

**FINAL INTEGRATED MARINE OBSERVING SYSTEM (IMOS)
EDUCATION INVESTMENT FUND (EIF)
PROJECT PLAN**

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1. PROJECT OVERVIEW

1.0 Background and context

The Integrated Marine Observing System (IMOS) is an initiative of the Australian Government, commenced under the National Collaborative Research Infrastructure Strategy (NCRIS). Since the initiative began in 2007 it has established 10 facilities concerned with distinct ocean observing technologies, as well as a national marine information infrastructure facility and national project management office capable of successfully administering an initiative of this magnitude. The technology-based facilities have established infrastructure at a national scale, guided by requirements of the marine and climate research community expressed through the IMOS Nodes. The IMOS Nodes have established activity in Commonwealth waters and in most States. Nevertheless, there remain significant gaps with regard to geographic coverage and intensity of observations, as identified in the 2008 Strategic Roadmap for Australian Research Infrastructure. The extension of IMOS under the Marine and Climate Super Science Initiative, with support from the Education Infrastructure Fund, will allow

- an increase in the intensity of monitoring circulation and thermohaline structure in the Southern Ocean (including use of new technologies),
- new infrastructure in northern Australian waters to measure the interaction of currents and ecosystems, and
- enhanced geographic coverage in more heavily-populated regions of eastern Australia, and new sensors to better support ecosystem-research.

It is acknowledged that the initial two years of this Final IMOS EIF Project Plan coincide with the final two years of the NCRIS Program, and that while the two projects will be under the same management, and be able to maximise opportunities for cost efficiencies, separate reports will be provided to DIISR for each of the NCRIS and EIF Projects.

This Final IMOS EIF Project Plan will supersede the Interim IMOS EIF Project Plan, from the date the Final IMOS EIF Project Plan is agreed by notice in writing from the Program Delegate.

1.1 Objectives of the Project

The Objectives of the Project are to:

- enhance and extend the Integrated Marine Observing System (IMOS) established under the National Collaborative Research Infrastructure Strategy (NCRIS) Programme, through ongoing creation and development of marine observing infrastructure;
- provide sustained ocean and associated observational data and infrastructure capability that meets the broad needs of the Australian marine, oceanographic and climate research communities;
- provide free and timely discoverability of and access, by electronic means, to quality assured observational data to the marine research community;
- involve the marine and climate research community in defining future needs and to strengthen the technical and operational capability of the marine community and hence sustain the marine observing paradigm into the longer term;
- establish, operate and/or provide access to the research infrastructure provided through IMOS in accordance with the principles set out below:

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- (i) Australia’s investment in research infrastructure should be planned and developed with the aim of maximising the contributions of the R&D system to economic development, national security, social wellbeing and environmental sustainability;
- (ii) Infrastructure resources should be focused in areas where Australia is, or has the potential to be, world-class (in both discovery and application driven research) and provide international leadership;
- (iii) Major infrastructure should be developed on a collaborative, national, non-exclusive basis. Infrastructure should serve the research and innovation system broadly, not just the host/funded institutions. Funding and eligibility rules should encourage collaboration and co-investment. It should not be the function of this funding arrangement to support institutional level (or even small-scale collaborative) infrastructure;
- (iv) Access is a critical issue in the drive to optimise Australia’s research infrastructure. There should be as few barriers as possible to accessing major infrastructure for those undertaking meritorious research;
- (v) Due regard be given to the whole-of-life costs of major infrastructure, with funding available for operational costs where appropriate; and
- (vi) The Project should seek to enable the fuller participation of Australian researchers in the international research system.

Expected benefits include:

- Enhanced capability to deploy new ocean observing technologies in Australia
- Improved observation, description, understanding and modelling of the role of the Southern Ocean in the climate system
- Improved capability to manage the living marine resources and natural heritage of the northern waters from Great Barrier Reef to the Kimberley region, and to assess the impacts of industrial development.

1.2 Implementation principles

The Project participants must endeavour to establish, operate and provide access to IMOS infrastructure and data in accordance with the EIF principles, listed below.

EIF Principles

- Principle 1: Projects should address national infrastructure priorities
- Principle 2: Projects should demonstrate high benefits and effective use of resources
- Principle 3: Projects should efficiently address infrastructure needs
- Principle 4: Projects should demonstrate they achieve established standards in implementation and management
- The participating organisations must endeavour to establish, operate and/or provide access to the facilities in a manner which:
 - takes into account the long-term strategic requirements of relevant research disciplines;
 - enhances national and international collaboration in research;
 - enhances research capability for relevant disciplines;

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- provides for merit-based access to the facilities in accordance with the norms and expectations of the research community;
 - has a strong emphasis on service provision to the research community; and
 - has a strong emphasis on effective use and management of data resources.
- The IMOS principles that will guide decision making of the IMOS Office and advice from the Steering Committee are:
 - **Service**—IMOS is a national system and provides a service that broadly supports marine research to maximise the contributions of R&D to economic development, national security, social wellbeing and environmental sustainability.
 - **Data-streams**—IMOS data is delivered openly, in a timely manner, preferably in near real time. Success is measured in terms of the quality and quantity of data that IMOS delivers, the number of users and the quality of research-results produced with IMOS data.
 - **Integration**—IMOS deploys a nationally coordinated, multi-platform system to take advantage of the synergies between instruments, and to provide a comprehensive description of the ocean, as a contribution to national and international programs.
 - **Sustainability**—The real value of IMOS will only emerge if systematic, repeated data collection continues over many years to see the full range of climate variation and change. Sustained streams of data are integrally related to conservation and sustainable development of the marine environment.

1.3 Context and scope of the Project

Context

IMOS represents a very significant change in marine observing in Australia, moving to a nationally strategic approach.

IMOS significantly enhances Australia's research capabilities to better predict climate change and respond or adapt to its impacts on the environment. With a focus on coastal oceans and blue-water, this nationally managed and distributed set of equipment provides data to support research on many of the critical marine issues facing Australia, including climate change and sustainability of ecosystems and marine natural resources.

Through EIF funding, the IMOS network will be extended to northern Australia from the Kimberly to the Great Barrier Reef. In addition, given the critical role of the Southern Ocean in a changing global ocean, other IMOS enhancements will include intensified observation of circulation and heat content, using new platforms for measurement in high latitudes (i.e. > 60° S) and the deep ocean (i.e. > 2,000 metres). The implementation of physical, biological and ecological sensors will follow recommendations in published plans for the internationally-coordinated Southern Ocean Observing System. Other gaps in geographic coverage and scientific focus of IMOS will be filled.

IMOS will continue to work closely with the national community, and in particular with members of the Ocean Policy Science Advisory Group (OPSAG) to establish a national approach to sustained marine observing in Australia. IMOS will respond to major science policy drivers, including the Australian Climate Change Science Framework and the National Framework for Marine Research and Innovation. Close collaboration with other NCRIS and EIF-funded capabilities, especially the Terrestrial Ecosystem Research Network, the Atlas of Living Australia and Platforms for Collaboration (Australian Research Collaboration Service, and

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Australian National Data Service) will be particularly relevant in the development and implementation of IMOS.

Scope

The Project will provide for the enhancement and extension of IMOS, in particular in relation to building on the existing distributed set of equipment, co-operative agreements and data and information services currently in place under IMOS. Through building on the IMOS arrangements these enhancements will contribute to meeting the needs of marine and climate research and other uses in Australia based on data in both open oceans and coastal oceans.

IMOS is comprised of 10 technology-based facilities based around Australia (as specified in section 1.4 on Participating Institutions), as well as a national marine information infrastructure facility and national project management office based at the University of Tasmania, all of which will be extended and enhanced under EIF as follows:

- Argo Australia – will extend the NCRIS deployment of autonomous floats to collect sub-surface marine data, and be enhanced to include ice- and oxygen-capable floats and completion of the southern hemisphere array.
- Enhanced Measurements from Ships of Opportunity Project (SOOP) – will extend the NCRIS instruments for underway data collection, and be enhanced by bringing Aurora Australis into the underway network, expansion and integration of the CPR network and commencement of bio-acoustic observing of mid-trophic organisms.
- Australian Bluewater Observing System (ABOS, previously SOTS) – will extend NCRIS long term time series marine observations, complete stage 2 of the SOFS installation (contingent on SOFS 1) and be enhanced by implementation of deep water arrays in the Indonesian Through Flow, Antarctic Coast (Polynya) and Eastern Australian Current (off Brisbane).
- Australian National Facility for Ocean Gliders (ANFOG) – will extend the NCRIS deployment and navigation of ocean gliders for sub-surface marine observations, and be enhanced by the addition of glider transects in the new Tasmanian Node, from Hobart to the SOTS site and in the Coral Sea.
- Autonomous Underwater Vehicle Facility (AUV) – will extend the NCRIS AUV deployments for marine observations and be enhanced to support a national program of benthic monitoring.
- Australian National Mooring Network (ANMN) – will extend the NCRIS deployment of and operation of a network of fixed moorings around Australia, and be enhanced with a new National Reference Station at Stradbroke Island (bringing the total NRS network to nine sites), addition of pH, current and bio-optical monitoring on NRS, implementation of new shelf arrays for Bonaparte and Kimberley regions of Western Australia to monitor the Leeuwin Current, addition of new acidification moorings and consolidation of the existing regional shelf mooring arrays.
- Australian Coastal Ocean Radar Network (ACORN) – will extend the NCRIS deployment and operation of radar systems to observe coastal currents and waves.
- Australian Acoustic Tagging and Monitoring System (AATAMS) – will extend the NCRIS tracking of large fauna in coastal and continental shelf ecosystems, and be enhanced by extension of the Ocean Tracking Network into Queensland, inclusion of Great Australian Bight and Southern Ocean sea creatures as samplers and monitoring of apex predators in the Southern Ocean.
- Facility for Automated Intelligent Monitoring of Marine Systems (FAIMMS) – will extend the NCRIS deployment of advanced sensor networks to collect real-time data at spatial

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and temporal scales required to understand complex marine processes, particularly those involving the interface between pelagic and benthic environments.

- Satellite Remote Sensing (SRS) – will extend the NCRIS production of standard ocean remote sensing data sets, archiving and provision of access to these, and be enhanced to include a bio-optical database and national products, and satellite altimetry calibration / validation moorings and data.
- eMarine Information Infrastructure (eMII) – will extend the NCRIS provision of a single integrative framework for data and information management, discovery and access for IMOS, and be enhanced to cover the new data streams arising from the enhancements to the IMOS Facilities.
- IMOS Office – will extend the NCRIS provision of a national project management office capable of successfully administering an initiative of this magnitude.

1.4 Participating organisations

A **Principal Operator** is an organisation that receives EIF funding and supports the leader of a Facility. An **Associate Operator** is an organisation that receives EIF funding and supports the leader of a sub-Facility. A **Contributor** does not receive EIF funding but contributes cash or in-kind resources to a Facility.

A full list of Participating organisations is provided in the following table:

No.	Organisation	Role and Responsibilities
Lead Institution		
1	University of Tasmania (UTAS)	<ul style="list-style-type: none"> • Funding recipient through the Funding Agreement with the Commonwealth Government • Receives the EIF funding from the Commonwealth Government for the management and coordination of activities through the IMOS Office in accordance with the Funding Agreement • Principal Operator <ul style="list-style-type: none"> ○ ABOS ○ eMII • Associate Operator <ul style="list-style-type: none"> ○ SRS
Operators		
2	Australian Institute of Marine Science (AIMS)	<ul style="list-style-type: none"> • Principal Operator <ul style="list-style-type: none"> ○ FAIMMS • Associate Operator <ul style="list-style-type: none"> ○ SOOP ○ ANMN ○ SRS
3	Bureau of Meteorology (BOM)	<ul style="list-style-type: none"> • Associate Operator <ul style="list-style-type: none"> ○ SOOP ○ ABOS ○ SRS

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No.	Organisation	Role and Responsibilities
4	Commonwealth Scientific and Industrial Research Organisation (CSIRO)	<ul style="list-style-type: none"> • CSIRO supports the IMOS Office • Principal Operator <ul style="list-style-type: none"> ○ Argo ○ SOOP ○ ANMN ○ SRS • Associate Operator <ul style="list-style-type: none"> ○ ABOS
5	Curtin University of Technology	<ul style="list-style-type: none"> • Associate Operator <ul style="list-style-type: none"> ○ ANMN
6	James Cook University (JCU)	<ul style="list-style-type: none"> • Principal Operator <ul style="list-style-type: none"> ○ ACORN
7	South Australian Research and Development Institute (SARDI)	<ul style="list-style-type: none"> • Associate Operator <ul style="list-style-type: none"> ○ ANMN
8	Sydney Institute of Marine Science (SIMS)	<ul style="list-style-type: none"> • Principal Operator <ul style="list-style-type: none"> ○ AUV ○ AATAMS • Associate Operator <ul style="list-style-type: none"> ○ ANMN
9	University of Western Australia (UWA)	<ul style="list-style-type: none"> • Principal Operator <ul style="list-style-type: none"> ○ ANFOG

Note: Please refer to Schedule 1 Item C3 Table 3 for a full list of Contributors and the total amount of the cash and in-kind co-investment to be made available to the Project.

1.5 Funding arrangements

The Project will be resourced through the following funding arrangements:

- The Funding will be paid to the University of Tasmania through the IMOS Office which will manage the funds and arrange for the payment of amounts to Principal and Associate Operators in accordance with the Funding Agreement.
- Other cash and in-kind contributions will be resourced and managed by the Principal and Associate Operators, consistent with the Final IMOS EIF Project Plan. Each Operator will advise the IMOS Office annually (via the Progress Reports) of actual co-investment received, and update the anticipated co-investment annually (via the Business Plans). In addition, the Operators will be required to notify the IMOS Office promptly of any significant changes (increases and decreases) to co-investment and resultant effect on the Project, and the University of Tasmania is required to advise DIISR.
- The Final IMOS EIF Project Plan includes proposed State Government cash co-investment that is contingent on final decisions to be made in the relevant jurisdictions. Final decisions are likely to be made in the period March to May 2010. In most cases, it is clear what elements of the infrastructure included in the Project Plan will be removed if proposed cash co-investment is not forthcoming. In two cases, totalling approximately \$2M of IMOS EIF funding, decisions to be made by State Governments are linked to investments recommended by the IMOS Advisory Board, and the Board will need to reconsider the priorities if the proposed cash co-investment is not forthcoming.

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1.6 Management and implementation arrangements

The University of Tasmania though the IMOS Office will have overall responsibility for the management and implementation of the Project in accordance with the reporting and accountability requirements outlined in this Funding Agreement. Further details on the nature and governance role of IMOS can be found at Section 5 of Attachment A.

The IMOS Office will manage the Project and will sub-contract with organisations to establish, operate and/or provide access to project infrastructure as defined by the Final IMOS EIF Project Plan. These subcontractors must be agreed by DIISR before the subcontractors' work may commence.

The IMOS Office's sub-contract with a subcontractor will, where appropriate, require the sub-contractor to act in accordance with the principles set out above.

2. PROJECT INFRASTRUCTURE

All of the 10 IMOS Facilities plus eMII and the IMOS Office will be extended in 2009/13, and all except for ACORN and FAIMMS will be enhanced in 2009/13. A summary of these are provided at Item 1.3 above. 2009-13 IMOS EIF Facility Project Plans detail the full work to be done, and these are available on the IMOS website.

2.1 Infrastructure

Infrastructure funded through EIF will extend and enhance the 10 facilities of IMOS plus eMII and the IMOS Office in 2009/13, in accordance with the 2008 Strategic Roadmap for Australian Research Infrastructure. The EIF Funds will be used to create and develop the infrastructure outlined in Section 1.3 Context and Scope of the Project. The 2009-2013 IMOS EIF Facility Project Plans are available on the IMOS website.

2.2 Equipment

The enhanced IMOS equipment is the set of Facility investments in 1.3 above. Assets which will be purchased are listed in Schedule 1 Item J Assets

2.3 Quarterly Milestones

Milestones for 2009/2010 are shown in Annex B

2.4 Project resources

The Budget is outlined in Tables 1-3 provided in Item C3 of Schedule 1. Annex A outlines the Project resources by Facility and sub-facility, via a summary of the EIF Funds, and cash and in-kind resources for each Facility. Full details of resources are provided in the 2009-13 IMOS EIF Facility Project Plans (available on the IMOS website).

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3. RISK MANAGEMENT

IMOS is a complex initiative involving a large number of relationships and participants and a challenging logistical and operational environment. There are therefore a range of risks that have to be managed. These occur at two levels – at the enterprise level of IMOS as a whole and at the Operator level related to the acquisition, deployment and operation of the infrastructure.

At the level of IMOS, the risks relate to the:

- Maintenance of the integrity of program in achieving the goals associated with marine observing at a national scale;
- Meeting the ‘marine observing data’ access needs of the marine community including forms of access;
- Shifting needs and priorities of the marine community;
- Continuity of the approach to “marine observing” beyond the EIF funding period;
- Commitment of Operators to the program and to meeting their obligations;
- Management of contingencies and untoward operational events; and
- Viability of some Facilities or Sub-facilities in the light of externalities e.g. adverse weather event, cost escalation, failure to secure necessary non-EIF support, in particular for maintenance and operating expenses as they arise.

These issues fall primarily at the level of the IMOS Office and the Advisory Board and will be reviewed regularly in the IMOS EIF Annual Business Plan.

Operators face a sub-set of these risks but have a range of risks that are related to their particular operations. These are detailed in the 2009-2013 IMOS EIF Facility Project Plans (available on the IMOS website).

4. ACCESS AND PRICING

4.1 General principles

The value from infrastructure investment in integrated marine observing lies in the coordinated deployment of a wide range of equipment aimed at deriving critical data sets which in turn becomes infrastructure for a wide range of research at a variety of scales.

The regime governing access to research infrastructure established with EIF funds will therefore be designed to support this approach and discourage fragmentation of the use of equipment into small scale process studies that do not support the longer term goals of integrated marine observing. The access principles will build on the access regime currently established under IMOS. A cultural shift has occurred with the establishment of IMOS to enable deployment and access to equipment to grow from community based strategic planning (rather than researcher based proposals) with the ensuing data flows being freely available for researcher use. This is essential to retain the approach of ‘integrated marine observing.’

In keeping with this cultural shift, ease of access and broad utility are central tenets of the IMOS approach and require all participants in IMOS to commit to the following:

1. Scientific strategic plans for open-ocean and coastal ocean observing Nodes agreed by the marine community be used to provide the guidance for deployment of the fixed infrastructure and its evolution through time and the deployment of portable infrastructure.

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Where appropriate, researchers will be able to use the fixed infrastructure for deployment of specialist instrumentation providing the proposals have been subject to appropriate peer review or authorisation (e.g. ARC or funded projects from national/international or institutional programs) and meet logistical and operational requirements and any additional costs. The deployment must not create any significant risk to achieving the objectives of IMOS. Similarly a proposal can be made for access to portable equipment providing the proposal is consistent with the marine observing objectives of IMOS. In both instances researchers will be encouraged to consult with the Director IMOS Office and the Operator prior to any proposal development. Proposals to use infrastructure will be reviewed by the IMOS Steering Committee (see paragraph 4.2) and a final decision made by the IMOS Office.

2. The strategic plans will be supported by Annual Business Plans developed by the Lead Scientist or Coordinator for each facility in concert with the IMOS Node Leaders and eMII. The plan will detail operational, calibration, Quality Assurance / Quality Control and data accessibility protocols and maintenance schedules. Where appropriate, provision and protocols for researcher access will be built into these operational plans.
3. Timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IMOS will be delivered through systems and processes agreed by eMII for data and information management. Fast-tracked access to data and products may incur a processing cost.

4.2 Strategic and operational plans, equipment access and deployment

The development of the IMOS model has involved extensive consultation with universities and government research institutions through national and regional Nodes and has resulted in a community view of the priorities for the deployment of this infrastructure. Accordingly the next stage of deployment using EIF funds and co-contributions will build on this strong community-based approach and rely on continued consultation with the numerous stakeholders operating, developing and using the IMOS infrastructure.

The IMOS Nodes are

- Western Australian IMOS (extended into Northern Australia)
- Southern Australian IMOS
- New South Wales IMOS
- Queensland IMOS (previously Great Barrier Reef Ocean Observing System, and now extended into South East Queensland)
- Tasmanian IMOS (new Node established under IMOS EIF)
- Bluewater and Climate

Each Node is made up of approximately 50 members, representing researchers, major marine agencies in the region, and industry interests. The Nodes provide the bridge between planning and coordination activities in the IMOS Office and the broader marine community. Nodes promote the uptake and use of IMOS data. Further details on Nodes are given in section 5.3.8.

With the enhancement and extension of IMOS under EIF, the existing IMOS Nodes and the new Node will revise and prepare new Science and Implementation Plans as part of the process for development of the Final IMOS EIF Project Plan. All of the Science and Implementation Plans are available for download from the IMOS website, two (being the Bluewater and Climate; and the Western Australia Nodes) have been through an external review process, and the others are scheduled for external review during 2010-11.

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4.3 Information management and access

4.3.1 Role of eMarine Information Infrastructure (eMII)

As the provision of marine data and information is the main outcome for IMOS, the role of the eMarine Information Infrastructure (eMII) Facility is a central element of the Project's success. It is essential that these data continue to be discoverable and accessible to both the research and wider community in an open and timely way.

eMII has established a single integrative framework for data and information management to enable data discovery and access by the marine community, building on infrastructure developed by the Australian Ocean Data Network (AODN). The AODN is a distributed data network and current hosting partners RAN, BOM, CSIRO, AIMS, AAD and GA as well as components of the Australian Research Collaboration Service (ARCS), namely TPAC (Tasmanian Partnership for Advanced Computing), iVEC ('The hub of advanced computing in Western Australia'), eRSA (eResearch South Australia), Intersect (Institute for Transdisciplinary eResearch Services and Technology, NSW) and QCIF (Queensland Cyber Infrastructure Foundation).

eMII hosts, manages and archives the data (raw and/or processed) from the IMOS facilities. eMII provides the standards, protocols and systems to integrate the data and related information into a number of conformal frameworks and will provide the tools to allow appropriate end users to access and utilise data. Priorities include:

- identification of specific data streams;
- development of end-to-end protocols, standards and systems to integrate the related observing systems into the eMII framework;
- development of data products that integrate data across observations on regional and national scales, as well as tools which facilitate the integration and analysis of data;
- deployment of tools to help visualise data as multiple web map layers, and web features.
- Standardised description of data ownership, creation conditions, formats and data quality.
- Promotion of processes for peer-review and comparisons of data and products.

The primary goal of eMII is to provide interoperability of IMOS data for the marine community.

eMII is building on AODN infrastructure to create a single national distributed and federated network to provide access to the IMOS streams of data. eMII aspires to address multifaceted collaborative needs, as well as data and information seeking, use, processing and management needs of marine science researchers working in an e-Science environment. The framework has been constructed to ensure interoperability with similar services internationally. An eventual aim is to connect with services from other related disciplines; however, additional resources are needed to achieve this higher level goal.

4.3.2 Intellectual Property

For data and data products produced under the auspices of IMOS, it is intended that these are openly available, are provided unencumbered, and that the eMarine Information Infrastructure (eMII) provides free and timely* access to these data and products. Any Intellectual Property Rights (IPR) associated with IMOS raw data lie with the institution that produced the data. Any

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IPR associated with IMOS value-added products produced under the auspices of IMOS lie with eMII/IMOS (University of Tasmania). The IPR owning institutions will issue a non-exclusive licence to any user of the data or value added products. For value-added products not produced under the auspices of IMOS, but which use IMOS data, products or services, the IPR of the value-added product rests with the agency that produces the product, with no restriction other than that set out below.

Any IPR existing at the commencement date of IMOS will be recognised and respected and will only be used as authorised by the owner of the IPR or as permitted under Law.

To minimise conflicts over IPR arrangements, all data, products and services developed under the auspices of IMOS will be free of encumbrances (i.e. users should be able to use and apply the data in whatever way they see fit without restriction other than that set out below).

Except where otherwise negotiated with the IMOS Office, any users (including re-packagers) of IMOS data, data products and services are required to clearly and prominently acknowledge the source of the material derived from the IMOS, together with (where relevant) a reference/link to the related metadata record.

Re-packagers of IMOS data should include a statement that information about data quality and lineage is available from the metadata record and a statement that data, products and services from IMOS are provided “as is” without any warranty as to fitness for a particular purpose.

In some instances several Parties will work collaboratively to develop value-added products or services. In these instances, except in the circumstances where IMOS funds development of data products and/or services, or where subject to another project agreement, IPR will be equally shared amongst the Parties as tenants in common, regardless of the individual level of contribution made by a project party in developing the material.

* fast-tracked access to data and/or products may incur a processing fee.

4.4 Access charges

The stream of data from the nationally supported infrastructure will be accessible to all users through eMII. Ordinarily, automated, electronic access will be provided free of charge. Special requests will be serviced at only the cost (if any) of work associated with the specific data request. IMOS will maintain the infrastructure and underwrite the ongoing data flow for the automated delivery system. Additional costs incurred as a result of deployment of researcher equipment onto national infrastructure will be charged to the user.

5. OWNERSHIP AND MANAGEMENT

5.1 Relation of IMOS to the Marine Research Community and the role of Nodes

IMOS is a distributed set of equipment and data and information services which collectively contributes to meeting the needs of marine and climate research in Australia for marine observational data. The infrastructure also contributes to Australia’s role in international programs for ocean observing.

The IMOS equipment will be deployed to make sustained, long term, repeated observations in ocean basins and coastal oceans. While sustained, long term, repeated observations are the

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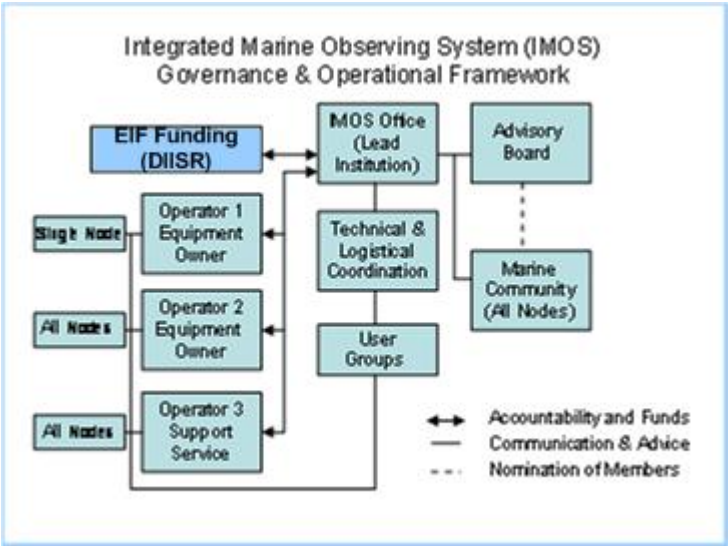
ultimate goal, some equipment may be portable or re-deployed to meet specific needs (e.g. regional capacity building). A characteristic feature is that priority for equipment deployment will be for the purposes of sustained marine observing and that data obtained will be made openly available to the marine research community.

The client base for IMOS is the marine and climate science community as a whole, and the national and regional Nodes of marine researchers and marine institutions who have collaborated in the development of the IMOS concept and agreed to the priorities for investment and deployment. They will continue to be involved in the strategic and operational planning for and use of IMOS through time. Refer Section 5.3.8 for further detail on Nodes.

5.2 Governance Framework

The Governance Framework for IMOS is essentially a partnership between particular institutions for the delivery of marine observing infrastructure on behalf of the marine and climate science community with each institution agreeing to a particular role (see Figure 1).

Figure 1



Nationally the program is managed and coordinated by the IMOS Office established and operated by the Lead Institution, the University of Tasmania (UTAS), which contracts with the Department of Innovation, Industry, Science and Research for the implementation of IMOS. In turn, UTAS through the IMOS Office enters into subcontracts with particular institutions (termed Operators) for the ownership and operation of the infrastructure (termed Facilities and Sub Facilities) under the terms and conditions of this Funding Agreement. The IMOS Office operates with the advice and agreement of an Advisory Board which has an Independent Chair appointed by UTAS in consultation with the Operators, and Members who are appointed for their skills and experience (relevant to their role) by the marine and climate science community operating through the Nodes.

The equipment or services being delivered by Operators constitute Facilities or Sub-Facilities. The latter may be equipment which is a sub-set of a larger Facility contributing to a national

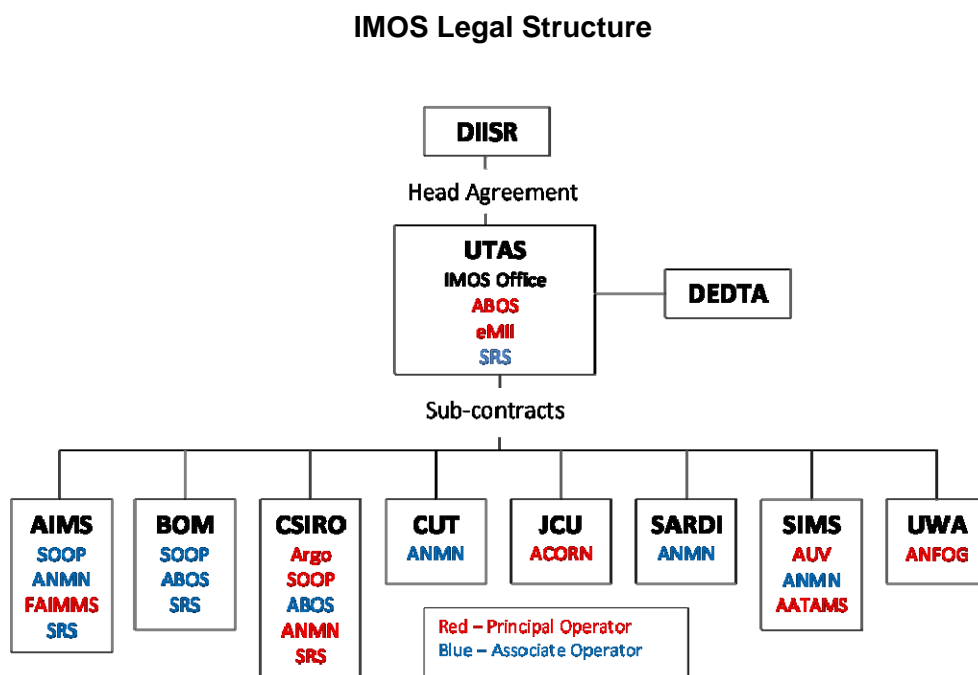
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system. The 11 Facilities (including eMII) are named in Section 1.3. Each Facility is maintained by one or more Operators. Operators who receive EIF funding to lead a Facility are termed Principal Operators and those who receive EIF funding to contribute to a Facility are termed Associate Operators.

The IMOS Office has existing subcontracts under NCRIS to fund and support the existing 11 facilities. The legal arrangements and how they project onto Facilities and Sub-facilities is shown in Figure 2. Additional subcontracts to provide EIF funding to specified Principal and Associate Operators will be arranged in accordance with this Final IMOS EIF Project Plan.

Figure 2



The IMOS Office will undertake technical and logistical coordination of planning and operational matters, relationships and reporting at the national level through a governance structure shown in Figure 3.

The University of Tasmania manages the IMOS Office. The IMOS Office will provide effective management and administration of IMOS Project with regards to the terms of both this Funding Agreement and, for the term of its life, the NCRIS Funding Agreement in place with the Department of Innovation, Industry, Science and Research. This will include but is not confined to the following:

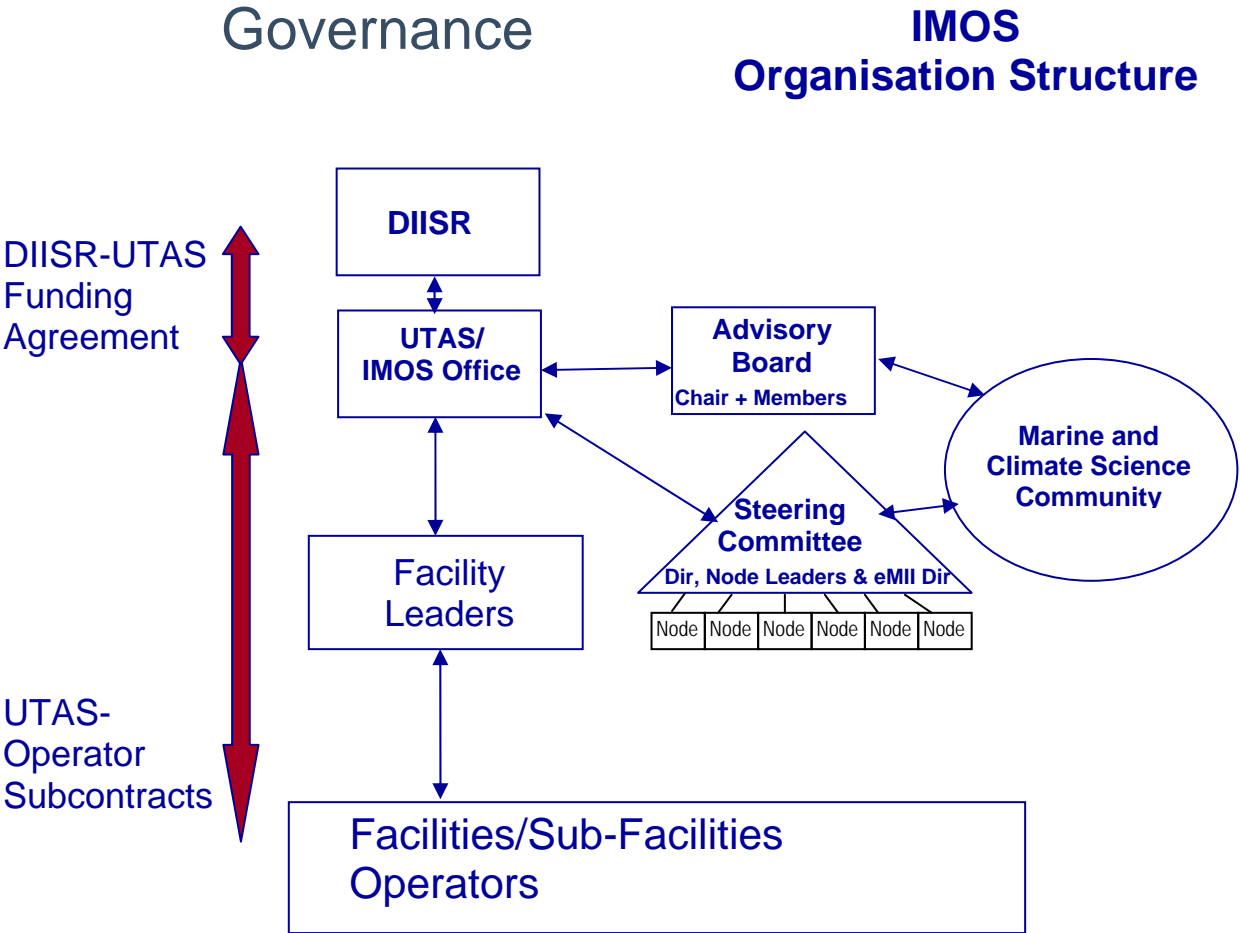
- Operational Role
 - Coordination of the program
 - Entering into agreements with the Operators
 - Monitoring and reporting on performance indicators
 - Reporting to DIISR under the terms of the Funding Agreement
 - Communicating with the marine and climate research community

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- Strategic Role
 - Development of strategic and business plans
 - Appointing and overseeing the Advisory Board,
 - Communicating with the national and international marine and climate science community
 - Undertaking performance assessment and review
 - Promoting long term, sustained marine observing in Australia and overseas

Figure 3



5.3 Specific Roles

5.3.1 University of Tasmania (Lead Institution)

The University of Tasmania (UTAS) entered into an agreement with DIISR for the implementation of the IMOS EIF Project, receives EIF funds and will be accountable to DIISR for execution and performance of the Project. This will continue existing and parallel arrangements between UTAS and DIISR in relation to NCRIS funding currently received by UTAS for the implementation of the IMOS under the National Collaborative Research Infrastructure Strategy Programme.

UTAS hosts and operates the IMOS Office. UTAS has appointed the Independent Chair of the Advisory Board after consultation with the Operators and Nodes and formally includes the

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Independent Chair in the performance management arrangements of the Director of the IMOS Office.

5.3.2 IMOS Office

Under the guidance and agreement of the Advisory Board, the IMOS Office provides strategic leadership and management of the consortium of Operators for implementation and operation of IMOS.

The IMOS Office is responsible for coordination of the program, development of strategic and business plans, operation of the advisory system, communication and engagement with the marine and climate science community at-large through the nodal structure, and planning and promotion.

In turn and on behalf of the University of Tasmania, the IMOS Office will continue or enter into additional agreements with the Operators for the operation of their part of the infrastructure and monitor the performance of the Operators and initiate any actions as appropriate.

The Director of the IMOS Office will be Mr Tim Moltmann. He will hold a University position (on secondment from CSIRO) reporting to the UTAS Pro Vice-Chancellor (Research) and associated with the Institute of Marine and Antarctic Studies on the Hobart campus of the University. The Director will have a particular role in facilitating the next stage of IMOS.

5.3.3 Advisory Board

The IMOS Advisory Board provides strategic guidance to UTAS through the IMOS Office, and monitors the overall strategic direction, management and performance of the program in accordance with this Funding Agreement. IMOS EIF Annual Business Plans, IMOS EIF Annual Reports, IMOS EIF Milestone Reports and proposed variations to the Funding Agreement will require the approval of the Advisory Board, prior to UTAS submitting these documents to DIISR.

The Advisory Board comprises an Independent Chair and nine Members. The IMOS Director and a nominee of the University will be ex Officio Members. The Independent Chair will be appointed for a three year term and 50 per cent of members' positions will be up for re-nomination every two years. The Advisory Board will meet a minimum of twice a year. For the first two years of the IMOS EIF Funding Agreement the membership of the Advisory Board will remain the same as for the current IMOS NCRIS Funding Agreement.

The Independent Chair will

- Promote a consensus of advice to the IMOS Office from the Advisory Board
- Review and advise the performance management arrangements of the Director of the IMOS Office.
- Be an advocate for further development of national and international ocean observing systems, and
- Be appointed for a 3 year term.

Dr Trevor Powell is the Independent Chair.

Board Members are appointed for outstanding abilities to guide the program and are senior people able to take a broad, national perspective on IMOS development. One Member must be an international scientist. The majority of members will have a marine background. They will include persons with previous experience in one or more of the following areas and will collectively cover all of the areas:

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- corporate governance
- financial/business management
- research and development activities
- international and national activities to develop ocean observing systems
- marine data management.

The final decision on appointment of Board Members will be with the University of Tasmania and the Chairman according to an assessment of the above criteria, after consultation with the Nodes.

The Advisory Board will:

- Provide strategic guidance to the IMOS Office, monitor the overall strategic direction and recommend any variation to the IMOS EIF Project Plan which it deems necessary;
- Receive reports on IMOS performance and monitor management and performance of the program in accordance with the DIISR Agreements;
- Approve the IMOS EIF Annual Business Plans (implementation milestones and budget allocations) and the IMOS EIF Annual Reports;
- Advise and assist the IMOS Office in the management of risks;
- Oversight the communication activities of the IMOS Office; and
- Provide other advice and input as required;

The Advisory Board Members were re-elected or elected for a two year term in March 2009 for the period July 2009 to June 2011. The Members are:

- Dr John Gunn, Chief Scientist, Australian Antarctic Division
- Prof Jason Middleton, University of New South Wales
- Dr Ian Poiner, Director, Australian Institute of Marine Science
- Dr Neville Smith, Acting Director, Bureau of Meteorology,
- Prof Rob Lewis, Executive Director, South Australian Research and Development Institute
- Dr Nick D'Adamo, Head, Intergovernmental Oceanographic Commission, Perth Regional Office
- Dr Andreas Schiller, CSIRO Marine and Atmospheric Research
- Dr Peter Rogers, Chair, Western Australian Marine Science Institution
- Prof John Gould (retired), Southampton Oceanography Institute, United Kingdom (international member)

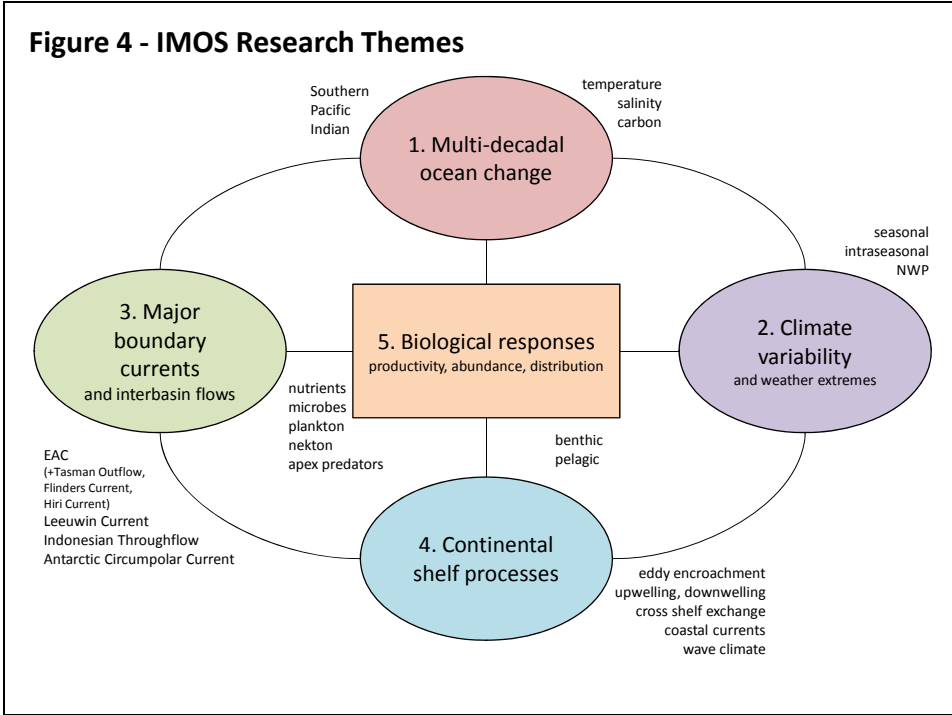
Ex Officio Members are:

- Prof Allan Canty, Pro-Vice Chancellor (Research), University of Tasmania
- Mr Tim Moltmann, IMOS Director

5.3.4 Steering Committee

The marine community has formed regional Nodes, which provide the scientific rationale and research goals for marine observing. The six Node leaders, the eMII Director and the IMOS Director form the IMOS Steering Committee, which consolidates scientific thinking in the Nodes and forms a national perspective that guides the preparation of annual business plans for the facilities. This will be achieved by the Nodes having a shared focus on five major national research themes, and developing their Node plans within this context as overseen by the Steering Committee. The IMOS research themes are shown in the Figure 4.

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The Steering Committee also assists the Office in assessment of annual business plans and reports from the Facilities. The Steering Committee will meet at least twice yearly, or more regularly as required.

5.3.5 Operators

Operators are individual institutions (legal entities) which own and operate designated equipment for the purposes of IMOS or provide services under IMOS. The equipment or services constitute Facilities or Sub-Facilities where the latter may be equipment which may be part of a larger Facility contributing to a national system (eg Australian National Mooring Network). Services may be national level services (e.g. Remote Sensing).

The Operators will enter into an agreement with the University of Tasmania through the IMOS Office for their role. This agreement will be the enabling agreement to allow funds to flow to the Operator.

- an Operator may be responsible for a set of equipment in a particular Node (e.g. Mooring operator for a region)
- an Operator may be responsible for equipment that will be deployed nation-wide (e.g. Australian Coastal Ocean Radar Network)
- an Operator may provide support service that is applicable to all Nodes (e.g. Satellite Remote Sensing)
- Operators will generally be a member of a Node and will have the competence to operate and maintain the equipment and/or provide the service as agreed.

The Operators agree to be responsible and accountable to the IMOS Office for EIF funds and Facilities or Sub-Facilities deployed and operated under IMOS terms and conditions as laid out in this Funding Agreement.

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The Operators will be responsible to the University of Tasmania for securing the co-investment and in-kind contributions for the operation of their Facility and Sub-Facility to be detailed in the Final IMOS EIF Project Plan and reporting on these arrangements. If co-investment or in-kind contributions are not forthcoming this would be reported to the IMOS Office at that time. The IMOS Office would then inform DIISR without delay.

The Operators will also be responsible for reporting against the Performance Indicators pertinent to their Facility or Sub-facility.

If an Operator wishes to cease being an Operator or is unable to maintain or operate the equipment or provide the service agreed to under the terms and conditions of the agreement with the IMOS Office, the agreement will provide for the transfer of the Facility to another Operator.

Each Operator will nominate a Lead Scientist/Manager for its Facility or Sub-Facility. Sub-facilities will be linked by a Facility Leader nominated by the IMOS Office in consultation with the relevant Lead Scientists/Managers.

5.3.6 Facility Leader and User Groups

The Facility Leader will be responsible under IMOS for operation of the Facility and maintain and be responsible for the execution of the Operational Plan for that Facility.

Where Sub-Facilities contribute to a larger Facility (e.g. Australian National Mooring Network), the Facility Leader will work with the various Sub-Facilities to ensure where appropriate they are operated according to a common set of standards and protocols and/or to coordinate overall planning.

Each Facility/Sub-facility or group of similar Facilities will have an associated User Group to work with the Facility Leaders in the development of operational plans and associated user protocols and relevant technical matters including training for users. The Facility Leader will convene the User group. Membership of the User Groups will be drawn from interested personnel from the relevant Nodes.

5.3.7 Nodes

The Nodes play a critical role in IMOS and represent the scientific opinion of the marine research community. They provide the scientific rationale for IMOS, develop research goals and identify the need to obtain specific streams of data. The Nodes also regularly provide advice to the IMOS Office on assessment of the technical implementation of IMOS and scientific merit of research undertaken with IMOS data. The Nodes will be required to integrate regional research objectives into a national scientific perspective on marine-observing.

Under NCRIS, five Nodes were agreed, the Blue Water and Climate Node, plus regional Nodes for Southern Australia (SAIMOS), New South Wales (NSW-IMOS), Western Australia (WAIMOS) and in the Great Barrier Reef region of Northern Queensland (GBROOS). Under EIF, GBROOS was expanded to also encompass South-East Queensland and the name changed to Queensland IMOS (Q-IMOS), Western Australian IMOS (WAIMOS) was expanded into northern Australia, and an additional Node was started in Tasmania (TasIMOS). While Nodes are regional with regard to scientific area of interest, they are encouraged to be inclusive for members at a national scale and to promote a national approach to ocean observing.

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The Nodes exist under a formal structure including a sponsor (one of the Operators or other body that provides funding for meetings, travel for national coordination and possibly other Node-activity), elected officers (at least a Node Leader and a representative on the IMOS Steering Committee, which may or may not be the same person), a list of members and a documented process (approved by 2/3 of the membership) for making recommendations to the Steering Committee. Nodes meet twice per year, or more frequently if required or desired by the marine community.

Thus following the EIF consultation process there are six Nodes: the Bluewater and Climate Node for the large-scale oceans around Australia, and five regional Nodes (Q-IMOS, NSW-IMOS, Tas-IMOS, SAIMOS and WAIMOS). The Nodes are an essential part of the forward planning, development and implementation of IMOS. Development of new Nodes or extension of existing Nodes to fill gaps in the scientific advisory framework will be encouraged by the IMOS Office.

5.4 Project goals and evaluation

5.4.1 Goals

The primary aim of IMOS is to transform the way in which marine observational data is collected from the current fragmented research proposal or institutional driven basis to one in which the acquisition and provision of critical observational data on Australia’s ocean environment is determined by a national strategic approach.

While process studies will still be required in marine research, IMOS’ national strategic approach will:

- provide the long term context for research into environmental change in the ocean,
- allow specific research studies to be conducted in a global, national and regional context, and
- allow oceanographic and associated biological phenomena to be investigated at a geographic and temporal scale that has hitherto been extremely limited.

Implementation of IMOS will be a step towards the establishment of a long-term, sustained operational observing system leading to ocean forecasting services analogous to meteorological services.

The goals of IMOS are:

- to provide sustained ocean and associated observational data and infrastructure capability that meets the broad needs of the Australian marine, oceanographic and climate research communities.
- to provide free and timely discoverability of and access, by electronic means, to quality assured observational data to the marine research community.
- to involve the marine and climate research community in defining future needs and to strengthen the technical and operational capability of the marine community and hence sustain the marine observing paradigm into the longer term.

5.4.2 Evaluation

Given the logistics, geographic dispersion and time frames (months to a year plus) required to obtain meaningful results from marine observing infrastructure, the community has decided access to equipment needs to be based upon community based strategic planning (rather than

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researcher based proposals) with the ensuing data flows being freely available for researcher use. Evaluation of how well the infrastructure is meeting the needs for observational data is built into this process, and will be formally reported.

This approach has been evaluated to ensure it is meeting the needs of the marine and climate science community. In late 2008, a formal evaluation of access arrangements was undertaken. Recommendations of this evaluation are being incorporated into the business processes for the second two year period of IMOS NCRIS operation, and will influence the access arrangements for the IMOS EIF project. During the IMOS EIF consultation process the Advisory Board agreed on an IMOS five year strategy 2009-2013, and set the strategic priorities that underpin this Final IMOS EIF Project Plan. Node Science and Implementation Plans are also being internationally peer reviewed on a rolling basis, with the Bluewater and Climate and WAIMOS plans reviewed in late 2009. The remaining Node plans will be sent for review in 2010-11.

6. IMPLEMENTATION STRATEGY AND FINANCIAL INFORMATION

6.1 Implementation Strategy

6.1.1 Initial arrangements

Core tasks to be completed between 1 July 2009 and 30 June 2010 are:

1. The IMOS Office at the University of Tasmania will develop a Project Steering Group to assist in the critical start up phase of the project including legal, financial and administrative expertise
2. Undertake extensive consultation in developing a Final IMOS EIF Project Plan based on the Interim IMOS EIF Project Plan to define the parameters and execution of this project
3. Finalise and seek approval of the Final IMOS EIF Project Plan from DIISR
4. Begin the development of arrangements to extend IMOS into northern Australian waters and enhance Southern Ocean monitoring
5. Establish subcontracts between the IMOS Office and the Operators
6. Develop the first Annual Business Plan for the IMOS EIF Project by 31 March 2010
7. Implement the components of the initial \$8,000,000 plan for 2009/10, as outlined in the Milestones at Part 2.3 of the Initial IMOS EIF Project Plan.

6.1.2 Final IMOS EIF Project Plan

The IMOS EIF Project Plan has been developed through an intensive, national, community-based process conducted over eight months, from July 2009 to February 2010. Key elements of the process included:

- Development of a Five Year Strategy, approved by the Advisory Board.
- Open call for Facility and Node Proposals in response to the Five Year Strategy.
- Review and analysis of submitted Proposals by the IMOS Office, and international peer review of selected Node Proposals.

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- Community discussion of the review and analysis at a national meeting.
- Discussion of national meeting outcomes with the Steering Committee of Node Leaders, and preparation of a draft assessment and recommendations for the Advisory Board.
- Advisory Board approval of the assessment and recommendations.
- Preparation of the Final IMOS EIF Project Plan for submission to DIISR, approved by the Advisory Board.

Full details on all stages of the process can be found at <http://imos.org.au/eif.html>

This Final IMOS EIF Project Plan covers the period to July 2009 to June 2013.

6.1.3 Transition from NCRIS to EIF

IMOS was established under NCRIS as a national, collaborative, research infrastructure initiative. The key milestone in development of IMOS NCRIS to date has been the launch of the IMOS Ocean Portal on 29th June 2009. This will enable transition to a 'data centric' IMOS under EIF, with a clear focus on creating and developing infrastructure in the form of sustained, long-term, time series of physical, chemical and biological ocean variables. These data sets will become the infrastructure that enables research into how the ocean is driving the climate system and providing ecosystem services, and how the impacts of ocean variability and ocean change will affect society. This will be fundamental to improved decision-making by governments, industries and communities across generations.

6.2 Financial projections

A summary of the Financial Projections is contained in Annex A.

6.2.1 Financial management

IMOS financial management occurs at two levels. The first is at the IMOS Office level. The IMOS Office is responsible for the overall financial management and reporting for IMOS and overall management of EIF Funds. Through the IMOS Funding Agreements it funds the acquisition and operation of the equipment or services to Operators who use funds provided by IMOS along with co-invested funds (cash or in-kind) to operate the equipment and deliver the services. The Operator is responsible, via a sub-contract, for securing and reporting the cash and in-kind co-investment identified in this Funding Agreement.

The second is at the Operator level. Because IMOS operates on a distributed basis, the use of funds to achieve the desired outcome and the negotiation of co-investment required occurs at the level of the Operator. Financial management by the IMOS Office will be on a cash basis with each Operator following its own financial management policies in accordance with the meeting requirements and financial obligations of this Funding Agreement.

Because of the exigencies of exchange rates, marine operations (where operational equipment loss and repair cannot be predicted with accuracy), and the large number of Operators, it is in the interests of overall efficiency and effectiveness that cash be conserved to meet unexpected events. Payment for services by the IMOS Office will therefore be on the basis of invoice related to the actual expenditure of funds by the Operator.

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6.2.2 Source and nature of co-investment

Because of the distributed nature of IMOS and the many national and regional interests, co-investment in IMOS relates to specific sets of equipment and/or services and the investment is made through the Operator as follows:

Cash Co-Investment – this includes cash expenditure (existing or proposed) committed to equipment or operating costs for the operation or enhancement of the program – e.g. purchase of extra Argo Floats by interested parties to increase sampling density of the ocean; co-investment by a State Government or its agencies in a particular type of equipment or service relevant to their state.

Co-Investment In-Kind – this typically takes the form of technical and scientific services for the operation of the equipment (e.g. calibration or technical design and maintenance) for delivery of the service or provision of vessels for deployment and maintenance of equipment which are integral parts of IMOS. It may also include equipment or data streams that already exist but which are being brought within the scope of IMOS, either because IMOS investment is enhancing capability to the benefit of the marine community or equipment and/or data streams are being made available to the marine community.

Details of Co-investment are provided in Annex A

The Final IMOS EIF Project Plan includes proposed State Government cash co-investment that is contingent on final decisions to be made in the relevant jurisdictions. Final decisions are likely to be made in the period March to May 2010. In most cases, it is clear what elements of the infrastructure included in the Project Plan will be removed if proposed cash co-investment is not forthcoming. In two cases, totalling approximately \$2M of IMOS EIF funding, decisions to be made by State Governments are linked to investments recommended by the IMOS Advisory Board, and the Board will need to reconsider the priorities if the proposed cash co-investment is not forthcoming.

6.2.3 Nature of expenditure

As mentioned previously the value from the infrastructure investment in integrated marine observing lies in the coordinated deployment of a wide-range of equipment aimed at deriving critical data sets.

For much equipment deployed in or near the ocean, depreciation rates are relatively high because of the corrosive nature of the marine environment, marine fouling and the impact of severe weather on the integrity of the equipment. The costs of deployment and servicing necessary to ensure an on-going datastream are also very high because of the high rates of wear and tear and the need to access vessels with appropriate capability. This capability and its cost vary depending on the location of the equipment.

In the case of moorings there is essentially a more or less continuous injection of capital to maintain the integrity of the mooring and the resultant data flows. For example it is usual to replace the main elements in a mooring on a 2-4 year cycle with the shorter life cycles applying where conditions are particularly severe such as the Sub-Antarctic zone. Sensors are replaced on an ongoing basis.

Argo floats have a 3-4 year life with careful preparation and are not recovered. The value of the investment lies in maintenance of a continuously operating network of floats spaced through the

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ocean. Capital investment occurs on an ongoing basis to maintain the continuity and spatial distribution of the data flows from the ocean.

Operating costs include repairs and maintenance and also the significant cost of remote communications from buoys. Hire and/or provision of vessels for deployment and servicing represents a significant cost.

Personnel are required for preparation of equipment (including calibration) for deployment, deployment of equipment, quality control/quality assurance of data flows, repairs and maintenance of equipment at site and at base. In the case of HF Radar, sites have to be identified and permissions obtained. In the case of underway measurements liaison must be maintained with vessel operators and in some cases technicians put on board to obtain the measurements. In other cases samples are collected regularly analysed in established laboratories and the data made available.

In the specific case of the eMarine Information Management [eMII], project personnel are used to develop appropriate management tools and to work with the other capability areas to deliver the information into the electronic systems that underpin the key aims of IMOS.

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ANNEX A – IMOS EIF Project Resources by Facility 2009-2013

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
01 Argo		1 DIISR Cash Total	1,800,000		1,814,413	1,852,820	5,467,233
		ACECRC			280,000		280,000
		BOM			200,000	200,000	400,000
		CSIRO			265,057	275,659	540,716
		2 Co-invest Cash Total			745,057	475,659	1,220,716
		BOM			145,709	151,537	297,246
		CSIRO			483,037	483,037	966,074
		CSIRO - ACCSP			499,910	515,803	1,015,713
		3 Co-invest InKind Total			1,128,656	1,150,377	2,279,033
01 Argo Total			1,800,000		3,688,126	3,478,856	8,966,982
02 SOOP	2a Underway Network	1 DIISR Cash Total		1,036,152	1,218,969	1,114,436	3,369,557
		BOM			64,896	67,492	132,388
		RAN			514,842	535,435	1,050,277
		Scripps			248,640	256,100	504,740
		2 Co-invest Cash Total			828,378	859,027	1,687,405
		AAD		110,000	110,000	110,000	330,000
		Austral fisheries		35,000	35,000	35,000	105,000
		BOM			323,774	337,389	661,163
		CSIRO		608,940	1,086,544	1,101,038	2,796,522
		CSIRO - ACCSP			166,637	171,934	338,571
		l'Astrolabe			50,000	50,000	100,000
		MNF		42,000	92,000	92,000	226,000
		Petuna Sealords		35,000	35,000	35,000	105,000

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Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
		3 Co-invest InKind Total		830,940	1,898,955	1,932,361	4,662,256
	2a Underway Network Total			1,867,092	3,946,302	3,905,824	9,719,218
	2c SST Sensors	1 DIISR Cash Total			155,133	143,226	298,359
		AIMS			28,000	28,000	56,000
		BOM			29,211	30,379	59,590
		3 Co-invest InKind Total			57,211	58,379	115,590
	2c SST Sensors Total				212,344	201,605	413,949
	2d Real-time Air-sea Fluxes	1 DIISR Cash Total			102,018	105,385	207,403
		BOM			29,993	31,193	61,186
		3 Co-invest InKind Total			29,993	31,193	61,186
	2d Real-time Air-sea Fluxes Total				132,011	136,578	268,589
02 SOOP Total				1,867,092	4,290,657	4,244,007	10,401,756
03 ABOS	3a Air-Sea Flux Stations	1 DIISR Cash Total			1,401,437	262,509	1,663,946
		BOM			123,113	128,534	251,647
		3 Co-invest InKind Total			123,113	128,534	251,647
	3a Air-Sea Flux Stations Total				1,524,550	391,043	1,915,593
	3b Southern Ocean Time Series	1 DIISR Cash Total			940,060	502,518	1,442,578
		ACECRC			539,000		539,000
		2 Co-invest Cash Total			539,000		539,000
		AAD			425,000	425,000	850,000
		ACECRC			220,882	228,565	449,447
		CSIRO			239,001	162,446	401,447
		MNF			850,000	850,000	1,700,000
		UTAS			60,633	62,741	123,374
		3 Co-invest InKind Total			1,795,516	1,728,752	3,524,268
	3b Southern Ocean Time Series Total				3,274,576	2,231,270	5,505,846

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
	3c Deepwater Arrays	1 DIISR Cash Total	622,421	1,368,676	315,582	447,606	2,754,285
		ACECRC		448,019			448,019
		CSIRO		974,000	375,000	375,000	1,724,000
		Korea			306,000		306,000
		NOAA, USA		612,000		630,000	1,242,000
		2 Co-invest Cash Total		2,034,019	681,000	1,005,000	3,720,019
		AAD		500,000	500,000	500,000	1,500,000
		ACECRC		70,668	70,668	69,300	210,636
		AIMS		100,000		100,000	200,000
		CSIRO		144,782	199,151	73,447	417,380
		MNF				600,000	600,000
		3 Co-invest InKind Total		815,450	769,819	1,342,747	2,928,016
	3c Deepwater Arrays Total		622,421	4,218,145	1,766,401	2,795,353	9,402,320
03 ABOS Total			622,421	4,218,145	6,565,527	5,417,666	16,823,759
04 ANFOG		1 DIISR Cash Total	1,500,000	723,640	1,294,003	1,301,242	4,818,885
		NSW Govt		34,000	33,000	33,000	100,000
		WA Govt		254,640	310,493	166,912	732,045
		2 Co-invest Cash Total		288,640	343,493	199,912	832,045
04 ANFOG Total			1,500,000	1,012,280	1,637,496	1,501,154	5,650,930
05 AUV		1 DIISR Cash Total		227,500	325,000	330,000	882,500
		2 Co-invest Cash					
		NSW Govt		50,000	50,000	50,000	150,000
		SIMS			17,500	17,500	35,000
		2 Co-invest Cash Total		50,000	67,500	67,500	185,000

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
		AIMS			280,000	280,000	560,000
		NSW DECCW			25,000	25,000	50,000
		Qld DEEDI			30,000	30,000	60,000
		UniSyd			180,000	180,000	360,000
		UTAS			64,200	64,200	128,400
		Vic Parks			10,000	10,000	20,000
		WA Fisheries			26,400	26,400	52,800
		3 Co-invest InKind Total			615,600	615,600	1,231,200
05 AUV Total				277,500	1,008,100	1,013,100	2,298,700
06 ANMN	6a Qld&NA	1 DIISR Cash Total	1,177,579	776,877	1,477,301	1,505,104	4,936,861
		Qld Govt			800,759	816,050	1,616,809
		WA Govt	713,976	975,759	1,005,030	1,035,182	3,729,947
		2 Co-invest Cash Total	713,976	975,759	1,805,789	1,851,232	5,346,756
		AIMS	414,383	1,046,906	2,145,071	2,223,439	5,829,799
		3 Co-invest InKind Total	414,383	1,046,906	2,145,071	2,223,439	5,829,799
	6a Qld&NA Total		2,305,938	2,799,542	5,428,161	5,579,775	16,113,416
	6b New South Wales	1 DIISR Cash Total	50,000	0	850,606	867,973	1,768,579
		NSW Govt		50,000	50,000	50,000	150,000
		SIMS		220,000	187,500	17,500	425,000
		2 Co-invest Cash Total		270,000	237,500	67,500	575,000
		NSW DECCW			1,172,000	1,172,000	2,344,000
		SIMS			18,000	18,000	36,000
		SWC			250,000	250,000	500,000
		3 Co-invest InKind Total			1,440,000	1,440,000	2,880,000
	6b New South Wales Total		50,000	270,000	2,528,106	2,375,473	5,223,579

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
	6c Southern Australia	1 DIISR Cash Total	50,000	109,464	631,653	632,101	1,423,218
		Flinders			2,500	2,500	5,000
		SARDI			2,500	2,500	5,000
		2 Co-invest Cash Total			5,000	5,000	10,000
		Flinders			111,470	114,506	225,976
		SARDI		42,188	308,236	318,045	668,469
		3 Co-invest InKind Total		42,188	419,706	432,551	894,445
	6c Southern Australia Total		50,000	151,652	1,056,359	1,069,652	2,327,663
	6d Western Australia	1 DIISR Cash Total			518,997	541,435	1,060,432
		WA Govt		200,000	220,000	238,008	658,008
		2 Co-invest Cash Total		200,000	220,000	238,008	658,008
		CSIRO			228,320	228,320	456,640
		3 Co-invest InKind Total			228,320	228,320	456,640
	6d Western Australia Total			200,000	967,317	1,007,763	2,175,080
	6e Acoustic Observatories	1 DIISR Cash Total			146,564	211,142	357,706
		CUT			156,000	156,000	312,000
		2 Co-invest Cash Total			156,000	156,000	312,000
		CUT			35,000	35,000	70,000
		3 Co-invest InKind Total			35,000	35,000	70,000
	6e Acoustic Observatories Total				337,564	402,142	739,706
	6f National Reference Stations	1 DIISR Cash Total	1,600,000	1,395,203	1,750,983	1,672,786	6,418,972
		Qld Govt		311,428			311,428
		2 Co-invest Cash Total		311,428			311,428
		CSIRO		525,715	829,653	829,653	2,185,021
		3 Co-invest InKind Total		525,715	829,653	829,653	2,185,021
	6f National Reference Stations Total		1,600,000	2,232,346	2,580,636	2,502,439	8,915,421

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
	6g CO2 Acidification moorings	1 DIISR Cash Total		398,765	142,250	146,013	687,028
		CSIRO		66,069	47,486	47,486	161,041
		3 Co-invest InKind Total		66,069	47,486	47,486	161,041
	6g CO2 Acidification moorings Total			464,834	189,736	193,499	848,069
06 ANMN Total			4,005,938	6,118,374	13,087,879	13,130,743	36,342,934
07 ACORN		1 DIISR Cash Total			707,655	734,962	1,442,617
		Flinders			10,000	10,000	20,000
		NSW Govt		33,000	33,000	34,000	100,000
		Qld Govt			1,172,657	171,992	1,344,649
		SARDI			10,000	10,000	20,000
		2 Co-invest Cash Total		33,000	1,225,657	225,992	1,484,649
		Flinders			5,624	5,849	11,473
		JCU			255,465	265,685	521,150
		PortMap P/L			45,704	47,532	93,236
		SARDI			23,622	24,567	48,189
		3 Co-invest InKind Total			330,415	343,633	674,048
07 ACORN Total				33,000	2,263,727	1,304,587	3,601,314
08 AATAMS		1 DIISR Cash Total	1,200,000	963,214	1,301,649	1,505,774	4,970,637
		AIMS		180,000	180,000	180,000	540,000
		Apache		50,000	50,000		100,000
		CSIRO		457,800			457,800
		MQ	20,000	20,000	10,000		50,000
		NSW Govt		33,000	34,000	33,000	100,000
		OTN			500,000		500,000
		Qld Govt		301,000	26,000	26,000	353,000
		SA DEH		65,000	65,000	0	130,000

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
		SIMS		40,000	17,500	17,500	75,000
		WA Govt		400,000	350,000	130,000	880,000
		2 Co-invest Cash Total	20,000	1,546,800	1,232,500	386,500	3,185,800
		AAD		1,394,000	2,402,000	2,204,000	6,000,000
		AIMS		10,000	321,501	333,961	665,462
		Chevron		232,667	232,667	232,667	698,001
		CSIRO			105,000	105,000	210,000
		Flinders		123,000	128,000	133,000	384,000
		MPA		16,360	16,360	16,360	49,080
		MQ	125,000	129,000	135,000	40,000	429,000
		Qld DERM		2,500	2,500	2,500	7,500
		SARDI		339,000	357,408	371,624	1,068,032
		SIMS			188,199	195,726	383,925
		UTAS	157,000	57,000	57,000	57,000	328,000
		WA Fisheries			151,424	157,481	308,905
		3 Co-invest InKind Total	282,000	2,303,527	4,097,059	3,849,319	10,531,905
08 AATAMS Total			1,502,000	4,813,541	6,631,208	5,741,593	18,688,342
09 FAIMMS		1 DIISR Cash Total			291,126	298,304	589,430
		Qld Govt			291,126	298,303	589,429
		2 Co-invest Cash Total			291,126	298,303	589,429
		AIMS			665,009	689,526	1,354,535
		ISSNIP			50,000	50,000	100,000
		QCIF			90,000	90,000	180,000
		TMN			308,000	310,000	618,000
		3 Co-invest InKind Total			1,113,009	1,139,526	2,252,535
09 FAIMMS Total					1,695,261	1,736,133	3,431,394

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
10 eMII		1 DIISR Cash Total			1,600,000	1,680,000	3,280,000
		UTAS			1,024,708	1,065,696	2,090,404
		3 Co-invest InKind Total			1,024,708	1,065,696	2,090,404
10 eMII Total					2,624,708	2,745,696	5,370,404
11 SRS	11a SST L2P Products	1 DIISR Cash Total			215,305	178,990	394,295
		3 Co-invest InKind					
		BOM			62,084	64,568	126,652
		3 Co-invest InKind Total			62,084	64,568	126,652
	11a SST L2P Products Total				277,389	243,558	520,947
	11b AODAAC	1 DIISR Cash Total			115,000	65,000	180,000
		CSIRO			185,948	140,927	326,875
		CUT			50,000	0	50,000
		GA			130,000	100,000	230,000
		3 Co-invest InKind Total			365,948	240,927	606,875
	11b AODAAC Total				480,948	305,927	786,875
	11d Satellite Ocean Colour	1 DIISR Cash Total		514,115	454,505	460,379	1,428,999
		CSIRO		149,939	163,844	163,844	477,627
		Other		105,833	105,833	105,833	317,499
		3 Co-invest InKind Total		255,772	269,677	269,677	795,126
	11d Satellite Ocean Colour Total			769,887	724,182	730,056	2,224,125
	11e Satellite Altimetry CalVal	1 DIISR Cash Total		486,394	269,606	337,000	1,093,000
		CSIRO		148,000	152,000	156,000	456,000
		UTAS		252,000	259,000	267,000	778,000
		3 Co-invest InKind Total		400,000	411,000	423,000	1,234,000
	11e Satellite Altimetry CalVal Total			886,394	680,606	760,000	2,327,000
11 SRS Total				1,656,281	2,163,125	2,039,541	5,858,947

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Source	2009/10	2010/11	2011/12	2012/13	Total
12 Office		1 DIISR Cash Total			775,000	816,000	1,591,000
		Tas DEDTA			125,000	125,000	250,000
		UTAS			125,000	125,000	250,000
		2 Co-invest Cash Total			250,000	250,000	500,000
		UTAS			445,857	468,094	913,951
		3 Co-invest InKind Total			445,857	468,094	913,951
12 Office Total					1,470,857	1,534,094	3,004,951
Grand Total			9,430,359	19,996,213	47,126,671	43,887,170	120,440,413

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ANNEX B – IMOS EIF Milestones 2009-2013

Milestones for 2009-2010 are:

Facility	Operator	Due by 30 Sep 2009	Due by 31 Dec 2009	Due by 31 Mar 2010	Due by 30 Jun 2010
Argo - Enhanced array and new capability	CSIRO	Configuration of purchases confirmed	Floats ordered	Floats purchased	Argo array density in Southern Hemisphere enhanced
ANFOG – Gliders for Southern Ocean and Coral Sea	UWA	Gliders ordered and development technician advertised	Technician employed	First gliders delivered	First gliders deployed for location tests
ANMN – CO ₂ and pH on selected NRS; New NRS at Moreton Bay; Currents on NRS	CSIRO AIMS SARDI SIMS	Configuration of purchases confirmed	Technician employed and equipment ordered	Equipment delivered	Maria CO ₂ test deployed; Stradbroke mooring built and test deployed; Single real-time test deployment
ANMN – Northern Australian Observing System	CSIRO AIMS	WA initiates regional consultation	Science and Implementation for 2013 agreed	First staff engaged and initial equipment ordered	In water deployments of pilot elements commenced
AATAMS – Queensland lines; Southern Ocean animals as sensor platforms; Southern Australian seals	SIMS	Equipment ordered	Equipment delivered	Qld lines equipment deployed; Cruises identified for deployment of animal tags	Animal tags first sensors deployed
IMOS Office	UTAS	Milestone Report 1	Milestone Report 2	Final IMOS EIF Project Plan (by 28Feb10); Annual Business Plan 1; Milestone Report 3	Milestone Report 4

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Milestones for 2010-2011 are:

Facility	Sub-Facility	Operator	Due by 30 Sep 2010	Due by 31 Dec 2010	Due by 31 Mar 2011	Due by 30 Jun 2011
SOOP	CPR	CSIRO	Initiate quarterly Melbourne to Adelaide route Initiate annual Devonport (Tasmania) to Nelson (New Zealand South Island)	Initiate Quarterly GBR route (Cairns to Gladstone) Annual evaluation of progress, strengths, weaknesses and opportunities for the AusCPR survey, plus review budget, staff performance and development.	Initiate ad hoc Tasmania east coast route	Initiate quarterly Tasman Sea route (from Brisbane) Data delivered to eMII.
	BGC	CSIRO		Complete purchase and initial testing of pCO ₂ system for <i>Aurora Australis</i> (AA)		
	Bio-acoustics	CSIRO	Data access and collection procedures in place and calibration schedules for vessels agreed.	Procedures for data quality and data management finalized.	Posting of quality controlled data from several vessels in eMII.	New instrument installed on a selected vessel and calibrated with data streaming to eMII
ABOS	DA	CSIRO	Design of Polynya and ITF mooring arrays completed. Construction of mooring arrays begun.	Completed construction and deployment of the Polynya mooring array. Construction of ITF mooring array completed	Deployment of ITF mooring array	Finalize design of EAC mooring array.

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2010	Due by 31 Dec 2010	Due by 31 Mar 2011	Due by 30 Jun 2011
	ASFS	BOM				Subject to successful deployment of SOFS#1 and board approval, ensure WHOI contract in place to construct SOFS#2 mooring
ANFOG		UWA	Deployment of Seagliders at SOTS site and Coral Sea. Slocum gliders for Tasmania on order	First deployment of Slocum gliders in Tasmania.	All ocean gliders in the ANFOG fleet (6 Slocums and 11 Seagliders) deployed on missions at least once.	Successful deployment of a Seaglider, south of Tasmania, traverse to SOTS site and return.
AUV		SIMS	Hire of additional staff	Deployment in NSW & Qld	Start of vehicle redesign	Repeat of reference sites in Tasmania and temperate WA Data delivered to eMII.
ANMN	Qld and Northern Australia	AIMS	Upgrade Ningaloo NRS and WQM sensors; Upgrade Darwin NRS with ADCP; Develop Yongala real time data stream; Submit QA Qld&NA data to eMII	Purchase Kimberley, Pilbara & Arafura instrumentation; Service shelf ITF array & Darwin NRS; Service Qld&NA array and Yongala NRS	Submit QA Qld&NA datastreams to eMII; Service Ningaloo NRS	Deploy Kimberley & Pilbara & Arafura transects; Service ITF transect and Darwin NRS; Service Qld&NA array and Yongala NRS
	NSW	SIMS	Appoint a Mooring Technician (0.25FTE) to develop NSW shelf mooring infrastructure			
	SA	SARDI	Appoint Mooring Technician to develop SAIMOS shelf mooring infrastructure			

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2010	Due by 31 Dec 2010	Due by 31 Mar 2011	Due by 30 Jun 2011
	WA	CSIRO	Appoint a Mooring Technician to develop WAIMOS shelf mooring infrastructure			
	NRS	CSIRO	Finalise design of ADCP mooring ESP and ROT	Deploy NSI NRS Purchase Bio-optics Triplet sensors.	Finalise Design pCO2 KAI	Finalise design of SEQ shelf array. Deploy Bio-optic sensors on 4 NRS.
AATAMS		SIMS	Employ a Technical Officer to develop AATAMS infrastructure		Continuation of SOSS and commencement of MAPSO: Biologgers deployed.	
SRS	Ocean colour	CSIRO		Provisioning of MODIS AQUA and MODIS TERRA L1A data stream and archives from NASA to ARCS infrastructures. Provisioning of SOOP-Radiometers data stream.	Provisioning of MODIS L2 data streams for primary productivity products. Provisioning of bio-optical data base of Australian Waters. Provisioning of SOOP-Radiometers data stream.	Provisioning of SeaWIFS L1A data Archives from CMAR and AIMS to ARCS infrastructures. Provisioning of SOOP-Radiometers data stream.
	Satellite Altimetry	UTAS	Procure infrastructure hardware: GPS buoys and oceanographic instruments. Deploy Bass Strait and Storm Bay oceanographic instrument moorings.	Present plans for IMOS altimetry cal/val contributions to the international community.	Complete GPS buoy deployments at Bass Strait and Storm Bay sites.	Generate estimates of land motion at global sites for the production of the bias drift data stream.
IMOS Office		UTAS	Annual Report 1; Milestone Report 5	Milestone Report 6	Annual Business Plan 2; Milestone Report 7	Milestone Report 8

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Milestones for 2011-2012 are:

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
Argo		CSIRO	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system
SOOP	XBT	CSIRO		New XBT systems purchased and installed	All XBT data for 2011 processed, QCd and delivered to eMII, NODC, BOM and RAN	Maintain data stream and deliver near real-time QC data products to IMOS
	CPR	CSIRO	Continuation of AusCPR routes	Continuation of AusCPR routes Annual evaluation of strengths, weaknesses and opportunities for the AusCPR survey	Continuation of AusCPR routes	Continuation of AusCPR routes and deliver data to eMII.
	BGC	CSIRO	Delayed mode pCO ₂ data for 2010-2011 season complete for <i>l'Astrolabe</i> , <i>Southern Surveyor</i> and <i>Aurora Australis (AA)</i>	Real-time data available from AA	Complete 2011-2012 field season for AA and <i>l'Astrolabe</i>	
	Bio-acoustics	CSIRO	Summary report of data holdings summary statistics and uptake of users	Installation of new instrument completed for Tasman Sea	Posting of quality controlled data from all vessels – with feedback of requirements from users.	Vessels calibrated and quality controlled data posted to eMII web page.

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
	Tropical Vessels	AIMS		All new data processed and lodged in AIMS Data Centre for transfer to eMII		All new data processed and lodged in AIMS Data Centre for transfer to eMII
	SST	BOM		Data stream quality maintained by recalibrating all pre-existing IMOS hull-contact temperature sensors	4 additional hull-contact temperature sensors purchased	Near real-time, QC'd, SST provided to GTS and Ocean Portal from 13 vessels for access by users
	Flux	BOM				Real-time data stream maintained (including instrument calibration and Meta-data) and provided to eMII over last 12 months to enable user access
ABOS	DA	CSIRO	Acquisition of instruments for EAC mooring array. Construction and instrument preparation of Polynya mooring turn-a-round (if require yearly recovery / deployment schedule).	Completion of EAC mooring array construction. Recover/redeploy Polynya mooring array (if required)	Construction of ITF mooring array and calibration of instruments. Deployment of EAC mooring array.	Recovery and Deployment of ITF array

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
	ASFS	BOM	Redeploy SOFS#1 mooring to ensure real-time data-stream resumes reliably ASAP		Delayed-mode SOFS meteorological and current meter data streams delivered to eMII to assist user access	
	SOTS	UTAS CSIRO	Recover SAZ13 redeploy as SAZ14 Deploy Pulse8	Deploy Profilers 4and 5	Recover Pulse8	Pulse7, SAZ12, Profiler 4and 5 data delivered to eMII
ANFOG		UWA	Calibration procedures for biogeochemical data from gliders finalized. Advice on removal of salinity spiking from Slocum data.	Annual total deployments of 24 gliders at all sites (Coral Sea, NSW, Tasmania, SOTS, SA and WA)	All glider deployments producing real-time data via eMII and GTS	All glider deployments producing real-time data via eMII and GTS
AUV		SIMS	Repeat of reference sites in tropical WA	Repeat of reference sites in NSW & Qld	New vehicle coming online	Repeat of reference sites in Tasmania and temperate WA Data delivered to eMII
ANMN	Qld & Northern Australia	AIMS	Submit QA Qld&NA datastreams to eMII; Service Ningaloo NRS	Service ITF, Kimberley, Pilbara & Arafura array and Darwin NRS; Service Qld&NA array and Yongala NRS	Submit QA Qld&NA datastreams to eMII; Service Ningaloo NRS	Service ITF, Kimberley, Pilbara & Arafura array and Darwin NRS; Service Qld&NA array and Yongala NRS

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
	NSW	SIMS	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams
	SA	SARDI	Development of mooring research infrastructure at 4 sites to produce data streams	Development of mooring research infrastructure at 6 sites to produce data streams	Development of mooring research infrastructure at 6 sites to produce data streams	Development of mooring research infrastructure at 4 sites to produce data streams
	WA	CSIRO	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams
	NRS	CSIRO	Deploy pCO2 MAR and ADCP. Delivery of data from all stations in the network to eMII.	Delivery of data from all stations in the network to eMII.	Deploy ADCP ESP and ROT. Delivery of data from all stations in the network to eMII.	Deploy pCO2 KAI. Delivery of data from all stations in the network to eMII.
	Acoustic	CUT	Turnaround Perth Canyon moorings (recover PCA-4, deploy PCA-5)	Turnaround NSW & Portland moorings (recover NSW-2 deploy NSW-3, recover PORT-3, deploy PORT-4)	Data from PCA-4 submitted to eMII	Data from NSW-2 & PORT-3 submitted to eMII

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
ACORN		JCU SARDI	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.
AATAMS		SIMS	Servicing and redeployment of AATAMS curtains, provide delayed mode data to eMII .	AATAMS Data Workshop	SOSS and MAPSO: Biologgers deployed, provide delayed mode data to eMII.	Servicing and redeployment of AATAMS curtains, provide delayed mode data to eMII .
FAIMMS		AIMS	Updating of sensor equipment and installation of additional sensors on the central sites. Delivery of data from all sensor networks to eMII.	Pre-summer servicing of equipment and updating of sensors to support monitoring of summer conditions. Delivery of data from all sensor networks to eMII.	Delivery of data from all sensor networks to eMII.	Updating of sensor equipment and installation of additional sensors at the northern sites. Delivery of data from all sensor networks to eMII.
eMII		UTAS	First EIF data products available. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	Portal v5 released. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	EIF data products available – for education. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	Review of portal functionality. All IMOS data discoverable and accessible through the IMOS Ocean Portal.

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2011	Due by 31 Dec 2011	Due by 31 Mar 2012	Due by 30 Jun 2012
SRS	SST	BOM		All available, archived, raw AVHRR data from Casey and Davis (Antarctica) stitched with Australian data using IMOS/CMAR code		New IMOS AVHRR SST processing code ported to Casey and Davis Stations in Antarctica
	AODAAC	CSIRO	Prototype crawler populating database with metadata from non-rectangular gridded granules	Initial Ocean Colour L2 Case 1 products (MODIS, possibly SeaWIFS) becoming visible via AO-DAAC	System documentation included with eMII portal documentation	Interface capable of returning granules that match spatio-temporal search parameters
	Ocean colour	CSIRO	Provisioning of SeaWIFS L1A data Archives from CMAR and AIMS to ARCS infrastructures. Commissioning of bio-optical data base of Australian Waters. Commissioning of SOOP-Radiometers data stream.	Provisioning of Match-up database for MODIS L2 and SeaWIFS L2 case 1 & case 2 products.	Commissioning of MODIS L2 and SeaWIFS L2 data streams for primary productivity products. Commissioning of bio-optical data base of Australian Waters	Commissioning of Match-up database for MODIS L2 and SeaWIFS L2 case 1 & case 2 products and primary productivity products.
	Satellite Altimetry	UTAS	Generate the bias drift data stream. Cycle Bass Strait and Storm Bay oceanographic instrument moorings.	Generate the absolute bias data stream and disseminate data to the international community.	Complete GPS buoy deployments at Bass Strait and Storm Bay sites.	Update estimates of land motion at global sites for bias drift computation.
IMOS Office		UTAS	Annual Report 2; Milestone Report 9	Milestone Report 10	Annual Business Plan 3; Milestone Report 11	Milestone Report 12

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Milestones for 2012-2013 are:

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
Argo		CSIRO	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system	Maintain an array of 240 active Argo floats and deliver their data in realtime to eMII the global Argo data system
SOOP	XBT	CSIRO			All XBT data for 2012 processed, QCd and delivered to eMII, NODC, BOM and RAN	XBT data for 2013 processed, QCd and delivered to eMII, NODC, BOM and RAN
	CPR	CSIRO	Continuation of AusCPR routes	Continuation of AusCPR routes. Annual evaluation of strengths, weaknesses and opportunities for the AusCPR survey	Continuation of AusCPR routes	Continuation of AusCPR routes. Data delivered to eMII
	BGC	CSIRO	Delayed mode data for 2011-2012 complete for <i>l'Astrolabe</i> , AA and <i>Southern Surveyor</i> .		Complete 2012-2013 field season for AA and <i>l'Astrolabe</i>	Delayed mode data complete for <i>l'Astrolabe</i> , AA and <i>Southern Surveyor</i> .
	Bio-acoustics	CSIRO	Review uptake of data and modify collections and data processing to match user uptake.	Report on progress with development of alternative uptake / funding options by fisheries management.	Draft report of the project.	Final report of project highlighting the developments and its impact and methods for ongoing data collections

Initials
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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
	Tropical Vessels	AIMS		All new data processed and lodged in AIMS Data Centre for transfer to eMII		All new data processed and lodged in AIMS Data Centre for transfer to eMII
	SST	BOM		Data stream coverage expanded by all new vessels (up to max 4) being installed with hull-contact temperature sensors		Near real-time, QC'd, SST from additional ships provided to GTS and eMII for access by users
	Flux	BOM				Real-time data stream maintained (including instrument calibration and Meta-data) and provided to eMII over last 12 months to enable user access
ABOS	DA	CSIRO	Construction and instrument preparation of Polynya mooring turn-a-round	Recovery and deployment of Polynya mooring array. Quality controlled ITF mooring data submitted to eMII		Quality controlled Polynya mooring data submitted to eMII
	ASFS	BOM	Retrieve SOFS and deploy new SOFS mooring to ensure continuity and reliability of real-time data availability maintained		Delayed-mode SOFS meteorological and current meter data streams delivered to eMII to assist user access	Delayed-mode SOFS met and current meter data from previous deployment delivered to eMII

Initials

FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
	SOTS	UTAS CSIRO	Recover SAZ14 redeploy as SAZ15 Deploy Pulse9	Deliver plan for ongoing observations following the EIF period	Recover Pulse9	All Pulse, SAZ, Profiler data delivered to eMII
ANFOG		UWA	All glider deployments producing real-time data via eMII and GTS	Annual total deployments of 24 gliders at all sites (Coral Sea, NSW, Tasmania, SOTS, SA and WA) All glider deployments producing real-time data via eMII and GTS	All glider deployments producing real-time data via eMII and GTS	All glider deployments producing real-time data via eMII and GTS
AUV		SIMS	Repeat of reference sites in tropical WA	Repeat of reference sites in NSW & Qld		Repeat of reference sites in Tasmania and temperate WA. Data delivered to eMII.
ANMN	Qld & Northern Australia	AIMS	Submit QA Qld&NA datastreams to eMII; Service Ningaloo NRS	Service ITF, Kimberley, Pilbara & Arafura array and Darwin NRS; Service Qld&NA array and Yongala NRS	Submit QA Qld&NA datastreams to eMII; Service Ningaloo NRS	Service ITF, Kimberley, Pilbara & Arafura array and Darwin NRS; Service Qld&NA array and Yongala NRS
	NSW	SIMS	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams	Development of mooring research infrastructure at 8 mooring sites and 4 stations at Port Hacking to produce data streams

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
	SA	SARDI	Development of mooring research infrastructure at 4 sites to produce data streams	Development of mooring research infrastructure at 6 sites to produce data streams	Development of mooring research infrastructure at 6 sites to produce data streams	Development of mooring research infrastructure at 4 sites to produce data streams
	WA	CSIRO	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams	Development of mooring research infrastructure at 10 sites to produce data streams
	NRS	CSIRO	Deploy SEQ shelf array	Maintain pCO2 KAI	Maintain NRS/ADCP/pCO2 MAR	Maintain SEQ shelf array and NSI NRS
	Acoustic	CUT	Turnaround Perth Canyon moorings (recover PCA-5, deploy PCA-6)	Turnaround NSW & Portland moorings (recover NSW-3 deploy NSW-4, recover PORT-4, deploy PORT-5)	Data from PCA-5, NSW-3 & PORT-4 submitted to eMII	Recover all 3 arrays, all outstanding data submitted to eMII
ACORN		JCU SARDI	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.	Maintain and operate 6 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes. Install Moreton radar	Maintain and operate 7 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.	Maintain and operate 7 radar sites. Provide near real-time, raw and delayed mode data to eMII to enable eMII to deliver radar data and products to the Nodes.
AATAMS		SIMS	Servicing and redeployment of AATAMS curtains, provide delayed mode data to eMII .	Review AATAMS program and strategic planning going forward	SOSS and MAPSO: Biologgers deployed, provide delayed mode data to eMII .	Servicing and redeployment of AATAMS curtains, provide delayed mode data to eMII .

Initials

FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
FAIMMS		AIMS	Development of data discovery and delivery client systems and tools. Delivery of data from all sensor networks to eMII.	Pre-summer servicing of equipment and updating of sensors to support monitoring of summer conditions. Delivery of data from all sensor networks to eMII.	Development of sensor network test bed at one site for the testing of new sensors and sensor technology. Delivery of data from all sensor networks to eMII.	Delivery of data from all sensor networks to eMII.
eMII		UTAS	Portal interaction with ARCS GRID computing. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	Portal v6 released. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	EIF data products available – for public. All IMOS data discoverable and accessible through the IMOS Ocean Portal.	All IMOS data discoverable and accessible through the IMOS Ocean Portal. Final report
SRS	SST	BOM		Real-time AVHRR SST files incorporating all Antarctic and Australian data available to the AO-DAAC and eMII in GHRSSST format for access by users		Reprocessed AVHRR SST data available for the Australian and Antarctic region back to 1992, full 1 km resolution, calibrated and validated and with estimated errors, available to the AO-DAAC and eMII in GHRSSST format as L2P (single swath), L3C (single sensor, multiple swath, single day/night) and L3S (multiple sensor, multiple day) files.

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FINAL IMOS EIF PROJECT PLAN

Facility	Sub-Facility	Operator	Due by 30 Sep 2012	Due by 31 Dec 2012	Due by 31 Mar 2013	Due by 30 Jun 2013
	AODAAC	CSIRO	Decision point to determine whether feasible to support spatial sub-setting of non-rectangular grids	Prioritised list of outstanding issues/bugs to be resolved over final six months of project	Non-rectangular grids subsetting supported	No outstanding bugs needing to be fixed in agreed feature set, full operations support and documentation
	Ocean colour	CSIRO	Commissioning of bio-optical data base of Australian Waters		Commissioning of bio-optical data base of Australian Waters	
	Satellite Altimetry	UTAS	Update the bias drift data stream. Cycle Bass Strait and Storm Bay oceanographic instrument moorings.	Update the absolute bias data stream and disseminate data to the international community.	Complete GPS buoy deployments at Bass Strait and Storm Bay sites.	Compile the final set of absolute and bias drift data streams. Disseminate to the community.
IMOS Office		UTAS	Annual Report 3; Milestone Report 13	Milestone Report 14	Milestone Report 15	Milestone Report 16

Milestones for 2013-2014 are:

Facility	Operator	Due by 30 Sep 2013	Due by 31 Mar 2014
IMOS Office	UTAS	Final Report	Completion of all requirements under this Agreement

Initials
