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| MQ inline RGB | Implementation Plan for Review of Department of Physics and Astronomy14-16 November 2012 |

## Implementation of Findings and Recommendations

### Governance, Leadership and Management

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| **Rec No.** | **Recommendation** | **Responsibility** | **Planned Response** |
| 1.1 | We affirm the restructure of the Department Executive involving the appointment of an executive including a deputy HOD and staff with identified executive delegation around Department responsibilities | HoD | A Department Executive has been formed which consists of the HoD, Deputy HoD and staff with identified formal delegation representing the Department for HDR, Research, TLC and FSQC. |
| 1.2 | We recommend the streamlining of administration and processes in the Faculty and central University administration to free up more time to meet teaching and research needs | University executive | Beyond the control of the Department |
| 1.3 | We recommend that the Department explores mechanisms to improve communication within the Department and with the Faculty | HoD, delegated representatives, Centre Directors and staff | The main communication mechanism is the monthly Department meeting supplemented by research centre meetings/ seminars/ newsletters. The HoD attends Deans Advisory Committee meetings where some items of business in the Faculty are discussed. Regular emails to the academic staff, and to the Department as a whole, from HoD and other staff also facilitate information exchange. Meetings of the Department academic staff, and of HoD with postdocs, to disseminate and discuss information on specific topics have been organised. Further social gatherings are planned around Department colloquia and PhD student final thesis seminars. The Faculty Committee representatives report to the Department meeting and separately to the HoD as needed. Improved internal communication has also come from the planned relocation of most of the Department from C5C and E7A to a refurbished floor of E6B with dedicated meeting space. We will survey the members of the Department to determine which forms of communication (regular email reports, meetings, informal gatherings) are considered effective. |

**2. Academic Program**

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| 2.1 | The actions taken in response to survey questionnaires (LEU and LET) should be more explicitly made to students so that the feedback loop is clear to future cohorts of students | Teaching staff | All unit outlines have a section discussing changes to the offering. Staff are asked to put changes in response to their surveys in this section, and also to make students aware of the changes in their lectures as appropriate. Student Liaison Committee meetings twice a year also act as a forum to discuss problems with units, and resulting changes by staff. |
| 2.2 | The Panel supports the restructure of Physics Majors to lift enrolments in third year | HoD and Curriculum committee | The Physics offerings have been adjusted slightly for 2014, but further changes were placed on hold while changes to the definition of the majors were finalised by Senate. Further changes to offerings are possible in 2015. |
| 2.3 | The Panel recommends that the Department considers the need for the current laboratory experience in Planet units and whether this experience could be delivered by alternative methods to reduce the resource impact on laboratory facilities | Academic staff responsible for Planet units and professional lab staff. | This refers to ASTR170 and PHY159. Further discussions are required between the staff concerned, as we have deliberately tailored lab experiences to suit “planet unit” students. |
| 2.4 | In the light of the small enrolments in the advanced program the Panel recommends that the Department investigates alternative less staff-intensive options which meet the same very positive outcomes identified by the students | HoD and TLC reps | From2013, PHYS246 and 388 will beco-taught with content alternating from year to year. The BSc Advanced cohort appears to be growing, so we hope to be able to change this arrangement in the future.  Mentoring is offered to some students, and we would like to expand this program. |
| 2.5 | Given the issues around service teaching to engineering students and new opportunities in expanding mathematics offerings, the Panel recommends the development of a regular consultation schedule with the collaborating degree programs and service programs | HoD and academic staff responsible for service units | One meeting between HoDs of Physics and Engineering, Engineering representatives, and Physics lecturing staff in Physics 143 and 140 in January discussed unit content and established an assessment plan which supports Engineering accreditation. A further meeting of PHYS143 and PHYS140 lecturing staff with their colleagues in Engineering is planned for later in semester 1. Meetings between new HoD Engineering and HoD Physics occur as needed. Physics, Engineering and Maths jointly ran a teaching seminar on online learning in February. We would like to see an Engineering Management Committee formalised for liaison between the Departments that support Engineering teaching. |

### Research

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| 3.1 | The Department should seek out opportunities to consolidate research infrastructure with other groups on campus to ensure ongoing support and growth | HoD, academic staff and technical manager | Hearing hub infrastructure is integrated to an extent. Collaboration with the Microscopy unit is also effective, (eg joint bid for a FESEM) but there is scope for much more engagement with members of the Department. We identify a need for a liquid helium plant (could be placed in F7B aligned with the NMR facility there). The 4 MQ Research Centres in Physics are active in coordinating their research infrastructure needs within Physics and across departments. |
| 3.2 | The Department should plan for the development and funding of advanced astronomy facilities to support its leading research effort | HoD, MQAASSTRO centre director and Astronomy staff | Joint appointments with AAO and CASS allow access to world class facilities on excellent terms. It would be difficult for us to equal these facilities. There is a continuing threat to our on-campus observatory from light pollution.  For a 5 rated department, we do not as an institution have ownership of a proper research astronomy telescope. Strategic discussions with MQ AAASTRO to consider the recommendation further are planned. |
| 3.3 | WHS practices should be examined with a view to simplifying risk assessment process and clarifying responsibilities at the researcher / Department / faculty and institution level | HoD, Technical manager and Faculty WHS manager | Workshops run by Faculty WHS manager are offered to all lab supervisors annually. Additional workshops with academic staff on understanding of the legal position are planned, with discussion in Department meetings as a follow-up. |
| 3.4 | A Department or Faculty level IT specialists should be supported to make all 3 popular platforms work for staff to ensure the continuing advanced productivity offered by computer software and hardware | HoD and Executive Dean | Department budget request for next year will include a request for more specialist staff support within Faculty IT. This person (or part time people) could be a specialist in some software to provide high level support for Physics researchers. |
| 3.5 | The Mechanical workshop capacity and processes need to be expanded to meet the increased needs of undergraduate laboratories, research students and researchers | Workshop manager and Faculty | Workshop load is monitored and decisions made on priorities by manager. The Department is pleased to see new staff recruited in the mechanical side of METS and will lobby for new appointments in the electronics side to meet the demand. |
| 3.6 | The Department should institute a benchmarking process against equivalently performing institutions to identify opportunities for improvement in terms of excellence and productivity | HoD | We will consider possibilities for benchmarking in the future. The Department will be reviewed by the AIP in 2013 for degree accreditation.  Some ongoing benchmarking already exists within the 4 digit FORC codes in preparation for and analysis of the ERA results and informal benchmarking across nodes of ARC Centres of Excellence is also conducted. |

### Research Training

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| **Rec No.** | **Recommendation** | **Responsibility** | **Planned Response** |
| 4.1 | The Department should institute a formal mentoring scheme for HDR students involving staff unrelated to the students research group | HoD and HDR director | We will discuss this with the students themselves to identify a strategy to provide them with more effective mentoring and social engagement within the Department. We will explore continuing involvement of the annual review panel members with supervisors and students. |
| 4.2 | Review the rules about how HDR research support funds are allowed to be used to meet the needs of all students. Current rules appear to disadvantage theory PhD projects relative to experimental | Faculty AD HDR | Department support is available within current Faculty guidelines. Since theory students do not need to purchase equipment or consumables, their expenditures are usually for travel to workshops or lengthy research visits. Changes at Faculty and university level to travel funding policies have affected the ability of students to do this. |
| 4.3 | The Department and Faculty establish support for access to more than basic software tools such as CAD, ORIGIN, SIGMAPLOT, LABVIEW, IRAF and other speciality software and licences | HoD and Faculty | We will prioritise our software requests as part of the 2014 budget process. Currently the Department funds some teaching licences for software but most software is funded by research grants. This has limited access for some students and staff to some of these standard software packages. |

### Staff and Student Profile

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| **Rec No.** | **Recommendation** | **Responsibility** | **Planned Response** |
| 5.1 | To allow the Department to achieve its objectives for the coming decade, we recommend the staffing profile be maintained. The Faculty will need to budget to retain the Department's Future Fellows and secure continuing AAO support from its incoming Director | Exec Dean | There are currently no plans to change the staffing profile of the Department. A new position replacing a Future fellow is being advertised at present and is jointly funded by the AAO Gemini Office. Another joint position with CASS is under discussion. |
| 5.2 | The Department identify and implement opportunities to support the transition of post-doctoral fellows from a research only to a research / teaching future | HoD and academic staff | Postdoctoral fellows were surveyed early in the year to find out who was interested in gaining teaching experience. In semester 1, four postdoctoral staff were given opportunities for meaningful teaching experience within the Department’s normal teaching offerings. In semester 2, other postdoctoral staff will be given opportunities to contribute to Department teaching. A voluntary mentoring program for postdocs paired with academic staff is planned, modelled on an existing program at Swinburne Univ. |
| 5.3 | We recommend the development of a more strategic and targeted program to attract both domestic and international students to undergraduate and postgraduate level physics degrees. Actions could include;   * a more comprehensive survey to establish the driving forces around decisions to come to Macquarie to study physics or not. * a professional marketing approach with focus on increasing science enrolments, particularly from local schools. * Marketing opportunities to combine physics with maths, engineering, medical or biotechnology degrees. * Better advertise and differentiate the advanced degree opportunities * More aggressive marketing of research degree opportunities for domestic HDR students * Faculty can publicise their research using new media such as *The Conversation*, as well as traditional media | HoD, HDR Director, TLC representatives, and Faculty marketing staff | The Faculty will have more control over Marketing in the future. The Department undergrad recruitment committee is not currently active, but could work with marketing staff to be more effective. We are keen to work with other Departments and Centres such as Engineering or the Biofocus Research Centre to promote double degrees, as these attract the better students. We do not have a strategy for Facebook or social media, and this will discussed when the Faculty marketing structure is finalised. We should be able to recruit more students to HSC enrichment days for example. We are keen to have a dedicated person at Faculty level supporting HDR recruitment. Further discussion on the promotion of the Advanced degree is also needed. A large number of academic staff have contributed to the MQ International program by visiting China for recruitment purposes. |

### Community / Industry Engagement

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| **Rec No.** | **Recommendation** | **Responsibility** | **Planned Response** |
| 6.1 | The Department should undertake better coordination, consolidation and evaluation of the effectiveness of the Department’s community outreach activities. These processes should support processes associated with recommendation 5.3 | HoD and academics | The Faculty plans to better coordinate outreach across all areas. We aim to contribute to this, and we are developing a new PACE unit on science communications /education to enable our students to work with school teachers and present physics demonstrations to schools. Astronomy Open Night and University Open Day are both successful events where we showcase our Department. Careers night is also an annual event with strong support from alumni and current students. |
| 6.2 | The Department should engage more closely with the Industry Advisory Group to seek new lines of research and teaching enquiry | AD Research, HoD, Centre directors, and academic staff | This is a Faculty body, so we need to coordinate with the Faculty to engage with it. MQ Research Centres also have advisory boards with whom we are engaging. We would like senior industry people to give advice on programs and on research areas with potential for collaboration or contracts. |

### Future Directions

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| **Rec No.** | **Recommendation** | **Responsibility** | **Planned Response** |
| 7.1 | The Department should review opportunities for teaching and research collaboration with Health Sciences in the light of potential developments in biotechnology and biomedical science | HoD, HDR and TLC reps and Biofocus director | Proposals for joint research supervision are under discussion with Genesis Cancer Care in the Hospital. Further proposals for undergraduate or Masters level training in Medical Physics are being considered.  We are keen to increase our service teaching into medical and human science programs (we successfully offer PHYS149 for biomedical science, but could offer biomechanics for Physiotherapy for example). |
| 7.2 | The Department should formulate a decadal plan and from this a medium term action plan to provide a shared vision for the future direction and goals | HoD and Department executive | The Department is fully engaged in the Framing of Futures MQ Strategic planning process, with a full Department meeting contributing to a recent Department submission. Later in 2013, building on the development of the Faculty of Science strategy, we will develop strategic plans for the department. We will also draw on the recent Physics Decadal Plan for Australia formulated by a Committee of the National Academies. |
| 7.3 | Departmental contingency-based financial planning should address the vulnerabilities identified in the research and student income sources | HoD and Exec Dean | Over the longer term, we plan to strengthen our service teaching into Engineering and Human sciences. We aim to grow our domestic HDR population through a strong MRes coursework offering and will increase our mentoring program for undergraduate students to improve retention of strong students. |
| 7.4 | The Department should look for possible partners for Centres of Excellence proposals | Senior researchers | Three external CoE bids in preparation include MQ Physics staff. |