tailed Tattler, Lesser Sand Plover and Ruddy Turnstone considered being the most abundant (EcOz 2013). Desktop research in this study identified a further five species of migratory shorebirds that have been detected at East Point, bringing the total number to 26 species (DLRM 2016; Table 4).

Prior records from the Nightcliff foreshore exist for 23 migratory shorebird species, which is comparable to the species richness at East Point (Table 4). Despite our surveys occurring in the dry season when the majority of migratory shorebirds are in the Northern Hemisphere we detected six species. All species - Common Greenshank, Common Sandpiper, Ruddy Turnstone, Whimbrel, Red Knot and Eastern Curlew - were detected on the rock platform at Site 2 on the Nightcliff foreshore as a high tide was receding. Under the EPBC Act all of these species are protected, with the Red Knot and Eastern Curlew also listed as Vulnerable in the Northern Territory. The Eastern Curlew also has an international (IUCN) listing of Critically Endangered.

**Table 4. Migratory and resident shorebirds and waders recorded from East Point and the Nightcliff foreshore area, including species detected at Nightcliff during this survey.**

Species conservation status shown for EPBC listing, migratory species listing, Territory Parks and Wildlife Conservation Act 2006, and IUCN Red List status. CR: Critically Endangered, LC: Least Concern, NT: Near Threatened, V: Vulnerable, NE: Not Evaluated.

Type	Species	Prior record East Point	Prior record Nightcliff	DLRM 2016 survey: Nightcliff	EPBC Act	EPBC Migratory species list	NT	IUCN
MIGRATORY	Asian Dowitcher	Y				protected	V	NT
MIGRATORY	Bar-tailed Godwit	Y	Y			protected	V	LC
MIGRATORY	Black-tailed Godwit	Y	Y			protected		NT
MIGRATORY	Broad-billed Sandpiper	Y	Y			protected		LC
MIGRATORY	Common Greenshank	Y	Y	Y		protected		LC
MIGRATORY	Common Sandpiper	Y	Y	Y		protected		LC
MIGRATORY	Curlew Sandpiper	Y	Y		CR	protected	V	LC
MIGRATORY	Eastern Curlew	Y	Y	Y	CR	protected	V	V
MIGRATORY	Great Knot	Y	Y			protected	V	V
MIGRATORY	Greater Sand Plover	Y	Y			protected	V	LC
MIGRATORY	Grey Plover	Y	Y			protected		LC
MIGRATORY	Grey-tailed Tattler	Y	Y			protected		NT
MIGRATORY	Lesser Sand Plover	Y	Y			protected	V	LC
MIGRATORY	Little Curlew	Y	Y			protected		LC
MIGRATORY	Marsh Sandpiper	Y	Y			protected		LC
MIGRATORY	Oriental Plover	Y	Y			protected		LC
MIGRATORY	Pacific Golden Plover	Y	Y			protected		LC
MIGRATORY	Pectoral Sandpiper	Y				protected		LC
MIGRATORY	Red Knot	Y	Y	Y		protected	V	LC
MIGRATORY	Red-necked Phalarope	Y				protected		LC
MIGRATORY	Red-necked Stint	Y	Y			protected		LC
MIGRATORY	Ruddy Turnstone	Y	Y	Y		protected		LC
MIGRATORY	Sanderling	Y				protected		LC
MIGRATORY	Sharp-tailed Sandpiper	Y	Y			protected		LC
MIGRATORY	Terek Sandpiper	Y	Y			protected		LC
MIGRATORY	Whimbrel	Y	Y	Y		protected		LC
MIGRATORY	Wood Sandpiper	Y	Y			protected		LC
RESIDENT	Australian Pied Oystercatcher	Y	Y	Y				LC
RESIDENT	Australian White Ibis	Y	Y					LC
RESIDENT	Beach Stone-curlew	Y	Y					NT
RESIDENT	Black-winged Stilt	Y						LC
RESIDENT	Eastern Great Egret	Y	Y					NE
RESIDENT	Eastern Reef Egret	Y	Y	Y				LC
RESIDENT	Great-billed Heron	Y						LC
RESIDENT	Intermediate Egret	Y	Y					LC
RESIDENT	Masked Lapwing	Y		Y				LC
RESIDENT	Pied Heron	Y						LC
RESIDENT	Sooty Oystercatcher	Y	Y					LC
RESIDENT	Striated Heron	Y						LC

## 4. Discussion

### 4.1 East Point Reserve

More bird species were detected in this survey than during the 2013 EcOz survey; however in contrast, fewer mammal species were detected (Table 5). Of the 83 bird species detected during the 2013 survey and this survey, only 35 % of species were recorded in both surveys. Of the 13 reptile species, 54 % were recorded in both surveys; 56 % of the nine mammal species were recorded in both surveys and 100% of the amphibians. Methods varied between the two studies and this is likely to have contributed to this variable result: for example, the EcOz birds surveys were 45 minute transect surveys whereas this survey used timed area searches (10 minute surveys of a 100 x 100m, 1 hectare) in accordance with BirdLife Australia's preferred methodology. These results reflect the different survey methods and highlight the importance of using standardised fauna sampling methods when doing surveys.

**Table 5. Species richness recorded at East Point Reserve for two surveys: East Point Reserve Biodiversity Assessment (EcOz 2013) and this survey (DLRM 2016).**

Survey	Species detected: EcOz 2013	Species detected: DLRM 2016	Total species detected
Birds	42	70	83
Mammals	8	6	9
Reptiles	10	11	13
Amphibians	2	2	2

There is some indication that mammal and amphibian species richness may be greater in remnant monsoon forest, or mature revegetated monsoon forest, compared to immature revegetated monsoon forest or edge habitats. Amphibians and mammals restricted to remnant and mature revegetated monsoon forest during standardised composite sampling included Green Frogs, Flying-foxes, unidentified small bats and Grassland Melomys. Further sampling also identified Northern Blossom Bats in the remnant monsoon forest. It is probable that this pattern reflects species habitat preferences. For example, the moist microhabitat under dense monsoon forest canopies may provide the most suitable habitat for Green Frogs at East point (Reynolds 2005; Fig. 13), while previous research has shown that Grassland Melomys and Northern Blossom Bats are more abundant in monsoon rainforest than adjacent vegetation in the Northern Territory (Menkhorst and Woinarski 1992).



**Figure 13. Green Tree-frog in the monsoon forest at East Point Reserve.**

Similar to the results for mammals and amphibians, more bird species were detected solely in remnant monsoon forest than in any other monsoon habitat type, including the Rose-Crowned Fruit-Dove and the Arafura Fantail. Research has demonstrated that large patch size is an important habitat feature for these species as they usually occur in the interior of monsoon forest patches (Woinarski 1993).

In contrast to patterns of species richness, mammal abundance recorded by standard sampling was less in remnant monsoon forest habitats than other monsoon forest habitats, largely due to low numbers of Agile Wallabies. Although Agile Wallabies were detected utilising all monsoon forest sites in this survey, previous studies have found that Agile Wallabies do occur in significantly lower abundances in monsoon rainforest patches in the Northern Territory compared to adjacent vegetation (Menkhorst and Woinarski 1992).

Although species richness of reptiles was found to be similar across all monsoon forest habitats, the abundance of reptiles was greatest in remnant rainforest habitats. In particular, large numbers of Red-Sided Rainbow Skink were observed in the leaf litter on the forest floor. This species is also known to be abundant in moist garden habitats throughout Darwin (Wilson and Swan 2013).

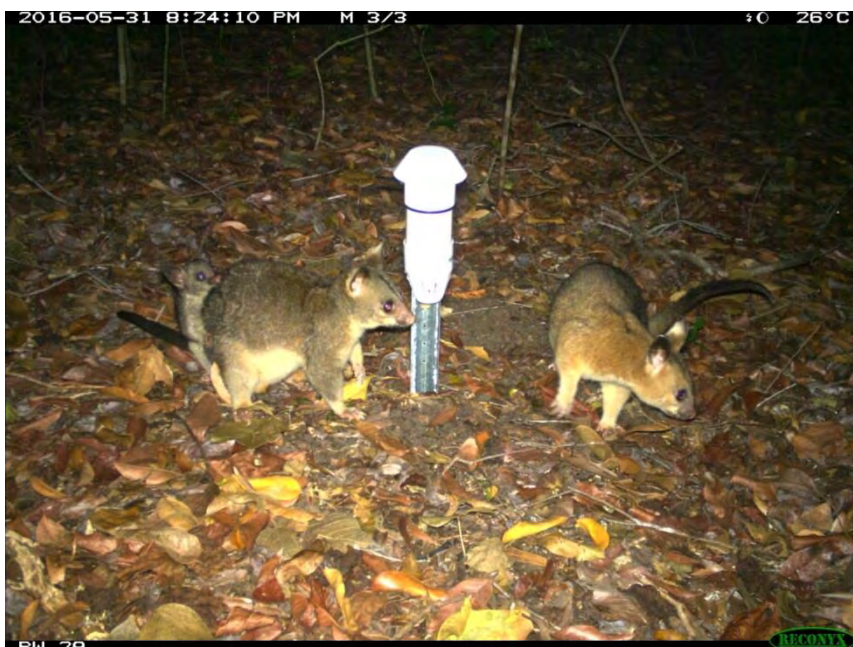
The failure to detect cats or dogs by standardised camera arrays in this survey suggests that there is relative low abundance and/or activity of these species at East Point Reserve. For instance, the probability of detecting the presence of a cat using one standardised 5-camera array is approximately 60 % if the array is deployed for four weeks (Stokeld *et al.* 2016). Given that this study used three 5-camera arrays and an additional three single cameras in the relatively small area of East Point Reserve, the probability of detection for cats was

expected to be far greater than 60 %. Cats and dogs therefore appear to be in low abundance or absent at East Point Reserve, consistent with patterns detected previously (EcOz 2013). However, feral cats and dogs can still have a significant predatory impact on some native wildlife species at very low densities (Ziembicki *et al.* 2015).

In recent decades a widespread decline has been reported in small-medium sized mammals in Northern Australia (Ziembicki *et al.* 2014). Abundance estimates of small mammals in Kakadu National Park for 2012-14 using the same standardised composite fauna sampling methods as this study demonstrate an average of  $0.55 \pm 0.22\text{SE}$  small mammals per trap night at 149 long-term monitoring sites (DLRM unpublished data). In comparison, in 2014 the mean number of mammal captures per trap night across 30 sites in Darwin area was 0.23 per trap night (Stockeld and Gillespie 2015). This study showed that the mean number of mammal captures across the six trap sites at East Point was  $1.21 \pm 0.22\text{ SE}$  per trap night which is higher than recently recorded at Kakadu and the wider Darwin area. East Point reserve may therefore be an important refugia for small mammals in a time of general declines throughout Northern Australia. However, species such as the Black-footed Tree Rat, which persists elsewhere in the Darwin area, was absent.

The presence of three Near Threatened species at East Point Reserve is notable. The Bush Stone-curlew, Northern Brown Bandicoot and Common Brushtail Possum were all detected at the majority of the monsoon forest sites, and the Bush Stone-curlew was also commonly recorded in adjacent parkland at night. Mean captures per trap night in a 2014 study of the wider Darwin area using methods comparable to this study was just under 0.3 for Common Brushtail Possum and just under 0.5 for Northern Brown Bandicoot (Stockeld and Gillespie 2015). In this survey mean captures per trap night were  $0.79 \pm 0.22\text{ SE}$  for Common Brushtail Possum and  $0.29 \pm 0.09\text{ SE}$  for Northern Brown Bandicoot. These findings suggest that Common Brushtail Possum in particular has a relatively healthy population at East Point Reserve (Fig. 14).





**Figure 14. Common Brushtail Possums caught on a camera trap at East Point Reserve.**

In 2013 EcOz observed the Vulnerable Floodplain Monitor in the parkland areas of East Point Reserve. No Floodplain Monitors were detected during the present survey; however activity levels of this species are known to be highly seasonal, with little foraging activity during the dry season and this factor may have contributed to the lack of detections in this survey (Rhind *et al.* 2013). Poisoning from Cane Toad ingestion is regarded as the primary cause of declines of Floodplain Monitors and other varanids in the Top End (DLRM 2016b); however, populations at East Point and the Nightcliff foreshore potentially face several other threats, including predation by dogs and cats, traffic collision, and potentially predation by people.

## **4.2 Nightcliff foreshore**

This baseline survey of the Nightcliff foreshore added 29 species to those recorded from this area, which is more than one fifth of the known species. Species present during this survey included small populations of Vulnerable and Near Threatened species including Bush Stone-curlew, Common Brushtail Possum, Ruddy Turnstone, Whimbrel, Red Knot, Eastern Curlew, Floodplain Monitor and Mitchell's Water Monitor. Bush Stone-curlew and Common Brushtail Possum were found in the greatest abundances of any of the species of conservation interest. Floodplain Monitor and the Mitchell's Water Monitor were only detected at the Rapid Creek end of the Nightcliff foreshore (near the Casuarina Coastal Reserve) during this survey, although in the past both species have been observed as far along the foreshore as the Nightcliff jetty (T. Parkin pers comm). The Casuarina Coastal Reserve is one of the few known breeding locations for the Floodplain Monitor (Rhind *et al.* 2013), and it is probable that the Nightcliff foreshore is a part of a network of suitable habitats for the

species along Darwin's coastline. Likewise, the presence of Ruddy Turnstone, Whimbrel, Red Knot, Common Greenshank, Common Sandpiper and Eastern Curlew indicate that the Nightcliff rock platforms are an important part of the network of suitable migratory shorebird habitats in Darwin Harbour (see 4.3; Migratory shorebirds).

The most abundant feral species recorded at the Nightcliff foreshore was the Asian House Gecko. Cane toads were observed in low numbers. The presence of Black Rats and House Mice between Sites 1 and 2 is not unexpected as both these species favour human modified habitats and urban and peri urban areas.

Of all feral species recorded, the presence of cats that are likely to be feral (given their flighty nature and lack of collars) is of greatest concern. Cats are known to prey on at least 400 vertebrate species in Australia and are specifically identified as predating on Common Brushtail Possum and Floodplain Monitor (Doherty *et al.*, 2015). In total, ten of the native species known to occur at the Nightcliff foreshore are known to be preyed on by cats, while an additional thirty native species are closely related to known prey species (including Mitchell's Water Monitor) and are therefore likely to be vulnerable to predation by feral cats also (Table 6).

Furthermore, cats are known to be opportunistic, generalist predators able to effectively hunt a very wide range of lizards, snakes, frogs, birds, marsupials, rodents, mammals and invertebrates (Doherty *et al.* 2015). It is therefore likely that cats at the Nightcliff foreshore pose threat to most native vertebrate species present in the area, including all of the species of conservation concern.

**Table 6. Native species preyed upon by feral cats and congeners of known prey species that are recorded from Nightcliff foreshore. Data extracted from Doherty *et al.* (2015).**

<i>Mammals</i>	<i>Birds</i>
Black Flying-fox	Pied Imperial-Pigeon
Little Red Flying-fox	Buff-banded Rail
Common Brushtail Possum (Top End)	Bar-shouldered Dove
<i>Reptiles</i>	Peaceful Dove
Floodplain Monitor	White-gaped Honeyeater
Swanson's Snake-eyed Skink	White-breasted Whistler
Mitchell's Water Monitor	Mangrove Golden Whistler
	Long-tailed Finch
<i>Birds</i>	Masked Finch
Red-necked Stint	Silver-crowned Friarbird
Black Kite	Helmeted Friarbird
Striated Pardalote	Little Friarbird
Tree Martin	Arafura Fantail
Tawny Frogmouth	Mangrove Grey Fantail
Willie Wagtail	Northern Fantail
Sacred Kingfisher	Double-barred Finch
White-breasted Woodswallow	Collared Kingfisher
Sulphur-crested Cockatoo	Forest Kingfisher
Great Knot	Yellow White-eye
Greater Sand Plover	
Lesser Sand Plover	
Oriental Plover	
Torresian Crow	

### 4.3 Migratory shorebirds

East Point is recognised as an important habitat for migratory shorebirds within Darwin Harbour (EcOz 2013, Lilleyman *et al.* 2015) with 26 species recorded from the reserve. The Nightcliff foreshore is utilised by a comparable number of migratory shorebird species, with 23 species recorded. Rocky headlands and rock platforms that are exposed as the tide recedes provide roosting and feeding sites for these birds (Fig. 15). The availability of safe roosting sites within close proximity to a network of productive feeding areas is essential to maintain a healthy community of shorebirds (Garnett 2012) and given the central location of Nightcliff foreshore within the broader network of feeding areas of Darwin Harbour (spanning East Arm – Lee Point) the Nightcliff foreshore undoubtedly represents an important migratory shorebird habitat.



**Figure 15. Exposed rock platform at low tide on the Nightcliff foreshore (Site 2).**

This survey detected six species of migratory shorebirds - Common Greenshank, Common Sandpiper, Ruddy Turnstone, Whimbrel, Red Knot and Eastern Curlew, at Site 2 on the Nightcliff foreshore during a time when most migratory shorebirds are in the Northern Hemisphere. Interestingly, several hundred individual migratory shorebirds of a variety of species are known to stay in the Darwin region year round. It is thought that these individuals are non-breeding juveniles and older adults (*pers comm.* A. Lilleyman). A notable threatening process for these individuals at the Nightcliff foreshore is the presence of cats along the foreshore area. Cats are particularly destructive to migratory shorebirds (Geering *et al.* 2007, Doherty *et al.*, 2015) and many of the rock platforms at Nightcliff are accessible to cats when the tide is low. This is of particular

concern as all of the migratory shorebirds detected at Nightcliff are protected, and two species are considered to be Vulnerable (Red Knot and Eastern Curlew).

The roosting and feeding opportunities at Site 2 on the Nightcliff foreshore attract resident shorebirds as well as the non-breeding migratory shorebirds that have remained behind. Many shorebirds are therefore likely to be sighted year-round and this study has identified eight migratory shorebird species and seven resident shorebird species which may commonly be seen at Site 2 (Table 7).

**Table 7. Shorebird species most likely to be seen at Site 2 on the Nightcliff foreshore.**

Type	Species	Time of year at Nightcliff foreshore	Roosting (R) or Feeding (F)	Most likely to be seen at Nightcliff foreshore
MIGRATORY	Asian Dowitcher	wet season	F, R	
MIGRATORY	Bar-tailed Godwit	wet season	F, R	
MIGRATORY	Black-tailed Godwit	wet season	F, R	
MIGRATORY	Broad-billed Sandpiper	wet season	R	
MIGRATORY	Common Greenshank	wet season	F, R	
MIGRATORY	Common Sandpiper	year-round	F, R	Y
MIGRATORY	Curlew Sandpiper	year-round	F, R	Y
MIGRATORY	Eastern Curlew	wet season	F, R	
MIGRATORY	Great Knot	wet season	R	
MIGRATORY	Greater Sand Plover	year-round	F, R	Y
MIGRATORY	Grey Plover	year-round	F, R	
MIGRATORY	Grey-tailed Tattler	wet season	F, R	
MIGRATORY	Lesser Sand Plover	year-round	F, R	
MIGRATORY	Little Curlew	year-round	F, R	Y
MIGRATORY	Marsh Sandpiper	wet season	R	
MIGRATORY	Oriental Plover	wet season	F, R	
MIGRATORY	Pacific Golden Plover	wet season	F, R	
MIGRATORY	Pectoral Sandpiper	wet season	F, R	
MIGRATORY	Red Knot			
MIGRATORY	Red-necked Phalarope	year-round	F, R	Y
MIGRATORY	Red-necked Stint	wet season	F, R	
MIGRATORY	Ruddy Turnstone	year-round	F, R	Y
MIGRATORY	Sanderling	year-round	F, R	Y
MIGRATORY	Sharp-tailed Sandpiper	wet season	F, R	
MIGRATORY	Terek Sandpiper	wet season	F, R	
MIGRATORY	Whimbrel	year-round	F, R	
MIGRATORY	Wood Sandpiper	year-round	R	Y
RESIDENT	Australian Pied Oystercatcher	wet season	F, R	
RESIDENT	Australian White Ibis	year-round	F, R	Y
RESIDENT	Beach Stone-curlew	year-round	F, R (trees)	Y
RESIDENT	Black-winged Stilt	year-round	F, R	Y
RESIDENT	Eastern Great Egret	year-round	F, R (trees)	Y
RESIDENT	Eastern Reef Egret	year-round	F, R (trees)	Y
RESIDENT	Great-billed Heron	year-round	F, R	
RESIDENT	Intermediate Egret	year-round	F, R (trees)	Y
RESIDENT	Masked Lapwing	year-round	F, R	Y
RESIDENT	Pied Heron	year-round	F, R	
RESIDENT	Sooty Oystercatcher	year-round	F, R	
RESIDENT	Striated Heron	year-round	F, R	

## 5. Conclusions and Recommendations

Only a small portion (approximately 3 %) of the Darwin Harbour Site of Conservation Significance is managed within reserves, and many areas that are not located in reserves may provide important habitat for native species. For example East Point has been shown in this survey to be a significant refuge for small native mammals and bird species that use closed forest, such as Rainbow Pittas and Rufous Owls. Both East Point Reserve and the Nightcliff foreshore area provide habitat for threatened monitor species and are important parts of the network of available habitat for migratory shorebirds in Darwin Harbour. As such both East Point and the Nightcliff foreshore contribute significantly to supporting biodiversity in an otherwise highly urbanised environment.

This survey has contributed new information about the vertebrate biodiversity of East Point and the Nightcliff Foreshore area. However, inferences about changes in vertebrate biodiversity at East point since the previous 2013 survey must be made with caution. The 2013 and current surveys provide only two samples in time, additional sample points in time are needed to evaluate trends. Furthermore there were some differences in some sampling methods between the two surveys; any changes in fauna since 2013 can only be inferred from the data derived with common sampling methods. Our standardised composite sampling method did however allow important comparisons with local and regional surveys undertaken by DLRM and highlights the importance of using standardised fauna sampling methods when doing surveys.

The remnant monsoon forest and mature revegetated monsoon forest are providing habitat for a range of vertebrate species, small mammals and frogs in particular. This finding suggests that protection and further recovery of these habitats is beneficial to vertebrate biodiversity in the area. It is therefore recommended that efforts to increase extent of monsoon forest strategic revegetation and reduce edge effects (Action 2 in the East Point Biodiversity 5 Year Management Plan 2014 – 2018) be continued.

Expansion of monsoon forest at East Point Reserve is also expected to reduce carrying capacity for Agile Wallabies, and ultimately population size in the long-term, due to a reduction in grazing area. Estimates of the Agile Wallaby population size at East Point were not undertaken during this survey. We note that the sampling methods currently employed to monitor the wallaby population at East Point are unlikely to provide reliable estimates of population size or relative change in population size over time. If more reliable estimates of the wallaby population size are required, then other more robust population sampling methods may need to be considered.

East Point and the Nightcliff Foreshore support remnant populations of the threatened Floodplain Monitor and Mitchell's Water Monitor. Poisoning from Cane Toad ingestion is regarded as the primary cause of historic declines of Floodplain Monitors and other varanids in the Top End (DLRM 2016b). The Floodplain Monitor and Mitchell's Water Monitor suffered substantial declines in the NT associated with the arrival of toads. The populations of these species along the coastal fringe of Darwin are therefore regionally significant. As yet it is

unclear what factors are influencing the persistence of these populations (and of other populations elsewhere in the NT). Apart from poisoning by toad ingestion, monitor populations at East Point and the Nightcliff foreshore face several other threats, including predation by dogs and cats and traffic collision. Small monitor lizards have been frequently found in cat stomachs in the Top End (Doherty *et al.* 2015; DLRM unpublished data). Road-killed Floodplain Monitors have been observed in the Nightcliff area (T. Mitchell, G. Gillespie, DLRM pers. obs.). The relative and/or accumulative impact of these factors on survival, and whether the monitor populations are increasing or decreasing, is not known. Options for managing potential threats to these species, such as toads or cat/dog predation, are limited and may potentially be ineffective, especially if they are not the primary factor(s) limiting populations. Further information on population trends and actual sources of mortality is therefore required to inform which management actions, if any, may enhance the security of these populations. In order to establish population trends, population size needs to be estimated using systematic mark-recapture methods at appropriate population scales, repeated over at least three inter-annual sampling intervals, and preferably over at least one generation interval. Sources of mortality can be determined by undertaking radio tracking studies of multiple individuals to ascertain their fate.

Cats that appeared to be either feral or ‘un-owned’ were detected at the Nightcliff foreshore. Although not detected during this survey, as with all other per-urban areas on the Australian mainland, East Point Reserve may also contain feral cats, or be visited by straying ‘owned’ cats from nearby residential areas (Denny and Dickman 2010). Feral cats are highly effective predators of small mammals and other vertebrates (Doherty *et al.* 2015). They are strongly implicated in the extinction of several Australian native mammals and birds and the widespread decline of small and medium-sized mammals across northern Australia (Woinarski *et al.* 2015; Ziemnicki *et al.* 2015). Recent research in Kakadu National Park has demonstrated that feral cats also exert significant population pressure on reptile communities, including small monitors (Stokeld *et al.* 2016). Cats are expected to be exerting significant predation pressure on a range of native species along the Nightcliff foreshore, and at East Point, if present. Cats may be responsible for the exclusion of some native species currently absent from these areas despite the availability of suitable habitat, and they pose a threat to the persistence of some species. Control of cat populations or cat activity in these areas is desirable to protect native fauna. However, feral cats are difficult to control and this is exacerbated in peri-urban environments such as the Nightcliff Foreshore where the major source of cats is expected to be from the nearby domestic population. Therefore in order to minimize cat activity and impacts on biodiversity in these areas, a high level of community awareness, engagement and participation in management of domestic and ‘un-owned’ cats is desirable.

Predation by feral cats, disturbance by domestic dogs and people, and contamination or loss of coastal habitats are among the major threats that migratory shorebirds face when in Australia (Geering *et al.* 2007). These pressures also apply to the shorebird community in Darwin Harbour. An Honours study at Casuarina Beach recorded high levels of disturbance to roosting shorebirds by humans and dogs (Lilleyman *et al.* 2016). In Darwin rock-fishing is also likely to disturb roosting shorebirds. Strategies should be considered to reduce

disturbance and improve protection of shore birds at both the East Point and the Nightcliff foreshores (as per Action 9 “Support the protection of shorebird roosting areas within and adjacent to the Reserve” in the East Point Biodiversity 5 Year Management Plan 2014 – 2018). Disturbance can be managed using a variety of techniques, such as restricting particular activities, limiting visitor access at certain times of the year, or limiting the number of access points. Establishing ‘buffers or ‘set-backs’ by installing fencing is a practical approach, applying minimum buffer distances determined from experimental trails (e.g., Glover *et al.* 2011). In particular, it is recommended that domestic dogs be excluded from the Nightcliff Rocks and that the City of Darwin manage human access to these important shorebird roosting areas. Furthermore, consideration of shorebird requirements when planning events or coastal developments is essential to minimise shorebird disturbance and damage to, or loss of habitat.

Ongoing biodiversity monitoring is an essential component of any biodiversity management program. The type of monitoring (i.e. what to monitor, sampling methods, intensity and frequency) should be informed by the outcomes that management is aiming to achieve and evaluate. Standardised and consistent and regular (i.e. annual) general vertebrate monitoring may contribute to this, but targeted monitoring of particular species of concern, such as threatened species, or groups such as shore birds may also be necessary.



## 6. References

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## Appendix I: Vertebrate fauna detected during all surveys at East Point Reserve.

\*Sites 1-6 = monsoon forest; Site 7 = beach; Site 8 = Lake Alexander; Site 9 = mangroves. Presence indicated by 1; absence indicated by 0.

Site*	1	2	3	4	5	6	7	8	9
Total amphibian richness	1	2	0	0	1	2	0	0	1
Cane toad	1	1	0	0	1	1	0	0	0
Green Tree-frog	0	1	0	0	0	1	0	0	1
Total bird richness	23	29	27	23	24	21	23	17	32
Arafura Fantail	0	0	0	1	0	0	0	0	1
Australasian Figbird	1	1	0	1	1	1	0	1	0
Australian White Ibis	0	1	0	0	0	0	0	1	1
Azure Kingfisher	0	0	0	0	0	0	0	0	1
Barking Owl	0	1	0	0	0	0	0	0	1
Bar-shouldered Dove	1	1	1	1	1	1	1	1	1
Beach Stone-curlew	0	0	0	0	0	0	1	0	0
Black Butcherbird	0	0	0	0	0	0	0	0	1
Black Kite	1	0	0	0	0	0	0	1	1
Blue-faced Honeyeater	0	0	0	0	0	0	0	0	1
Brahminy Kite	1	0	0	0	0	0	0	0	1
Broad-billed Flycatcher	0	0	0	0	0	0	0	0	1
Brown Goshawk	0	1	0	1	0	0	0	0	0
Brown Honeyeater	1	0	1	0	1	1	1	0	1
Brush Cuckoo	1	1	0	0	0	0	0	0	0
Bush Stone-curlew	1	1	1	0	1	1	0	0	0
Cicadabird	0	0	1	0	0	0	0	0	0
Collared Kingfisher	0	0	0	0	0	0	0	0	1
Crimson Finch	0	0	0	0	0	0	0	1	0
Double-barred Finch	1	0	0	0	0	0	1	0	0
Dusky Honeyeater	1	1	1	1	1	1	0	0	0
Eastern Reef Egret	0	0	0	0	0	0	1	0	0
Forest Kingfisher	1	0	1	0	0	0	1	0	0
Green-backed Gerygone	0	0	0	0	0	0	0	0	1
Grey Shrikethrush	0	0	0	0	0	0	0	0	1
Grey Whistler	1	1	1	1	1	0	0	0	0
Helmeted Friarbird	0	0	0	0	0	0	1	0	1
Intermediate Egret	0	0	0	0	0	0	0	1	0
Large-billed Gerygone	0	1	1	1	1	0	0	0	1
Large-tailed Nightjar	1	1	1	1	1	1	0	0	1
Leaden Flycatcher	0	1	1	0	0	1	0	0	0
Lemon-bellied Flycatcher	0	0	1	0	1	1	1	0	0
Little Friarbird	0	0	0	0	0	0	0	1	0
Little Pied Cormorant	0	0	0	0	0	0	1	0	0
Magpie-lark	1	1	1	1	1	1	1	1	0
Mangrove Gerygone	0	0	0	0	0	0	0	0	1
Mangrove Golden-whistler	0	0	0	0	0	0	0	0	1
Mangrove Robin	0	0	0	0	0	0	0	0	1
Martin sp.	0	0	0	0	0	0	1	0	0
Masked Lapwing	0	1	1	1	1	1	1	1	0
Nankeen Kestrel	0	0	1	0	0	0	0	0	1
Nankeen Night Heron	1	0	0	0	0	0	0	0	1
Northern Fantail	0	1	1	1	1	1	0	0	1
Orange-footed Scrubfowl	1	1	1	1	1	1	1	1	1
Peaceful Dove	0	1	1	0	1	1	0	1	0
Pied Imperial-Pigeon	0	0	0	0	0	0	0	1	0
Rainbow Bee-eater	0	1	1	0	1	1	1	0	1

Rainbow Lorikeet	1	1	0	1	1	0	0	0	0
Rainbow Pitta	1	1	0	1	0	1	0	0	0
Red-tailed Black-cockatoo (Top End)	1	1	0	1	1	0	1	0	0
Red-winged Parrot	0	0	0	0	1	0	0	0	1
Rose-crowned Fruit Dove	0	0	0	1	0	0	0	0	0
Rufous Owl	0	0	0	1	0	0	0	0	0
Rufous-banded Honeyeater	1	0	1	1	1	1	0	0	0
Shining Flycatcher	0	1	1	1	1	1	0	0	1
Silver Gull	1	0	0	0	0	0	1	1	0
Spangled Drongo	0	0	1	0	1	1	0	0	0
Straw-necked Ibis	0	1	0	0	0	0	0	1	0
Striated Heron	0	0	0	0	0	0	1	1	0
Tawny Frogmouth	0	1	1	0	0	0	0	0	1
Tern sp.	0	0	0	0	0	0	1	0	0
Varied Lorikeet	0	0	1	1	0	0	0	0	0
Varied Triller	1	1	1	1	1	1	1	0	0
Whistling Kite	0	0	0	1	0	0	0	0	0
White-bellied Cuckoo-shrike	1	1	1	0	0	1	1	0	1
White-breasted Woodswallow	0	0	0	0	0	0	1	0	1
White-gaped Honeyeater	1	1	1	1	1	1	1	1	1
White-throated Honeyeater	0	1	1	0	0	0	1	0	0
Yellow Oriole	0	1	0	0	1	0	0	1	0
Yellow White-eye	0	0	0	0	0	0	0	0	1
<b>Total mammal richness</b>	<b>6</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>
Agile Wallaby	1	1	1	1	1	1	0	0	0
Black Flying-fox	0	0	0	0	0	0	0	0	1
Common Brushtail Possum (Top End)	1	1	1	1	1	1	0	0	1
Grassland Melomys	1	1	0	0	0	0	0	0	0
Northern Blossom Bat	1	0	0	0	0	0	0	0	0
Northern Brown Bandicoot	1	1	1	1	0	1	0	0	0
Unid. Flying-fox	1	0	0	0	0	0	0	0	0
Unid. Small bat	0	1	0	0	0	0	0	0	0
<b>Total reptile richness</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>5</b>
Asian House Gecko	1	1	1	1	1	1	0	0	1
Australian Bockadam	0	0	0	0	0	0	0	0	1
Bynoe's Gecko	0	1	1	0	0	1	0	0	1
Carpet Python	0	0	0	1	0	0	0	0	0
Top End Mulch-skink	0	0	0	0	0	1	0	0	0
Friiled Lizard	0	0	1	0	0	0	0	0	0
Northern Water Dragon	1	1	1	1	0	0	0	1	0
Red-Sided Rainbow Skink	1	1	1	1	0	1	0	0	1
Slaty-grey Snake	0	0	1	0	0	0	0	0	1
Slender Rainbow Skink	0	0	1	1	0	0	0	0	0
Swanson's Snake-eyed Skink	1	1	0	0	1	0	0	0	0

## Appendix II: Comprehensive vertebrate fauna list, East Point Reserve

Common Name	Scientific Name	Data Source
Birds		
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>	DLRM (2016)
Brown Goshawk	<i>Accipiter fasciatus</i>	DLRM (2016)
Grey Goshawk	<i>Accipiter novaehollandiae</i>	EcOz (2013)
Australian Reed-warbler	<i>Acrocephalus australis</i>	EcOz (2013)
Common Sandpiper	<i>Actitis hypoleucos</i>	DLRM (2016)
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	EcOz (2013)
Australasian Darter	<i>Anhinga novaehollandiae</i>	DLRM (2016)
Magpie Goose	<i>Anseranas semipalmata</i>	DLRM (2016)
Australasian Pipit	<i>Anthus novaeseelandiae</i>	DLRM (2016)
Red-winged Parrot	<i>Aprosmictus erythropterus</i>	DLRM (2016)
Fork-tailed Swift	<i>Apus pacificus</i>	DLRM (2016)
Cattle Egret	<i>Ardea ibis</i>	DLRM (2016)
Intermediate Egret	<i>Ardea intermedia</i>	DLRM (2016)
Eastern Great Egret	<i>Ardea modesta</i>	DLRM (2016)
White-necked Heron	<i>Ardea pacifica</i>	EcOz (2013)
Great-billed Heron	<i>Ardea sumatrana</i>	EcOz (2013)
Wedge-tailed Shearwater	<i>Ardenna pacifica</i>	EcOz (2013)
Ruddy Turnstone	<i>Arenaria interpres</i>	DLRM (2016)
Black-faced Woodswallow	<i>Artamus cinereus</i>	EcOz (2013)
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	DLRM (2016)
Masked Woodswallow	<i>Artamus personatus</i>	DLRM (2016)
Pacific Baza	<i>Aviceda subcristata</i>	DLRM (2016)
Bush Stone-curlew	<i>Burhinus grallarius</i>	DLRM (2016)
Striated Heron	<i>Butorides striata</i>	DLRM (2016)
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	DLRM (2016)
Little Corella	<i>Cacatua sanguinea</i>	DLRM (2016)
Brush Cuckoo	<i>Cacomantis variolosus</i>	DLRM (2016)
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	EcOz (2013)
Sanderling	<i>Calidris alba</i>	DLRM (2016)
Red Knot	<i>Calidris canutus</i>	DLRM (2016)
Curlew Sandpiper	<i>Calidris ferruginea</i>	DLRM (2016)
Pectoral Sandpiper	<i>Calidris melanotos</i>	DLRM (2016)
Red-necked Stint	<i>Calidris ruficollis</i>	DLRM (2016)
Great Knot	<i>Calidris tenuirostris</i>	DLRM (2016)
Red-tailed Black-cockatoo (Top End)	<i>Calyptorhynchus banksii macrorhynchus</i>	DLRM (2016)
Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	DLRM (2016)
Pheasant Coucal	<i>Centropus phasianinus</i>	DLRM (2016)
Azure Kingfisher	<i>Ceyx azureus</i>	DLRM (2016)
Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>	DLRM (2016)
Little Bronze-Cuckoo	<i>Chalcites minutillus</i>	DLRM (2016)
Emerald Dove	<i>Chalcophaps indica</i>	DLRM (2016)
Greater Sand Plover	<i>Charadrius leschenaultii</i>	DLRM (2016)
Lesser Sand Plover	<i>Charadrius mongolus</i>	DLRM (2016)
Red-capped Plover	<i>Charadrius ruficapillus</i>	DLRM (2016)
Oriental Plover	<i>Charadrius veredus</i>	DLRM (2016)
Whiskered Tern	<i>Chlidonias hybrida</i>	DLRM (2016)
White-winged Black Tern	<i>Chlidonias leucopterus</i>	DLRM (2016)
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	DLRM (2016)
Banded Honeyeater	<i>Cissomela pectoralis</i>	DLRM (2016)
Golden-headed Cisticola	<i>Cisticola exilis</i>	DLRM (2016)
Zitting Cisticola	<i>Cisticola juncidis</i>	DLRM (2016)
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	New record
Little Shrike-thrush	<i>Colluricincla megarhyncha</i>	DLRM (2016)

Rock Dove	<i>Columba livia</i>	DLRM (2016)
Rufous-banded Honeyeater	<i>Conopophila albogularis</i>	DLRM (2016)
Rufous-throated Honeyeater	<i>Conopophila rufogularis</i>	DLRM (2016)
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	DLRM (2016)
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>	DLRM (2016)
Cicadabird	<i>Coracina tenuirostris</i>	DLRM (2016)
Torresian Crow	<i>Corvus orru</i>	DLRM (2016)
Pied Butcherbird	<i>Cracticus nigrogularis</i>	DLRM (2016)
Black Butcherbird	<i>Cracticus quoyi</i>	DLRM (2016)
Grey Butcherbird	<i>Cracticus torquatus</i>	EcOz (2013)
Oriental Cuckoo	<i>Cuculus optatus</i>	DLRM (2016)
Blue-winged Kookaburra	<i>Dacelo leachii</i>	DLRM (2016)
Wandering Whistling-duck	<i>Dendrocygna arcuata</i>	EcOz (2013)
Mistletoebird	<i>Dicaeum hirundinaceum</i>	DLRM (2016)
Spangled Drongo	<i>Dicrurus bracteatus</i>	DLRM (2016)
Pied Imperial-Pigeon	<i>Ducula bicolor</i>	DLRM (2016)
Little Egret	<i>Egretta garzetta</i>	DLRM (2016)
White-faced Heron	<i>Egretta novaehollandiae</i>	DLRM (2016)
Pied Heron	<i>Egretta picata</i>	DLRM (2016)
Eastern Reef Egret	<i>Egretta sacra</i>	DLRM (2016)
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	DLRM (2016)
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	DLRM (2016)
Gouldian Finch	<i>Erythrura gouldiae</i>	EcOz (2013)
Beach Stone-curlew	<i>Esacus magnirostris</i>	DLRM (2016)
Eastern Koel	<i>Eudynamys orientalis</i>	DLRM (2016)
Galah	<i>Eulophus roseicapilla</i>	DLRM (2016)
Spotted Nightjar	<i>Eurostopodus argus</i>	EcOz (2013)
Dollarbird	<i>Eurystomus orientalis</i>	DLRM (2016)
Brown Falcon	<i>Falco berigora</i>	DLRM (2016)
Nankeen Kestrel	<i>Falco cenchroides</i>	DLRM (2016)
Australian Hobby	<i>Falco longipennis</i>	DLRM (2016)
Christmas Island Frigatebird	<i>Fregata andrewsi</i>	DLRM (2016)
Lesser Frigatebird	<i>Fregata ariel</i>	DLRM (2016)
Great Frigatebird	<i>Fregata minor</i>	EcOz (2013)
Swinhoe's Snipe	<i>Gallinago megala</i>	DLRM (2016)
Buff-banded Rail	<i>Gallirallus philippensis</i>	DLRM (2016)
Gull-billed Tern	<i>Gelochelidon nilotica</i>	DLRM (2016)
Diamond Dove	<i>Geopelia cuneata</i>	DLRM (2016)
Bar-shouldered Dove	<i>Geopelia humeralis</i>	DLRM (2016)
Peaceful Dove	<i>Geopelia striata</i>	DLRM (2016)
White-throated Gerygone	<i>Gerygone albogularis</i>	DLRM (2016)
Green-backed Gerygone	<i>Gerygone chloronota</i>	DLRM (2016)
Mangrove Gerygone	<i>Gerygone levigaster</i>	DLRM (2016)
Large-billed Gerygone	<i>Gerygone magnirostris</i>	DLRM (2016)
Magpie-lark	<i>Grallina cyanoleuca</i>	DLRM (2016)
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	DLRM (2016)
Australian Pied Oystercatcher	<i>Haematopus longirostris</i>	DLRM (2016)
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	DLRM (2016)
Brahminy Kite	<i>Haliastur indus</i>	DLRM (2016)
Whistling Kite	<i>Haliastur sphenurus</i>	DLRM (2016)
Black-winged Stilt	<i>Himantopus himantopus</i>	DLRM (2016)
Welcome Swallow	<i>Hirundo neoxena</i>	DLRM (2016)
Barn Swallow	<i>Hirundo rustica</i>	DLRM (2016)
Caspian Tern	<i>Hydroprogne caspia</i>	DLRM (2016)
Varied Triller	<i>Lalage leucomela</i>	DLRM (2016)
White-winged Triller	<i>Lalage sueurii</i>	DLRM (2016)
Grey-headed Honeyeater	<i>Lichenostomus keartlandi</i>	DLRM (2016)

White-gaped Honeyeater	<i>Lichenostomus unicolor</i>	DLRM (2016)
Singing Honeyeater	<i>Lichenostomus virescens</i>	DLRM (2016)
Brown Honeyeater	<i>Lichmera indistincta</i>	DLRM (2016)
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	DLRM (2016)
Asian Dowitcher	<i>Limnodromus semipalmatus</i>	DLRM (2016)
Bar-tailed Godwit	<i>Limosa lapponica</i>	DLRM (2016)
Black-tailed Godwit	<i>Limosa limosa</i>	DLRM (2016)
Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>	DLRM (2016)
Yellow-rumped Mannikin	<i>Lonchura flaviprymna</i>	DLRM (2016)
Square-tailed Kite	<i>Lophoictinia isura</i>	DLRM (2016)
Red-backed Fairy-wren	<i>Malurus melanocephalus</i>	DLRM (2016)
Yellow-throated Miner	<i>Manorina flavigula</i>	DLRM (2016)
Tawny Grassbird	<i>Megalurus timoriensis</i>	EcOz (2013)
Orange-footed Scrubfowl	<i>Megapodius reinwardt</i>	DLRM (2016)
White-throated Honeyeater	<i>Melithreptus albogularis</i>	DLRM (2016)
Rainbow Bee-eater	<i>Merops ornatus</i>	DLRM (2016)
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	DLRM (2016)
Lemon-bellied Flycatcher	<i>Microeca flavigaster</i>	DLRM (2016)
Black Kite	<i>Milvus migrans</i>	DLRM (2016)
Shining Flycatcher	<i>Myiagra alecto</i>	DLRM (2016)
Restless Flycatcher	<i>Myiagra inquieta</i>	DLRM (2016)
Leaden Flycatcher	<i>Myiagra rubecula</i>	DLRM (2016)
Broad-billed Flycatcher	<i>Myiagra ruficollis</i>	DLRM (2016)
Red-headed Honeyeater	<i>Myzomela erythrocephala</i>	DLRM (2016)
Dusky Honeyeater	<i>Myzomela obscura</i>	DLRM (2016)
Crimson Finch	<i>Neochmia phaeton</i>	DLRM (2016)
Green Pygmy-goose	<i>Nettapus pulchellus</i>	EcOz (2013)
Barking Owl	<i>Ninox connivens</i>	DLRM (2016)
Southern Boobook	<i>Ninox novaeseelandiae</i>	EcOz (2013)
Rufous Owl	<i>Ninox rufa</i>	New record
Eastern Curlew	<i>Numenius madagascariensis</i>	DLRM (2016)
Little Curlew	<i>Numenius minutus</i>	DLRM (2016)
Whimbrel	<i>Numenius phaeopus</i>	DLRM (2016)
Nankeen Night Heron	<i>Nycticorax caledonicus</i>	DLRM (2016)
Cockatiel	<i>Nymphicus hollandicus</i>	EcOz (2013)
Bridled Tern	<i>Onychoprion anaethetus</i>	DLRM (2016)
Yellow Oriole	<i>Oriolus flavocinctus</i>	DLRM (2016)
Olive-backed Oriole	<i>Oriolus sagittatus</i>	DLRM (2016)
White-breasted Whistler	<i>Pachycephala lanioides</i>	DLRM (2016)
Mangrove Golden Whistler	<i>Pachycephala melanura</i>	DLRM (2016)
Rufous Whistler	<i>Pachycephala rufiventris</i>	EcOz (2013)
Grey Whistler	<i>Pachycephala simplex</i>	DLRM (2016)
Eastern Osprey	<i>Pandion cristatus</i>	DLRM (2016)
Striated Pardalote	<i>Pardalotus striatus</i>	DLRM (2016)
Australian Pelican	<i>Pelecanus conspicillatus</i>	DLRM (2016)
Mangrove Robin	<i>Peneonanthe pulverulenta</i>	DLRM (2016)
Tree Martin	<i>Petrochelidon nigricans</i>	DLRM (2016)
Pied Cormorant	<i>Phalacrocorax varius</i>	DLRM (2016)
Red-necked Phalarope	<i>Phalaropus lobatus</i>	DLRM (2016)
Silver-crowned Friarbird	<i>Philemon argenticeps</i>	DLRM (2016)
Helmeted Friarbird	<i>Philemon buceroides</i>	DLRM (2016)
Little Friarbird	<i>Philemon citreogularis</i>	DLRM (2016)
Rainbow Pitta	<i>Pitta iris</i>	DLRM (2016)
Royal Spoonbill	<i>Platalea regia</i>	DLRM (2016)
Glossy Ibis	<i>Plegadis falcinellus</i>	EcOz (2013)
Pacific Golden Plover	<i>Pluvialis fulva</i>	DLRM (2016)
Grey Plover	<i>Pluvialis squatarola</i>	DLRM (2016)

Tawny Frogmouth	<i>Podargus strigoides</i>	DLRM (2016)
Long-tailed Finch	<i>Poephila acuticauda</i>	DLRM (2016)
Masked Finch	<i>Poephila personata</i>	DLRM (2016)
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	EcOz (2013)
Varied Lorikeet	<i>Psitteuteles versicolor</i>	DLRM (2016)
Rose-crowned Fruit-dove	<i>Ptilinopus regina</i>	DLRM (2016)
Great Bowerbird	<i>Ptilonorhynchus nuchalis</i>	DLRM (2016)
Bar-breasted Honeyeater	<i>Ramsayornis fasciatus</i>	DLRM (2016)
Grey Fantail	<i>Rhipidura albiscapa</i>	DLRM (2016)
Arafura Fantail	<i>Rhipidura dryas</i>	DLRM (2016)
Willie Wagtail	<i>Rhipidura leucophrys</i>	DLRM (2016)
Mangrove Grey Fantail	<i>Rhipidura phasiana</i>	DLRM (2016)
Northern Fantail	<i>Rhipidura rufiventris</i>	DLRM (2016)
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	DLRM (2016)
Weebill	<i>Smicromis brevirostris</i>	EcOz (2013)
Australasian Figbird	<i>Sphecotheres vieilloti</i>	DLRM (2016)
Roseate Tern	<i>Sterna dougallii</i>	DLRM (2016)
Common Tern	<i>Sterna hirundo</i>	DLRM (2016)
Black-naped Tern	<i>Sterna sumatrana</i>	EcOz (2013)
Little Tern	<i>Sternula albifrons</i>	DLRM (2016)
Australian Pratincole	<i>Stiltia isabella</i>	EcOz (2013)
Brown Booby	<i>Sula leucogaster</i>	DLRM (2016)
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	EcOz (2013)
Radjah Shelduck	<i>Tadorna radjah</i>	DLRM (2016)
Double-barred Finch	<i>Taeniopygia bichenovii</i>	DLRM (2016)
Lesser Crested Tern	<i>Thalasseus bengalensis</i>	DLRM (2016)
Crested Tern	<i>Thalasseus bergii</i>	DLRM (2016)
Australian White Ibis	<i>Threskiornis molucca</i>	DLRM (2016)
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	DLRM (2016)
Collared Kingfisher	<i>Todiramphus chloris</i>	DLRM (2016)
Forest Kingfisher	<i>Todiramphus macleayii</i>	DLRM (2016)
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>	DLRM (2016)
Sacred Kingfisher	<i>Todiramphus sanctus</i>	DLRM (2016)
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	DLRM (2016)
Grey-tailed Tattler	<i>Tringa brevipes</i>	DLRM (2016)
Wood Sandpiper	<i>Tringa glareola</i>	DLRM (2016)
Wandering Tattler	<i>Tringa incana</i>	DLRM (2016)
Common Greenshank	<i>Tringa nebularia</i>	DLRM (2016)
Marsh Sandpiper	<i>Tringa stagnatilis</i>	DLRM (2016)
Eastern Grass Owl	<i>Tyto longimembris</i>	EcOz (2013)
Masked Lapwing	<i>Vanellus miles</i>	DLRM (2016)
Terek Sandpiper	<i>Xenus cinereus</i>	DLRM (2016)
Yellow White-eye	<i>Zosterops luteus</i>	DLRM (2016)
<b>Mammals</b>		
Dingo/dog	<i>Canis lupis</i>	EcOz (2013)
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	EcOz (2013)
Cat	<i>Felis catus</i>	EcOz (2013)
Northern Brown Bandicoot	<i>Isodon macrourus</i>	EcOz (2013)
Northern Blossom Bat	<i>MacroGLOSSUS minimus</i>	New record
Agile Wallaby	<i>Macropus agilis</i>	DLRM (2016)
Grassland Melomys	<i>Melomys burtoni</i>	EcOz (2013)
Black Flying-fox	<i>Pteropus alecto</i>	EcOz (2013)
Little Red Flying-fox	<i>Pteropus scapulatus</i>	EcOz (2013)
Dusky Rat	<i>Rattus colletti</i>	DLRM (2016)
Common Brushtail Possum (Top End)	<i>Trichosurus vulpecula arnhemensis</i>	DLRM (2016)
<b>Reptiles</b>		
Children's Python	<i>Antaresia childreni</i>	DLRM (2016)

Brown Tree Snake	<i>Boiga irregularis</i>	DLRM (2016)
Slender Rainbow Skink	<i>Carlia gracilis</i>	DLRM (2016)
Red-Sided Rainbow Skink	<i>Carlia rufilatus</i>	New record
Australian Bockadam	<i>Cerberus australis</i>	New record
Frilled Lizard	<i>Chlamydosaurus kingii</i>	DLRM (2016)
Aboreal Snake-Eyed Skink	<i>Cryptoblepharus cygnatus</i>	DLRM (2016)
Spalding's Ctenotus	<i>Ctenotus spaldingi</i>	DLRM (2016)
Olive Whip Snake	<i>Demansia olivacea</i>	DLRM (2016)
Green Tree Snake	<i>Dendrelaphis punctulata</i>	DLRM (2016)
Orange-sided Bar-lipped Skink	<i>Eremiascincus douglasi</i>	DLRM (2016)
Orange-naped Snake	<i>Furina ornata</i>	DLRM (2016)
Northern Dtella	<i>Gehyra australis</i>	DLRM (2016)
Top End Mulch-skink	<i>Glaphyromorphus darwiniensis</i>	New record
Northern Water Dragon	<i>Gowidon temporalis</i>	DLRM (2016)
Asian House Gecko	<i>Hemidactylus frenatus</i>	EcOz (2013)
Bynoe's Gecko	<i>Heteronotia binoei</i>	DLRM (2016)
Water Python	<i>Liasis mackloti</i>	DLRM (2016)
Carpet Python	<i>Morelia spilota</i>	DLRM (2016)
Western Brown Snake	<i>Pseudonaja nuchalis</i>	DLRM (2016)
Flower-pot Blind Snake	<i>Ramphotyphlops braminus</i>	DLRM (2016)
Slaty-grey Snake	<i>Stegonotus cucullatus</i>	DLRM (2016)
Common Blue-Tongued Lizard	<i>Tiliqua scincoides</i>	DLRM (2016)
Keelback	<i>Tropidonophis mairii</i>	DLRM (2016)
Floodplain Monitor	<i>Varanus panoptes</i>	DLRM (2016)
Spotted Tree Monitor	<i>Varanus scalaris</i>	DLRM (2016)
Northern Bandy-bandy	<i>Vermicella intermedia</i>	EcOz (2013)
Narrow-banded Northern Bandy-bandy	<i>Vermicella multifasciata</i>	DLRM (2016)
<b>Amphibians</b>		
Marbled Frog	<i>Limnodynastes convexiusculus</i>	EcOz (2013)
Green Tree Frog	<i>Litoria caerulea</i>	EcOz (2013)
Rocket Frog	<i>Litoria nasuta</i>	EcOz (2013)
Cane Toad	<i>Rhinella marina</i>	EcOz (2013)



### Appendix III: Vertebrate fauna detected during all surveys at the Nightcliff foreshore.

\*Surveys: 1 = bird survey, Site 1 (mangroves and rock platform); 2 = bird survey, Site 2 (parkland and rock platform); 3 = bird survey, Site 3 (parkland and beach); 4 = active diurnal survey, Transect 1; 5 = active diurnal survey, Transect 2; 6 = active diurnal survey, Transect 3; 7 = nocturnal survey. Presence indicated by 1; absence indicated by 0.

Survey *	1	2	3	4	5	6	7
Total amphibian diversity	0	0	0	0	0	0	1
Cane toad	0	0	0	0	0	0	1
Total bird diversity	20	33	19	8	5	6	10
Australasian Darter	0	0	0	0	0	0	1
Australasian Figbird	0	1	1	0	0	0	0
Australian Pied Oystercatcher	0	1	0	0	0	0	0
Australian White Ibis	1	0	0	0	0	0	0
Barking Owl	0	0	0	0	0	0	1
Bar-shouldered Dove	1	1	1	0	0	0	1
Black Butcherbird	0	1	0	0	0	0	0
Black Kite	1	1	1	0	0	0	0
Blue-faced Honeyeater	0	1	0	0	0	0	0
Brown Goshawk	0	0	0	0	1	0	0
Brown Honeyeater	1	1	1	0	0	0	0
Bush Stone-curlew	0	0	0	0	0	0	1
Caspian tern	0	1	0	0	0	0	0
Collared Kingfisher	0	0	0	0	0	1	0
Common Greenshank	0	1	0	0	0	0	0
Common Sandpiper	0	1	0	0	0	0	0
Double-barred Finch	1	1	0	0	0	0	0
Eastern Curlew	0	1	0	0	0	0	0
Eastern Reef Egret	1	0	0	0	0	0	0
Forest Kingfisher	1	0	0	0	0	0	0
Galah	1	1	0	0	0	0	0
Golden-headed Cisticola	0	0	0	1	0	0	0
Grey-crowned Babbler	0	0	1	0	0	0	0
Helmeted Friarbird	0	1	0	0	0	0	0
Intermediate Egret	1	1	0	0	0	0	0
Lemon-bellied Flycatcher	1	0	0	0	0	0	0
Little Friarbird	0	1	0	0	0	0	0
Long-tailed Finch	0	0	0	1	0	0	0
Magpie-lark	1	1	1	0	0	0	1
Mangrove Gerygone	0	0	0	1	0	0	0
Mangrove Golden Whistler	1	0	0	0	0	0	0
Masked Finch	0	0	0	0	1	0	0
Masked Lapwing	1	1	1	0	0	0	1
Mistletoebird	0	0	1	0	0	0	0
Orange-footed Scrubfowl	0	1	1	0	0	0	0
Peaceful Dove	0	1	1	0	0	0	1
Pheasant Coucal	0	0	0	1	0	0	0
Pied Imperial-Pigeon	0	0	1	0	0	0	1
Rainbow Bee-eater	1	1	1	0	0	0	0
Rainbow Lorikeet	0	1	0	0	0	0	0
Red Knot	0	1	0	0	0	0	0
Red-headed Honeyeater	0	0	0	1	0	0	0
Red-tailed Black-cockatoo (Top End)	0	0	0	0	0	1	0
Red-winged Parrot	0	0	0	0	1	1	0
Ruddy Turnstone	0	1	0	0	0	0	0
Rufous-throated honeyeater	0	0	0	0	0	1	0
Sacred Kingfisher	0	0	0	0	0	0	1

Shining Flycatcher	1	0	0	0	0	0	0
Silver Gull	0	1	1	0	0	0	0
Spangled Drongo	0	1	0	0	0	0	0
Straw-necked Ibis	0	1	1	0	0	0	0
Striated Heron	1	0	0	0	0	0	0
Striated Pardalote	0	0	0	1	0	0	0
Sulphur-crested Cockatoo	1	0	1	0	0	0	0
Tawny Frogmouth	0	0	0	1	0	0	1
Tern sp.	0	1	0	0	0	0	0
Torresian Crow	0	1	1	0	0	0	0
Varied Triller	1	0	1	0	0	0	0
Whimbrel	0	1	0	0	0	0	0
Whistling Kite	0	0	1	0	0	0	0
White-bellied Cuckoo-shrike	0	1	0	0	0	0	0
White-breasted Woodswallow	1	1	0	0	0	0	1
White-gaped Honeyeater	0	1	1	0	0	0	0
White-throated Honeyeater	0	0	0	0	1	1	0
Yellow Oriole	0	0	0	1	1	1	0
Yellow White-eye	1	0	0	0	0	0	0
Total mammal diversity	0	0	0	0	0	0	5
Black Flying-fox	0	0	0	0	0	0	1
Black Rat	0	0	0	0	0	0	1
Cat	0	0	0	0	0	0	1
Common Brushtail Possum (Top End)	0	0	0	0	0	0	1
House Mouse	0	0	0	0	0	0	1
Little Red Flying-fox	0	0	0	0	0	0	1
Unid. small bat	0	0	0	0	0	0	1
Total reptile diversity	0	0	0	7	5	3	3
Asian House Gecko	0	0	0	1	0	0	1
Floodplain Monitor	0	0	0	1	1	0	0
Fringed Lizard	0	0	0	1	1	1	1
House Gecko	0	0	0	0	0	0	1
Mitchell's Water Monitor	0	0	0	1	1	0	0
Northern Water Dragon	0	0	0	1	1	1	0
Slaty-grey Snake	0	0	0	1	0	0	0
Swanson's Snake-eyed Skink	0	0	0	1	1	1	0

## Appendix IV: Comprehensive vertebrate fauna list, Nightcliff foreshore

Common Name	Scientific Name	Data Source
<b>Birds</b>		
Brown Goshawk	<i>Accipiter fasciatus</i>	New record
Common Sandpiper	<i>Actitis hypoleucos</i>	DLRM (2016)
Australasian Darter	<i>Anhinga novaehollandiae</i>	DLRM (2016)
Red-winged Parrot	<i>Aprosmictus erythropterus</i>	New record
Fork-tailed Swift	<i>Apus pacificus</i>	DLRM (2016)
Intermediate Egret	<i>Ardea intermedia</i>	New record
Eastern Great Egret	<i>Ardea modesta</i>	DLRM (2016)
Ruddy Turnstone	<i>Arenaria interpres</i>	DLRM (2016)
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	DLRM (2016)
Pacific Baza	<i>Aviceda subcristata</i>	DLRM (2016)
Bush Stone-curlew	<i>Burhinus grallarius</i>	New record
Striated Heron	<i>Butorides striata</i>	DLRM (2016)
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	DLRM (2016)
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	DLRM (2016)
Red Knot	<i>Calidris canutus</i>	DLRM (2016)
Curlew Sandpiper	<i>Calidris ferruginea</i>	DLRM (2016)
Red-necked Stint	<i>Calidris ruficollis</i>	DLRM (2016)
Great Knot	<i>Calidris tenuirostris</i>	DLRM (2016)
Red-tailed Black-cockatoo (Top End)	<i>Calyptorhynchus banksii macrorhynchus</i>	DLRM (2016)
Pheasant Coucal	<i>Centropus phasianinus</i>	DLRM (2016)
Azure Kingfisher	<i>Ceyx azureus</i>	DLRM (2016)
Little Bronze-Cuckoo	<i>Chalcites minutillus</i>	DLRM (2016)
Greater Sand Plover	<i>Charadrius leschenaultii</i>	DLRM (2016)
Lesser Sand Plover	<i>Charadrius mongolus</i>	DLRM (2016)
Oriental Plover	<i>Charadrius veredus</i>	DLRM (2016)
Whiskered Tern	<i>Chlidonias hybrida</i>	DLRM (2016)
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	DLRM (2016)
Golden-headed Cisticola	<i>Cisticola exilis</i>	DLRM (2016)
Rock Dove	<i>Columba livia</i>	DLRM (2016)
Rufous-banded Honeyeater	<i>Conopophila albogularis</i>	DLRM (2016)
Rufous-throated Honeyeater	<i>Conopophila rufogularis</i>	DLRM (2016)
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	DLRM (2016)
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>	DLRM (2016)
Torresian Crow	<i>Corvus orru</i>	New record
Black Butcherbird	<i>Cracticus quoyi</i>	New record
Oriental Cuckoo	<i>Cuculus optatus</i>	DLRM (2016)
Blue-winged Kookaburra	<i>Dacelo leachii</i>	DLRM (2016)
Mistletoebird	<i>Dicaeum hirundinaceum</i>	DLRM (2016)
Spangled Drongo	<i>Dicrurus bracteatus</i>	DLRM (2016)
Pied Imperial-Pigeon	<i>Ducula bicolor</i>	DLRM (2016)
Little Egret	<i>Egretta garzetta</i>	DLRM (2016)
Eastern Reef Egret	<i>Egretta sacra</i>	DLRM (2016)
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	DLRM (2016)
Beach Stone-curlew	<i>Esacus magnirostris</i>	DLRM (2016)
Galah	<i>Eulophus roseicapilla</i>	DLRM (2016)
Spotted Nightjar	<i>Eurostopodus argus</i>	DLRM (2016)
Dollarbird	<i>Eurystomus orientalis</i>	DLRM (2016)
Australian Hobby	<i>Falco longipennis</i>	DLRM (2016)
Lesser Frigatebird	<i>Fregata ariel</i>	DLRM (2016)
Buff-banded Rail	<i>Gallirallus philippensis</i>	DLRM (2016)
Gull-billed Tern	<i>Gelochelidon nilotica</i>	DLRM (2016)
Bar-shouldered Dove	<i>Geopelia humeralis</i>	DLRM (2016)
Peaceful Dove	<i>Geopelia striata</i>	DLRM (2016)

Mangrove Gerygone	<i>Gerygone levigaster</i>	DLRM (2016)
Large-billed Gerygone	<i>Gerygone magnirostris</i>	DLRM (2016)
Magpie-lark	<i>Grallina cyanoleuca</i>	DLRM (2016)
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	DLRM (2016)
Australian Pied Oystercatcher	<i>Haematopus longirostris</i>	DLRM (2016)
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	DLRM (2016)
Brahminy Kite	<i>Haliastur indus</i>	DLRM (2016)
Whistling Kite	<i>Haliastur sphenurus</i>	DLRM (2016)
Caspian Tern	<i>Hydroprogne caspia</i>	DLRM (2016)
Varied Triller	<i>Lalage leucomela</i>	DLRM (2016)
White-gaped Honeyeater	<i>Lichenostomus unicolor</i>	DLRM (2016)
Brown Honeyeater	<i>Lichmera indistincta</i>	DLRM (2016)
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	DLRM (2016)
Bar-tailed Godwit	<i>Limosa lapponica</i>	DLRM (2016)
Black-tailed Godwit	<i>Limosa limosa</i>	DLRM (2016)
Orange-footed Scrubfowl	<i>Megapodius reinwardt</i>	DLRM (2016)
White-throated Honeyeater	<i>Melithreptus albogularis</i>	New record
Rainbow Bee-eater	<i>Merops ornatus</i>	DLRM (2016)
Lemon-bellied Flycatcher	<i>Microeca flavigaster</i>	DLRM (2016)
Black Kite	<i>Milvus migrans</i>	DLRM (2016)
Shining Flycatcher	<i>Myiagra alecto</i>	DLRM (2016)
Restless Flycatcher	<i>Myiagra inquieta</i>	DLRM (2016)
Leaden Flycatcher	<i>Myiagra rubecula</i>	DLRM (2016)
Broad-billed Flycatcher	<i>Myiagra ruficollis</i>	DLRM (2016)
Red-headed Honeyeater	<i>Myzomela erythrocephala</i>	DLRM (2016)
Dusky Honeyeater	<i>Myzomela obscura</i>	DLRM (2016)
Barking Owl	<i>Ninox connivens</i>	New record
Eastern Curlew	<i>Numenius madagascariensis</i>	DLRM (2016)
Little Curlew	<i>Numenius minutus</i>	DLRM (2016)
Whimbrel	<i>Numenius phaeopus</i>	DLRM (2016)
Yellow Oriole	<i>Oriolus flavocinctus</i>	DLRM (2016)
White-breasted Whistler	<i>Pachycephala lanoides</i>	DLRM (2016)
Mangrove Golden Whistler	<i>Pachycephala melanura</i>	New record
Eastern Osprey	<i>Pandion cristatus</i>	DLRM (2016)
Striated Pardalote	<i>Pardalotus striatus</i>	New record
Australian Pelican	<i>Pelecanus conspicillatus</i>	DLRM (2016)
Tree Martin	<i>Petrochelidon nigricans</i>	DLRM (2016)
Pied Cormorant	<i>Phalacrocorax varius</i>	DLRM (2016)
Silver-crowned Friarbird	<i>Philemon argenticeps</i>	DLRM (2016)
Helmeted Friarbird	<i>Philemon buceroides</i>	DLRM (2016)
Little Friarbird	<i>Philemon citreogularis</i>	DLRM (2016)
Pacific Golden Plover	<i>Pluvialis fulva</i>	DLRM (2016)
Grey Plover	<i>Pluvialis squatarola</i>	DLRM (2016)
Tawny Frogmouth	<i>Podargus strigoides</i>	New record
Long-tailed Finch	<i>Poephila acuticauda</i>	New record
Masked Finch	<i>Poephila personata</i>	DLRM (2016)
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	New record
Varied Lorikeet	<i>Psitteuteles versicolor</i>	DLRM (2016)
Arafura Fantail	<i>Rhipidura dryas</i>	DLRM (2016)
Willie Wagtail	<i>Rhipidura leucophrys</i>	DLRM (2016)
Mangrove Grey Fantail	<i>Rhipidura phasiana</i>	DLRM (2016)
Northern Fantail	<i>Rhipidura rufiventris</i>	DLRM (2016)
Australasian Figbird	<i>Sphecotheres vieilloti</i>	DLRM (2016)
Little Tern	<i>Sternula albifrons</i>	DLRM (2016)
Brown Booby	<i>Sula leucogaster</i>	DLRM (2016)
Radjah Shelduck	<i>Tadorna radjah</i>	DLRM (2016)
Double-barred Finch	<i>Taeniopygia bichenovii</i>	DLRM (2016)

Lesser Crested Tern	<i>Thalasseus bengalensis</i>	DLRM (2016)
Crested Tern	<i>Thalasseus bergii</i>	DLRM (2016)
Australian White Ibis	<i>Threskiornis molucca</i>	DLRM (2016)
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	DLRM (2016)
Collared Kingfisher	<i>Todiramphus chloris</i>	DLRM (2016)
Forest Kingfisher	<i>Todiramphus macleayii</i>	DLRM (2016)
Sacred Kingfisher	<i>Todiramphus sancta</i>	DLRM (2016)
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	DLRM (2016)
Grey-tailed Tattler	<i>Tringa brevipes</i>	DLRM (2016)
Wood Sandpiper	<i>Tringa glareola</i>	DLRM (2016)
Common Greenshank	<i>Tringa nebularia</i>	DLRM (2016)
Marsh Sandpiper	<i>Tringa stagnatilis</i>	DLRM (2016)
Masked Lapwing	<i>Vanellus miles</i>	DLRM (2016)
Terek Sandpiper	<i>Xenus cinereus</i>	DLRM (2016)
Yellow White-eye	<i>Zosterops luteus</i>	DLRM (2016)
<b>Mammals</b>		
House Mouse	<i>Mus musculus</i>	New record
Black Flying-fox	<i>Pteropus alecto</i>	New record
Little Red Flying-fox	<i>Pteropus scapulatus</i>	New record
Black Rat	<i>Rattus rattus</i>	New record
Common Brushtail Possum (Top End)	<i>Trichosurus vulpecula arnhemensis</i>	New record
Cat	<i>Felis catus</i>	New record
Unidentified small bat		New record
<b>Reptiles</b>		
Frilled Lizard	<i>Chlamydosaurus kingii</i>	New record
Swanson's Snake-eyed Skink	<i>Cryptoblepharus cygnatus</i>	New record
House gecko	<i>Gehyra australis</i>	New record
Northern Water Dragon	<i>Gowidon temporalis</i>	New record
Asian House Gecko	<i>Hemidactylus frenatus</i>	New record
Slaty-grey Snake	<i>Stegonotus cucullatus</i>	New record
Mitchell's Water Monitor	<i>Varanus mitchelli</i>	New record
Floodplain Monitor	<i>Varanus panoptes</i>	New record
<b>Amphibians</b>		
Cane Toad	<i>Rhinella marinus</i>	New record

**ENCL: ENVIRONMENT & INFRASTRUCTURE  
YES COMMITTEE/OPEN**

**AGENDA ITEM: 10.2.3**

**1ST QUARTER PERFORMANCE REPORT 2016/17**

**REPORT No.: 16TC0063 VG:ph COMMON No.: 1230662**

**DATE: 22/11/2016**

**Presenter: Manager Strategy & Outcomes, Vanessa Green**

**Approved: General Manager Infrastructure, Luccio Cercarelli**

**PURPOSE**

The purpose of this report is to provide the Council with the 1<sup>st</sup> Quarter Performance Report 2016/17 relating to Council's Environment and Infrastructure areas.

**LINK TO STRATEGIC PLAN**

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the 'Evolving Darwin Towards 2020 Strategic Plan':-

**Goal**

5 Effective and Responsible Governance

**Outcome**

5.3 Good governance

**Key Strategies**

5.3.3 Understand and manage Council's risk exposure

**KEY ISSUES**

- Performance in this report is measured against progress in achieving Council's Strategic Plan and Annual Municipal Plan.
- The performance of environment and infrastructure areas are tracking positively as expected for the 1<sup>st</sup> quarter.
- Performance reports will be updated to include financial information from the 2<sup>nd</sup> quarter forward.
- Action performance for quarter 1 (July to September 2016) will generally be reported as 25% complete unless there is an exception.
- Key performance indicators will be reported on as required throughout the year (some KPIs are reported quarterly and others such as community satisfaction are reported annually).

PAGE: 2  
 REPORT NUMBER: 16TC0063 VG:ph  
 SUBJECT: 1<sup>ST</sup> QUARTER PERFORMANCE REPORTS 2016/17

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## **RECOMMENDATIONS**

THAT the Committee resolve under delegated authority:-

THAT Report Number 16TC0063 VG:ph entitled 1<sup>st</sup> Quarter Performance Report 2016/17, be received and noted.

## **BACKGROUND**

In accordance with the Local Government Act Council prepares a Municipal Plan and Annual Report each year.

The Municipal Plan outlines Council's service delivery plan which includes key actions, budgets, and key performance indicators.

The Annual Report contains an assessment of the Council's performance against the Municipal Plan including key actions, budgets and key performance indicators and subsequently provides a high level assessment of progress towards achieving the longer term Strategic Plan.

To date, Council has been presented with six-monthly reports against the Strategic and Municipal Plan. Historically, departments have also been presenting Council with more detailed quarterly reports. These were considered to be largely operational and they did not directly reflect progress against the Strategic Plan and Municipal Plan.

Local Government best practice is to provide quarterly performance reports against Strategic and Municipal Plans to Council. The Environment & Infrastructure Committee has oversight of the following Municipal Plan Program Profiles:

- Asset Management
- Development
- Building Services
- Capital Works
- Civil Infrastructure
- Climate Change & Environment
- Design
- Parks and Reserves
- Planning
- Waste Management
- Operations Administration
- Office of the General Manager Infrastructure

PAGE: 3  
 REPORT NUMBER: 16TC0063 VG:ph  
 SUBJECT: 1<sup>ST</sup> QUARTER PERFORMANCE REPORTS 2016/17

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## PREVIOUS DECISION

DECISION NO.21\4848 (20/09/16)

### **Strategic Reporting**

Report No. 16TC0059 VG:ph (20/09/16) Common No. 1230662

*THAT the Committee resolve under delegated authority:-*

- A. *THAT Report Number 16TC0057 VG:ph entitled Strategic Reporting, be received and noted.*
- B. *THAT the Committee note the revised quarterly report format is effective for the 2016/17 Municipal Plan reporting.*

## **DISCUSSION**

Performance Reports provide an assessment of performance against actions and key performance indicators (KPIs) for each Program Profile.

Action performance for quarter 1 (July to September 2016) will generally be reported as 25% complete unless there is an exception. This is on the basis that we are delivering 100% of the program throughout the course of the year.

Key performance indicators will be reported on as required and dependent on whether they are a quarterly or annual KPI. For example, community satisfaction is reported annually as opposed to each quarter. However once an annual KPI falls due it will be displayed in each quarterly report thereafter.

There has been delay in integrating financial information with the system utilised for performance reporting. It is anticipated that Performance reports will be updated to include financial information from the 2<sup>nd</sup> quarter forward.

Performance of the environment and infrastructure areas is tracking positively as expected for the first quarter. 1<sup>st</sup> Quarter Performance Reports are provided at Attachments A to L.

The following commentary is provided as additional information for Council's capital works program:

- Whilst the Capital Works program is progressing on track it is noted that there is a lag time between the work being undertaken and contractor invoices being received, meaning that actual expenditure does not directly reflect progress with project delivery.
- A number of Darwin City Centre Master Plan projects have been delivered or are planned to be delivered in 2016/17. A status report on the delivery of Master Plan projects will be presented to Council in February 2017.
- For quarter 1, the Parap Pool Redevelopment Project was under expended due to a larger than expected tender assessment period. Construction commenced 26 September 2016.



PAGE: 4  
 REPORT NUMBER: 16TC0063 VG:ph  
 SUBJECT: 1<sup>ST</sup> QUARTER PERFORMANCE REPORTS 2016/17

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## **CONSULTATION PROCESS**

In preparing this report, the following City of Darwin officers were consulted and provided input:

- Manager Technical Services
- Manager Design, Planning and Projects
- Manager Capital Works
- Manager Infrastructure Maintenance
- Manager Building Services
- Coordinator Civil Infrastructure

## **POLICY IMPLICATIONS**

There are no direct policy implications as a result of this report and decision.

## **BUDGET AND RESOURCE IMPLICATIONS**

There are no direct budget or resource implications as a result of this report. If any budget variances are identified throughout the year they will be dealt with via normal Financial Management procedures.

Work is progressing to integrate Council's budget and actual results into the quarterly reports on an ongoing basis.

## **RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

This report and decision supports implementing the overall intent of the Local Government Act for local government strategic and municipal planning and performance management.

Ongoing benefits also include more robust and accountable reporting in the Annual Report and more informed performance guiding the development of future Strategic and Municipal Plans.

## **ENVIRONMENTAL IMPLICATIONS**

There are no direct environmental implications as a result of this report and decision.

PAGE: 5  
 REPORT NUMBER: 16TC0063 VG:ph  
 SUBJECT: 1<sup>ST</sup> QUARTER PERFORMANCE REPORTS 2016/17

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### **COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION**

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

**VANESSA GREEN**  
**MANAGER STRATEGY &**  
**OUTCOMES**

**LUCCIO CERCARELLI**  
**GENERAL MANAGER**  
**INFRASTRUCTURE**

For enquiries, please contact Vanessa Green on 89300531 or email:  
[v.green@darwin.nt.gov.au](mailto:v.green@darwin.nt.gov.au).

#### **Attachments:**

#### **1<sup>ST</sup> Quarter Performance Reports – 2016/17**

- Attachment A** - Asset Management
- Attachment B** - Development
- Attachment C** - Building Services
- Attachment D** - Capital Works
- Attachment E** - Civil Works
- Attachment F** - Climate Change and Environment
- Attachment G** - Design
- Attachment H** - Parks and Reserves
- Attachment I** - Planning
- Attachment J** - Waste Management
- Attachment K** – Operations Administration
- Attachment L** – Officer of the General Manager Infrastructure



# *City of Darwin* **PREMIUM Performance Report**

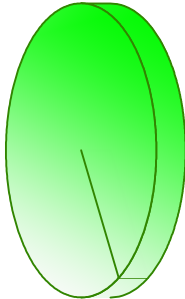
*Jul 16 - Sep 16*

Report Filters:  
Service Profile: Asset Management

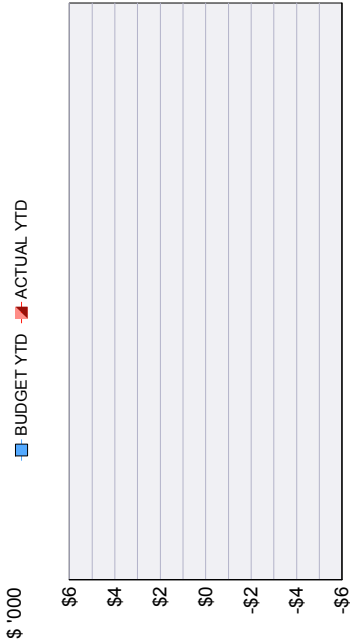
Asset Management

Action Status


Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%





Financial Summary





Action Summary


 At least 90% of action target achieved

 Between 70 and 90% of action target achieved

 Less than 70% of action target achieved

 No Target Set

 Target

 % Complete

Action	Start Date	End Date	<div><div></div><div></div></div>	Budget Expenditure	Actual Expenditure	% variance
5.5.1.1 Develop and implement a Corporate Asset Management Strategy and asset management plans for defined asset classes: Roads, Pathways, Stormwater, Parks and Buildings	01/07/2016	30/06/2017	<div><div></div><div></div></div>	\$0.00	\$0.00	0%
5.5.1.2 Develop, implement and maintain a corporate asset register	01/07/2016	30/06/2017	<div><div></div><div></div></div>	\$0.00	\$0.00	0%
5.5.1.3 Develop and manage the implementation of Council's annual renewal and replacement program	01/07/2016	30/06/2017	<div><div></div><div></div></div>	\$0.00	\$0.00	0%
5.5.1.4 Undertake cyclic condition assessments, collection and maintenance of asset information, predictive modelling and forward works planning for City of Darwin assets	01/07/2016	30/06/2017	<div><div></div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%



## Action Details

## Infrastructure Services

## Technical Services

**STRATEGY:** 5.5.1 Manage Council's business based on a sustainable financial and asset management strategy

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.1.2 Develop, implement and maintain a corporate asset register	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	

Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance
Asset Management					

**Linked Related Plan(s):**

**Linked Action Filter(s):**

## Action Progress Comments

New asset management system has been implemented and functional for infrastructure management. Implementation of financial requirements planning underway and is reported through the Asset Management Steering Group to the Risk Management & Audit Committee.

Last Updated - 14/11/2016

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.1.3 Develop and manage the implementation of Council's annual renewal and replacement program	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	

Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance
Asset Management					


**Linked Related Plan(s):**

**Linked Action Filter(s):**

## Action Progress Comments

Programs have been developed for the 2016/17 year with all programs underway. This includes footpaths, roads, bollards and buildings.

Last Updated - 11/10/2016

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.1.4 Undertake cyclic condition assessments, collection and maintenance of asset information, predictive modelling and forward works planning for City of Darwin assets	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	

Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance
Asset Management					


**Linked Related Plan(s):**

**Linked Action Filter(s):**

## Action Progress Comments

Condition assessment for pathways (footpaths, walkways, driveways) has been completed which will update data for asset and financial management and will be used to develop maintenance and replacement programs. Modeling of the road condition data is also underway.

Last Updated - 11/10/2016

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
5.5.1.1 Develop and implement a Corporate Asset Management Strategy and asset management plans for defined asset classes: Roads, Pathways, Stormwater, Parks and Buildings	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN	
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Asset Management								
Linked Related Plan(s):								
Linked Action Filter(s):								
Action Progress Comments								
Asset Management Plans, and relevant Strategy, are being developed in conjunction with the Asset Management Audit recommendations and are reported through the Asset Management Steering Group to the Risk Management & Audit Committee.								
Last Updated - 14/11/2016								





*City of Darwin*  
**PREMIUM Performance Report**

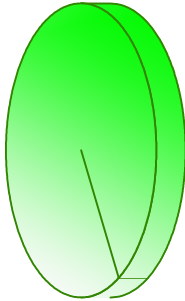
*Jul 16 - Sep 16*  
Report Filters:  
Service Profile: Development



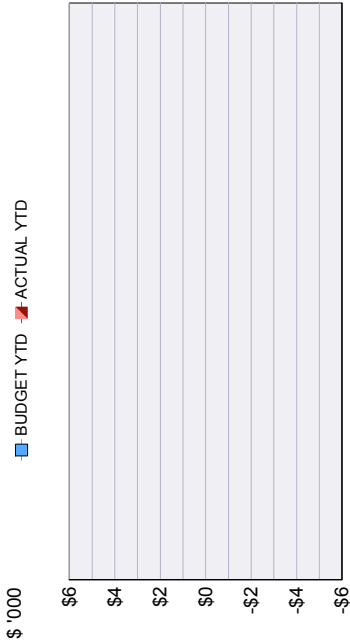


Development  
Action Status


Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%





Financial Summary





Action Summary


 At least 90% of action target achieved





 Between 70 and 90% of action target achieved

 Less than 70% of action target achieved

 No Target Set

 Target

 % Complete

Action		Start Date	End Date				Budget Expenditure	Actual Expenditure	% variance
2.2.3.1 Develop and maintain Developer Contribution Plans in accordance with the NT Planning Act		01/07/2016	30/06/2017	<div><div></div></div>	0%	20%	\$0.00	\$0.00	0%
2.2.3.2 Develop and maintain and implement subdivision, redevelopment and minor development guidelines, standards, policies and procedures		01/07/2016	30/06/2017	<div><div></div></div>	0%	20%	\$0.00	\$0.00	0%
2.2.3.3 Investigate and provide technical advice on private and public civil works within Council property		01/07/2016	30/06/2017	<div><div></div></div>	0%	20%	\$0.00	\$0.00	0%
2.2.3.4 Certify Final Approval Certificate and Northern Territory Planning Authority permit conditions		01/07/2016	30/06/2017	<div><div></div></div>	0%	20%	\$0.00	\$0.00	0%
						\$0.00	\$0.00	\$0.00	0%







## Action Details

## Infrastructure Services

## Technical Services

**STRATEGY:** 2.2.3 Improve the landscaping, streetscape, infrastructure and natural environment

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.2 Develop and maintain and implement subdivision, redevelopment and minor development guidelines, standards, policies and procedures	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Development							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Guideline and procedure updating is ongoing. Policies within the responsibility of Development have been updated. Updated Standard Drawings are being finalised and all other procedures are in progress.							
Last Updated - 11/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.4 Certify Final Approval Certificate and Northern Territory Planning Authority permit conditions	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Development							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Approvals and clearances are provided on an ongoing basis on request from Builders/Developer's.							
Last Updated - 11/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.3 Investigate and provide technical advice on private and public civil works within Council property	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Development							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Investigation and advice is provided on an ongoing basis.							
Last Updated - 11/10/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
2.2.3.1 Develop and maintain Developer Contribution Plans in accordance with the NT Planning Act	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%		
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Development								
<b>Linked Related Plan(s):</b>								
<b>Linked Action Filter(s):</b>								
<b>Action Progress Comments</b>								
City of Darwin Officers are working with the Northern Territory Government group to develop a set of Uniform Subdivision Guidelines that would be used by all Councils and also allows for individual variation.								
The current Guidelines remain adequate at this stage and a draft update has been prepared which is awaiting the outcome of the NTG Uniform Guidelines.								
Last Updated - 11/10/2016								





*City of Darwin*  
**PREMIUM Performance Report**

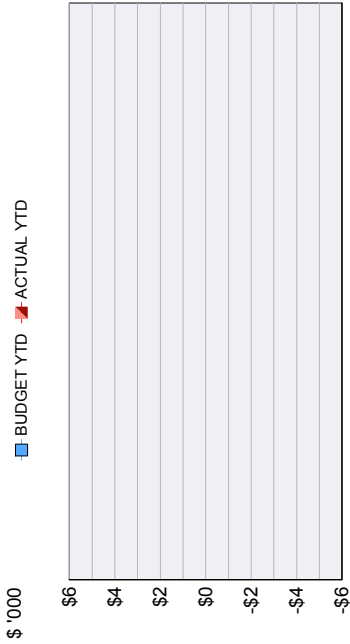
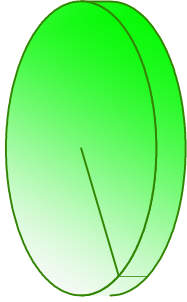
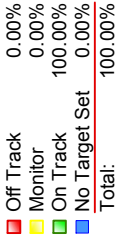
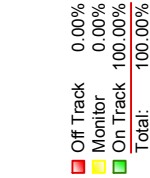
*Jul 16 - Sep 16*

Report Filters:  
Service Profile: Building Services



Building Services  
Action Status

KPI Status

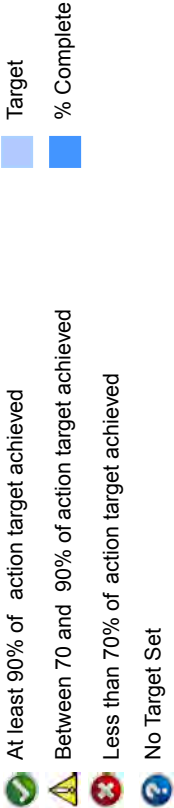


Summary KPI

KPI	Trend	Unit	Target	Actual
Percentage of abusive or offensive graffiti removed within 24 hours	Jul 16 - Sep 16	%	100.00	100.00
Latest Comment				
All reported graffiti has been removed in accordance with service levels.				



Action Summary



Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
2.2.3.8 Manage and deliver building maintenance services for Council's building assets	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.9 Maintain compliance with all Building Regulations for Council owned buildings	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.10 Conduct Council's building inspection program	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.12 Manage the removal of Graffiti from Council owned buildings and provide Graffiti removal services to the Northern Territory Government in accordance with the Service Level Agreement	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%



## Action Details


## Infrastructure Services

## Infrastructure Maintenance

**STRATEGY:** 2.2.3 Improve the landscaping, streetscape, infrastructure and natural environment

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.10 Conduct Council's building inspection program	Maxine Flanagan - Team Coordinator - Building Services	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Building Services							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Inspections carried out on Council's Child Care and Community Centre's, public amenities, Gardens, Malak and Bagot Oval, City of Darwin Depot, Swimming Pools (excluding Parap), Westlane and China Town Car Parks and in accordance with Asset Management Plans.							
Last Updated - 14/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.9 Maintain compliance with all Building Regulations for Council owned buildings	Maxine Flanagan - Team Coordinator - Building Services	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Building Services							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Building compliance maintained. Monthly inspections as programmed.							
Last Updated - 14/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.8 Manage and deliver building maintenance services for Council's building assets	Maxine Flanagan - Team Coordinator - Building Services	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Building Services							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Building maintenance ongoing in line with existing maintenance contracts.							
Last Updated - 14/11/2016							



Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
2.2.3.12 Manage the removal of Graffiti from Council owned buildings and provide Graffiti removal services to the Northern Territory Government in accordance with the Service Level Agreement	Maxine Flanagan - Team Coordinator - Building Services	In Progress	01/07/2016	30/06/2017	25%	25%		
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Building Services								
Linked Related Plan(s):								
Linked Action Filter(s):								
Action Progress Comments								
Council graffiti removal continued.								
Last Updated - 14/11/2016								





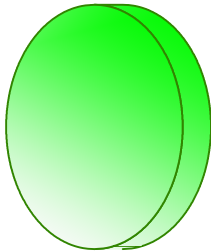
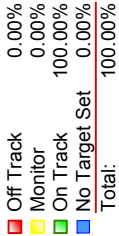
*City of Darwin*  
**PREMIUM Performance Report**

*Jul 16 - Sep 16*

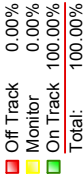
Report Filters:  
Service Profile: Capital Works



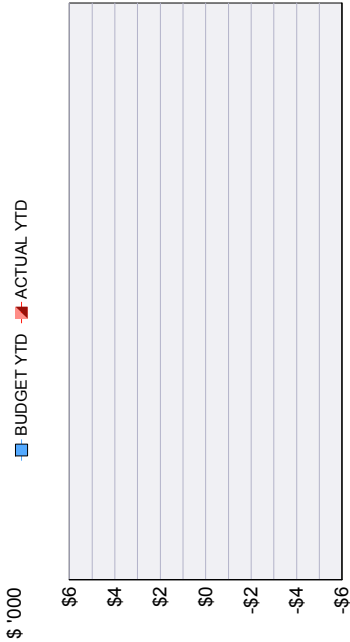
Capital Works  
Action Status



KPI Status



Financial Summary



Summary KPI

KPI	Trend	Unit	Target	Actual
Annual capital expenditure within approved budget	Jul 16 - Sep 16	%	25.00	27.00



Latest Comment

The City of Darwin's 2016/17 Capital Works Budget was \$41.5M. In addition, carry forwards from 2015/16 totalled \$15.9M, a revised budget of \$57.4M

As at 30 September 2016 (Quarter 1), City of Darwin has committed or completed projects to the value of \$15.6M, which represents 27.0% of the City of Darwin's total Capital Works Budget.

Of the total Council Capital Works Budget, \$20.9M is directly managed and delivered by the Infrastructure Department. In addition, carry forwards from 2015/16 totalled \$12.0M, a revised budget of \$33.0M


As at 30 September 2016 (Quarter 1), Infrastructure Services have committed or completed projects to the value of \$13.4M, which represents 40.6% of the revised Infrastructure Services Capital Works Budget.


To date actual spend equates to 9% of the revised Infrastructure Services budget and 8% of the total revised Capital Works Budget.


There is a lag period between the work being undertaken and the contractors invoices being received and the timing of this report.





Action Summary


 At least 90% of action target achieved

 Between 70 and 90% of action target achieved

 Less than 70% of action target achieved

 No Target Set

 Target

 % Complete

Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
2.2.1.8 Implement projects from the Darwin City Centre Master Plan.	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.9 Develop and annually review Council's capital works program and budget	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.10 Manage the delivery of Council's annual capital works program	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.3.11 Oversee, supervise and provide project management services and advice across Council for all capital works projects	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%




## Action Details


## Infrastructure Services


## Design, Planning and Projects

## STRATEGY: 2.2.1 Develop a vibrant and active central business district

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.1.8 Implement projects from the Darwin City Centre Master Plan.	Nik Kleine - Team Leader - Capital Works	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Capital Works							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
16/17 Master Plan Projects include:							
Bicentennial Park Play Space - Q1 UPDATE - tender awarded, construction scheduled to commence March 2017 with a view to be opened by the dry season.							
Cavenagh/Bennett Street Intersection Upgrade - \$1.0M grant funding received from the Northern Territory Government. Concept design is being finalised for community consultation in the third quarter.							
All other Master Plan projects have been put on hold and are under review. A report will be presented to late November 2016.							
Last Updated - 04/11/2016							

## STRATEGY: 2.2.3 Improve the landscaping, streetscape, infrastructure and natural environment

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.9 Develop and annually review Council's capital works program and budget	Nik Kleine - Team Leader - Capital Works	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Capital Works							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Council's 2016/17 capital works plan was endorsed as part of the annual budget process.							
The 2017/18 Capital Works Program will be developed as part of the 2017/18 budget development process and will take into consideration the Council's Long Term Capital Works Plan and Long Term Financial Plan.							
The current years capital works program and financial status is reviewed and updated on a monthly basis.							
Last Updated - 02/11/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.10 Manage the delivery of Council's annual capital works program	Nik Kleine - Team Leader - Capital Works	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget		YTD Actual	
Capital Works		Budget Type		YTD Budget		YTD Variance	

**Linked Related Plan(s):****Linked Action Filter(s):****Action Progress Comments**

Capital projects progressing as planned

Parap Pool Redevelopment (Total Construction Cost \$14.0M)

2016/17 Revised Budget - \$12.3M

Expended to date - \$51,000 (0.5%)

Committed to date - \$0 (0%)

Total expended and committed to date - \$ 51,000 representing 0.5% of the revised budget.

Tender awarded to Sunbuild with construction commencing 26 September 2016.

Darwin Entertainment Centre including Air conditioning project

2016/17 Revised Budget - \$4.7M

Expended to date - \$122,000 (2.5%)

Committed to date - \$170,000 (3.6%)

Total expended and committed to date - \$ 292,000 representing 6% of the revised budget.

Design drawings under review.

Playground Refurbishment (Shade and Playground upgrades)

2016/17 Revised Budget - \$1.4M

Expended to date - \$262,000 (18%)

Committed to date - \$724,000 (52%)

Total expended and committed to date - \$ 986,000 representing 70% of the revised budget.

Tenders have been awarded for the Shading Program and Playground Program as outlined on Councils website .

Velodrome

2016/17 Revised Budget - \$1.5M

Expended to date - \$0

Committed to date - \$0

Project brief is currently being developed for this project.

Pathways - 2016/17 Revised Budget - \$891,000

Expended to date - \$95,000 (11%)

Committed to date - \$193,000 (22%)

Total expended and committed to date - \$ 288,000 representing 33% of the revised budget.


Footpath construction on track with 8 projects completed.

Road Resurfacing -  
 2016/17 Revised Budget - \$1.9M  
 Expended to date - \$158,000 (8%)  
 Committed to date - \$1,250,000 (65%)  
 Total expended and committed to date - \$ 1,408,000 representing 73% of the revised budget.

Coastal Erosion  
 2016/17 Revised Budget - \$1.4M  
 Expended to date - \$233,000 (17%)  
 Committed to date - \$143,000 (10%)  
 Total expended and committed to date - \$ 376,000 representing 27% of the revised budget.  
 Drawings issued for review. Aboriginal Areas Protection Authority (AAPA) Certificate received. Environmental approval is being sought for works.

Shoal Bay  
 2016/17 Revised Budget - \$13.8M (\$9.8M 16/17 budget plus \$4.0M carry forward)  
 Expended to date - \$1,073,000 (8%)  
 Committed to date - \$5,975,000 (43%)  
 Total expended and committed to date - \$7,048,000 representing 51% of the revised budget.  
 Construction of new waste cell has commenced and tender for design of new leachate system is on schedule.

Storm water  
 2016/17 Revised Budget - \$1.4M  
 Expended to date - \$65,420 (5%)  
 Committed to date - \$374,000 (26%)  
 Total expended and committed to date - \$ 439,420 representing 31% of the revised budget.  
 Bennison Road construction commenced September 2016.  
 Last Updated - 04/11/2016

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
2.2.3.11 Oversee, supervise and provide project management services and advice across Council for all capital works projects	Nik Kleine - Team Leader - Capital Works	In Progress	01/07/2016	30/06/2017	25%	25%		
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Capital Works								
<b>Linked Related Plan(s):</b>								
<b>Linked Action Filter(s):</b>								
<b>Action Progress Comments</b>								
Internal discussion are underway with regards to a reporting tool for project management.								
Last Updated - 05/10/2016								





## *City of Darwin* **PREMIUM Performance Report**

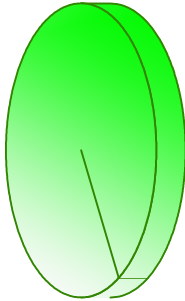
*Jul 16 - Sep 16*

Report Filters:  
Service Profile: Civil Works

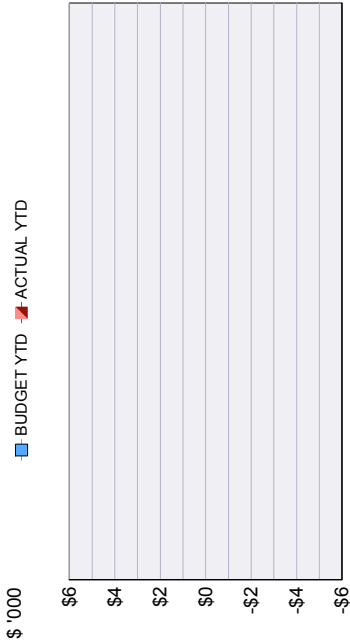


Civil Works  
Action Status

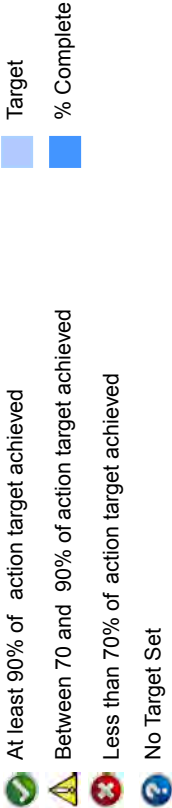
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Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%



Financial Summary



Action Summary



Action	Start Date	End Date	<div><div></div></div>	Budget Expenditure	Actual Expenditure	% variance
2.1.1.1 Construct, reconstruct and maintain footpaths, driveways, walkways and shared paths	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.1.1.3 Undertake public place cleaning including path, street sweeping and litter collection services to maintain public amenities	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.1.3.1 Manage and maintain Council's road network	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.1.3.2 Manage and maintain line marking and signage to all roads	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.1.3.3 Undertake mosquito control spraying in stormwater drainage infrastructure in the municipality as required	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.1.3.4 Manage and maintain Council's stormwater drainage infrastructure and network	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%





Action Details




Infrastructure Services


Infrastructure Maintenance

STRATEGY: 2.1.1 Improve the pathway and cycle networks and encourage cycling and walking

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.1.1 Construct, reconstruct and maintain footpaths, driveways, walkways and shared paths	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget		YTD Budget		YTD Actual	YTD Variance
Civil Works							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
130 linear meters of concrete footpaths have been repaired and replaced							
50m2 of exposed aggregate has been placed within CBD							
80 SEP have been replaced/repaired							
15 driveways repaired/replaced							
20 linear meters of kerb and gutter has been repaired/replaced							
Last Updated - 14/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.1.3 Undertake public place cleaning including path, street sweeping and litter collection services to maintain public amenities	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget		YTD Budget		YTD Actual	YTD Variance
Civil Works							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Scheduled cleaning undertaken. Cleaning for which additional funding was allocated has commenced. CBD streets are being flushed once a week on an ongoing basis. High intensity cleaning undertaken as planned during the first quarter.							
Last Updated - 14/11/2016							



Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.1 Manage and maintain Council's road network	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
<b>Program Profile</b>							
Civil Works	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
160 pot holes have been filled 220 meters of CCTV has been recorded and investigated Last Updated - 15/11/2016							
<b>Action</b>	<b>Responsibility</b>	<b>Action Status</b>	<b>Start Date</b>	<b>End Date</b>	<b>% Comp.</b>	<b>Target</b>	<b>Indicator</b>
2.1.3.2 Manage and maintain line marking and signage to all roads	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
<b>Program Profile</b>							
Civil Works	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Approximately \$100,000 has been invested in line marking to date and 190 directional, information and regulatory signs have been repaired or replaced. Last Updated - 17/11/2016							
<b>Action</b>	<b>Responsibility</b>	<b>Action Status</b>	<b>Start Date</b>	<b>End Date</b>	<b>% Comp.</b>	<b>Target</b>	<b>Indicator</b>
2.1.3.4 Manage and maintain Council's stormwater drainage infrastructure and network	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
<b>Program Profile</b>							
Civil Works	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
On track Last Updated - 14/11/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
2.1.3.3 Undertake mosquito control spraying in stormwater drainage infrastructure in the municipality as required	Hasan Karatas - Coordinator Civic Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN	
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Civil Works								
Linked Related Plan(s):								
Linked Action Filter(s):								
Action Progress Comments								
Mosquito program has been followed as per schedule								
The concrete inverts part of the program has not commenced to date. Anticipated start date will be during the next quarter.								
Last Updated - 07/10/2016								





*City of Darwin*  
**PREMIUM Performance Report**

*Jul 16 - Sep 16*

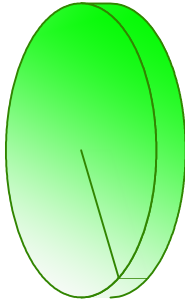
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Service Profile: Climate Change and Environment



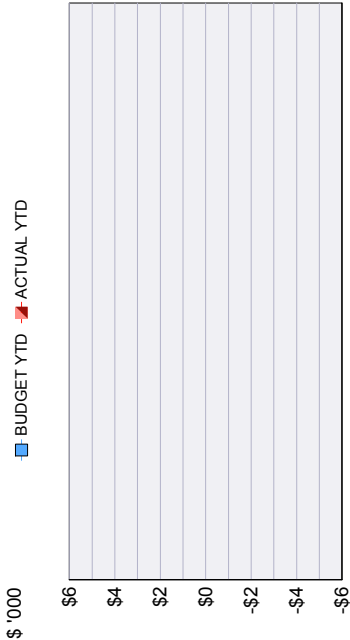
Climate Change and Environment

Action Status

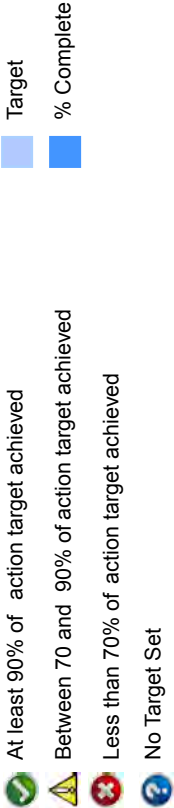
Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%



Financial Summary



Action Summary



Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
3.1.1.1 Coordinate the improvement of the environmental performance of Council's operations	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.2.1.1 Manage and implement the City of Darwin Climate Change Policy and Action Plan 2011-2020	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.2.1.2 Foster environmentally sustainable behaviour in the Darwin community	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.2.3.2 Manage Council's response regarding legislation, government policy and land use strategy as it affects environmental management and climate change outcomes	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.2.3.4 Advocate to the Territory Government and comment on Development Applications to foster environmentally sustainable development	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.3.1.1 Monitor stormwater and waterway water quality	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.3.2.1 Manage and implement the East Point Reserve Biodiversity 5 Year Plan (2014-2018)	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
3.3.2.2 Manage Council's strategies for biodiversity and conservation management	01/07/2016	30/06/2017	<div><div></div><div>0%20%40%60%80%100%</div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%






Action Details

Office of the Chief Executive



Climate Change and Environment



STRATEGY: 3.1.1 Reduce Council's greenhouse gas emissions

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
3.1.1.1 Coordinate the improvement of the environmental performance of Council's operations	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN	
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Climate Change and Environment								
Linked Related Plan(s):								
Linked Action Filter(s):								
Action Progress Comments								
Implementation of recommendations from the Deloittes Environmental System assessment is ongoing. Notably the development of Standard Operating procedures for environmental reporting and site inspections, environmental checklist, register of NT and Commonwealth legislation and clauses to be used in contractor and lease arrangements . These documents will be brought together into an Operational Environmental Management Plan. CCE staff are continuing to work with OHS staff based at the Operations Centre to include environmental conditions in Safe Working Methods Statements.								
Last Updated - 16/11/2016								


STRATEGY: 3.2.1 Increased community understanding of climate change and environment issues and mitigation and adaption actions





Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.1.2 Foster environmentally sustainable behaviour in the Darwin community	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget	YTD Actual	YTD Variance	
Climate Change and Environment							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
First Quarter Update (July-September 2016) Science Week in August was promoted with a Renewable Energy Innovations Forum . Over 60 people attended to hear the research and development innovations from an indigenous owned organisation, that's has implemented renewable energy technologies specifically designed to withstand the harsh climate of the Northern Territory . Anula Primary School Biodiversity program was started in September educating students about their local biodiversity, what council does and how they can help improve the environment. This will continue until October. Bird biodiversity was promoted at the Darwin Show through the development of the talking bird poster and Backyard birds of Darwin poster handout. We delivered a talk to distance education students studying geography and undertaking a project on coastal processes in Darwin . The session allowed for an explanation of why they were necessary to explain Councils coastal erosion works and look at the seawall construction was undertaken in August at Nightcliff . CC&E presented to over 300 students at the Dripstone School 'Kids Teaching Kids' event providing an overview on Councils activities in relation to climate change , renewable energy, coastal erosion and biodiversity.  We also participated in the Super Tuesday Bike Count .  Staff participated in the following forums coordinated by other agencies : <ul style="list-style-type: none"><li>• Spatial Workshop on using Atlas of Living Australia</li><li>• The Biodiversity and Climate Change Virtual Laboratory training</li><li>• Low Carbon Living Workshop</li></ul> Last Updated - 16/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.1.1 Manage and implement the City of Darwin Climate Change Policy and Action Plan 2011-2020	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget	YTD Actual	YTD Variance	
Climate Change and Environment							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Action plan continued to be implemented.  Over the last 3 months we have consulted on and developed a Energy Strategy tender which will be released in November 2016. A new energy target will be established as part of this process. Last Updated - 16/11/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.3.4 Advocate to the Territory Government and comment on Development Applications to foster environmentally sustainable development	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile							
Climate Change and Environment							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Where appropriate, comment is provided on development applications and submissions provided to NT Government initiatives.							
Last Updated - 16/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.3.2 Manage Council's response regarding legislation , government policy and land use strategy as it affects environmental management and climate change outcomes	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile							
Climate Change and Environment							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Where appropriate, comment is provided on development applications and submissions provided to NT Government initiatives.							
Last Updated - 16/11/2016							

**STRATEGY: 3.3.1 Advocate for the conservation of natural systems**

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.3.1.1 Monitor stormwater and waterway water quality	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget		YTD Variance	
Climate Change and Environment							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
First Quarter Update (July-September 2016)							
Waterway water qualities were consistently good during this period with no action required .							
Last Updated - 16/11/2016							

**STRATEGY: 3.3.2 Increase biodiversity richness and abundance across Darwin**

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.3.2.2 Manage Council's strategies for biodiversity and conservation management	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Climate Change and Environment							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
First Quarter Update (July-September 2016)							
The Darwin Green Office has been open for new nominations. Initial meetings to discuss priorities for DGO have been undertaken. Feedback from staff has included there is a lack of recycling education both internal and external.							
Liaison regarding Lakeside Drive has continued in line with developing SWMS and an Operation Environmental Plan for Operations staff .							
Green Waste storage at East point has been assessed as to the economic and environmental benefits it poses . Investigations into licensing requirements continue.							
The George Brown Memorial Scholarship winner Tiffanie Pearce started in September and has worked on aligning School presentations and materials to national curriculum requirements.							
Last Updated - 16/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.3.2.1 Manage and implement the East Point Reserve Biodiversity 5 Year Plan (2014-2018)	Brooke Rankmore - Manager Climate Change & Environment	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Climate Change and Environment							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
First Quarter Update (July-September 2016)							
Wallaby surveys were undertaken in August and September counting 232 and 143 respectively.							
Sightings of carpet pythons mating a positive sign for biodiversity at EP							
East Point Fauna survey initial report indicates healthy populations of many native species with few introduced species present. Additional survey transects were undertaken as part of the East Point / Nightcliff fauna assessment. Final report due by October 2016.							
Last Updated - 16/11/2016							

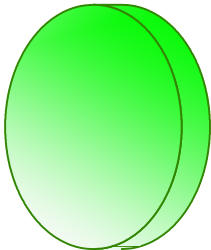


## *City of Darwin* **PREMIUM Performance Report**

*Jul 16 - Sep 16*

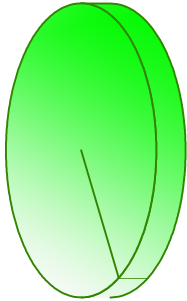
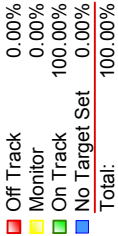
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Service Profile: Design

KPI Status

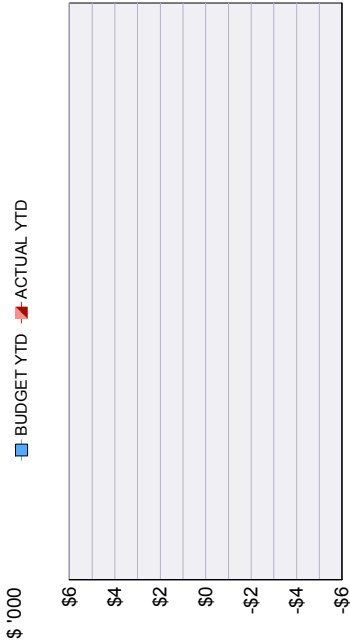


Design

Action Status



Financial Summary

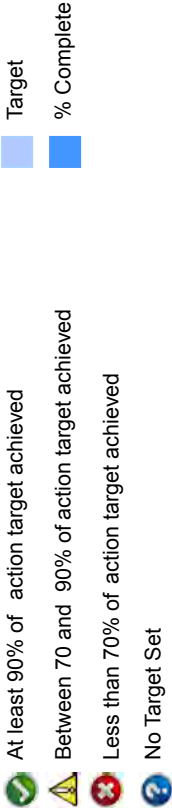


Summary KPI

KPI	Trend	Unit	Target	Actual
Percentage of annual design program completed	Jul 16 - Sep 16	%	25.00	25.00
Latest Comment	In progress.			

GREEN

Action Summary



Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
2.1.3.5 Undertake design for Council's annual capital works program including roads, pavements and stormwater design	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.1.3.6 Coordinate design for Council's Roads to Recovery and Blackspot federal funding programs	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.1.3.7 Undertake traffic management investigations and formulate responses	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.1.3.9 Conduct urban traffic analysis and design of traffic management schemes	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.1.3.10 Provide documentation for the technical aspects of construction	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.1.3.11 Undertake stormwater drainage studies and identify future upgrading works required	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
			<div><div></div></div> 100%	\$0.00	\$0.00	0%



## Action Details

## Infrastructure Services

## Design, Planning and Projects

## STRATEGY: 2.1.3 Manage the road network to meet community needs

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.6 Coordinate design for Council's Roads to Recovery and Blackspot federal funding programs	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget	YTD Actual	YTD Variance	
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Design of Dinah Beach Road upgrade project (R2R) underway. Design of Black Spot projects pending Council's endorsement.							
Last Updated - 05/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.11 Undertake stormwater drainage studies and identify future upgrading works required	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget	YTD Actual	YTD Variance	
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Works has commenced.							
Last Updated - 05/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.10 Provide documentation for the technical aspects of construction	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget		YTD Budget	YTD Actual	YTD Variance	
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Design and tender documentation for capital works projects							
Last Updated - 05/10/2016							



Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.7 Undertake traffic management investigations and formulate responses	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Ongoing investigations on traffic management completed throughout the year as required .							
Q1 (July - September) - the number of road safety issues raised by the community and assessed (e.g pedestrian parking, on-street parking, speeding and disability access matters) was 40 and of these, 26 were resolved.							
Last Updated - 17/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.9 Conduct urban traffic analysis and design of traffic management schemes	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Last Updated - 09/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.1.3.5 Undertake design for Council's annual capital works program including roads, pavements and stormwater design	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Design							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Report to Council on proposed 2016/17 Black Spot program to go Council in November 2016. Projects to commence following Council's endorsement. LATM program to be developed after Black Spot program is resolved. Design of other capital projects is underway.							
Last Updated - 14/11/2016							



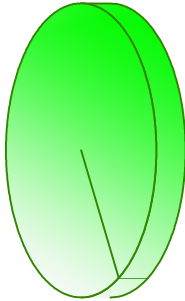
*City of Darwin*  
**PREMIUM Performance Report**

*Jul 16 - Sep 16*

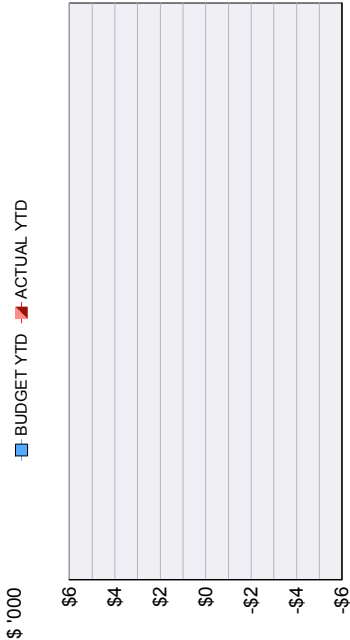
Report Filters:  
Service Profile: Parks & Reserves

Parks & Reserves  
Action Status

Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%



Financial Summary



Action Summary

At least 90% of action target achieved

Between 70 and 90% of action target achieved

Less than 70% of action target achieved

No Target Set

Target

% Complete

Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
2.2.3.3 Maintain Council's parks, reserves, foreshores and sporting fields	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.2.3.4 Manage and maintain cemeteries including the installation of memorials and headstones and conduct internments	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.2.3.5 Maintain irrigation systems and deliver sustainable irrigation practices for Council's open spaces	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
2.2.3.7 Work with government, other organisations and community members to plant and maintain trees in urban forests	01/07/2016	30/06/2017	<div><div></div></div> 100%	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%







## Action Details

## Infrastructure Services

## Infrastructure Maintenance

**STRATEGY:** 2.2.3 Improve the landscaping, streetscape, infrastructure and natural environment

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.5 Maintain irrigation systems and deliver sustainable irrigation practices for Council's open spaces	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Parks & Reserves							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
Action Progress Comments							
Irrigation systems operating as required.							
Last Updated - 10/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.3 Maintain Council's parks, reserves, foreshores and sporting fields	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Parks & Reserves							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
Action Progress Comments							
Maintenance programmes remain on schedule.							
Last Updated - 10/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.3.4 Manage and maintain cemeteries including the installation of memorials and headstones and conduct interments	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Parks & Reserves							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
Action Progress Comments							
Maintenance programmes on track with interments continuing in accordance with the Cemeteries Act.							
Last Updated - 14/11/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator				
2.2.3.7 Work with government, other organisations and community members to plant and maintain trees in urban forests	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%					
Program Profile		Budget Type		Budget		YTD Budget		YTD Actual		YTD Variance	
Parks & Reserves											
Linked Related Plan(s):											
Linked Action Filter(s):											
Action Progress Comments											
Programme is ongoing with the majority of tree planting to occur within the second and third quarters.											
Last Updated - 10/10/2016											

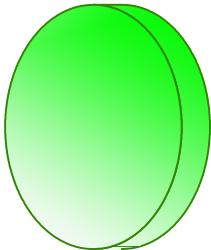




*City of Darwin*  
**PREMIUM Performance Report**

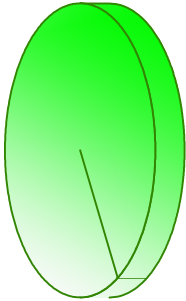
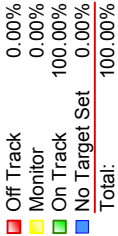
*Jul 16 - Sep 16*  
Report Filters:  
Service Profile: Planning

KPI Status

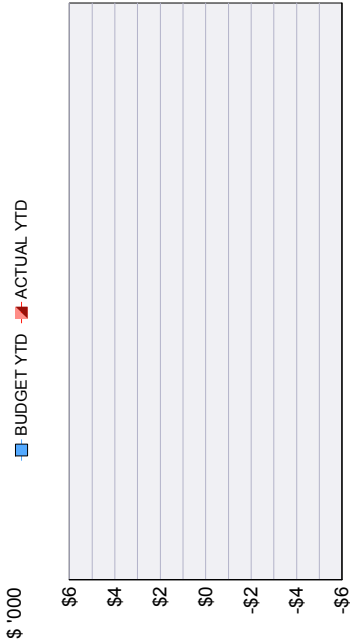


Planning

Action Status



Financial Summary



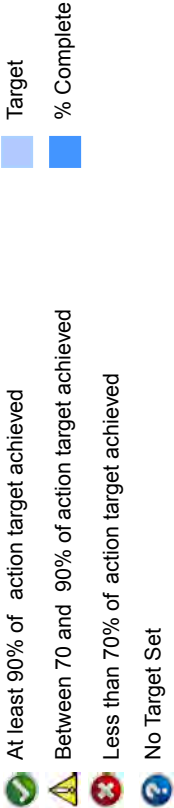
Summary KPI

KPI	Trend	Unit	Target	Actual
Number of development applications received	Jul 16 - Sep 16	#	62.50	67.00
Latest Comment	No comments entered for this KPI			

GREEN



Action Summary



Action	Start Date	End Date	<div><div></div></div>	Budget Expenditure	Actual Expenditure	% variance
1.4.2.1 Review and comment on all Northern Territory Development Consent Authority matters, in keeping with statutory and strategic requirements and community needs	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
1.4.2.2 Participate in working groups with the Northern Territory Government to implement strategic planning initiatives	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
1.4.2.3 Undertake land use planning to develop strategic plans and policy to influence the Northern Territory Governments Land Use Plans and Northern Territory Planning Scheme	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
1.4.2.4 Develop high level planning strategies	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
1.4.2.5 Develop and manage Developer Contribution Plans for infrastructure upgrading works such as road works, stormwater drainage and social infrastructure	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
2.2.1.9 Implement Darwin Bike Plan Actions	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%






## Action Details

## Infrastructure Services

## Design, Planning and Projects

## STRATEGY: 1.4.2 Play an active role in strategic and statutory planning processes

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator		
1.4.2.2 Participate in working groups with the Northern Territory Government to implement strategic planning initiatives	Cindy Robson - Strategic Town Planner	In Progress	01/07/2016	30/06/2017	25%	25%			
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance				
Planning									
Linked Related Plan(s):									
Linked Action Filter(s):									
Action Progress Comments									
The City of Darwin has continued to participate and comment on the preparation and exhibition of the Darwin Mid and Inner Suburbs Area Plans , which have been inserted into The Northern Territory Planning Scheme as Policy documents during this quarter .									
Last Updated - 14/11/2016									
Action	Responsibility	Action Status	Start Date	End Date	% Comp.			Target	Indicator
1.4.2.3 Undertake land use planning to develop strategic plans and policy to influence the Northern Territory Governments Land Use Plans and Northern Territory Planning Scheme	Cindy Robson - Strategic Town Planner	In Progress	01/07/2016	30/06/2017	25%	25%			
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance				
Planning									
Linked Related Plan(s):									
Linked Action Filter(s):									
Action Progress Comments									
Continued preparation of reports to bi-monthly Town Planning Committee meetings, with the intention of addressing Strategic Planning matters of importance to Council.									
Last Updated - 14/11/2016									
Action	Responsibility	Action Status	Start Date	End Date	% Comp.			Target	Indicator
1.4.2.5 Develop and manage Developer Contribution Plans for infrastructure upgrading works such as road works, stormwater drainage and social infrastructure	Cindy Robson - Strategic Town Planner	In Progress	01/07/2016	30/06/2017	25%	25%			
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance				
Planning									
Linked Related Plan(s):									
Linked Action Filter(s):									
Action Progress Comments									
The continued preparation of background studies to enable the development of infrastructure upgrade contribution plans in response to intensified development.									
Last Updated - 14/11/2016									

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
1.4.2.4 Develop high level planning strategies	Cindy Robson - Strategic Town Planner	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Planning							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Refer to 1.4.2.2 and 1.4.2.3							
Last Updated - 14/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
1.4.2.1 Review and comment on all Northern Territory Development Consent Authority matters, in keeping with statutory and strategic requirements and community needs	Cindy Robson - Strategic Town Planner	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Planning							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Development Applications have been commented on, as referred to the City of Darwin by the Northern Territory Government.							
Last Updated - 14/11/2016							
STRATEGY: 2.2.1 Develop a vibrant and active central business district							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
2.2.1.9 Implement Darwin Bike Plan Actions	Drosso Lelekis - Manager Design, Planning & Projects	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Planning							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Revised Darwin Bike Plan Implementation being developed and to be put to Council for endorsement during quarter 2.							
Last Updated - 14/11/2016							

# ATTACHMENT J



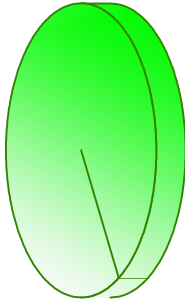
## *City of Darwin* **PREMIUM Performance Report**

*Jul 16 - Sep 16*

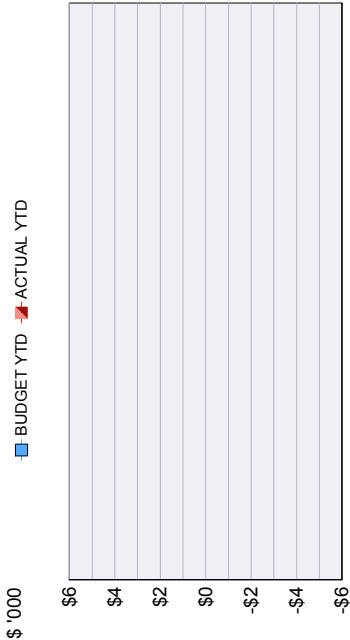
Report Filters:  
Service Profile: Waste Management

Waste Management  
Action Status

Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%



Financial Summary



Action Summary

At least 90% of action target achieved

Between 70 and 90% of action target achieved

Less than 70% of action target achieved

No Target Set

Target

% Complete

Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
3.2.2.1 Plan for and manage effective and efficient waste collection and recycling services striving towards waste minimisation and avoidance, and maximising resource recovery	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
3.2.2.2 Develop and deliver education programs to the community and schools regarding waste minimisation and recycling	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
3.2.2.3 Manage the Shoal Bay Waste Management Facility	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
3.2.2.4 Plan effectively for Council's long term waste and recycling services	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%







## Action Details

### Infrastructure Services

#### Technical Services

**STRATEGY:** 3.2.2 Increase awareness through encouraging the use of waste management options, including recycling across Darwin

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.2.4 Plan effectively for Council's long term waste and recycling services	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Waste Management							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
The Waste Management Strategy development is underway which, when complete, will further improve planning and implementation of waste minimisation targets. All other activities align with this task.							
Last Updated - 11/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.2.3 Manage the Shoal Bay Waste Management Facility	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Waste Management							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Management of Shoal Bay Waste Management Facility is ongoing. The new lined landfill cell (Stage 5) construction is underway with scheduled completion in December. Waste filling to commence at the start of the 2017 dry season. The existing cells are being planned for capping as they progressively reach their final profiles and heights.							
A report into the condition of the weighbridge structure has been completed, resulting in some remedial works to occur in the coming quarter to enable the existing structure to be utilized for another 18 months to 2 years. Planning for a new weighbridge will commence early in 2017 and will be in accordance with Master Planning of the site (which will be reported to Council separately).							
Last Updated - 14/11/2016							

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.2.1 Plan for and manage effective and efficient waste collection and recycling services striving towards waste minimisation and avoidance, and maximising resource recovery	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Waste Management							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Ongoing planning and service delivery for all Waste Management activities .							
Activities of the last quarter included completion of a concrete crushing trial, resulting in the introduction of a new charge at the Shoal Bay Waste Management Facility . The charge is lower that current general waste fees and is intended to encourage separation of waste which results in diversion and reuse of material on site.							
The Pre Cyclone Clean Up was completed over August and September . A total of 488 tonnes of material was collected with 178 tonnes, or 36%, of the material being recycled and diverted from landfill. The majority of waste diverted was scrap metal, with cardboard, e-waste, mixed recyclables and resalable items making up the remainder.							
Last Updated - 14/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
3.2.2.2 Develop and deliver education programs to the community and schools regarding waste minimisation and recycling	Nadine Nilon - Manager Technical Services	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile	Budget Type	Budget	YTD Budget	YTD Actual	YTD Variance		
Waste Management							
<b>Linked Related Plan(s):</b>							
<b>Linked Action Filter(s):</b>							
<b>Action Progress Comments</b>							
Work has been underway on a new program of education and associated advertising . The material will be launched for Recycling Week in November .							
The campaign will be ongoing throughout the year and will include new television advertising, 'bus-back' ads, new calendars, improved education centre at the Shoal Bay Waste Management Facility and other promotional material.							
Staff are also commencing waste minimisation and diversion education direct with businesses within the municipality .							
Council's contractor Cleanaway has continued with education in schools and with community groups. A manual services (units) recycling and bin audit is scheduled to occur in the next quarter.							
Last Updated - 14/11/2016							





*City of Darwin*  
**PREMIUM Performance Report**

*Jul 16 - Sep 16*

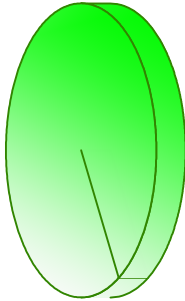
Report Filters:  
Service Profile: Operations Administration



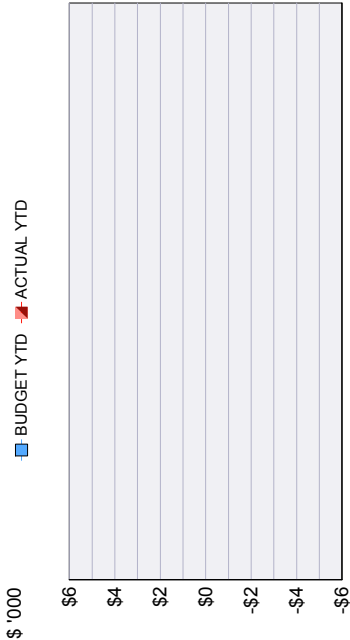
Operations Administration

Action Status


Off Track	0.00%
Monitor	0.00%
On Track	100.00%
No Target Set	0.00%
Total:	100.00%





Financial Summary





Action Summary


 At least 90% of action target achieved

 Between 70 and 90% of action target achieved

 Less than 70% of action target achieved

 No Target Set

 Target

 % Complete

Action	Start Date	End Date	<div></div>	Budget Expenditure	Actual Expenditure	% variance
5.3.2.1 Manage and provide administration for the City of Darwin Operations Centre	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
5.3.2.2 Coordinate Council's Emergency Response Plan including the Cyclone Plan	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
5.3.2.3 Maintain business continuity plans to ensure Council's resilience to business interruption and disaster events	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%






Action Details

Infrastructure Services

Infrastructure Maintenance

STRATEGY: 5.3.2 Display contemporary leadership and management practices

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.3.2.3 Maintain business continuity plans to ensure Council's resilience to business interruption and disaster events	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Operations Administration							
Linked Related Plan(s): Linked Action Filter(s):							
Action Progress Comments							
Business continuity remains on track.							
Last Updated - 07/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.3.2.2 Coordinate Council's Emergency Response Plan including the Cyclone Plan	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Operations Administration							
Linked Related Plan(s): Linked Action Filter(s):							
Action Progress Comments							
Councils Emergency Response Plan has been updated in the first quarter. The annual emergency response scenario training week is scheduled to occur from 17 - 21 October 2016.							
Last Updated - 07/10/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.5.3.2.1 Manage and provide administration for the City of Darwin Operations Centre	Kerry Smith - Manager Infrastructure Maintenance	In Progress	01/07/2016	30/06/2017	25%	25%	 GREEN
Program Profile		Budget	YTD Budget	YTD Actual	YTD Variance		
Operations Administration							
Linked Related Plan(s): Linked Action Filter(s):							
Action Progress Comments							
Management of Operations Centre administration continues on track.							
Last Updated - 07/10/2016							





*City of Darwin*  
**PREMIUM Performance Report**

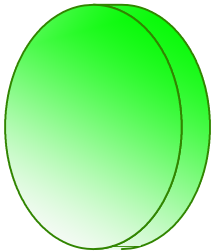
*Jul 16 - Sep 16*

Report Filters:  
Service Profile: Office of GM Infrastructure

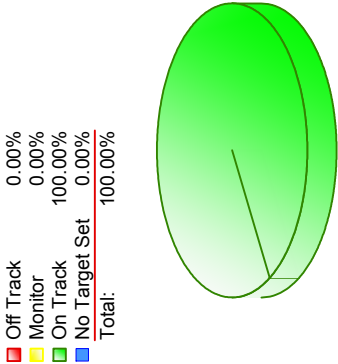


Office of GM Infrastructure

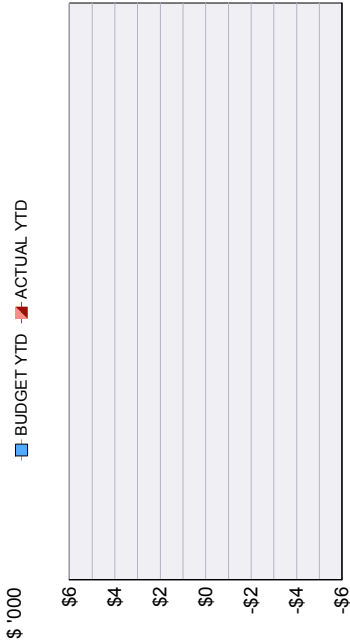
KPI Status



Action Status



Financial Summary





Summary KPI


KPI	Trend	Unit	Target	Actual
Annual Infrastructure Services departmental expenditure within approved budget	Jul 16 - Sep 16	%	25.00	23.00
Latest Comment				
Year to date expenditure (excluding capital) versus budget.				





Action Summary


 At least 90% of action target achieved

 Between 70 and 90% of action target achieved

 Less than 70% of action target achieved

 No Target Set

 Target

 % Complete

Action	Start Date	End Date	<div><div></div></div>	Budget Expenditure	Actual Expenditure	% variance
5.3.2.1 Provide strategic and operational leadership to the Infrastructure Services Department	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
5.3.2.2 Attend Council and Committee Meeting to provide advice on matters relating to Infrastructure Services	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
5.3.2.3 Lead implementation of Council plans, policy and decisions which involve infrastructure services	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
5.3.2.4 Actively participate in the Executive Leadership Team to monitor and resolve organisation-wide issues and represent matters relating to Infrastructure Services	01/07/2016	30/06/2017	<div><div></div></div>	\$0.00	\$0.00	0%
				\$0.00	\$0.00	0%



## Action Details


## Infrastructure Services

Office of GM Infrastructure

**STRATEGY:** 5.3.2 Display contemporary leadership and management practices

Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.3.2.2 Attend Council and Committee Meeting to provide advice on matters relating to Infrastructure Services	Luccio Cercarelli - General Manager Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile							
Office of GM Infrastructure							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
All Council and Committee meetings attended. Review, presentation and advice on reports relating to the Infrastructure Department provided.							
Last Updated - 09/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.3.2.1 Provide strategic and operational leadership to the Infrastructure Services Department	Luccio Cercarelli - General Manager Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile							
Office of GM Infrastructure							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Provided and reviewed on an ongoing basis.							
Last Updated - 09/11/2016							
Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator
5.3.2.4 Actively participate in the Executive Leadership Team to monitor and resolve organisation-wide issues and represent matters relating to Infrastructure Services	Luccio Cercarelli - General Manager Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%	
Program Profile							
Office of GM Infrastructure							
Linked Related Plan(s):							
Linked Action Filter(s):							
Action Progress Comments							
Executive Leadership Team meetings and Project Control Group meetings attended on a weekly basis to address organization wide issues.							
Last Updated - 09/11/2016							



Action	Responsibility	Action Status	Start Date	End Date	% Comp.	Target	Indicator	
5.3.2.3 Lead implementation of Council plans, policy and decisions which involve infrastructure services	Luccio Cercarelli - General Manager Infrastructure	In Progress	01/07/2016	30/06/2017	25%	25%		
Program Profile		Budget		YTD Budget		YTD Actual		YTD Variance
Office of GM Infrastructure								
Linked Related Plan(s):								
Linked Action Filter(s):								
Action Progress Comments								
All Infrastructure policies on track to be reviewed in accordance with the schedule. Implementation of Council plans and decisions regularly monitored.								
Last Updated - 09/11/2016								



# OPEN SECTION

E&I11/8

## Environment & Infrastructure Committee Meeting – Tuesday, 22 November 2016

- 11. INFORMATION ITEMS**
- 12. GENERAL BUSINESS**
- 13. CLOSURE OF MEETING**

