

Armagh Observatory and Planetarium

Business Plan 2017/18

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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 18th 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. Combined with the Observatory’s vibrant research, education and public outreach programme, this 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. From 1 April 2016 the Armagh Observatory and Planetarium is recognised as a single unified charity.
- 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.

- 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 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 Northern 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 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 agreed a one year budget for 2016/17 which protected health and social care as well as providing an additional £40 million for education and £5 million for skills. Consultation on a new Programme for Government closed on 23 December 2016 and the Equality Impact Assessment consultation closed on 27 January 2017. This contained 14 strategic outcomes and touched on every aspect of government including the attainment of good health and education, economic success and a confident and peaceful community. With the fall of the Executive and new elections, this process has now been delayed.
- 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)¹;

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

- Develop and implement a Strategy to reduce economic inactivity through skills, training, incentives and job creation².
- 2.3. 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.

Working with Others

- 2.4. 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; contributing to the next generation gamma ray telescope the Cherenkov Telescope Array through CTA-Ireland; 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; collaboration with Monaghan Council aimed at developing a Dark Sky Reserve on Slieve Beagh.
- 2.5. 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.
- 2.6. In addition, the Observatory undertakes extensive collaborative activities as a member of several international science projects. These, in particular, involve relations with other UK organisations. These projects include the GOTO telescope (on La Palma), the SALT telescope (in South Africa), the CTA (in La Palma and Chile), the DKIST telescope (in Hawaii, USA), the LSST (in Chile) and the Mopra telescope (in Australia). AOP staff regularly use the facilities of the European Southern Observatory (ESO) in their work.

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

3. Key Performance Indicators – 2017/18

The KPIs for AOP in 2017/18 have been updated from those for 2016/17 to reflect the new unified organisation, operating with a new structure and resources, as per the organisational change process that is underway.

Area	KPI	Description	Target	PfG Outcome
Visitors	1	Total number of visitors to the Armagh Observatory and Planetarium by 31 March 2018	40,000	1, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14
	2	Percentage of visitors from schools on the Extended Schools Register or with high proportion of Free School Meals by 31 March 2018	25% of total school visitors	3, 5, 6, 8, 9, 11, 13, 14
	3	Number of visitors to the AOP's websites by 31 March 2018	1 million page views	3, 4, 5, 10, 13, 14
	4	Number of participants in STEM/STEAM programmes on site at AOP by 31 March 2018	1,800	1, 3, 5, 6, 8, 9, 10, 11, 13, 14
Outreach	5a	Number outreach events held external to AOP by 31 March 2018	30	1, 3, 4, 5, 8, 10, 11
	5b	Number of outreach events targeted to areas of deprivation by 31 March 2018	10	
Research	6	Number of articles published in refereed scientific journal publications by 31 March 2018	35	5, 6, 10, 14
	7	Number of citations to refereed scientific journal publications, averaged over a rolling 3-year period, to 31 March 2018	300	5, 6, 14
Resources	8	Total external income of £450k (equivalent to 25% of total expenditure) by 31 March 2018	£450k	1, 5
	9	Payments processed within 10 days by 31 March 2018	90%	1, 12
Governance	10	To continue to develop and maintain robust governance arrangements. To include implementation of financial policies and procedures, the management statement and financial memorandum (MSFM) and the terms of reference for committees (ToR) by 31 March 2018		12
Organisational Change	11	To deliver the key actions detailed in the Business Plan relating to creating a single unified organisation by 31 March 2018		12

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 (KPI 2);
 - Ten outreach events will be delivered across Northern Ireland, targeted at areas with high levels of deprivation (KPI 5b);
 - Free visits to the Planetarium will continue to be offered to all special schools in Northern Ireland; and
 - Therapeutic work placements will be available to two adults with complex needs aimed at increasing their knowledge, self-confidence and communications skills.

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 AOP's grounds, and promoting the Observatory's research through other outreach and cultural 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.
- Encourage 80 visits to the Planetarium from schools in the Extended Schools Programme or with a high proportion of Free School Meals.
- Provide online access to the AOP's history and heritage as well as to its scientific results in astronomy, meteorology and related sciences, and to facilitate 'virtual' visits, as well as to latest astronomy news by continuing to promote our social media and Astronotes pages, reaching a total of 1 million visitors to the websites (KPI 3).
- Encourage 1,800 participants through the provision events aimed at supporting the STEM/STEAM agenda. This is to nurture the ambitions of future scientists, technologists, engineers, artists and mathematicians. (KPI 4).
- 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 at least 30 outreach events held external to AOP. (KPI 5a).
- Deliver four work-experience placements to school children from deprived areas to encourage them to pursue careers in STEM industries.
- Deliver ten events targeted at areas of high multiple deprivation. (KPI 5b)
- Deliver two work-experience placements for adults with complex needs to increase their skills and knowledge.
- Deliver a STEAM programme in conjunction with other partners e.g. National Museums NI & Libraries NI.

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 6).
- Achieve 300 citations to refereed scientific journal publications, when averaged over a 3-year rolling period (KPI 7).
- 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.

There are insufficient funds to provide for any capital works programmes, in particular preventative maintenance of the Grade One heritage listed Observatory building.

There are insufficient funds for instigating new programmes and activities.

Key Tasks and Supporting Actions:

- Achieve total external income of £450k (equivalent to 25% of total opening budget expenditure) by 31 March 2017 (KPI 8).
- Achieve 90% compliance with the NI Executive's ten-day prompt payment target (KPI 9).
- 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.

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. This includes, following the appointment of the Director and Chief Executive, a new Senior Management Team at second tier level and appropriate support structures at lower levels (which will be determined by the new SMT).

Key Tasks and Supporting Actions (KPI11):

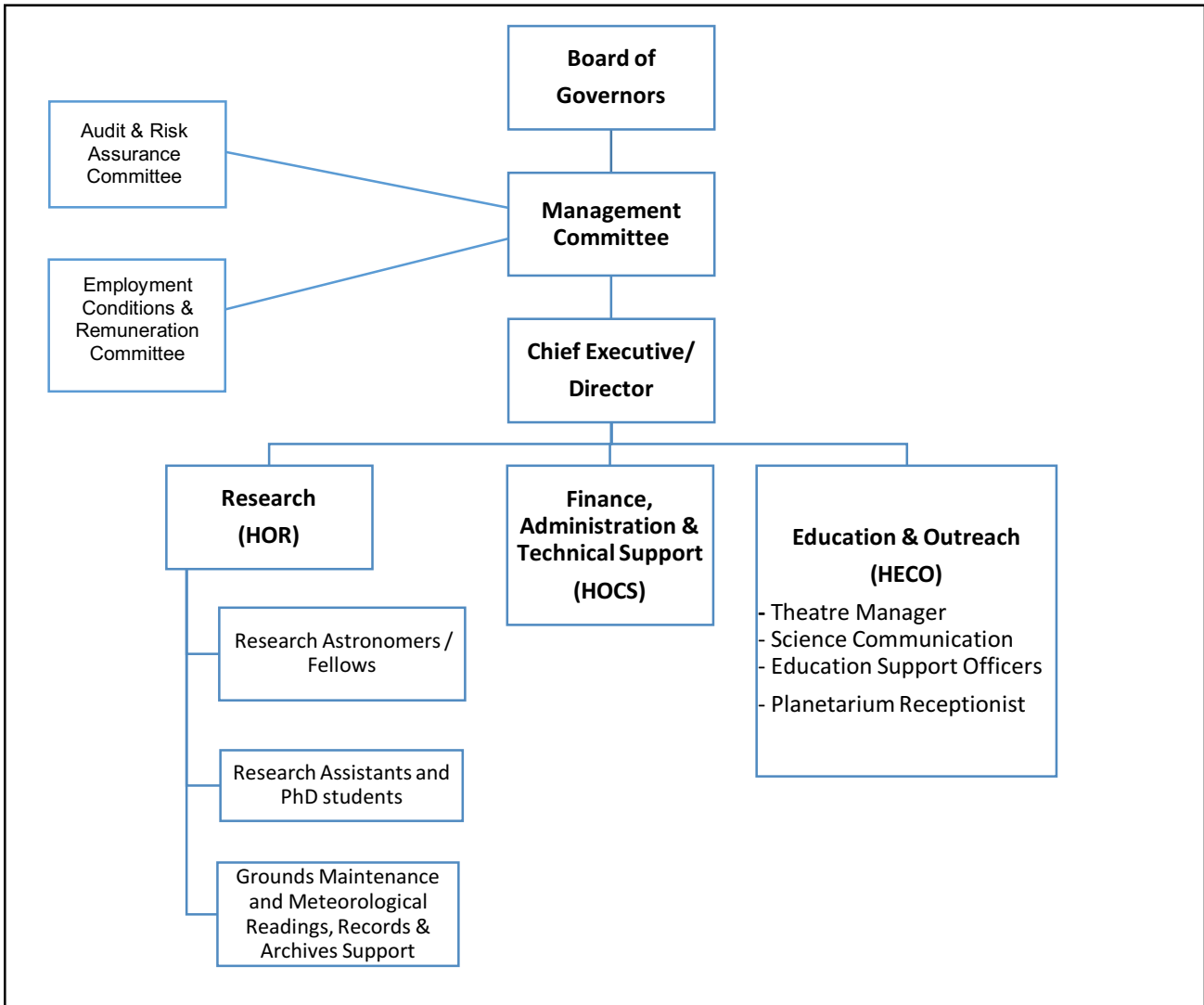
- By 31 December 2017, to support the new Chief Executive in appointing a Senior Management Team consisting of a Head of Corporate Services (HOCS), a Head of Education and Community Outreach (HECO) and a Head of Research (HOR).
- By 31 March 2018, to support the new Chief Executive to develop a strategic plan for a unified organisation with strengthened outreach, research and corporate governance functions endorsed by the Governors.
- By 31 March 2018, 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.
- By 31 March 2018, to recalibrate the governance arrangements between AOP and the sponsor department to deliver a more effective arm's length relationship.
- By 31 October 2017, completion of vision documents articulating guiding plans for Research, Education and Community Outreach, and History and Heritage by AOP.
- Continued engagement with key stakeholders, including the Armagh Banbridge Craigavon Council, and visitor attractions in the Armagh city and regional area.

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. The Governors are considering proposals to amend the roles of the Board and Committees within this legislation to more closely match the skills and abilities of the various memberships. This may include further delegation of regular management and governance functions to the Management Committee. Two main sub-committees of the Management Committee are the Audit and Risk Assurance Committee and the Employment Conditions and Remuneration Committee.
- 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. With the appointment in 2016/17 of a Chief Executive over the unified Armagh Observatory and Planetarium as the first stage of the outworkings of the *Review of the Organisation and Management of Armagh Observatory and Planetarium*, it is intended to implement a new organisational structure in 2017/18 to ensure efficient and effective delivery of the organisation's objectives. This will include a new Senior Management Team at second tier level and appropriate support structures at lower levels. Governance documents will be produced for Financial Policies and Procedures, the Management Statement and Financial Memorandum (MSFM) and for the Terms of Reference for AOP committees (ToR). (KPI10)

6. Organisational Structure

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



7. Financing our Services

- 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 engaged in research, education and public outreach activities in astronomy and related sciences with the aim of developing knowledge, appreciation and practice of these disciplines, nationally and internationally, in order to enrich the intellectual, economic, social and cultural life of the community. Armagh Observatory and Planetarium is actively seeking to promote the Department's objectives and target those most in need, wherever practicable and relevant to its core functions.
- 7.2. The majority of the organisation's income is received as Grant-in-Aid from its sponsor Department, the Department for Communities. Significant funds are also received from admissions, café profits and rents. In addition, external grant income is received from scientific and other organisations to be used for specific purposes.

The Table below shows the projected budget in 2017/18, based on the current grant in aid allocation and other reasonable assumptions. In addition is shown the projected funding required on a year-to-year basis to deliver the agreed services of a single organisation.

We want to continue to work with the Department to explore how AOP can best deliver on our ambition of a unified structure able to develop a world class Planetarium excelling in education and outreach working alongside a world class Research Institute.

	2016/17	2017/18
	Budget	Budget
	£k	£k
Sponsor Department Resource Grant-in-Aid	1,279	1,228
Admissions, café profits & rents	158	187
External grant Income from scientific organisations	297	265
Sponsor Department Resource Voluntary Exit Scheme	110	-
Total Income / Grant-in-Aid	1,844	1,680
Salaries	1,074	1291
Student Costs	86	60
Heat, Light, Insurance & Rates	111	90
Buildings, Grounds & Property Maintenance	81	100
Technical consumables, maintenance & internet	40	40
Library & Conservation	36	36
Travel, Meetings & visitor costs	24	30
Audit & Professional Fees	23	28
Governance, Recruitment & Training	22	20
Post, Stationery, Telephony & Printing	21	15
Other research costs	6	8
Planetarium – Shows, exhibitions & events	5	20
Currency Fluctuations/Bank Charges	3	3
Voluntary Exit Costs	110	
Sub-total (a)	1,642	1,741
Expenditure funded by external grants		
Salaries	110	97
Student Costs	72	62
Travel, Meetings & visitor costs funded by External Grants	12	17
Technical consumables	7	3
Other research costs	1	1
Sub-total (b)	202	180
Total Expenditure	1,844	1,921