BUSINESS PLAN

July 2004 – June 2006

PERTH OBSERVATORY

INTRODUCTION

Astronomy is the study of the Universe and its contents, except the Earth, and is one of the oldest and most fundamental of sciences. At the same time it is one of the most modern and dynamic sciences. This century's discoveries, and their associated hypotheses such as the Big Bang and Relativity theories, have had a profound impact on the culture of developed societies. This is not surprising, as astronomy is the most respected and accessible of the physical sciences. Astronomy is also technology-intensive and has been central to the development of computers, light detectors and radio communications; technologies that are now an integral part of the infrastructure of developed societies. There is also an ongoing community demand and a need for the provision of information concerning astronomy-related scientific, technological and sometimes philosophical issues in a professional, timely and authoritative manner. Western Australia is well served in this task by the existence and activities of the Perth Observatory.

Furthermore, Australia, along with other countries, is undergoing transition to a knowledge-based economy driven by scientific, engineering and technological advances. Science-based knowledge underpins Western Australia's future as a thriving, cultured and responsible community and this has been acknowledged in the State Government's *'Innovate WA' Policy*. Innovation, based on ideas, novel concepts, modern techniques and newly discovered facts, is a key factor in improving the State's economy and quality of life of its citizens. To be successful, public sector research must be both excellent and relevant. Perth Observatory's astronomical activities combine these characteristics for the benefit of the state of Western Australia.

PURPOSE OF THIS PLAN

This Business Plan sets out the role of the Perth Observatory as a service provider to its purchaser, the State Government, acting on behalf of the public of Western Australia. (Perth Observatory is also a service purchaser being a separate program in the state Treasury). It enunciates how the Observatory will deliver services by describing the aim of its core functions and the objectives, resources, milestones, outputs, outcomes and performance measures for these core functions, whilst located within the Science Division of the Department of Conservation and Land Management (CALM). The plan also presents marketing strategy and outlines the organisational structure needed to deliver these services over the duration of the plan – July 2004 to June 2006.

The plan is aligned with the CALM Corporate Plan 2002 to 2005 and the Observatory's Strategic Plan. Further detail about individual science projects is contained in the CALM Science WA Science Project Plans (WASPP) database available on the CALM Science web site.

This plan also serves as a communication and risk management device and, with Individual Development and Performance Enhancement (IDAPES), is a mechanism for aligning individual activities and resource allocation with Observatory, Divisional and Departmental goals.

PERTH OBSERVATORY

Perth Observatory will deliver services to the above Purchaser through the mechanism of Service Provider Agreements (as appropriate) and the implementation of this Business Plan.

VISION

To gain world recognition as a leader in astronomical research, education and information provision.

MISSION

To meet the demand for general and specialised up-to-date astronomical information and services from the public, business and educational community while furthering scientific research in astronomy in conjunction with other astronomy institutions and universities.

OBJECTIVES

To achieve its Mission, Perth Observatory has the following broad objectives:

- To attain a worldwide reputation for excellence in astronomy by publishing knowledge obtained through scientific research in the premier national and international scientific journals and through electronic means.
- Provide up-to-date educational and outreach services that exceed the expectations and demands of customers.
- Provide specialised astronomical information that exceeds the expectations and demands of our customers.
- Demonstrate science in action, and the role of astronomy in everyday life.
- Develop the tourism potential of astronomy.
- To contribute, as a part of CALM, to meeting the need for astronomical services by the public of Western Australia.
- To ensure that Perth Observatory is responsive to the needs of policy makers and output purchasers by bringing its expertise to bear as required and in a timely manner.

STRATEGIES

To meet its Mission and Objectives, and in addition to the relevant CALM Science Divisional strategies, Perth Observatory has adopted the following broad strategies:

- Work in partnership with purchasers of the Observatory's services.
- Identify relevant purchasers and secure the necessary resources to support the core functions and projects of the Observatory.
- Assemble outcome-based teams to conduct scientifically/educationally worthwhile activities and, where appropriate, to develop new technologies within a specified time and budget, and patent new technologies or innovations that have commercial potential.
- Conduct astronomical research, particularly that which exploits Perth Observatory’s isolated position on the globe.
- Communicate research discoveries, upcoming astronomical events etc through all appropriate channels, at a wide variety of fora, and to all appropriate audiences.
- Keep abreast of worldwide astronomical and technological advances via the literature and attendance at scientific meetings and seek opportunities to utilise or adapt these to suit Observatory, Divisional and Departmental needs.

- Develop and project Perth Observatory's reputation as a credible and dependable source of sound and up-to-date astronomical information.
- Develop and market up-to-date educational materials, services, "public outreach" programmes and other interactive/experiential activities.
- Maintain science resources such as astronomical equipment, computing, museum, workshop and library facilities.
- Collaborate with local, national, and international astronomy institutes, universities, Government agencies, industries, other interest groups and the public to conduct or co-ordinate research, educational and/or information activities when such interaction will benefit the Purchaser and relevant Departmental objectives.
- Maximise output by automating equipment monitoring, data acquisition and presentation; providing resources for students; collaborating with other relevant parties; actively seeking external funds and employing staff where appropriate.
- Communicate, promote and market the Observatory's contribution to attaining the Departmental and Divisional Mission.
- Continue a commitment to individual performance management through CALM's IDAPES.
- Enhance project co-ordination and staff management skills.

BUSINESS PROFILE

The Perth Observatory is a part of the CALM Science Division, a provider of services, and one of seven Divisions in the Department of Conservation and Land Management. Perth Observatory is a Treasury program in its own right and is both a purchaser and provider of services.

Observatory operations are conducted from its complex at Bickley, 25km east of Perth. The complex includes: staff offices, workshop, library, museum and seven freestanding telescope enclosures. Three of these buildings house telescopes mainly used for research, and another three house telescopes used for educational purposes. Several other portable telescopes are also available.

The Government Astronomer, manager of the Astronomical Services Output, is responsible for ensuring that services provided by the Observatory are delivered effectively, efficiently and at a high standard to end users and for ensuring that relevant activities are integrated and coordinated within the Observatory and the Science Division. The Government Astronomer is responsible to the Director of the Division and is a member of the Science Management Team (SMT), which develops strategic plans, business plans and service provider agreements and determines policy and resource allocation within the Division.

Outcome-based teams (Programs) that align with the Observatory's key result areas are administered by a Program Team Leader. Program Team Leaders are responsible for the integration of priorities within a program, the effectiveness and quality of the activity done and fostering interaction within the program and with other relevant staff.

Perth Observatory has three programs/core functions:

1. astronomy outreach and education,
2. astronomy information services, and
3. conduct of astronomical research.

The education and information core functions are sufficiently distinct to be identified as such here and are formally separated in the Observatory Operational Plan. However, they are not considered separately below because there is also significant alignment of, and the majority of Observatory staff participate in, both functions.

A total of eight staff designated as astronomers, astronomical (technical) officers or technical officers contribute the equivalent of 4.6 FTEs and 2.9 FTEs directly to its educational and information services, and astronomical research services, respectively. Another 3.4 FTEs contribute indirectly to these programs in administration and maintenance - roles that underpin these efforts.

SWOT ANALYSIS

Strengths

The Perth Observatory has a number of advantages over other potential providers of astronomical services. These include:

- Dedicated, motivated team of trained, adaptable, skilled and experienced people.
- Clear focus on its core business - astronomy.
- Involvement in a science with large public interest and general appeal.
- High standard of professionalism, supported by explicit guidelines.
- A reputation as a credible and dependable source of sound knowledge about astronomy. Observatory staff are readily available to provide quality information on a range of astronomy issues, to a range of customers.
- High public profile (with minimal expenditure on advertising) arising from wide public interest in astronomy and Observatory credibility.
- High community respect arising from its long tradition (over 100 years of operation) of quality service to the community.
- A history (over 100 years of operation) of conducting high quality astronomical research and educational experiences.
- Isolated location on globe, reasonable weather conditions, reasonable proximity to a major city but sufficiently far away from city light pollution.
- A demonstrated capacity and willingness to work effectively with partners.
- Well-developed strategic planning, operations planning, individual performance planning and reporting of outcomes.
- Support facilities such as telescopes, workshop, museum and library. A capacity to secure the necessary resources and support, including income retention, external grants and community participation.
- A commitment to keep abreast of worldwide scientific and technological advances via the literature and attendance at scientific meetings and seeking opportunities to utilise or adapt these to suit end user needs.
- Effective communication strategies.
- Experienced researchers are actually involved in delivery of educational/informational services,
- Criteria progression career pathway for research scientists and technical officers.
- Cost-efficient means of carrying out research such as providing resources for students, collaborating with other agencies, and actively seeking external funds.
- A capacity to carry out a balanced program of short-term and long-term research.
- Collaboration with other Government agencies, universities, industries, other interest groups and the public to conduct or co-ordinate research/educational activities when such interaction will benefit our clients.
- Access to appropriate Departmental resources that support Observatory activities.
- Effective volunteer programmes.

Weaknesses

- Most of the Observatory budget is allocated as salary to full time, permanent officers, or as overheads; this leads to inflexibility.
- Poor Internet connectivity (impeded by physical difficulties in connecting to the outside world).
- Lack of a 'Observatory foundation' reduces its capacity to secure donations etc compared with other kindred institutions, especially universities.
- Aging and modest infrastructure.
- Exclusion from directly securing federal grants such as ARC grants.
- Non-astronomical visitor facilities are aging and below world's best practice.
- Location is perceived by significant numbers of the public to be far from the city of Perth.
- Limited capability to conduct social research and marketing.
- Limited capability to provide educational services in poor weather.
- Potential loss of corporate knowledge owing to low staff numbers, and an unbalanced age structure.

Opportunities

- Continuing and increasing demand for services - full market potential has probably not been reached. Potential to expand services.
- State Government through its 'Innovate WA' Policy is supportive of science, especially that done in partnerships.
- Potential to attract sponsors.
- Potential to provide relevant Internet services, eg Internet telescope.
- Possible siting of world's largest radio telescope in WA around 2010 will provide leading-edge astronomical opportunities and increase public interest.
- Potential to expand volunteer programme.
- Increased funding for PhD Scholarships will improve linkages with universities and research output.

Threats

- Perception of some in the public service that science, especially astronomy, is irrelevant and not fundamental to the Government's mission.
- Relativism – the view that there are no objective standards by which knowledge can be evaluated. Opinion, prejudice and personal belief are of equal status with science-based knowledge.
- Diminishing budget/resource climate.
- Anti-science bias shown by the Federal Government, an indirect source of external funds.
- Competition from increasing number of new local astronomy "businesses", some of which have support structures that enable them to more easily secure donations and sponsorship.
- Growing light pollution from Perth will eventually restrict research and general star viewing observations.
- Diminishing local radio and television media opportunities as these organisations base their output from the east.
- Issues of legal responsibility have led to an increasing unwillingness of teachers to take school students on excursions.

One of the purposes of this plan is to provide direction to the Perth Observatory in order to optimise the strengths and opportunities while managing the weaknesses and threats.

STAFF RESOURCES

Details of staff resources at Perth Observatory are given in the following table.

	Research Scientists	**Technical Officers**	**Administration Officers**	**Total**
Full time permanent FTEs	4	4	2	10
Contract FTE – external/recoup funding Ground staff and cleaner*	0	0.9	0	0.9

*In the process of conversion to permanent status.

FINANCIAL INFORMATION

The approximate value of Perth Observatory services provided to internal and external purchasers is given in the following table.

	Salaries $000/annum	**Operating $000/annum**	**Total $000/annum**	**External Funds/Recoup $000/annum**
Perth Observatory	720	20	740	110

PROFILE OF PURCHASERS OF PERTH OBSERVATORY SERVICES

The Government of Western Australia purchases services from Perth Observatory on behalf of the Western Australian community. This constitutes Output 5 within the CALM Treasury statement. A summary of the Purchaser Profile is presented here.

Output Description

Providing public information and awareness directly beneficial to the Western Australian community, and contributing to scientific research in astronomy by cooperating with national and international institutions in the acquisition, analysis, interpretation and dissemination of information.

Outcome

Astronomical information, educational and research services for the benefit of the Community.

Science and information services required by Output

- Communication of research discoveries and publicity of forthcoming astronomical events.
- Development and marketing of relevant and up-to-date educational resources and services such as tours of Observatory facilities and interactive programs.
- Development and provision of up-to-date information resources and services.
- Exploitation of Perth Observatory's isolated position on the globe and collaboration with appropriate partners.
- Determination of changes in celestial objects by comparing with existing published records of previous observations, or discovery of new objects and events.
- Communication of research results and maintenance of skills and knowledge.
- Maintenance and development of equipment and other resources.

Trends

- Strong demand for astronomy education and outreach services from diverse sections of the community, such as the general public, educational institutions, community groups, government departments, private industry and the legal profession.
- Strong and ongoing public interest in astronomical research results.
- Internet is becoming one of the major tools for astronomy research, education and information services.
- Astronomy continues to be a very active and dynamic science (US National Science Foundation Report*: Astronomy and Astrophysics in the New Millennium*, 2001).
- Increasing call for Australian governments to support science and technology education and awareness to underpin a technology-based economy (eg *The Chance to Change*, Final Report of the Science Capability Review, Chief Scientist, 2000).
- Increased awareness that astronomy can play a leading role in physical science and technology awareness (US National Science Foundation Report*: Astronomy and Astrophysics in the New Millennium*, 2001).
- Astronomy research funding bodies (worldwide) demand public outreach services to complement and publicise research activities (US National Science Foundation Report*: Astronomy and Astrophysics in the New Millennium*, 2001).
- Increasing implementation of public outreach services/educational activities by astronomy institutions worldwide (US National Science Foundation Report*: Astronomy and Astrophysics in the New Millennium*, 2001).
- State Government through its 'Innovate WA' Policy is supportive of science, especially that done in partnerships.
- Increasing overseas interest in WA as an "astronomy tourism" destination.
- Increased funding of overseas astronomy institutions.

- Possible siting of world's largest radio telescope in WA around 2010.
- Continued demand for collaboration (especially from overseas) that exploits Perth Observatory's location.
- Improved state infrastructure that can assist research, especially supercomputing.
- Increasing appreciation of the link between Earth and space, especially the threat posed by "Near-Earth Objects".
- Diminution of capability in physical science at Australian universities.
- Reduced capacity to purchase overseas (especially US) equipment because of low exchange rate.

PERTH OBSERVATORY MARKETING STRATEGY

Marketing strategy

Marketing involves the identification of products and services for which there is a demand and which can be provided, as well as effective promotion and communication of activities, outputs and outcomes. Perth Observatory is in the business of generating new astronomical science and providing quality educational and information services to the community of Western Australia.

Market demand - Purchaser needs

The need or demand for the services provided by the Perth Observatory is identified by a variety of formal and informal processes. The formal processes include meetings with relevant stakeholders in the astronomy research/education/information fields and may lead to semi formal collaboration agreements being drafted and acted upon subject to alignment with the Observatory's mission and capability. The Observatory is responsive and flexible, and depending on the nature and importance of the request, has a capacity to respond to short term issues and demands as they arise.

Observatory education services have arisen out of a previous (1987) structural review that found the Observatory needed more relevance to the community of Western Australia. The services that arose from that process were modelled on activities conducted elsewhere but were limited by staff numbers and financial constraints. These services have evolved in line with market demand and as resources permitted.

Observatory information services have evolved out of the legal requirement for the Observatory to be, effectively, the sole source of evidential material relating to natural lighting conditions, eg sunrise and sunset times, for the state of Western Australia.

In order to maintain its exemplary record concerning satisfaction of purchaser needs the Observatory surveys its customers regarding the quality and satisfaction over the wide range of educational and information services it provides. Observatory research quality is substantiated by continued scientific communication output, especially in international journals and publications.

Partnerships

Partnerships with non-government institutions and the public are actively fostered through activities such as public education/outreach programs (star viewing nights, astronomy lectures, open days, media information provision etc), active participation in "astronomy community" events and activities, and the Observatory's volunteer program. These partners include:

- General public
- Media organisations
- Perth Observatory Volunteer Group Inc.
- Amateur astronomy groups
- Tour operators

The Observatory actively seeks opportunities to collaborate with educational bodies and other similar institutions where these align with its mission, and especially those that exploit the Observatory's capabilities. Current educational/informational partnerships include:

- Primary/secondary school teachers,
- Science Teachers Association of WA.
- Astronomy lecturing arrangements at Curtin University and UWA,
- Student project supervision (at tertiary level from Curtin University), and
- Project ASTRONET (an Internet telescope) with science education practitioners at Kent State University, USA, University of Cincinnati, USA and Edith Cowan University.

- Horizons Planetarium, Scitech.
- Hands on Universe Project, University of California (Berkeley); James Cook U. Qld. and Oil Region Astronomical Society, Pennsylvania, USA.

The Observatory also seeks opportunities to collaborate with universities and other kindred institutions where these align with its mission, and especially those that exploit the Observatory's capabilities and isolated location. Research partnerships include:

- Perth Astronomical Research Group (membership comprised of Observatory astronomers and local academics),
- Comet research: Lowell Observatory, USA and astronomers at the University of Maryland, USA,
- PLANET (astronomers at the Space Telescope Science Institute, USA; South African Astronomical Observatory; Institut d'Astrophysique, France; U Potsdam, Germany; U of St Andrews, Scotland and the University of Tasmania),
- Gamma ray burst monitoring, Mt Stromlo Observatory, ANU.
- Young star research: University of Cincinnati, USA,
- IVEC supercomputing facility (Kensington), and
- Perth Observatory Volunteers Group (incorporated).

Communications plan

It is crucial that astronomy is communicated effectively. The Observatory communications plan is flexible and responsive to the changing needs of the Division, the Department, and the community, and provides the Observatory with a focused and co-ordinated approach to both internal and external communication. The plan identifies key communications issues, objectives and key messages, target audiences, strategies, and measures for evaluation.

The key communications issues are:

- Co-ordinated approach to communication.
- Internal and external reputation and integration.
- Effectively publicising astronomical advances and upcoming events that can be enjoyed by the community.
- Taking credit for Observatory initiatives and achievements.
- Utilisation of all appropriate media from radio interviews to refereed journals.

The objectives (and appropriate key messages) are:

- Provision of quality, up-to-date astronomy education and information services to its output purchasers.
- Reinforcement that the Observatory is a credible scientific organisation and that sound science underpins its research, educational and information activities.
- Increased Departmental and external awareness, understanding and support for the Observatory and its work, astronomy in general and the role of astronomy in everyday life.

The target audiences are:

- General public of Western Australia.
- Other kindred research organisations (universities, astronomy institutions).
- Primary/secondary schools and their staff,
- All CALM staff (including Corporate Executive).
- Federal, State and local government agencies.
- Non-government organisations.
- Business (including legal profession).
- Relevant societies.

The Strategies include:

- Maintaining astronomy knowledge and skills.

- Maintaining and expanding Observatory communication infrastructure.
- Support and maintenance of Observatory's Astronomy Outreach and Education, and Astronomical Information Services (see below).
- Provision of appropriate staff to communicate with diverse audiences, eg deliver talks, lectures and demonstrations.
- High priority assigned to media contacts.
- Utilisation of all appropriate communication channels.
- Acquiring, and responding to, customer feedback.
- Creation of a new part-time position to assist with the marketing and operation of revenue raising activities.

Performance Indicators

- Percentage of positive responses to 'quality' measures in customer surveys.
- Amount of coverage in the media.
- Number of seminars and speaking engagements.
- Number of public visitors.
- Number of enquiries.
- Total volunteer time contributed to Observatory activities.
- Amount and quality of scientific publications.
- Number of partnerships/collaborations formed.
- Number of student programs supported.

SERVICE DELIVERY PLAN

During the period July 2004 – June 2006 the Perth Observatory will implement the following plan to provide services to the WA State Government in an efficient and effective manner. This plan will also be used to track the delivery of services and as a mechanism for reporting performance.

PROGRAM – PERTH OBSERVATORY

RELEVANT CORPORATE OBJECTIVES

- Astronomy research.
- Astronomy education services.
- Astronomy information provision.

RELEVANT CORPORATE STRATEGIES

- To serve the state with world-class astronomy research.
- To serve the state with world-class educational services.
- To serve the state with world-class provision of information.

RELEVANT KEY RESULT AREAS

- KRA 5.2: Development of visitor facilities/infrastructure.
- KRA 6.1: Communicating with and providing information to the public.
- KRA 6.2: School and experience-based education programs.
- KRA 6.3: Public participation and involvement programs.
- KRA 6.3: Management of volunteers.
- KRA 6 - Corporate and Output priorities for 2004/05:
  - Supporting major scientific investment for the world's largest telescope, the Square Kilometre Array, sited in Western Australia.
  - Providing astronomical education and information services from the Observatory.

PURCHASERS REQUIRING SERVICE

- West Australian community via the WA State Government.

Sub program: Astronomy Outreach and Education, and Astronomy Information Services

Description

These programs directly addresses the State Government's 'Innovate WA' Policy objective of
'strengthen and improve the educational and research capacity of the state'.
It is also consistent with a recommendation in the Final Report of the (Australian) Science Capability Review by the Chief Scientist (2000)
'We need more support for those who inspire our children to study science and maths.',
Furthermore, it contributes to the WA State Government's Astronomical Services Output of providing public

information and awareness directly beneficial to the Western Australian community and relates to CALM's KRAs 5.2, 6.1, 6.2, 6.3, 6.4 and Corporate and Output priorities for 2004/05 KRA 6.

Astronomy is a subject that has long captured mankind's imagination. The public's fascination with the subject is clearly apparent in the constant stream of astronomical features and articles in all forms of mass media. Local interest in astronomy also manifests itself in an ongoing and increasing demand for astronomical educational information from the state Observatory.

Because of its mass appeal, astronomy is being used in educational initiatives to highlight physical science in an effort to foster a greater appreciation of science, engineering and technology - the cornerstone of our modern society.

Objectives

- Provision of relevant and timely outreach, education and information services.
- Demonstration of science in action, and the role of astronomy in everyday life.
- Facilitation of the development of the tourism potential of astronomy.
- Provision of relevant and timely astronomical information.

Strategies

- Communicate research discoveries, upcoming astronomical events etc through all appropriate channels, at a wide variety of fora, and to all appropriate audiences.
- Develop and market up-to-date educational materials, services, “public outreach” programmes and other interactive/experiential activities.
- Communicate, promote and market the Observatory's contribution to attaining the Departmental and Divisional Mission.
- Develop and project Perth Observatory's reputation as a credible and dependable source of sound and up-to-date astronomical information.
- Collaborate with local, national, and international astronomy institutes, universities, Government agencies, industries, other interest groups and the public to conduct or co-ordinate research, educational and/or information activities when such interaction will benefit the Purchaser and relevant Departmental objectives.
- Work in partnership with purchasers of the Observatory's services.

Significance and Benefits

There is a significant demand for astronomy education services from many different groups and individuals within the community. Conduct of this project serves to satisfy this demand and also directly addresses the State Government’s ‘Innovate WA’ Policy objective outlined above.

There is also a significant demand for astronomical information from many different groups and individuals within the community. Furthermore, state law requires provision of certain astronomical information by the Observatory.

Results Expected

- Satisfaction of demand for educational/outreach services.
- Satisfaction of demand for astronomical information.
- Satisfaction of requirements of state law.
- Increased number of customers.
- Operation of active volunteer programs.
- Operation of Internet telescope (dependent on adequate Internet access).

Performance Indicators

- Number of public visitors (KRA 6.1, 6.2).
- Number of enquiries (composed of telephone, information line, e-mail and written enquiries; web site 'hits';

and talk/lecture attendance) (KRA 6.1, 6.2).

- Percentage of positive responses to 'quality' measures in customer surveys (KRA 6.1, 6.2).
- Satisfaction of information requests as they occur (KRA 6.1, 6.2).
- Cost per visitor (KRA 6.1, 6.2).
- Cost per enquiry (KRA 6.1, 6.2).

Anticipated Outcomes

Provision of valued astronomical education and information services to the people of Western Australia underpinned by a reputation for excellence in astronomy education.

Adoption Strategy

Perth Observatory services will be developed and appropriately marketed so that they can be accessed by those within the WA community requiring them.

Sub Program: Astronomical research

Description

This program directly addresses the State Government's 'Innovate WA' Policy objective of

'strengthen and improve the educational and research capacity of the state',

and with a recommendation in the Final Report of the *(Australian)* Innovation Summit Implementation Group; *Innovation: Unlocking the Future* (2000),

'Publicly funded basic research plays an important role in supplying much of the knowledge, skills and new ideas critical to a competitive and innovative economy.'

Furthermore, it contributes to the WA State Government's Astronomical Services Output of *successfully contributing to scientific research in astronomy by cooperating with national and international institutions in the acquisition, analysis, interpretation and dissemination of information* and relates to CALM's KRAs 6.1, and 6.4 and Corporate and Output priorities for 2004/05 KRA 6.

For many years astronomy has been one of Australia's pre-eminent sciences, and the per capita output was in excess of many other developed nations (*Beyond 2000: The Way Ahead*, 2001, a mid-term review of Australian Astronomy by the National Committee for Astronomy of the Australian Academy of Science). This prominence is declining but astronomy still leads Australian research in terms of publication citation impact.

This scientific prominence is in part due to the dearth of observatories in the Southern Hemisphere and the more accessible view of our galaxy, the Milky Way, from this location. Perth Observatory has been a part of this scientific endeavour for over 100 years and is still sought for collaborations with other astronomy institutions, worldwide, because of its particularly isolated location on the globe and generally favourable weather conditions. Its equipment is modest by world's best practice standards but can still contribute to many projects summarised in the next section

Objectives

Provision of astronomical research in the following areas:

- Monitor brightness changes in stars, comets, gravitational lensing events, gamma ray bursts and other celestial bodies, and participate in their further study.
- Determine positions of minor bodies (asteroids and comets) and targets of opportunity and forward these to the International Astronomical Union for publication and dissemination.
- Searching for extra-galactic supernovae in low-redshift spiral galaxies.
- Testing the suitability of appropriate Western Australian sites for astronomical observations.

Strategies

- Conduct astronomical research, particularly that which exploits Perth Observatory's isolated position on the globe.
- Collaborate with local, national, and international astronomy institutes, universities, Government agencies, industries, other interest groups and the public to conduct or co-ordinate research, educational and/or information activities when such interaction will benefit the Purchaser and relevant Departmental objectives.
- Communicate research discoveries, upcoming astronomical events etc through all appropriate channels, at a wide variety of fora, and to all appropriate audiences.
- Keep abreast of worldwide astronomical and technological advances via the literature and attendance at scientific meetings and seek opportunities to utilise or adapt these to suit Observatory, Divisional and Departmental needs.
- Maximise output by automating equipment monitoring, data acquisition and presentation; providing resources for students; collaborating with other relevant parties; actively seeking external funds and employing staff where appropriate.
- Work in partnership with purchasers of the Observatory's services.

Significance and Benefits

Knowledge will be obtained on the nature and orbits of Solar System objects such as comets and minor planets. Clues to the internal structure of stars will be obtained by photometric observation of stars and supernovae. Microlensing observations also provide information on the number of faint galactic stars and their potential planetary companions. Site testing will provide information necessary for the planning of future facilities. The conduct of research also supports the authority of the Observatory in its education/outreach and information programmes.

Results Expected

- Increased knowledge of solar system objects.
- Discovery of new solar system objects.
- Increased knowledge of the structure and processes in stars.
- Characterisation of astronomical observing sites throughout the state.
- Scientific publications detailing these results.

Performance Indicators

- Number of refereed scientific papers (KRA 6 - Corporate and Output priorities for 2004/05).
- Percentage of submitted research papers published in international refereed journals (KRA 6 - Corporate and Output priorities for 2004/05).
- Timeliness of publication of research papers in international refereed journals (KRA 6 - Corporate and Output priorities for 2004/05).
- Percentage of astronomical targets of opportunity effectively studied as they occur (KRA 6 - Corporate and Output priorities for 2004/05).
- Cost of research activities per refereed research paper (KRA 6 - Corporate and Output priorities for 2004/05).
- Cost of research activities per 1,000 head of WA population (KRA 6 - Corporate and Output priorities for 2004/05).

Anticipated Outcomes

- Improved understanding of the Solar System.
- Improved inventory of Solar System objects.
- Improved understanding of the structure and processes in stars.
- Identification of optimal site for potential remote telescope.
- First-class science.
- World-wide reputation for excellence in astronomy and astrophysics.
- Scientific authority for educational and information services.

Adoption Strategy

Communication of results in all appropriate fora, such as journal publications, seminars, public lectures and press releases.