

Armagh Observatory & Planetarium

Business Plan 2023-24

Version 2.1: 11 October 2023



1. Introduction

2022/23 has been a significant year for Armagh Observatory and Planetarium (AOP). Whilst continuing to deliver operational success focused on achieving the objectives set in our Strategic Plan and Annual Business Plan, we have also successfully reached another milestone in securing our future vision through completion and submission of an Outline Business Case (OBC) and preferred development option (subject to approval). Throughout the year we have engaged fully with stakeholders locally, regionally, across the Island of Ireland and nationally to encourage support and advocacy for our future plans. Our ambition and key strategic focus in 2023/24 will be to continue this momentum and further develop our plans to be ‘shovel ready’ for potential funding applications to a range of funding bodies.

2022/23 was an exceptional year in terms of visitors and income in the Planetarium. This was made possible by the summer Brickosaurs exhibition, increased capacity created by hiring a marquee and additional marketing support provided by Tourism NI. In particular, income well in excess of estimates and the fact that most of the cost of exhibition had already been paid as it had been deferred due to COVID, helped to cushion the impact of cost pressures resulting from increased running costs. Whilst AOP wishes to build on this success, targets for 2023/24 take into consideration that many of the ingredients that contributed to 2022/23 success are not available in 2023/24.

AOP Strategic Themes			
Enduring Relevance	National & International Standing	Offering More	Pursuing our Priorities

2. Key Achievements in 2022/23

- Progression of an Outline Business Case including estimated costs for all options and case for a preferred option.
- Establishment of new Armagh – Birr – Dunsink partnership including formal aspirations towards UNESCO world heritage nomination.
- Continued productive research across the field of astrophysics, with publications covering solar system, stellar, galactic and extra-galactic science, and now extending to education and history.
- Record visitor numbers to Planetarium due to success of a special events programme made possible by investment in additional capacity via a marquee for the summer programme.
- Continued emphasis on inclusivity including introduction of sign language to dome presentations, BSL and ISL and Irish language translation, signed Mission Santa events and relaxed sessions for events.
- Re-establishing an outreach programme with partnerships with the Royal Institution and the Association of Science and Discovery Centres (ASDC) Bold Futures Fund.
- Introduction of public presentations in the Data Visualisation Lab (DVL), deepening the visitor engagement.
- Co-hosting of an International Astronomical Union (IAU) Symposium in Cavan with Dublin Institute of Advanced Studies (DIAS), the first held on the island of Ireland since 2005, bringing in 200 international visitors.

- Delivered four summer internships, three in education and one in research.
- Delivered two projects made possible by successful DfE funding applications towards reducing AOP's carbon footprint and assisting the public understanding of climate change.
- Managed resource budget within allocation (which included additional resource funding) despite further inflationary pressures, through increased visitor income and close cost management.
- Successfully invested over £800,000 in a range of capital expenditure on our property and equipment, including an upgrade to the AOP grounds and Astropark to improve the visitor experience, with support from DfC and TourismNI.

3. External Context and Environment

As with last year, AOP is preparing this Business Plan in the context of an unclear and uncertain political and financial environment. The 2023/24 budget has been confirmed and, whilst still showing a deficit, AOP will continue to plan in a pro-active and positive way, looking for partnerships and funding to support delivery of its objectives, but with the caveat that in an uncertain public sector environment our plans may need to be changed/scaled back within the constraints resulting from the general economic climate and the lack of political stability at Stormont.

4. 2023-24 Objectives

4.1 **Enduring Relevance:** Our extraordinary heritage makes us a valued asset in terms of tourism and education and a much-cherished presence in our community. We will continue to deepen and enhance that unique combination, ensuring that AOP's continued role in promoting science retains local, national and international significance.

2023/24 Objective	How we will do it	What success will look like
Develop/expand our audiences across a range of tourism and education activities	<ul style="list-style-type: none"> • Review operating model and staffing to meet the demands of an expanded programme • Identify and make application for appropriate funding opportunities to improve offerings and increased marketing activity • Provide programme of special events and tours in addition to core offering • Launch and establish a membership scheme to encourage and reward regular visitors • Raise our profile and engagement with local audiences through targeted PR and specific local events • Engagement with Tourism NI Experience Marketing • Ensure equality of access and participation as a core planning objective of our planned investments and events • Expand accessibility of dome shows • Continue staff training in sign language including Makaton • Engage with Education authorities in North and South and Science Week Ireland 	<p>A vibrant programme of activities and events throughout the year and 'must visit' destination attracting local, regional and international visitors</p> <ul style="list-style-type: none"> • 55,000 public visitors • 150 bed nights from a collaboration with local accommodation providers • To achieve the bronze level certification to be a Makaton friendly business • Achieve £520,000 income from admissions and sales • Achieve an 80% satisfaction rating of 4 or above out of 5
Communicating the value of science including astronomy and climate change	<ul style="list-style-type: none"> • Build upon our schools programme to include ecology/climate change options 	A valued educational resource supporting delivery of curricula led educational content to schools

	<ul style="list-style-type: none"> • Expand the input of astronomers and PhD students in the delivery of events and programmes • Use of social media, blogs and PR to maximise public reach • Build upon secondary education programme (GCSE/Junior Cycle) • Engagement with STEM Ambassadors programme • Build upon our outreach programme • Continue partnership with the Royal Institution 	<ul style="list-style-type: none"> • 12,000 school visitors • 2 dedicated GCSE Days to attract a range of schools • 2 dedicated Junior Cycle Days to attract a range of schools • Increase engagement with special schools to 25% (10 schools) of all special schools in NI (baseline from 22/23 8%) • 4 events focused on the work of astronomers and PhD students • 2 events on Climate Change and AOP green agenda • 3 career in STEM events with secondary schools with AOP staff and PhD students
<p>Recognised as a significant astronomical heritage site</p>	<ul style="list-style-type: none"> • Continue to strengthen links with the observatories of Birr and Dunsink via a Memorandum of Understanding to further explore and strengthen joint research, tourism and other partnership opportunities and ultimately aiming towards UNESCO World Heritage listing (a decade-long quest) • Develop linkages with local, national and international bodies related to pursuing future UNESCO bid • Safeguard our built and natural heritage through a programme of ongoing inspection and maintenance • Safeguard our historic instruments and heritage assets through identifying and engaging expert advice and assistance and retaining specialist collection skills within the organisation • Make an application to be recognised as an Urban Dark Sky Place 	<p>High profile recognition of the contribution of Ireland to world astronomy and the historic and continuing collaboration between the significant contributors of Armagh, Birr and Dunsink and exploration of joint projects for future collaboration. 2023/24 measures are to:</p> <ul style="list-style-type: none"> • Deliver an event to raise awareness of the Armagh-Birr-Dunsink partnership • Agree a Memorandum of Understanding and action plan to establish and deliver a programme of activity under the auspices of Astronomical Observatories of Ireland • Preparation of UNESCO World Heritage tentative list application together with Birr and Dunsink for a transnational nomination

		<ul style="list-style-type: none">• Development of Urban Night Sky Places (UNSP) application with the International Dark Skies Association (dependent on availability of funding to complete)• Engagement with National Lottery Heritage Fund (NLHF) in delivery of activities
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4.2 **National and International Standing:** AOP enjoys a reputation as a distinguished national and international scientific research institute. We will continue to create opportunities and partnerships to enhance our standing as an education provider and a key contributor to the goal of giving children the best start in life. Working in conjunction with education authorities we will maintain and enhance our role as a key institution in local STE(A)M curricula, becoming a regional/national hub for public outreach and explaining Big Data science.

2023/24 Objective	How we will do it	What success will look like
Recognised as a key player in international astronomy	<ul style="list-style-type: none"> • Enhanced PhD programme (i.e. through North/South partnership and co-funding opportunities) • Active role in international projects (in particular astronomical observatories) • Continued collaborations and contributions to published papers • Recognition of AOP research esteem through invitations to deliver public and scientific lectures, to participate in international bodies and to serve on grant awarding panels • <i>Implement an Action Plan that will assist us to demonstrate best practice and achieve the Institute of Physics Project Juno Gender Equality Champion Award by September 2023</i> 	<p>A vibrant scientific research environment attracting funding from a range of bodies to grow and expand. 2023/24 targets are:</p> <ul style="list-style-type: none"> • 50 published papers • 12 scientific talks at international conferences • 12 public talks by scientists • 2 PhD student intake in October 2023 <p>Hold the biannual Robinson Lecture presented by distinguished international scientist</p>
Position ourselves as a unique venue for national and international scientific conferences and events	<ul style="list-style-type: none"> • Capitalise on the 3 astronomy conferences planned at AOP for September 2023 to promote AOP for consideration as a conference venue • Reach out to educators, employers and interested voluntary groups to encourage visits and use of our facilities in the pursuance of promoting STEM education and the understanding of science 	<p>Recognised as a suitable conference venue in the forward planning timetable for major astronomy conference and seminars. A resource used by other science organisations and STEM providers for delivery of events. 2023/24 targets are:</p> <ul style="list-style-type: none"> • 8 organisations using our facilities for events or seminars

	<ul style="list-style-type: none"> • Explore opportunities to work with other science providers to make use of our facilities to expand on provision of STEM education programmes 	<ul style="list-style-type: none"> • Delivery of 3 astronomy conferences hosted by AOP staff as well as the annual conference of British Association of Planetaria
<p>Grow and diversify our research programmes to maximise funding opportunities and attract the best talent</p>	<ul style="list-style-type: none"> • Identify and make application for funding opportunities including collaboration with universities to deliver shared PhD projects • Capitalise on data visualisation capital investment, embedding DV in PhD training and education with our Öpik fellow and through partnership with other planetaria • Continue to develop the Scientific Visitor Programme and expand programme for Research Visitors to contribute to the work of AOP through delivery of events and seminars • Recruit a technician to address the skills shortage in AOP to support and maintain technical equipment and scientific instrumentation 	<ul style="list-style-type: none"> • Facilitate 6 on-site scientific visits • Achieve £332,000 funding from scientific sources to support AOP research

4.3 **Offering More:** We are committed to an ambitious plan for state of the art data visualisation facilities. This will allow us to explain and explore ideas in stunning new and engaging ways. Technology is not the goal, it is the means to deliver, share and inspire.

2023/24 Objective	How we will do it	What success will look like
Engage with other scientific organisations to share ideas and use of AOP facilities	<ul style="list-style-type: none"> • Set up and demonstrate the capabilities of our DVL facilitates to potential partners 	<p>AOP has established recognition as an emerging leader in data visualisation and a regional resource available for use by other science organisations and educators.</p>
Continue to invest in emerging technology to offer excellent research facilities and educational experiences	<ul style="list-style-type: none"> • Explore best practice and potential partnerships and funding that would assist delivery of objectives 	<p>Targets for 2023/24 –</p> <ul style="list-style-type: none"> • Develop one non-astronomy partnership in the use of DVL facilities • Continue to use DVL for public displays given by researchers
Develop the applications of the immersive experience for story-telling and education in science	<ul style="list-style-type: none"> • Develop applications for the Puffersphere telling stories of astronomy, the Observatory, current research, climate change • Utilise Data Visualisation tools to include use of VR in educational activities 	<ul style="list-style-type: none"> • Utilise new Puffersphere applications developed in-house (Interstellar, Astronomical Observatories of the World) • Develop 1 additional Puffersphere application around AOP research

4.4 **Pursuing our Priorities:** To realise our plans and achieve our goals is built on three key priorities (1) state of the art Research and Planetarium facilities (2) the need to grow our capacity (3) the need to add skills across the organisation.

2023/24 Objective	How we will do it	What success will look like
Continue engagement with DfC and other stakeholders to develop AOP's preferred option for development in readiness for funding opportunities	<ul style="list-style-type: none"> • A bid has been submitted for funding to continue Project Director support via SIB • Work in partnership with Armagh City, Banbridge and Craigavon Borough Council to agree the parameters for joint funding applications as part of the Place Plan agenda • Strengthen engagement with and pursue funding applications across a range of stakeholders including NLHF 	<p>Widespread stakeholder support for AOP redevelopment as a cross cutting flagship development opportunity</p> <p>2023/24 targets are -</p> <ul style="list-style-type: none"> • Approval of OBC by DfC/DoF • Appointment of a design team to develop proposals to planning stage • Submit at least one major funding application in pursuance of implementing the next stage of development
Pursue partnerships and collaborations to identify and bring in skills and resources to assist delivery of our objectives	<ul style="list-style-type: none"> • Participate in placement and other employment support opportunities with education bodies and government departments • Pursue partnerships and funding applications to bring in new skills and resources necessary to grow AOP's capacity to deliver 	AOP will have expanded its capacity to deliver by securing the increased professional, technical and support skills necessary to deliver its objectives.
Develop our environmental strategy and targets for reducing our carbon footprint and encourage our visitors to consider their own impacts	<ul style="list-style-type: none"> • Agree and publish an environmental plan to meet our commitment to reduce our carbon emissions by 50% by 2030 • Identify and submit funding bids to assist us to reduce carbon impact • Be visible and educate visitors on the environmental practices within our public facing facilities including delivery of a community/schools competition on Climate Change • Introduce programming and events specifically targeted and raising awareness of the impact of climate change 	<p>Be recognised as an organisation that lives its environmental values through using investment in reducing its own carbon footprint as educational tools for our visitors</p> <p>Introduce a new schools and public offering utilising the wind tree and sun-flower</p>

4 Making it Happen

4.1 Budgets (Updated July 2023)

AOP received a confirmed budget allocation of £1,961,000 on 22 June 2023. This reflects a 5% reduction (£103,000) on the previous year's allocation. AOP has assessed its ability to deliver within this budget allocation and is anticipating budget compliance.

In preparing this budget, we have considered the following:

- We have incorporated savings of £20k arising from the careful management of staff numbers and working hours.
- Energy costs have fallen since their peak in 2022, but we still have very inefficient buildings and annual costs are expected to increase.
- Ageing buildings and lack of proper infrastructure maintenance over many years is becoming more and more apparent in increased costs of essential repairs.
- Research staff have expressed their desire to return to pre-pandemic levels of international travel in order to participate in scientific conferences, engage with the international science community and develop networking opportunities.
- We are experiencing inflationary cost increases across the board, but these have been partially mitigated by ambitious visitor and income targets, although visitor numbers could be impacted by cost of living increases.
- We have reviewed opening hours for the Planetarium to see if further savings could be made by opening on fewer days therefore reducing staffing numbers but the knock-on impact on income has ruled this out as a viable option.

In addition to the core funding grant provided by DfC and the income derived from commercial activities, AOP research is reliant on grant funding awarded from STFC. Two consolidated grants worth £227k in 2023/24 are currently secure up until March 2024, and together with student and other external grants, make up a total of £330k of projected income. This is the final year of a three-year consolidated grant award and applications have been made for the next 3-year programme with decisions expected at the end of December 2023. Since this Business Plan was initially prepared we have become aware of significant changes to the landscape for the publication of research papers resulting in a potential additional budget pressure for AOP of circa £50k per annum from January 2024. Discussions are ongoing to procure a satisfactory solution that takes into consideration AOP's small size compared to universities to mitigate the impact of these additional costs.

AOP makes application for, and has been successful, in grant awards from other funders including the Association of Science and Discovery Centres (ASDC), International Astronomical Union, National Lottery Heritage Fund, Museums Association and Tourism NI. The knock-on

impact of reduced budgets and funding opportunities from other sources, particularly marketing resource from Tourism NI, may detrimentally impact visitor numbers due to reduced marketing.

AOP has also submitted a bid for £200k additional resource funding to continue the next phase of the redevelopment project, following submission of an Outline Business Case for redevelopment. An additional allocation to allow AOP to continue to develop the preferred option to be planning ready and to assist with preparation of funding applications is crucial to keeping the project viable and attractive to potential funders.

An outline resource budget requirement for 2023/24 is provided as an appendix.

At the time of writing, AOP has a confirmed capital allocation of £269k to complete a number of capital projects.

4.2 People and resources

AOP has recognised skills deficiencies in a number of areas and keeps under review opportunities to develop partnerships and bid for funding to fill these gaps. AOP has reviewed its operating models focused on key risks and ability to deliver an ambitious programme of activities. However, there are still other areas such as technical skills to maintain technical equipment and historic instruments and research support in maintaining historic archives and collections and key software/data bases relating to weather etc that require additional investment. The need for technical skills, in particular, to support Planetarium's complex infrastructure, and Observatory's suite of scientific instrumentation has become a critical need and it is proposed to create a new post within the structure to provide these skills as they are not within the skill set of any current employees and upskilling is not an option due to the already stretched workloads of existing staff. However, it has not been possible to progress recruitment of this post within the confirmed budget allocation.

As a small knowledge-based organisation the ability of AOP to nurture and maintain the drive and commitment necessary to maintain a reputation as a world class research organisation and scientific education provider is very important. Resources such as ICT, equipment, fees and subscriptions to enable networking and partnerships to thrive and maintaining a vibrant PhD student programme are a key component of attracting and retaining the talent.

AOP undertakes an Annual Staff survey in November/December each year. The 2022 survey continues to evidence underlying stresses due to workload pressures as a result of increasing demands on a small workforce. AOP has reviewed the delivery model and staffing needs required to deliver the range of services to meet the visitor and income targets set and will protect and sustain front line staffing to be able

to meet these needs. In addition, AOP will prioritise recommencing delivery of two full in-person staff engagement events to strengthen teamworking and engage staff in future planning activity.

AOP has developed a separate HR Strategy and Annual Action Plan to assist delivery of its Corporate Strategy and will report quarterly to the Staffing Policy and Remuneration Committee on progress against the Action Plan.

AOP participates in two gender diversity programmes, the first, Project Juno, is an award scheme that recognises and rewards university physics departments, schools of physics, and related institutes and organisations that can demonstrate they have taken action to address gender equality at all levels and to foster a more inclusive working environment and whilst reflecting the breadth of diversity across AOP is mainly focused on diversity within the research environment. AOP received Project Juno Practitioner Status in 2019 and is working towards submitting an application for Champion status in April 2023. The second, Diversity Mark, is a wider diversity and inclusion accreditation framework for the whole organisation. During 2022/23 AOP achieved a Diversity Mark Bronze award which includes 3 key gender diversity targets to be implemented over the next 2 years. It is anticipated that the next step in this process will be applying for the Silver award in 2025.

4.3 Governance

AOP will continue to strive towards achieving the highest levels of assurance from external and internal audit and to manage risk in an open and transparent way in consultation with its ARAC committee and DfC sponsor branch. AOP has entered into a contract for Internal Audit Services for the next 3-5 Years.

In 2023 one DfC appointee to the AOP Management Committee will retire at the end of his second term. A further two members have elected to continue for a further year to allow recruitment of new members through Public Appointment Processes which will commence in the Autumn to fill all three vacancies. In addition to this, two members of the Board of Governors will complete their first 5 year term in 2024 and continuation of a second term will be considered by the Board at its Annual Visitation in May.

AOP's main governance meetings have largely returned to in-person, however it continues to offer remote meeting arrangements for its Board of Governors and Management Committee members who cannot attend in person and anticipates hybrid arrangements will continue to be the norm to facilitate those members who would have to travel long distances to attend a half day meeting. AOP recognises the value of in person engagement and the need to allow time for a greater breadth and depth of engagement to allow members to contribute more meaningfully to AOP strategic development and have factored in a two day in person meeting in June each year. In 2023/24 AOP will implement recommendations arising from Board of Governors, Management Committee and sub-committee effectiveness reviews to improve governance and accountability.

AOP has also engaged with DfC to develop a Partnership Agreement to replace the existing MSFM, outlining our responsibilities and accountabilities to our DfC Sponsor Branch. It is expected this Partnership Agreement will be approved and implemented by DfC during 2023.

Budget Projections 2023/24

	2023/24	2022/23																											
INCOME																													
		final																											
Sponsor Department Resource Grant-in-Aid	£1,961,000	£2,064,000																											
Admissions and trading income	£561,088	£573,869																											
Other income (non-research grants, rents, etc)	£48,202	£68,896																											
Total Income / Grant-in-Aid	£2,570,290	£2,706,765																											
DIRECT COSTS																													
Planetarium direct expenses and trading costs	£255,629	£301,270																											
Salaries (Academic & Education)	£1,033,616	£982,567																											
Student costs	£87,330	£95,324																											
Library & conservation	£42,003	£31,532																											
Travel, meetings, conference & visitor costs	£63,406	£25,099																											
Technical consumables, minor technical equipment	£19,284	£18,790																											
Other research costs	£16,000	£15,000																											
	£1,517,269	£1,469,581																											
GOVERNANCE COSTS																													
Management committee costs	£5,845	£4,813																											
Audit	£33,050	£28,152																											
Professional & legal fees	£91,178	£245,454																											
Recruitment & training	£12,450	£8,539																											
	£142,523	£286,957																											
ADMINISTRATION & SUPPORT COSTS																													
Salaries (management, finance & admin)	£637,154	£632,854																											
Heat, light, insurance & rates	£161,909	£156,808																											
Buildings, grounds & property maintenance	£217,779	£187,597																											
Postage, stationery, telephony & printing	£77,293	£71,483																											
Other expenses	£5,260	£6,095																											
	£1,099,396	£1,054,837																											
LESS Overheads subsidised by external grants	-£188,898	-£104,610																											
TOTAL EXPENDITURE	£2,570,289	£2,706,765																											
SURPLUS / (DEFICIT)	£0	£0																											
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KPI	Description – target date 31 March 2024 unless otherwise stated
1	Attract 67,000 visitors <ul style="list-style-type: none"> • 55,000 public visitors • 12,000 school visitors
2	Achieve 150 number bed nights from a collaboration with local accommodation providers
3	Achieve bronze level certification to be a Makaton friendly business
4	Achieve £568,000 income from admissions and trading
5	Achieve an 80% satisfaction rating
6	Provide in-reach or outreach visits to at least 10 special schools (25%)
7	Deliver 4 educational days: 2 for GCSE and 2 for Junior Cycle
8	Deliver 4 events focused on the work of astronomers and PhD students
9	Deliver 2 events on Climate Change and AOP green agenda
10	Deliver one event to raise awareness of the Armagh-Birr-Dunsink partnership
11	Achieve recognition as an Urban Dark Sky Place
12	Publish 50 articles in referenced scientific journals
13	Scientific Outreach: <ul style="list-style-type: none"> • 12 scientific talks at international conferences • 12 public talks by scientists
14	Admit 2 new PhD students in October 2023
15	Attract 8 number of external bookings for events or seminars
16	Facilitate 6 onsite scientific visits
17	Delivery of 3 astronomy conferences hosted by AOP
18	Develop one non-astronomy partnership in the use of DVL facilities
19	Develop one new Puffersphere application around AOP research
20	Submit one major funding application in pursuance of AOP future development

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Achieve £323,000 funding from scientific sources to support AOP research