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# **Armagh Observatory and Planetarium**

## **Business Plan 2016/17**

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## 1. Welcome and Introduction

- 1.1. The Armagh Observatory is the oldest scientific institution in Northern Ireland and the longest continuously operating astronomical research institute in the UK and Ireland.
- 1.2. The cultural and heritage importance of Armagh Observatory and Planetarium is significant, and almost as important as our scientific credentials. It was founded in the late 18<sup>th</sup> Century, through the 1791 Act, passed by the Irish Parliament for *“settling and preserving a Public Observatory and Museum in the City of Armagh for ever”*.
- 1.3. The addition of the Planetarium on the same site in 1968 has greatly enhanced the organisation’s public face and outreach activities. The fact that we have an active Observatory with a vibrant research, education and public outreach programme strengthens our status nationally and internationally.

### Who We Are

- 1.4. The Governors of the Armagh Observatory and Planetarium is a statutory corporation that operates under the authority of the Armagh Observatory and Planetarium (Northern Ireland) Order 1995.
- 1.5. This Order requires the Governors to maintain and manage the Armagh Observatory and Planetarium for the purpose of *‘developing the knowledge, appreciation and practice of astronomy and related sciences’*. It permits the Governors to take such other action as they think proper for the purpose of acquiring or disseminating knowledge relating to astronomy and related sciences, and in particular to carry out and assist in the carrying out of research.
- 1.6. The 1995 Order permits the Governors to exercise any of the powers previously provided under the original 1791 Act, which was passed by the Irish Parliament for *“settling and preserving a Public Observatory and Museum in the City of Armagh for ever”*. The Act makes clear that this endowment is not only because of his *“generous inclinations”* but also for the *“encouragement of the Liberal Arts and Sciences”*.

### Mission Statement

- 1.7. The Mission of Armagh Observatory and Planetarium is:  
*“To advance the knowledge and understanding of astronomy and related sciences through the execution, promotion and dissemination of astronomical research nationally and internationally in order to enrich the intellectual, economic, social and cultural life of the community”*.
- 1.8. Thus, the primary function of the Corporation is to carry out international-quality research in astronomy and related sciences, to disseminate these results widely through a vibrant programme of Science in the Community, and to identify new ways to attract visitors to Armagh as part of its wider contribution to enriching the economic, social and cultural life of the local and national communities that it serves. This is in full alignment with the Department’s vision to promote equality and tackle poverty and social exclusion.

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- 1.9. Astronomy is arguably the 'Queen of Sciences'. It has a history extending back to humankind's first glimmerings of interest in the 'world around us', and its development is inextricably linked with the key discoveries, technological developments and ideas which in turn have moulded the development of civilization from Stone Age to Space Age. Astronomy stirs people's minds and has the capacity to stimulate a more scientific way of thinking. This leads to a more scientifically trained and literate population, and to greater numbers of young people attracted towards science at school and university, and into the important science, technology, engineering and mathematical (STEM) subjects that nowadays lie at the heart of a modern, competitive and high value-added technological economy.
- 1.10. The low take-up of STEM subjects at schools and universities throughout Europe, and especially in Ireland, remains of particular concern. Education has a key role to play in realising the Department's Vision to harness culture, arts and leisure to promote equality and tackle poverty and social exclusion. Education lifts people from poverty and has the potential to open their eyes to the wider Universe around them and to far more distant horizons than those determined by their birth or current economic and social circumstances.
- 1.11. Staff in organisations such as the unique Armagh Observatory and Planetarium play a key role in delivering this vision. They motivate children and young people towards science, and through their individual creativity discover new and important scientific results. Many scientific concepts, including those originating in astronomy and related sciences, produce long-lasting cultural impacts in fields far removed from the sphere in which they were first generated.

## **2. Policy Context**

- 2.1. The Northern Ireland Executive has agreed a one year budget for 2016/17 which protects health and social care as well as providing an additional £40 million for education and £5 million for skills. Work is well underway on the next Programme for Government and the indications to date are that it will focus on achieving positive outcomes in areas such as economic advancement, tackling disadvantage, equality and improving well-being.
- 2.2. Initiatives that have been taken into account in developing this Business Plan are:
- Increase skills in subject areas important to the NI economy such as Science, Technology, Engineering and Mathematics (STEM)<sup>1</sup>;
  - Develop and implement a Strategy to reduce economic inactivity through skills, training, incentives and job creation<sup>2</sup>.
- 2.3. Following the reorganisation of the Northern Ireland Executive departments, sponsorship responsibility for the Armagh Observatory and Planetarium will transfer from the Department of Culture, Arts and Leisure on 9<sup>th</sup> May 2016 to the Department for Communities (DfC).

### **Promoting Equality and Tackling Poverty and Social Exclusion (PETPSE)**

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<sup>1</sup><http://www.northernireland.gov.uk/ni-economic-strategy-revised-130312.pdf>, page 11

<sup>2</sup><http://www.northernireland.gov.uk/ni-economic-strategy-revised-130312.pdf>, page 14

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- 2.4. We live in a society where much inequality still exists and where everyone does not have an equal opportunity to develop their talents to the full. It is recognised that actions to promote equality, address poverty, tackle disadvantage and promote social inclusion are prerequisites for social progress. Armagh Observatory and Planetarium is committed to providing access to these audiences and will align resources and put structures in place around education, outreach, employability and communications to reach these audiences.

### **All Ireland Work**

- 2.5. The Armagh Observatory and Planetarium has good working relations with cross-border bodies. Its Management Committee has representation from universities in Dublin, Nottingham and Leeds. Its cross-border activity includes, for example, supporting the all-Ireland radio telescope project LOFAR; working with the Committees of the Royal Irish Academy; use of Observatory land for the siting of a magnetometer to be connected to the Birr/ Dublin Institute for Advanced Studies (DIAS)/ Trinity College Dublin (TCD) network and the first in Northern Ireland; use of the supercomputer FIONN through a collaboration with the DIAS; delivery of lectures at TCD; the supervision of Transition-Year school work-experience students and TCD final-year undergraduate Physics students' projects; visits by undergraduates from TCD; the postgraduate Lindsay Scholarship Programme; and participation in the all-Ireland Astronomy Trail, which covers observatories, visitor centres and astronomical research institutes across the whole island of Ireland.
- 2.6. In addition, the Observatory's meteorological records provide the longest daily climate series from a single site in the UK and Ireland, one of the longest such records in the world. The maintenance and continuation of this unique environmental sciences database provides researchers and policy makers with an important 'ground truth' as to the impact of global climate change on the island of Ireland.

### 3. Key Performance Indicators – 2016/17

| Area                         |    | Description  | Target                       |
|------------------------------|----|--|------------------------------|
| <b>Visitors</b>              | 1  | Total number of visitors to the Planetarium by 31 March 2017   | 40,000                       |
|                              | 2  | Percentage of visitors from schools on the Extended Schools Register or with high proportion of Free School Meals by 31 March 2017 (PETPSE)  | 25% of total school visitors |
|                              | 3  | Number of visitors to the Observatory's websites by 31 March 2017  | 18 million hits              |
|                              | 4  | Number of visitors to <a href="http://www.armaghplanet.com">www.armaghplanet.com</a> by 31 March 2017  | 1 million page views         |
|                              | 5  | Number of participants in STEM/STEAM programmes by 31 March 2017   | 1,800                        |
| <b>Outreach</b>              | 6  | Number of participants at outreach events by 31 March 2017   | 8,000                        |
|                              | 7  | Number of work placements offered to school children from deprived areas <sup>3</sup> by 31 March 2017 (PETPSE)  | 4                            |
|                              | 8  | Number of events targeted at areas of deprivation by 31 March 2017 (PETPSE)  | 10                           |
| <b>Research</b>              | 9  | Number of articles published in refereed scientific journal publications by 31 March 2017  | 35                           |
|                              | 10 | Number of citations in mass media publications by 31 March 2017  | 300                          |
| <b>Resources</b>             | 11 | Total external income of £455k (equivalent to 26% of total expenditure) by 31 March 2017   | £455k                        |
|                              | 12 | Payments processed within 10 days by 31 March 2017   | 90%                          |
| <b>Organisational Change</b> | 13 | By December 2016, to support the new Chief Executive to develop a 5 year strategic plan (including an Asset Management Plan) for a unified organisation with strengthened outreach, research and corporate governance functions endorsed by the Governors. |                              |
|                              | 14 | By December 2016, to support the new Chief Executive to develop detailed implementation plans for delivery of any further staffing and structural changes required to support the new strategic plan.  |                              |
|                              | 15 | By 31 March 2017, to support the new Chief Executive to deliver any further staffing and structural changes required to support the 5 year strategic plan.   |                              |
|                              | 16 | By 31 March 2017, to recalibrate the governance arrangements between AOP and the sponsor department to deliver a more effective arm's length relationship.   |                              |

<sup>3</sup> A deprived area is denoted by a school a) with 20% or greater entitlement to Free School Meals and/or b) registered on the Extended Schools Programme

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## 4. Strategy and Delivery

### Cross-Cutting Themes

- 4.1. The Extended Schools Programme aims to improve levels of educational achievement and the longer term life chances of disadvantaged children and young people by providing the necessary additional support which can enable those children to reach their full potential. The Armagh Observatory and Planetarium will, through our work with schools, focus resource on targeting the schools represented on the Extended Schools Programme or which have a high proportion of children entitled to Free School Meals.
- 4.2. More broadly, the Armagh Observatory and Planetarium will harness our resources in ways that meet the needs of people who face the most significant and urgent problems in our society. **The following activities will be delivered:**
- A curriculum based learning programme will be available to schools. We aim to have 25% of our total pupil visitors from schools on the Extended Schools register or those with a high proportion of entitlement to Free School Meals (PETPSE & KPI 2);
  - Ten outreach events will be delivered across Northern Ireland, targeted at areas with high levels of deprivation (PETPSE & KPI 8);
  - Ten work-experience placements will be available within the Observatory, aimed at nurturing the ambitions of future scientists, technologists, engineers and mathematicians. Four of these will be targeted at schools on the Extended Schools register or with a high proportion of children eligible for Free School Meals (PETPSE & KPI 7);
  - Free visits to the Planetarium will continue to be offered to all special schools in Northern Ireland (PETPSE); and
  - Therapeutic work placements will be available to two adults with complex needs aimed at increasing their knowledge, self-confidence and communications skills (PETPSE).

### Visitors

- 4.3. The Armagh Observatory and Planetarium will engage with the widest possible audience and will develop specific initiatives to increase awareness in target areas and communities of greatest need. Initiatives will include special events and use of promotional opportunities, promoting the outdoor exhibit 'aroundNorth' in the Observatory grounds, promoting the Observatory's research through an Artist-in-Residence scheme, and other outreach activities. Engagement with existing visitors will be important to achieve our visitor target, creating word of mouth referrals and reaching those who are visiting friends and relatives living in Northern Ireland.

### Key Tasks and Supporting Actions:

- Provide access to the Planetarium for 40,000 visitors (KPI 1). This will be achieved by running specially adapted programmes in the Digital Theatre, special events throughout the year, especially during holiday periods.

- Provide access to the Planetarium for 250 children with special needs. This will be achieved by inviting all special schools in Northern Ireland to have a free visit to the Planetarium. (PETPSE)
- Encourage 80 visits to the Planetarium from schools in the Extended Schools Programme or with a high proportion of Free School Meals. (PETPSE)
- Provide online access to the Observatory's history and heritage as well as to its scientific results in astronomy, meteorology and related sciences, and to facilitate 'virtual' visits to the Observatory, reaching a total of 18 million website hits (KPI 3).
- Provide online access to the Planetarium's resources and latest astronomy news by continuing to promote our blog and Astronotes pages, aiming to achieve 1 million page views (KPI 4).
- Encourage 1,800 participants through the provision of at least 12 events aimed at supporting the STEM/STEAM agenda. This is to nurture the ambitions of future scientists, technologists, engineers, artists and mathematicians. (KPI 5).
- Deliver a programme of research to track visitor numbers and attitudes to the Planetarium.
- In addition, we will consider the opportunities for AOP to develop its role as a visitor destination, keying into special interest visitors and the general visitor offering of Armagh city and the Armagh, Banbridge and Craigavon District Council, and highlighting the cultural importance of AOP as a unique scientific institution with an Observatory and Planetarium co-located on the same site.

### **Outreach – Science in the Community**

- 4.4. The Armagh Observatory and Planetarium plays a key role in inspiring young people to value education and pursue careers in Science and Technology. We will provide a fresh range of opportunities for those interested in astronomy and the world we live in. The initiatives will include reaching out to schools from deprived areas to offer four work-experience placements for children aged 16 years upwards, scheduling specific events in areas of high multiple deprivation and reaching out to 8,000 people who would not find it easy to come to Armagh. We also make a unique contribution to increasing skills and knowledge of two adults with complex needs.

### **Key Tasks and Supporting Actions:**

- Deliver organised programmes for 8,000 people. (KPI 6)
- Deliver four work-experience placements to school children from deprived areas to encourage them to pursue careers in STEM industries. (PETPSE & KPI 7)
- Deliver ten events targeted at areas of high multiple deprivation. (PETPSE & KPI 8)
- Deliver two work-experience placements for adults with complex needs to increase their skills and knowledge. (PETPSE)
- Deliver a STEAM programme in conjunction with other partners e.g. National Museums NI & Libraries NI.



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## Research

- 4.5. Staff at Armagh Observatory maintain a high level of research activity. Through their discoveries and the execution of world leading research, the Observatory's staff make a major contribution to promoting the City of Armagh and Northern Ireland, nationally and internationally.

### Key Tasks and Supporting Actions:

- Publish 35 articles in refereed scientific journals (KPI 9).
- Achieve 300 citations in mass-media publications on astronomy and meteorology related topics (KPI 10). These often contain significant educational content; they reflect the Observatory's success in contributing to lifelong learning and wider public understanding of science. The mass media can often reach millions of people simultaneously.
- Implement the recommendations arising from the independent review of research and outreach carried out in 2015/16.

## Resources

- 4.6. Armagh Observatory and Planetarium face significant budgetary pressures during this financial year. We will seek to maximise the value of our funding from central government through efficiency and effectiveness and we will continue to develop strategic partnerships that assist collaboration and joint initiatives as well as bids for grant funding and other income from external sources. Armagh Observatory and Planetarium resources will address our statutory commitments and public policy obligations.

### Key Tasks and Supporting Actions:

- Achieve total external income of £455k (equivalent to 26% of total opening budget expenditure) by 31 March 2017 (KPI 11).
- Achieve 90% compliance with the NI Executive's ten-day prompt payment target (KPI 12).
- Further develop best practice in governance and accountability:
  - Providing bi-annual Assurance Statements in line with guidelines
  - Delivering Annual Report and Accounts in line with statutory requirements
  - Providing End Year Governance and Financial Returns
  - Implementing procurement guidelines
  - Implementing audit recommendations against agreed target dates
  - Providing induction training to new Management Committee members
  - Promoting equality and best employment practice.

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## Organisational Change

- 4.7. Following the completion of the *Review of the Organisation and Management of Armagh Observatory and Planetarium*, the Board of Governors has commenced a programme of Organisational Change.
- 4.8. It is anticipated that the Armagh Observatory and Planetarium will be recognised as a single charity by the Charity Commission for Northern Ireland (CCNI) from 1 April 2016. Previously the Observatory and Planetarium were separate charitable entities. For reporting purposes the organisation will no longer have to prepare two sets of statutory accounts.
- 4.9. A Voluntary Exit Scheme for staff leaving in 2016/17 has received Departmental approval. It is expected that up to three staff posts will be released in year as both a restructuring and efficiency measure.

### Key Tasks and Supporting Actions:

- By December 2016, to support the new Chief Executive to develop a 5 year strategic plan (including an Asset Management Plan) for a unified organisation with strengthened outreach, research and corporate governance functions endorsed by the Governors (KPI 13).
- By December 2016, to support the new Chief Executive to develop detailed implementation plans for delivery of any further staffing and structural changes required to support the new strategic plan (KPI 14).
- By 31 March 2017, to support the new Chief Executive to deliver any further staffing and structural changes required to support the 5 year strategic plan (KPI 15).
- By 31 March 2017, to recalibrate the governance arrangements – via the MS/FM - between AOP and the sponsor Department to deliver a more effective arm's length relationship (KPI 16).
- Continued engagement with key stakeholders.

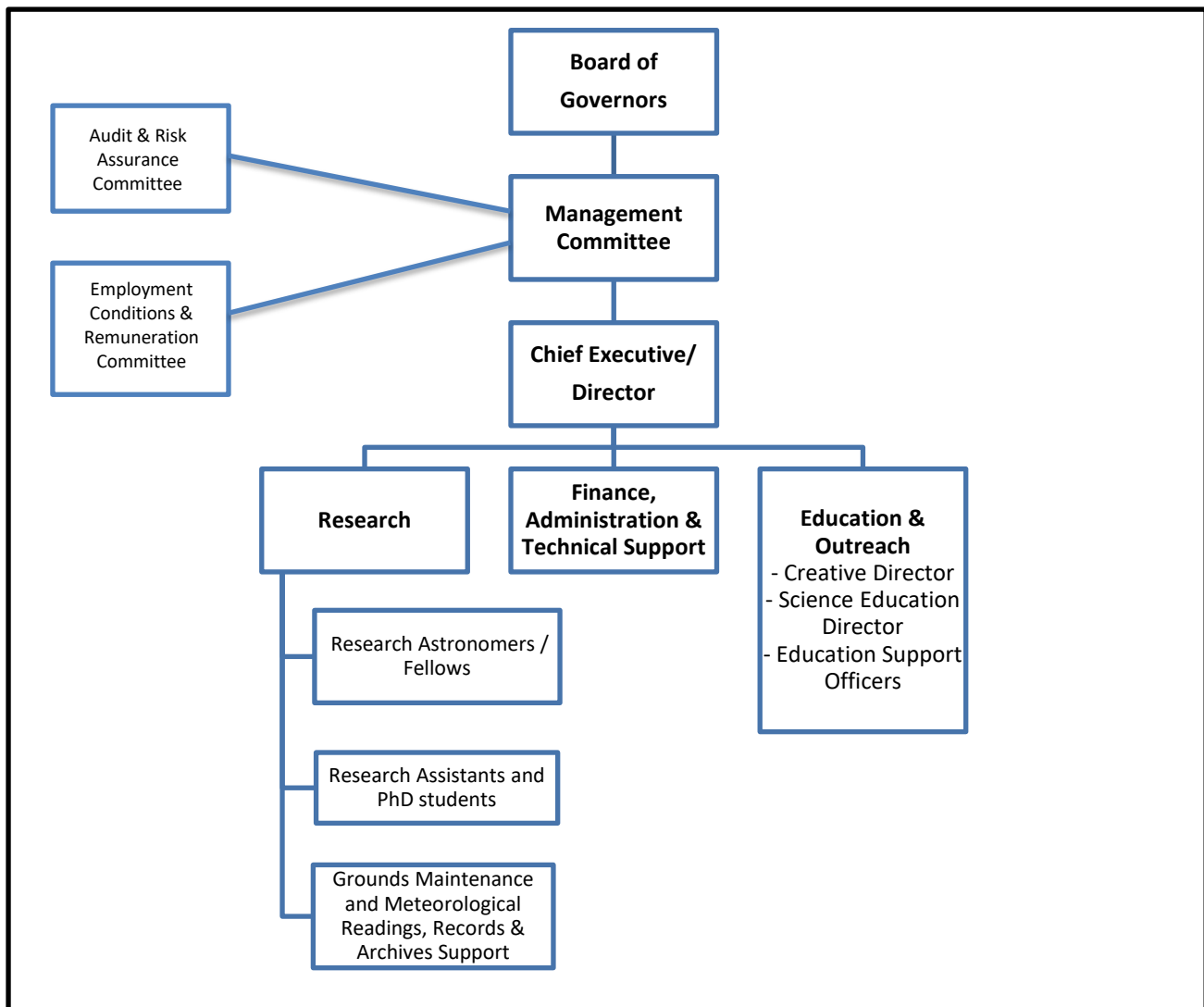
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## 5. Governance

- 5.1. The current governance arrangements include the Board of Governors and a Management Committee, with membership as described below. These arrangements will be replaced with a new governance structure.
- 5.2. Membership of the Board of Governors of the Armagh Observatory and Planetarium consists of:
- the Church of Ireland Archbishop of Armagh (Chair);
  - the Dean of the Church of Ireland Cathedral of Armagh;
  - the other members of the Chapter of the Church of Ireland Cathedral of Armagh;
  - one Departmental nominee;
  - one Queen's University Belfast (QUB) nominee; and
  - up to three additional members nominated by the Board of Governors.
- 5.3. The Board has established a Management Committee to provide specialist advice and expertise relating to Scientific Research and Education, and to fulfil certain duties of governance oversight and challenge. The Management Committee comprises:
- the Church of Ireland Archbishop of Armagh (Chair);
  - three nominees from the Board of Governors;
  - six Departmental nominees;
  - one nominee of the Queen's University Belfast;
  - one nominee from the Science and Technology Facilities Council (STFC);
  - one nominee from the Dublin Institute for Advanced Studies (DIAS); and
  - up to three additional members co-opted by the Board of Governors. This is by exception and subject to Departmental approval.
- 5.4. The Permanent Secretary has appointed an Interim Accounting Officer pending the arrival of a newly appointed Chief Executive. He is responsible for:
- Safeguarding the public funds for which he has charge;
  - Ensuring propriety and regularity in the handling of those public funds; and
  - Financial oversight of the respective day-to-day operations and management of the Observatory and Planetarium.

## 6. Organisational Structure

The interim organisational structure, by function is displayed below. There are approximately 40 staff and students.



## 7. Budget

- 7.1. The overwhelming majority of the organisation's budget is expended on meeting its statutory duties, with a proportionate level of governance, oversight and administration. Armagh Observatory and Planetarium is actively seeking to promote the Minister's obligations and target those most in need, wherever practicable and relevant to its core functions.
- 7.2. The indicative budget allocation for 2016/17 is £1.279m of Resource per annum. This represents a 5.7% reduction from the opening 2015/16 allocation. Additional funding has been provided for a Voluntary Exit Scheme of £110k. The organisation will make significant cuts in planned expenditure across all areas in order to project a balanced budget outturn for 2016/17. A carefully considered Savings Delivery Plan has been developed which reflects the implications of the proposed reductions on front line services, being partially offset by a small increase in income.

7.3. The following table sets out the organisation's opening 2016/17 'unitary' budget position.

|  |              |              |
|--|--------------|--------------|
| Sponsor Department Resource Grant-in-Aid 2016/17           |              | 1,279        |
| Admissions, café profits & rents                           |              | 158          |
| External grant Income from scientific organisations        |              | 297          |
| Sponsor Department Resource Voluntary Exit Scheme          |              | 110          |
| <b>Total Income / Grant-in-Aid</b>                         |              | <b>1,844</b> |
|  |              |              |
| Salaries   | 1,074        |              |
| Student Costs  | 86           |              |
| Heat, Light, Insurance & Rates                             | 111          |              |
| Buildings, Grounds & Property Maintenance                  | 81           |              |
| Technical consumables, maintenance & internet              | 40           |              |
| Library & Conservation                                     | 36           |              |
| Travel, Meetings & visitor costs                           | 24           |              |
| Audit & Professional Fees                                  | 23           |              |
| Governance, Recruitment & Training                         | 22           |              |
| Post, Stationery, Telephony & Printing                     | 21           |              |
| Other research costs                                       | 6            |              |
| Planetarium – Shows, exhibitions & events                  | 5            |              |
| Currency Fluctuations/Bank Charges                         | 3            |              |
| Voluntary Exit Costs                                       | 110          |              |
| <b>Sub-total (a)</b>                                       | <b>1,642</b> |              |
| <b>Expenditure funded by external grants</b>               |              |              |
| Salaries   | 110          |              |
| Student Costs  | 72           |              |
| Travel, Meetings & visitor costs funded by External Grants | 12           |              |
| Technical consumables                                      | 7            |              |
| Other research costs                                       | 1            |              |
| <b>Sub-total (b)</b>                                       | <b>202</b>   |              |
|  |              |              |
| <b>Total Expenditure</b>                                   |              | <b>1,844</b> |

Key planning assumptions:

1. Chief Executive/Director to be in post from 1 August 2016.
2. Staff releases via a Voluntary Exit Scheme are expected to take place no later than 30 June 2016.
3. 'Second Tier' staff changes resulting from the *Organisational Review* can only take place after the provision of additional funding from the Sponsor Department.
4. No new *Digistar 5* (digital theatre) shows are to be purchased for the Planetarium.
5. The Planetarium's opening hours will remain unchanged.
6. The majority of subscriptions to scientific/technical journals will cease on 31 December 2016.
7. The 'resource' costs associated for a necessary upgrade to the SAGE 200 accounts system and for additional training will be bid for in-year.
8. A £74k bid for to repair and paint the Planetarium's dome will be made in-year.