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This document was created in response to a Freedom of Information request made to CSIRO.

FOI Number: FOI2016/18

Date: 21 March 2016

Request: The written briefing or correspondence prepared in December 2015 by Dr Ken Lee, Director of the CSIRO Oceans and Atmosphere division for submission to the CSIRO executive for the "deep dive". The "deep dive" I am referring to is that which led to the "strategic alignment" that chief executive of CSIRO Larry Marshall announced to staff in his email dated February 4, 2016.

Document(s): 1

For more information, please refer to CSIRO's FOI disclosure log at [www.csiro.au/FOILog](http://www.csiro.au/FOILog)

# Oceans and Atmosphere Business Unit Analysis and inputs



# Oceans and Atmosphere Impact Strategy

IMPACT STRATEGY ON A PAGE

### GOAL

To boost Australia's prosperity and wellbeing through solutions that enable the sustainable economic, social and environmental use of Australia's marine estate and management of the atmospheric environment.

### IMPACT AREAS

- Protection of the marine and atmospheric environment and enhanced security
- Emergency response and preparedness
- Unlocking the blue economy

### IMPACT STATEMENTS

- Develop leading blue economy solutions... (text partially obscured)
- Weather and climate extension services... (text partially obscured)
- Solutions for sustainable food development... (text partially obscured)
- Conservation of the sea bed... (text partially obscured)
- Greenhouse gas emissions... (text partially obscured)
- Climate resilience... (text partially obscured)
- Expand marine science... (text partially obscured)
- Improve marine science... (text partially obscured)
- Develop intelligent wave energy... (text partially obscured)
- Environmental protection... (text partially obscured)
- Grow blue industries... (text partially obscured)
- World-leading marine... (text partially obscured)
- Sustainable... (text partially obscured)
- Next generation marine... (text partially obscured)

### ROLE KEY

● = Lead ○ = Support

### PROGRAMS

- Ocean and Climate Dynamics
- Earth System Assessment
- Coastal Development and Management
- Marine Resources and Industries
- Engineering and Technology

### OTHER BUSINESS UNITS

- Agriculture
- Data61
- Earth Observation Informatics TCP
- Energy
- Food and Nutrition
- Land and Water
- National Facilities and Collections

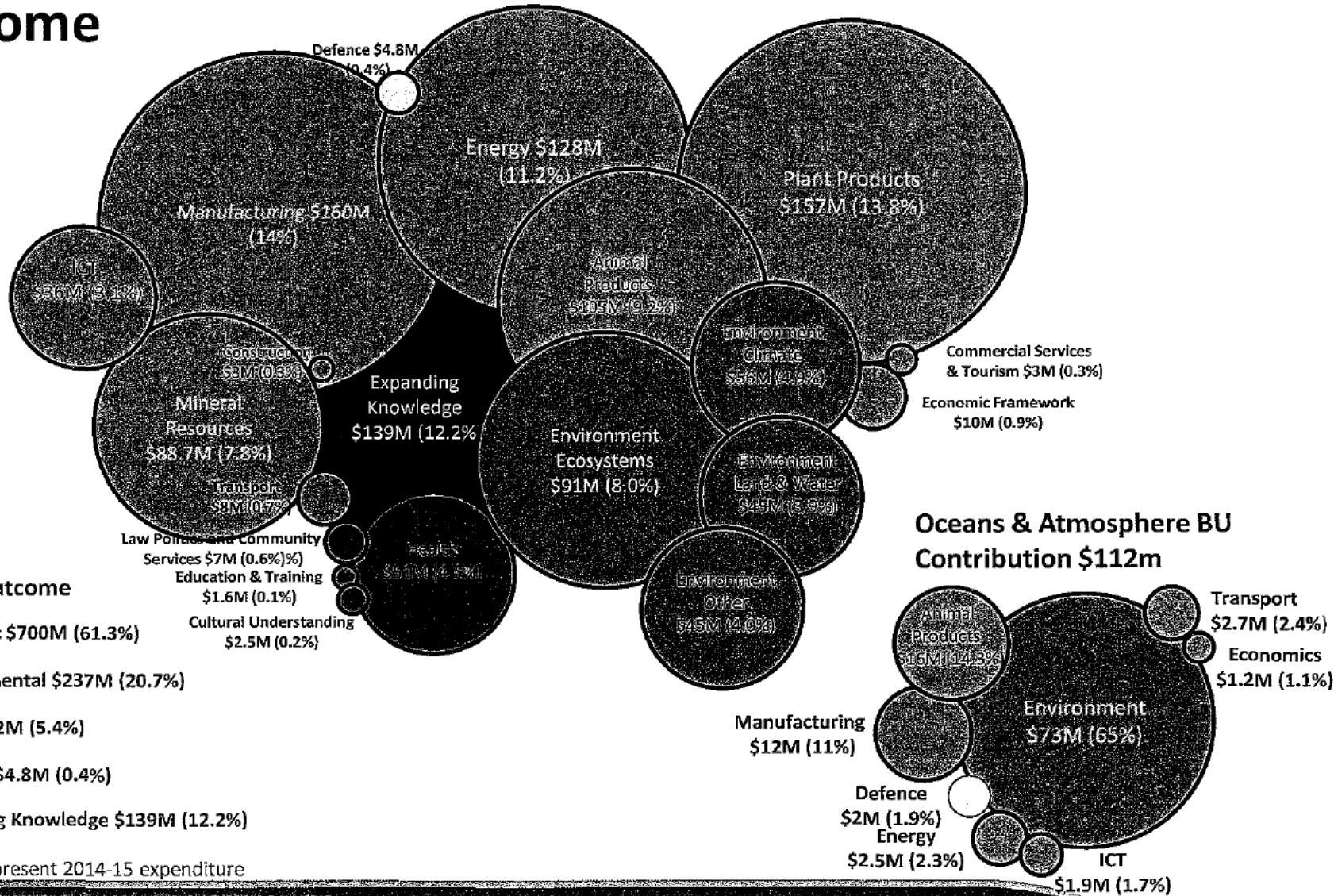
### ROLES

INTERNAL PROGRAMS	OTHER BUSINESS UNIT
● ●	
● ●	● DGI
● ●	● LW
● ●	● DGI ● NFE
● ●	● DGI ● LW
● ● ●	● LW
● ●	● LW
● ●	
● ●	● DGI ● EOE
● ●	● EN
● ●	● AC ● FN
● ● ●	● LW
● ● ●	● EOI
● ●	● DGI

Source: Business Unit Strategic Plans



# CSIRO & Oceans and Atmosphere Investment by Outcome

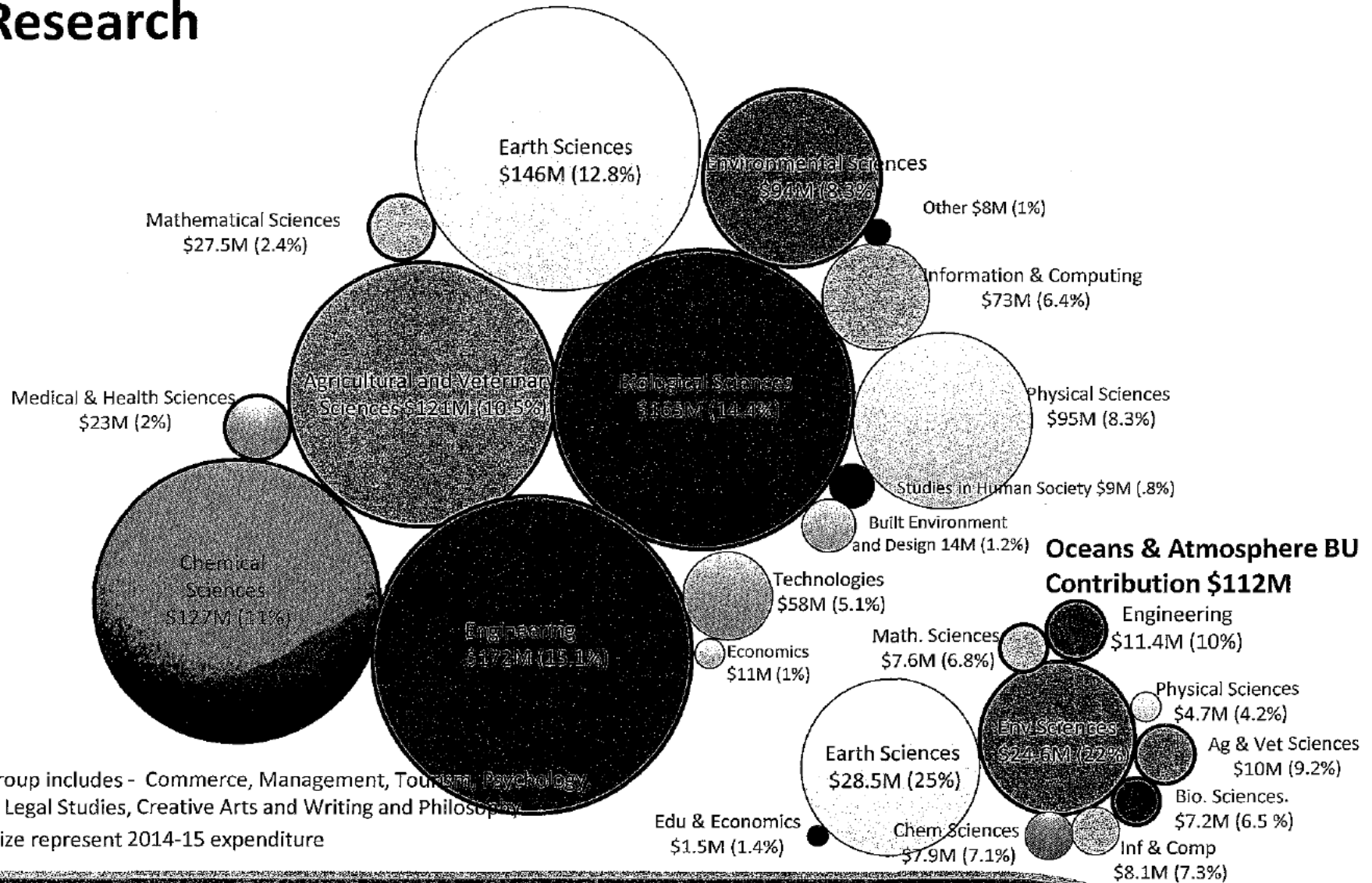


Bubble size represent 2014-15 expenditure

Total expenditure includes all BU and regional centres excluding CSIRO centres and ISS



# CSIRO & Oceans and Atmosphere Investment by Field of Research



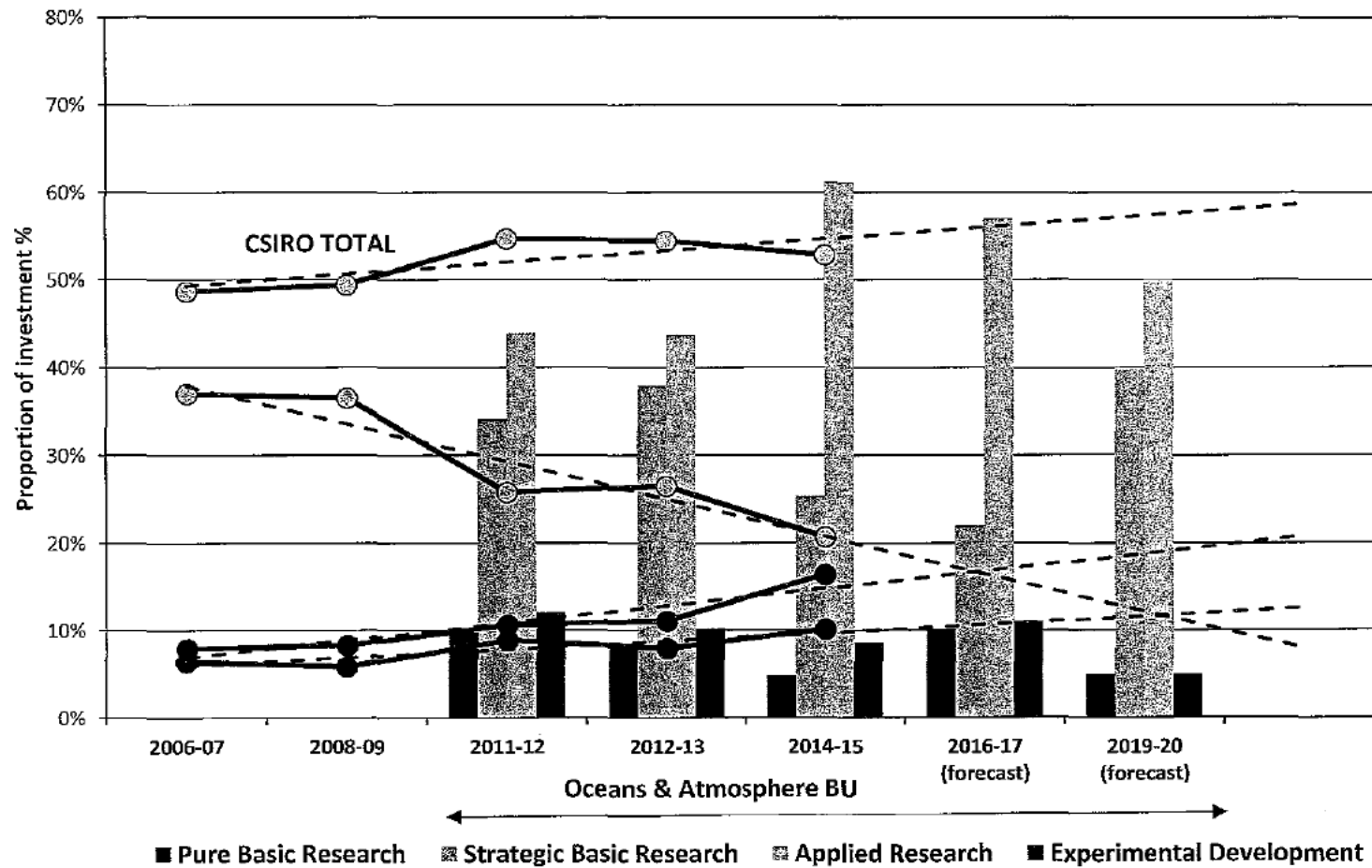
Other Group includes - Commerce, Management, Tourism, Psychology, Law and Legal Studies, Creative Arts and Writing and Philosophy  
Bubble size represent 2014-15 expenditure

Total expenditure includes all OUS and National Facilities expenditure, CSIRO Services, and R&D



# Oceans and Atmosphere Portfolio by "Type of Activity"

Business Unit vs. CSIRO trend



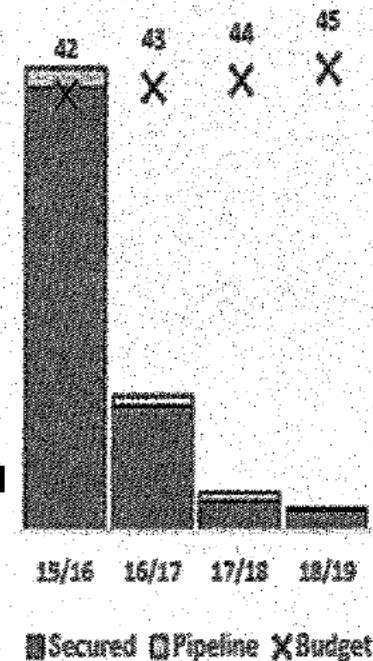
# External Revenue Pipelines

Oceans and Atmosphere Business Unit snapshot as at 31 October 2015

Business Unit:		Oceans and Atmosphere				Month: Oct15	All amounts \$'000				2015/16 Year
Program	Year Budget	Weighted Pipeline			Gap	YTD Budget	YTD Actual	Variance	% of Year's budget earned	Remaining to Earn	
		Secured	Opportun.	Total							
Management Oceans and Atmosphere	0	0	0	0	0	0	0	0%	0		
Ocean & Climate Dynamics	7,600	7,059	77	7,136	(364)	2,500	2,606	106	35%	4,894	
Earth System Assessment	7,500	5,177	111	5,288	(2,212)	2,500	1,490	(1,010)	20%	6,010	
Coastal Development and Management	9,989	5,831	628	6,459	(3,530)	3,323	1,975	(1,348)	20%	7,994	
Marine Resources and Industries	10,800	17,509	871	18,380	7,580	3,600	5,063	1,463	47%	5,737	
Engineering and Technology	6,500	7,470	18	7,488	988	2,167	3,538	1,372	54%	2,961	
	42,269	43,037	1,904	44,942	2,673	14,090	14,674	584	35%	27,585	

## Top 20 Opportunities in the Pipeline : from current year out

Opportunity description	Prime Customer	Opportunity Stage	Probability to Close (%)	Duration (years)	WOL Project Value	WOL External Revenue	Average Revenue p.a.	External Revenue Ratio to CSIRO
CSSNET EIF Funded Research Infrastructure	CO2CRC Limited	Qualify	10	1	8,730	8,423	8,423	96%
Integrated Pest Management of Crown-of-Thorns Starfish Reef and Rainforest Research Cen		Create	90	3	4,238	3,000	1,000	71%
NESP Biodiversity Director Salary	University of Tasmania	Qualify	60	6	3,553	2,040	340	57%
Global Ocean Biodiversity Initiative (UK) & Int'l Union for O2D Migration - Internal Use Only		Qualify	30	3	1,828	1,765	595	98%
NESP Marine Biodiversity Hub Project A3 - A national po	University of Tasmania	Qualify	10	2	3,384	1,692	781	50%
NESP Marine Biodiversity Hub Project - A2 - Quantificatio	University of Tasmania	Qualify	10	3	2,202	1,101	413	50%
Marine M & V Method Development (CCS Baselines)	CO2CRC Limited	Qualify	10	3	1,800	900	300	50%
NESP Marine Biodiversity Hub Project A1 - Northern Aus	University of Tasmania	Qualify	10	2	1,889	845	507	50%
SBT gene-tagging pilot study	Commission for the Conservation o	Approve	100	3	1,362	816	297	60%
2013/2013-Survey, Stock Assessment and MSE for the Tor	Australian Fisheries Management	Qualify	60	1	879	609	609	70%
John Stocker Fellowship - Almee Slangen - Solving the s	Science and Industry Endowment F	Qualify	30	3	1,551	552	179	36%
NESP Marine Biodiversity Hub Project - B2 - SoE report in	University of Tasmania	Qualify	10	2	1,100	550	330	50%
ABRS Taxonomy of Gelatinous Organisms	Department of the Environment	Endorse	#	3	810	540	180	67%
Future Reef MAP 2	Great Barrier Reef Foundation	Qualify	30	2	500	500	214	100%
NESP Jellyfish Proposal	Department of the Environment	Qualify	60	3	912	456	152	50%
Continuous Water Quality Monitoring - II	Great Barrier Reef Foundation	Qualify	60	1	800	400	800	50%
2015/2023-Monitoring the traditional take of finfish speck	Australian Fisheries Management	Qualify	60	2	672	400	200	69%
NESP RV2-Grey Nurse Shark Close-Kin Mark-Recapture (University of Tasmania)		Create	10	2	570	285	180	50%
NESP Marine Biodiversity Hub Project - D2 - Analysis and	University of Tasmania	Qualify	10	2	510	255	153	50%
					37,810	25,652		68%



Source BO October Report 2015





# Oceans and Atmosphere and Program capability mapping

Based on project plan data (2014-15)

DEPLOYMENT INTENTIONS as recorded in SAP Project Plans FY2015

	AGRICULTURE	ENERGY	FOOD & NUTRITION	HEALTH & BIOSECURITY	LAND & WATER	MANUFACTURING	MINERAL RESOURCES	OCEANS & ATMOSPHERE	DATA61	NATIONAL FACILITIES & COLLECTIONS	NET
OCEANS AND ATMOSPHERE	3	6	1		6	2			1	24	
	1	3			14	1			7	1	-16
ROSP01: Ocean and Climate Dynamics	2				1			19			
								6	2		-14
ROSP02: Earth System Assessment		6									
					1	1		3			-1
ROSP03: Coastal Development and Management			1		3	1		22	1		
	1				11			12	1		-3
ROSP04: Marine Resources and Industries	1				1			10		1	
		3						10	4	1	+5
ROSP05: Engineering and Technology								3		23	
					1			25			+0

 Exports: Deployment OUT     
  Imports: Deployment IN

Source: SAP Project Plan data as at Feb 2015





# Oceans and Atmosphere and Program KPI Performance

## KPI#1: Impact Return on Investment

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	4.1	4.1	4.1	4.2	4.2	4.3
<b>OCEANS &amp; ATMOSPHERE</b>	4.6	>4.6	>4.6	>4.6	>4.6	>4.6
Ocean & Climate Dynamics	4.4	4.4	4.4	4.4	4.4	4.4
Earth System Assessment	NA	4.3	4.4	4.4	4.5	4.5
Coastal Development & Management	4.5	4.5	4.5	4.5	4.5	4.5
Marine Resources & Industries	4.7	4.7	4.7	4.7	4.7	4.7
Engineering & Technology	NA	4.1	4.1	4.2	4.2	4.3

Source: Business Unit Strategic Plans



# Oceans and Atmosphere and Program KPI Performance

## KPI#2: Customer Satisfaction

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	8.2	8	8	8	8	8
<b>OCEANS &amp; ATMOSPHERE</b>	8.2	>8				
Ocean & Climate Dynamics	NA					
Earth System Assessment	NA	9	9	9	9	9
Coastal Development & Management	NA	NA	NA	NA	NA	NA
Marine Resources & Industries	NA	NA	NA	NA	NA	NA
Engineering & Technology	NA	8.6	8.6	8.6	8.6	8.6

Source: Business Unit Strategic Plans



# Oceans and Atmosphere and Program KPI Performance

## KPI#3: Active Licences

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	<b>276</b>	<b>280</b>	<b>290</b>	<b>300</b>	<b>320</b>	<b>350</b>
<b>OCEANS &amp; ATMOSPHERE</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>
Ocean & Climate Dynamics	NA	NA	NA	NA	NA	NA
Earth System Assessment	NA	0	0	0	0	0
Coastal Development & Management	NA	NA	NA	NA	NA	NA
Marine Resources & Industries	NA	NA	NA	NA	NA	NA
Engineering & Technology	NA	1	2	3	3	3

Source: Business Unit Strategic Plans



# Oceans and Atmosphere and Program KPI Performance

## KPI#4: External Revenue Ratio

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	<b>38%</b>	<b>39%</b>	<b>40%</b>	<b>41%</b>	<b>43%</b>	<b>45%</b>
<b>OCEANS &amp; ATMOSPHERE</b>	<b>39%</b>	<b>39%</b>	<b>42%</b>	<b>43%</b>	<b>44%</b>	<b>44%</b>
<b>Ocean &amp; Climate Dynamics</b>	<b>43%</b>	<b>42%</b>	<b>43%</b>	<b>43%</b>	<b>44%</b>	<b>44%</b>
<b>Earth System Assessment</b>	<b>29%</b>	<b>33%</b>	<b>35%</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>
<b>Coastal Development &amp; Management</b>	<b>33%</b>	<b>34%</b>	<b>35%</b>	<b>35%</b>	<b>36%</b>	<b>36%</b>
<b>Marine Resources &amp; Industries</b>	<b>42%</b>	<b>42%</b>	<b>43%</b>	<b>43%</b>	<b>44%</b>	<b>44%</b>
<b>Engineering &amp; Technology</b>	<b>42%</b>	<b>42%</b>	<b>42%</b>	<b>43%</b>	<b>44%</b>	<b>45%</b>

Source: Business Unit Strategic Plans



# Oceans and Atmosphere and Program KPI Performance

## KPI#5: Internal & external Collaboration

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	<b>1</b>	<b>1.05</b>	<b>1.1</b>	<b>1.15</b>	<b>1.2</b>	<b>1.25</b>
<b>OCEANS &amp; ATMOSPHERE</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Ocean &amp; Climate Dynamics</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Earth System Assessment</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Coastal Development &amp; Management</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Marine Resources &amp; Industries</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Engineering &amp; Technology</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

# Oceans and Atmosphere and Program KPI Performance

## KPI#6: Diversity & Inclusion

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	11	12	13	14	15	16
<b>OCEANS &amp; ATMOSPHERE</b>	9	>11	>11	>11	>11	>11
Ocean & Climate Dynamics	10	10	11	11	12	13
Earth System Assessment	10	16	16	17	17	18
Coastal Development & Management	22	23	24	24	25	25
Marine Resources & Industries	8	10	10	12	15	16
Engineering & Technology	5	5	6	6	7	7

Source: Business Unit Strategic Plans



# Oceans and Atmosphere and Program Diversity Profile

## KPI#6: Diversity & Inclusion (supplementary information)

	Leaders					FTE	All Staff	
	FTE	Female FTE	% Leaders (Female)	NESB FTE	% Leaders (NESB)	Total	ATSI All staff	% All staff
<b>CSIRO</b>	<b>1102</b>	<b>313</b>	<b>28.4%</b>	<b>179</b>	<b>16.2%</b>	<b>5209</b>	<b>63</b>	<b>1.2%</b>
<b>OCEANS &amp; ATMOSPHERE</b>	<b>83</b>	<b>17</b>	<b>20.5%</b>	<b>11</b>	<b>13.3%</b>	<b>405</b>	<b>3</b>	<b>0.7%</b>
Ocean & Climate Dynamics	16	4	25.0%	3	18.8%	71		0.0%
Earth System Assessment	17	2	11.8%	5	29.4%	78		0.0%
Coastal Development & Management	17	3	17.6%	2	11.8%	99	3	3.0%
Marine Resources & Industries	15	3	20.0%		0.0%	79		0.0%
Engineering & Technology	13	2	15.4%	1	7.7%	69		0.0%

# Oceans and Atmosphere and Program KPI Performance

## KPI#7: Innovation Capacity

	Actual			Target		
	2015	2016	2017	2018	2019	2020
<b>CSIRO</b>	55%	56%	57%	58%	59%	60%
<b>OCEANS &amp; ATMOSPHERE</b>	52%	54%				
Ocean & Climate Dynamics	52%	52%	53%	53%	55%	55%
Earth System Assessment	52%	55%	55%	60%	60%	60%
Coastal Development & Management	52%	55%	60%	60%	60%	60%
Marine Resources & Industries	52%	55%	60%	60%	60%	60%
Engineering & Technology	52%	53%	53%	54%	54%	55%

Source: Business Unit Strategic Plans





# Oceans and Atmosphere and Program KPI Performance

## KPI#8: Safety Performance

	Actual			Target		
	2015	2016	2017	2018	2019	2020
CSIRO	14.2	0	0	0	0	0
OCEANS & ATMOSPHERE	10	0	0	0	0	0
Ocean & Climate Dynamics		0	0	0	0	0
Earth System Assessment		0	0	0	0	0
Coastal Development & Management		0	0	0	0	0
Marine Resources & Industries		0	0	0	0	0
Engineering & Technology		0	0	0	0	0

# Oceans and Atmosphere Budget Validation Template

To be completed by BUs ahead of deep dives

Business Unit Budget Validation: Oceans & Atmosphere					Budget Validation - Business Unit to complete					Variance				
4 Year Budget including Strategy Adjustments					Budget Validation - Business Unit to complete					Variance				
Oceans & Atmosphere	2015/16	2016/17	2017/18	2018/19	Oceans & Atmosphere	2015/16	2016/17	2017/18	2018/19	Oceans & Atmosphere	2015/16	2016/17	2017/18	2018/19
Direct Appropriation	26,321	26,724	26,730	27,418	Direct Appropriation					Direct Appropriation	- 26,321	- 26,724	- 26,730	- 27,418
External Revenue - CCS	42,554	46,447	48,653	50,594	External Revenue - CCS					External Revenue - CCS	- 42,554	- 46,447	- 48,653	- 50,594
External Revenue - IP	-	-	-	-	External Revenue - IP					External Revenue - IP	-	-	-	-
External Revenue - Other	700	721	743	765	External Revenue - Other					External Revenue - Other	- 700	- 721	- 743	- 765
<b>Total Revenue</b>	<b>69,575</b>	<b>73,892</b>	<b>76,126</b>	<b>78,777</b>	<b>Total Revenue</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>Total Revenue</b>	<b>- 69,575</b>	<b>- 73,892</b>	<b>- 76,126</b>	<b>- 78,777</b>
Labour	49,692	50,882	50,842	51,859	Labour					Labour	- 49,692	- 50,882	- 50,842	- 51,859
Operating	19,882	22,156	24,336	26,066	Operating					Operating	- 19,882	- 22,156	- 24,336	- 26,066
<b>Total Expenses</b>	<b>69,575</b>	<b>73,038</b>	<b>75,178</b>	<b>77,925</b>	<b>Total Expenses</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>Total Expenses</b>	<b>- 69,575</b>	<b>- 73,038</b>	<b>- 75,178</b>	<b>- 77,925</b>
					<b>Additional Capex Requirement</b>									
<b>Staffing Levels</b>		<b>2015/16</b>			<b>Staffing Levels</b>		<b>2015/16</b>			<b>Staffing Levels</b>		<b>2015/16</b>		
Target ASL		389			Target ASL		370			Target ASL		-389		
YTD Actual - 30/09/15		370			YTD Actual - 30/09/15		370			YTD Actual - 30/09/15		0		
					<b>Comments</b>									



# Oceans and Atmosphere

**GOAL**

**IMPACT AREAS**

**IMPACT STATEMENTS**

**ROLES**

**INTERNAL PROGRAMS**

**OTHER BUSINESS UNITS**

**To boost Australia's prosperity and wellbeing through solutions that enable the sustainable economic, social and environmental use of Australia's marine estate and management of the atmospheric environment.**

- Protection of the marine and atmospheric environment and enhanced security
- Emergency response and preparedness
- Unlocking the Blue Economy

- Oceans and sea level change assessments to increase the resilience of government, industry and business in the face of climate change, including the use of satellite technology and modern data collection platforms for adaptation and mitigation strategies.
- Weather and climate extreme information to manage disaster risks, upgrade with and build capacity of the Australian government, neighbouring nations and industry, and the decision of the international community on weather and climate extremes and associated impacts, disaster prevention, planning, response, recovery, weather and climate extremes to help reduce economic costs and save lives and assets.
- Solutions to coastal blue economy development, enable sustainable multiple uses of coastal areas and help provide the government and industry with the cleaner, greener and more resilient solutions to manage and resolve the coastal and environmental problems arising from climate change.
- Conservation of marine biodiversity: Monitoring and evaluation tools for use by Commonwealth and Regional Managers to further the sustainable management and conservation of Australia and Regional Partners' marine biodiversity by 2025.
- Greenhouse and ozone depleting gases, air quality and human health: Improve the formation of policy, reporting and regulatory obligations by providing the national community with a world class integrated observing system and model the capability that can track and assess the influence of greenhouse and ozone depleting gases, reactive gases, aerosols on regional and global climate, air quality and human health.
- Climate baseline and projections to guide resource management, green energy and response actions: Improve the national and international climate baseline energy use for ecosystem resource managers and climate science community and industry, create a product through the national climate baseline and projections to guide resource management, green energy and response actions.
- Australian marine science infrastructure: In partnership with External Infrastructure Providers, build and deliver the marine science capability by 2025 to be a partner in the science community to increase the understanding and knowledge of our oceans and the marine environment to create a product over the Australian Exclusive Economic Zone.
- Ocean forecasting system: Reduce the loss of lives and assets from coastal operations and to increase operational safety by providing ocean observations and forecasts to marine and other stakeholders, improve risk mitigation and prediction, increase resilience and provide satellite for marine infrastructure.
- Coastal intelligence transformed: Develop a digital intelligence system, including modelling and information systems that provide the industry and industry with the capability to implement environmental intelligence systems within Australia that are resilient and commercial, assess, manage, communicate the success and impact of coastal assets and national preparedness to respond to emerging threats, assess and manage pollution events and to improve R2R2.
- Environmental support for offshore oil and gas sector: To provide the Australian Oil and Gas Industry with baseline characterisation tools and ongoing advice to assist in the management of their obligations under environmental policy and regulations for the protection of the coastal and ocean environment.
- Future blue industries: Develop technologies, equipment and services, response systems that sustainably grow existing and emerging coastal industries to provide increased employment opportunities for coastal communities.
- Managing multiple uses: Innovative socio-ecological decision support tool for use by government and industry stakeholders, leading to more efficient approvals, improved governance and community support in the management of multiple uses in the marine environment.
- Sustainable marine resources: Assessment methods, models and harvest strategies for uptake by both Commonwealth and Regional Resource Managers to build capacity, improve fisheries management and ensure sustainable resource use, resulting in a reduction in overfished stocks and enhanced food security by 2025.
- Next generation marine instrumentation and systems: Design and deliver the next generation instruments, hardware and systems for marine industry and the wider community to understand, measure, observe and predict the marine environment, improve the quality and quantity of coastal marine data and the data products associated with data collection.

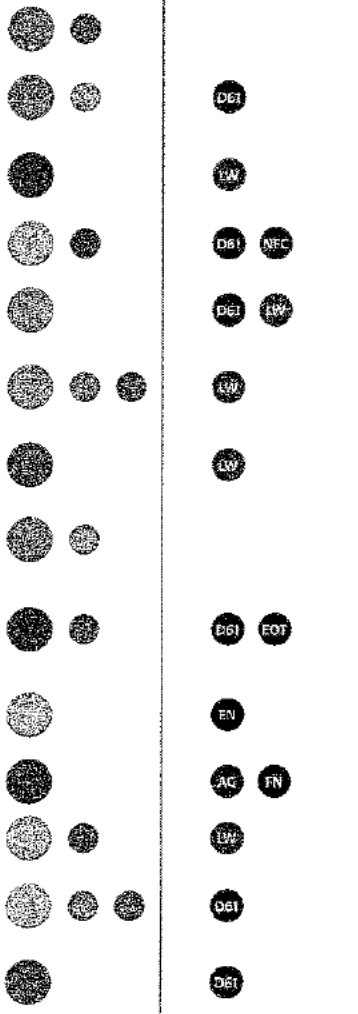
**ROLE KEY**  
● = Lead   ○ = Support

**PROGRAMS**

- Ocean and Climate Dynamics
- Earth System Assessment
- Coastal Development and Management
- Marine Resources and Industries
- Engineering and Technology

**OTHER BUSINESS UNITS**

- Agriculture
- Data61
- Earth Observation Informatics TCP
- Energy
- Food and Nutrition
- Land and Water
- National Facilities and Collections



# Oceans and Atmosphere Budget Validation Template

To be completed by BUs ahead of deep dives

Oceans & Atmosphere					Oceans & Atmosphere					Oceans & Atmosphere		
	2015/16	2016/17	2017/18	2018/19		2015/16	2016/17	2017/18	2018/19		2015/16	2016/17
Direct Appropriation	26,321	26,724	26,730	27,418	Direct Appropriation	26,321	26,724	26,730	27,418	Direct Appropriation	-	-
External Revenue - CCS	42,554	46,447	48,653	50,594	External Revenue - CCS	42,054	46,447	48,653	50,594	External Revenue - CCS	-	500
External Revenue - IP	-	-	-	-	External Revenue - IP	-	-	-	-	External Revenue - IP	-	-
External Revenue - Other	700	721	743	765	External Revenue - Other	700	721	743	765	External Revenue - Other	-	-
<b>Total Revenue</b>	<b>69,575</b>	<b>73,892</b>	<b>76,126</b>	<b>78,777</b>	<b>Total Revenue</b>	<b>69,075</b>	<b>73,892</b>	<b>76,126</b>	<b>78,777</b>	<b>Total Revenue</b>	-	500
Labour	49,692	50,882	50,842	51,859	Labour	49,092	50,882	50,842	51,859	Labour	-	600
Operating	19,882	22,156	24,336	26,066	Operating	19,982	22,156	24,336	26,066	Operating	100	-
<b>Total Expenses</b>	<b>69,575</b>	<b>73,038</b>	<b>75,178</b>	<b>77,925</b>	<b>Total Expenses</b>	<b>69,074</b>	<b>73,038</b>	<b>75,178</b>	<b>77,925</b>	<b>Total Expenses</b>	-	501
					<b>Additional Capex Requirement</b>							
<b>Staffing Levels</b>	<b>2015/16</b>				<b>Staffing Levels</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>Staffing Levels</b>	<b>2015/16</b>	
Target ASL	389				Target ASL	386	390	390	390	Target ASL	-3	
YTD Actual - 30/09/15	370				YTD Actual - 30/09/15	370				YTD Actual - 30/09/15	0	
					<b>Comments</b>							

**Lau, Bonnie (Finance, Kensington):**  
Based on Nov-15 ERF with consideration that further pipeline items will result from the FS growth areas.

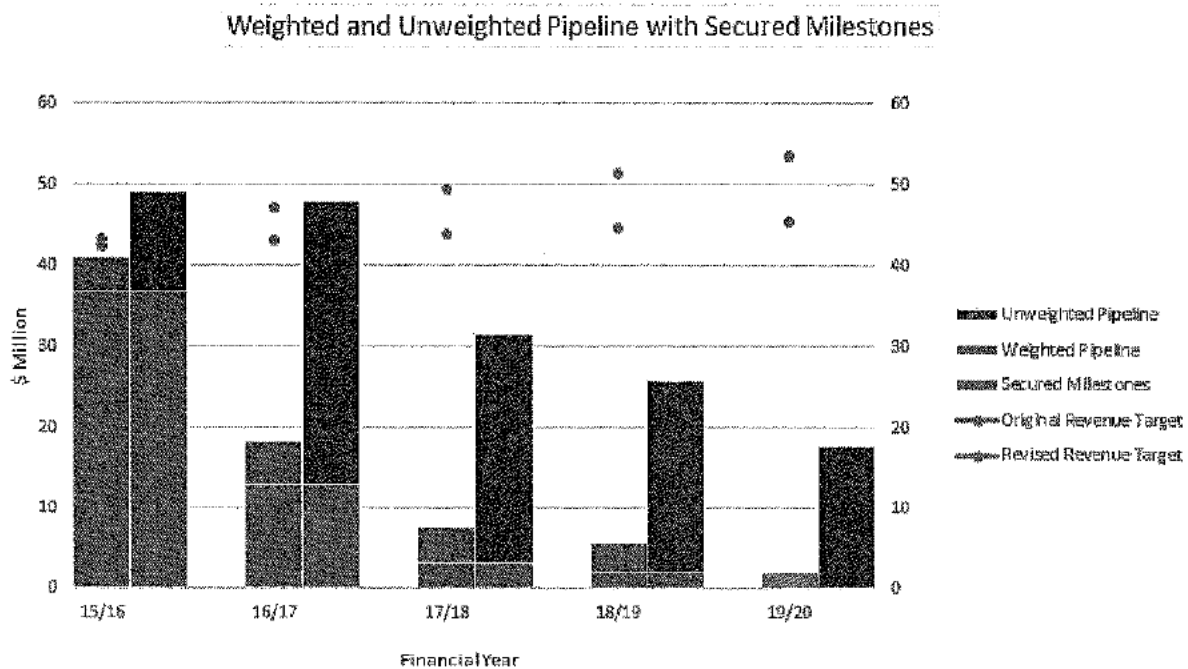
**Author:**  
**Author:**  
Project plans are already over by \$1.2M and there could be further collaborator payments fr FY14/15 (~\$1.5M) As at Nov-15, projected savings forecast from Strategic, OCE, CDF was ~\$1.1M so net adjustment is an additional \$100k - \$19.962M

Source: CSIRO Finance

## Brief for Deep Dive Discussions

### Oceans and Atmosphere Business Unit

#### 1. Business Unit Pipeline Health



#### Commentary notes:

The BU will likely reach its original target in 15/16 year but will fall short of revised target. Currently, 85% of revenue (revised target) is secured for this financial year and 12% (revised target) is in pipeline as a weighted value. Performance of individual programs shows normal variability, with two expected to significantly exceed external earnings targets and three currently below.

The situation is anticipated to improve as new projects are coming on line:

- **S7** to ramp up in 16/17 but weighted in the weighted pipeline data.
- ESCC NESP hub to ramp up in 16/17 and weighted in the pipeline data

Changes in government funding for climate research (ACCSP wind up and AUSAID claw back) have impacted on RP1 and RP2 who have traditionally relied on these funds to shore up their pipeline. New funding sources such as the Green Climate Fund (GCF) will assist financial recovery as of 16/17 year; it is currently weighted at 10% in O2D.

#### 2. Big growth opportunities

Oceans and Atmosphere have developed a strategy for sustained growth in external earnings that will enable us to reach the \$54 million target set for 2019/20. This will see incremental increases in our external revenue over the next 4 years. This will be achieved through:

- Application of current methods and tools in new markets;

- Development of new methods and tools in existing and new markets.

Three growth areas to bring in **additional** external revenue have been identified:

**Integrated assessments for the blue economy** – this explicitly couples socio-economic and biophysical considerations. It will require innovative complex systems approaches. It is an area of enormous international focus. Specifically it includes dealing with the “wicked” problem of managing multiple uses, spatial planning, cumulative impacts and Social License to Operate. Target markets are industry and governments in Australia, Asia/Pacific, Canada, the EU and Chile. It is anticipated to deliver additional revenue of up to \$15 million over the next 5 years.

**Customers:** governments, World Bank, IMF, philanthropic foundations, oil and gas sector, aquaculture industry, specifically:

s7 [REDACTED] Integrated Assessments,

- Spatial planning and livelihoods in Pacific Island Nations
- Cross BU initiative on SLO
- Ecosystem based management in the EU

**Oceans and Atmospheric Intelligence** - this area will deliver services related to water and air quality, multi-week, seasonal and multi-year forecasting of industry-specific parameters to our climate-exposed economy, using a variety of models, incl. the Australian Community and Earth System Simulator. There will be a clear focus on a variety of sectors, e.g. offshore operations, hazard and emergency response, and disaster risk management. It will build on the game changing Bluelink and eReefs approaches and a significant output in Australia will be an analog of Bluelink/eReefs for the coasts. Target markets include Australia and Chile. It is anticipated to deliver additional revenue of \$10 million over the next 5 years.

**Customers:** oil and gas sector, aquaculture industry, finance and insurance industry, specifically:

- Continuous Water Quality Monitoring, scenarios for Great Barrier Reef, QLD middling Centre - Coastal Intelligence
- Green Climate Fund, RDCs and R&D for Profit: information and services supporting sustainable resilient development in Pacific Small Islands Developing States, Australian and international primary industry
- China interaction with the National Laboratory for Marine Science and Technology

**International Fisheries** – this area will apply methods developed in Australia (e.g., Atlantis, harvest strategies) to fisheries in Chile, and the Asia-Pacific. It will also see the roll out of new genomic and remote sensing methods in international fisheries. The latter will focus on biomass estimation, chain of custody and provenance, and mitigating illegal, unreported and unregulated fishing activities. Target markets are Chile, the Asia Pacific and Indian Ocean Rim. Anticipated additional revenue is \$15 million over the next 3-5 years.

**Customers:** international fishing and aquaculture industries, governments, philanthropic foundations, specifically:

- Towards rebuilding Chile’s fisheries
- IOTC/EU/FAO stock structure tunas and sharks
- Allen foundation – use of satellite tracking to monitor illegal fishing
- Application of Close Kin mark recapture to global tuna fisheries
- Application of gene SNPs technologies to chain of custody and provenance.

In addition we note that:

**China** is a strategic focus for the business unit. However, additional revenue will be modest in the short term (1-2 years) as relationships are being built along with collaborative programs with government and private sector industries.

**Offshore oil and gas** – given the downturn in the industry, conservative demands to address knowledge gaps from the regulators, and limited funding available from oil spill response agencies, external earnings are anticipated to be flat over the 4 year period. Our focus will be on continuing building relationships with industry, regulators and spill response agencies to set the BU up for increased revenue in the medium term. Opportunities in metocean services, marine noise, decommissioning and operational discharges are also being explored – in addition to international opportunities under industry led joint venture partnerships.

Several capability and structural opportunities are currently being considered.

A focus on **Climate Services** will see a shift in capability-focus in Programs 1 and 2 from climate change research to meet the growing demand for services for farmers, resource managers, and industries, leading to more efficient primary sectors. Target markets are industries, governments, and EPAs. It is anticipated to deliver over \$20 million over the next 5 years, partially offsetting declines in government funding for climate change research. To realize this it may be necessary to re-shape these programs and this is being actively considered. A reduction in FTEs that are not aligned to these directions is being considered.

RP5 (Engineering and Technology) has a focus on marine infrastructure delivery. While it currently has strong external earnings, it has a small number of large clients (MNF and IMOS). Consequently the costs and benefits of maintaining this program are being evaluated.

### 3. Portfolio investments shifts

a) **20% Increase in Appropriation Funding:** Focus on 3 or 4 growth and emerging areas described above - would generate a high external earning revenue trajectory. We would proceed with the planned capability reshaping accordingly, and redirect resources to these growth areas.

b) **20% Decrease in Appropriation Funding:**

Option 1: The planned ~20 permanent FTE cuts over this year and next would free up approximately \$2.6 m/year, an equivalent of about 12% of total appropriation. The remaining 8% in option 1 we would anticipate to be replaced by increasing our average external investment ratio.

Option 2: A potential ~34 permanent FTE cuts over this year and next would free up approximately \$4.4 m/year, an equivalent of about 20% of total appropriation. We note that this option would cut into areas which are part of our growth and/or emerging areas, i.e. require a cut to our external targets and as such this option should only be treated as a last resort.

Cost of these cuts would be approx. \$2 m (option 1) or approx. \$3.4 m (option 2) in redundancy over 2 years, with payback within 1-2 years. This will come from specific capability areas deemed unviable and/or staff numbers in excess of requirements in the medium to long term, particularly in base-line climate research, plankton dynamics and Earth system assessment.

The 'rationale' for identifying numbers of redundancies is to release capability that is no longer in demand or consistent with O&A's Strategic Plan to grow the income by the amount required, i.e. we will free up some capability and hire additional capability in specific areas where will achieve that financial growth.

### 4. Other issues

**Cross-BU opportunities:** implementation of growth areas offers opportunities for cross-BU collaboration to maximise customer satisfaction and revenue. Examples are:

- O&A's coordinating role in addressing industry-community impacts and social license to operate (Data 61, L&W, Agriculture etc.);
- Expanding environmental assessments to include other BUs, e.g. Manufacturing. O&A would do the environmental assessments of tools and processes developed by Manufacturing.

**International:** corporate CSIRO and O&A need to actively consider how O&A can operate in EU and China with expected significant returns on investments (overcome organisational hurdles, clarify taxation issues etc.).

**Publicly Funded Research Agencies:** explore potential for revised relationships and increased collaborative revenue under proposed new bilateral collaboration agreements with GA, BoM, AIMS etc.

**Paris Climate Conference 2015:** Shifts in RP1 and RP2 capabilities will ensure core climate capabilities in place to pick-up potential funding improvement in the post-COP21 environment.

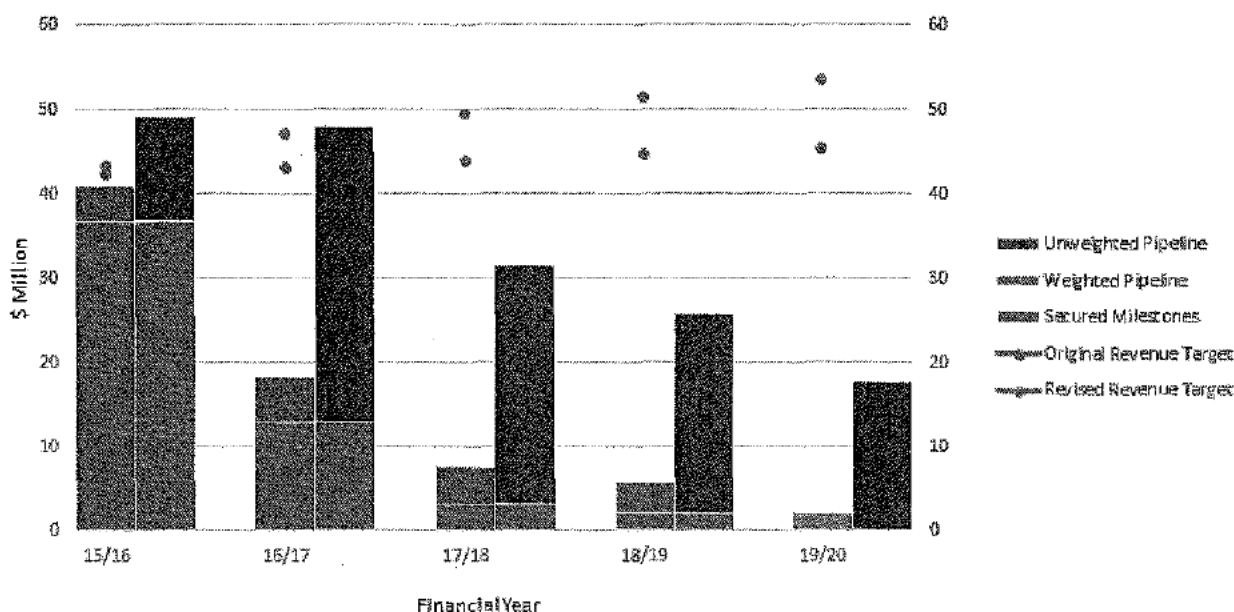


## Handout for Deep Dive Discussions

### Oceans and Atmosphere Business Unit

#### 1. Business Unit Pipeline Health

Weighted and Unweighted Pipeline with Secured Milestones



**Commentary notes:**

The BU will likely reach its original target in 15/16 year but will fall short of revised target. Currently, 85% of revenue (revised target) is secured for this financial year and 12% (revised target) is in pipeline as a weighted value. Performance of individual programs shows normal variability, with two expected to significantly exceed external earnings targets and three currently below.

The situation is anticipated to improve as new projects are coming on line:

- S7 to ramp up in 16/17 but weighted in the weighted pipeline data.
- ESCC NESP hub to ramp up in 16/17 and weighted in the pipeline data

Changes in government funding for climate research (ACCSP wind up and AUSAID claw back) have impacted on RP1 and RP2 who have traditionally relied on these funds to shore up their pipeline. New funding sources such as the Green Climate Fund (GCF) and other anticipated initiatives from the Paris Climate Conference may assist towards some financial recovery beginning in FY 16/17.

#### 2. Big growth opportunities

Oceans and Atmosphere have developed a strategy for sustained growth in external earnings that will enable us to reach the \$54 million target set for 2019/20. This will see incremental increases in our external revenue over the next 4 years. This will be achieved through realignment of our capability to:

- Expand the use of current methods and tools in new markets;



- Develop new methods and tools for application in existing and new markets.

Three growth areas to bring in **additional** external revenue have been identified:

**Integrated Assessments for the Blue Economy** – this explicitly couples socio-economic and biophysical considerations. It will require innovative complex systems approaches. It is an area of enormous international focus. Specifically it includes dealing with the “wicked” problem of managing multiple uses, spatial planning, cumulative impacts and Social License to Operate (SLO). Target markets are industry and governments in Australia, Asia/Pacific, Canada, the EU and Chile. It is anticipated to deliver additional revenue of up to \$15 million over the next 5 years.

**Customers:** governments, World Bank, IMF, philanthropic foundations, oil and gas sector, aquaculture industry, specifically:

S7 [REDACTED] - Integrated Assessments in Chile

- Spatial planning and livelihoods in Pacific Island Nations
- Cross BU initiative on SLO
- Ecosystem based management in the EU

**Oceans and Atmospheric Intelligence** - this area will deliver “*tailored services for customers*” related to water and air quality, multi-week, seasonal and multi-year forecasting of industry-specific parameters to our climate-exposed economy, using a variety of models, incl. the Australian Community and Earth System Simulator. There will be a clear focus on a variety of sectors, e.g. offshore operations, hazard and emergency response, and disaster risk management. It will build on the game changing Bluelink and eReefs approaches and a significant output in Australia will be an analog of Bluelink/eReefs for the coasts. Target markets include Australia and Chile. It is anticipated to deliver additional revenue of \$10 million over the next 5 years.

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**International Fisheries** – this area will apply methods developed in Australia (e.g., Atlantis, harvest strategies) to fisheries in Chile, and the Asia-Pacific. It will also see the roll out of new genomic and remote sensing methods in international fisheries. The latter will focus on biomass estimation, chain of custody and provenance, and mitigating illegal, unreported and unregulated fishing activities. Target markets are Chile, the Asia Pacific and Indian Ocean Rim. Anticipated additional revenue is \$15 million over the next 3-5 years.

**Customers:** international fishing and aquaculture industries, governments, philanthropic foundations, specifically:

- Towards rebuilding Chile’s fisheries
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- Allen foundation – use of satellite tracking to monitor illegal fishing
- Application of Close Kin mark recapture to global tuna fisheries
- Application of gene SNPs technologies to chain of custody and provenance.

In addition we note that:

**China** is a strategic focus for the business unit. A number of LOIs and MOUs have recently been signed (e.g., Chinese Academy of Sciences, State Oceanic Administration, Ocean College, Zhejiang University, etc.). Serious consideration is being given to establish an office in Qingdao – China’s emerging centre for marine science and technology. While external revenue will be modest in the short term (1-2 years), it is expected to increase with the establishment of joint collaborative programs with government and private sector industries.

**Offshore oil and gas** – given the downturn in the industry, conservative demands to address knowledge gaps from the regulators, and limited funding available from oil spill response agencies, external earnings are anticipated to be flat over the 4 year period. Our focus will be on continuing building relationships

with industry, regulators and spill response agencies to set the BU up for increased revenue in the medium term. Opportunities in metocean services, marine noise, decommissioning and operational discharges are also being explored – in addition to international opportunities under industry led joint venture partnerships.

Several capability and structural opportunities are currently being considered.

A focus on **Climate Services** will see a shift in capability-focus in Programs 1 and 2 from climate change research to meet the growing demand for services for farmers, resource managers, and industries, leading to more efficient primary sectors. Target markets are industries, governments, and EPAs. It is anticipated to deliver over \$20 million over the next 5 years, partially offsetting declines in government funding for climate change research. To realise this it will be necessary to re-shape our existing programs under RP1 and RP2. A reduction in FTEs that are not aligned to these directions is being considered. Two options are provided for the ET's recommendation:

- I. Reshape RP1 and RP2 to better align with our strategy of “tailored services for customers” and international business opportunities, especially in China.
- II. Merge both programs after reshaping of capabilities.

RP5 (Engineering and Technology) has a focus on marine infrastructure delivery. While it currently has strong external earnings, it is primarily funded by a small number of large clients (MNF and IMOS) and its core deliverables are not aligned with CSIRO's KPI metrics. Three options are provided for the ET's recommendation:

- I. Maintain the status quo
- II. Disband the program and distribute the capability across the remaining four programs in O&A.
- III. Revise CSIRO KPI's as they are not aligned with the operational framework of RP5.

### 3. Recommended Portfolio investments shifts

**a) 20% Increase in Appropriation Funding:**

Focus on 3 or 4 growth and emerging areas described above - would generate a high external earning revenue trajectory. We would proceed with the planned capability reshaping accordingly, and redirect resources to these growth areas.

**b) 20% Decrease in Appropriation Funding:**

This move would cut into areas which are part of our growth and/or emerging areas, i.e. require a cut to our external targets. Loss of core scientific expertise will impact the capability of the BU to respond to emerging challenges and financial growth opportunities. This option should only be treated as a last resort.

#### **Support of redundancy measures to support capability realignment.**

The Business Unit is requesting permission and financial support to action 30 redundancies to release capability that is no longer in demand or consistent with O&A's Strategic Plan. To meet our new external revenue targets there is a need to stop projects with little customer demand/low ROI potential (e.g., in capability areas like base-line climate change research, plankton ecology and Earth system assessment). Similarly, we will hire staff with the capability required in specific (growth) areas linked to customer need, scientific impacts and financial growth.

### 4. Other issues

**Cross-BU opportunities:** implementation of growth areas offers opportunities for cross-BU collaboration to maximise customer satisfaction and revenue. Examples are:

- O&A's coordinating role in addressing industry-community impacts and social license to operate (Data 61, L&W, Agriculture etc.);

- Expanding environmental assessments to include other BUs, e.g. Manufacturing. O&A would do the environmental assessments of tools and processes developed by Manufacturing.

**International:** corporate CSIRO and O&A need to actively consider how O&A can operate in EU and China with expected significant returns on investments (overcome organisational hurdles, clarify taxation issues etc.).

**Publicly Funded Research Agencies:** explore potential for revised relationships and increased collaborative revenue under proposed new bilateral collaboration agreements with GA, BoM, AIMS etc.