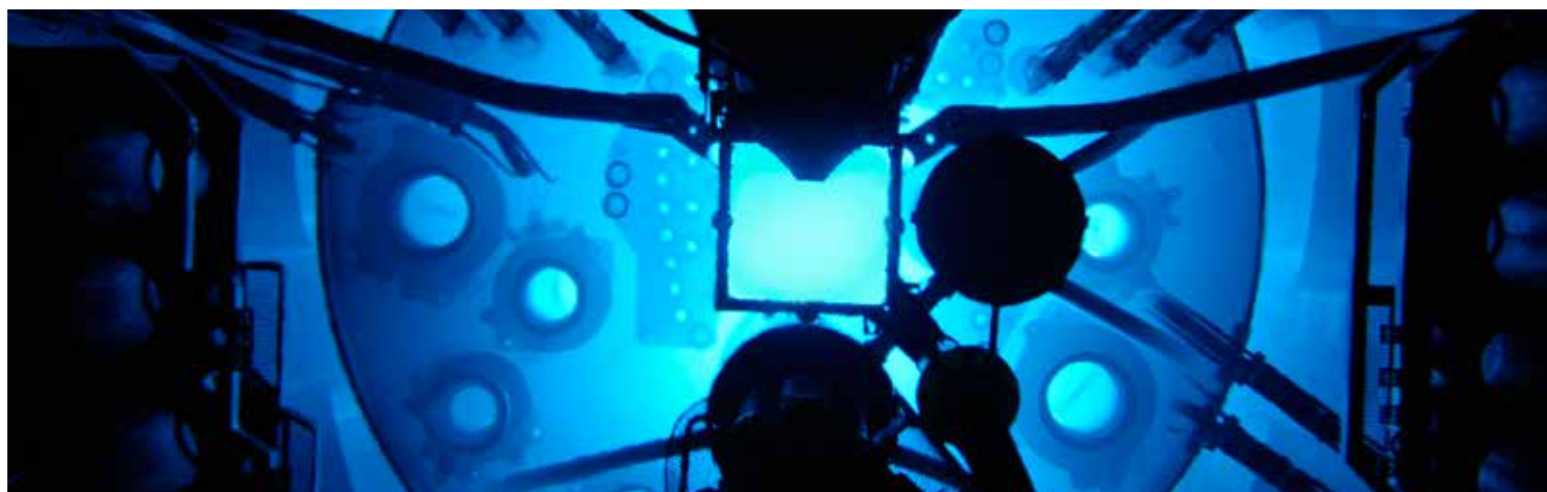




Corporate Plan

2016 - 2020



Contents

| | |
|----|---|
| 3 | A message from the CEO |
| 4 | Vision |
| 4 | Values |
| 5 | ANSTO's purpose |
| 6 | The environment |
| 8 | Core capabilities |
| 9 | Major projects |
| 11 | Strategic objectives |
| 12 | Strategic objective 1: Putting people first |
| 13 | Strategic Objective 2: World class science and technology outcomes |
| 14 | Strategic objective 3: Strategic management of landmark and national infrastructure |
| 15 | Strategic objective 4: Nuclear expertise and advice |
| 16 | Strategic objective 5: Nuclear business and innovation |
| 18 | Organisational capabilities |
| 19 | Governance and risk management |

A message from the CEO

The Australian Nuclear Science and Technology Organisation (ANSTO) is one of Australia's largest public research organisations and operator of Australia's only nuclear based businesses that support a range of industry sectors. ANSTO continues to build on its 60+ years of excellence in nuclear science and technology.

The features which distinguish ANSTO from other research organisations are custodianship of key Australian landmark and national science infrastructure and the focus on nuclear applications, science and technology. It owns and operates a range of globally competitive research platforms that are available for all Australian researchers through a peer review system or via membership of the Australian Institute of Nuclear Science and Engineering (AINSE).

Research led by ANSTO is helping to address *Australia's National Science and Research Priorities* and the *National Innovation and Science Agenda*, achieving significant science outcomes for Australia in the areas of human health, the environment and the nuclear fuel cycle.

ANSTO is committed to translating its discoveries and innovations into usable applications, products and services that can provide economic, health and well-being and sustainability benefits to the Australian economy, people and environment. ANSTO's landmark research infrastructure continues to provide industry with powerful insights that, in turn, stimulate the Australian economy.

Over the next five years, ANSTO will continue to increase the supply of key isotopes to support life-saving nuclear diagnostics and therapies. These help the fight against diseases like cancers, and heart and kidney conditions. The approaching completion of the Mo-99 Production Facility will position Australia as a global leader in the high-end manufacturing of nuclear medicine, securing the ongoing supply for Australian patients and strengthening Australia's contribution to global supplies.

ANSTO uses its specialised expertise to provide advice to the Australian Government on matters relating to nuclear science, technology and engineering. We track global developments and risks in relation to the nuclear fuel cycle and nonproliferation. We provide educational resources to our stakeholders and the community on how nuclear science and technology benefit all our lives.

ANSTO's capabilities and expertise has also led to Australia's membership of the Generation IV International Forum (GIF). This is a consortium of countries committed to working together in long-term research on advanced nuclear technologies. Generation IV reactors represent the next



step in nuclear technology and are being developed to use fuel more efficiently with less radioactive waste production, enabling them to be economically competitive while meeting stringent standards of safety and proliferation resistance. Australia's success in gaining membership was based on ANSTO's ability to contribute to the GIF's research and innovation goals using its landmark research infrastructure and world-class research capabilities.

ANSTO will continue to be agile in responding to the growing nuclear science and technology needs of Australia and the world through our infrastructure and people, as well as through our international and national strategic partnerships.

A handwritten signature in black ink, appearing to read 'Adi Paterson'.

Adi Paterson
Chief Executive Officer

I present the Australian Nuclear Science and Technology Organisation's 2016-17 Corporate Plan, which covers the period 2016-17 to 2019-20, as required under section 35(1)(b) of the *Public Governance, Performance and Accountability Act 2013*.

Other key documents that have informed the development of this Corporate Plan include:

- *Australian Nuclear Science and Technology Organisation Act 1987 (ANSTO Act)*
- Australian Government Portfolio Budget Statements 2016-17, Budget Related Paper No. 1.12

Vision

To deliver excellence in innovation, insight and discovery through our people, partnerships, nuclear expertise and landmark infrastructure.

Values

ANSTO's values underpin our vision, capabilities and strategic objectives and are critical to how we carry out our work. They also describe how our people will engage with one another and external stakeholders. Our values extend to the way we partner with government, industry, communities and stakeholders.



Safe. Secure. Sustainable.

Figure 1: ANSTO's Values underpin our work. These were developed by our staff and have been widely communicated and supported since 2014.



ANSTO's purpose

ANSTO's purpose is set by the following core functions listed in section 5 of the *ANSTO Act*.

- Conduct research and development in relation to nuclear science and technology
- Produce and use radioisotopes, isotopic techniques and nuclear radiation for medicine, science, industry, commerce and agriculture
- Encourage and facilitate the application and use of the results from research and development
- Manage radioactive materials and waste arising from various prescribed activities
- Provide goods and services related to core activities
- Provide advice to government and undertake international liaison in nuclear-related matters
- Make available (on a commercial basis where appropriate) facilities, equipment and expertise for research in nuclear science and technology
- Publish scientific and technical reports, periodicals and papers, and provide public information and advice
- Facilitate education and training in nuclear science and technology, including through granting scientific research studentships and fellowships, in cooperation with universities, professional bodies and other education and research institutions.

ANSTO is a corporate Commonwealth entity within the Australian Government's Industry, Innovation and Science portfolio with accountability to the Minister for Industry, Innovation and Science.

ANSTO operates under a Board which is appointed by the Minister.



OPAL multipurpose reactor pool.

The environment

ANSTO anticipates ongoing developments in science policy in the short to medium term. Research infrastructure is a critical part of Australia's economic base because it enables the development of breakthroughs in knowledge and technology, solves problems for industry and maintains a highly skilled workforce. It also sustains Australia's competitiveness and global relevance.

The launch of the National Innovation and Science Agenda in 2015, the early stages of the development of the *National Research Infrastructure Roadmap* and the *2030 National Research Plan* have emphasised the importance of longer term thinking, planning and investment. The changes in the structure of our economy mean research-intensive organisations cannot rely on old solutions and must develop new models that are responsive, connected and sustainable to make our contribution and deliver outcomes and benefits for Australia.

The custodianship of the Australian Synchrotron will change ANSTO. For the first time, we have more than 10 per cent of our staff outside New South Wales. The predictable funding for the Australian Synchrotron and clarity around its future direction is an important opportunity to grow this landmark facility and will strengthen our capacity to serve a wide range of users from industry, health, research, and the university sectors.

During the course of the year, there has been significant international and local debate about the future of the nuclear fuel cycle. ANSTO contributes technical expertise and a globally-informed perspective in these discussions. For example, we have the capability to contribute expert advice as requested in response to the South Australian Government's public consultation process around the South Australian Nuclear Fuel Cycle Royal Commission's recommendations and contribute to any Australian Government consideration of the matter.

The demographic shifts in an Australian society dominated by an ageing population have raised the importance of affordable healthcare and the ability to tackle associated challenges. The debate about the adoption of particle therapy (also termed carbon and/or proton therapy) has moved from a discussion between peers to specific project proposals based on both carbon and proton therapies. It is likely that in the forward planning period, investments will be made for the adoption of particle therapy in Australia to complement existing capabilities to address difficult and intractable cancers. ANSTO is well-positioned as a partner to ensure that an integrated national approach to such investments succeeds.

In response to the needs of our society, ANSTO is developing an integrated strategy for health to be delivered in late 2016. This will draw on our research and technology

capabilities, our understanding of the global setting for radiopharmaceuticals, X-ray and particle therapy and future requirements of our population and the region. There is a growing need regionally for more rapid adoption of diagnostic and therapeutic techniques based on nuclear science and technology. Among other things the strategy will address the slow uptake and adoption of new radiotracers for diagnosis and the need for a theranostic capability.

The ability to establish strategic partnerships and collaborations in research and innovation is a distinguishing feature of a high-performing organisation. ANSTO is intensifying its efforts to strengthen and extend its partnerships locally and internationally. The custodianship of landmark infrastructure and the need for a science-knowledgeable workforce has created an opportunity for ANSTO to play a stronger role in the development of postgraduate research and early career stage research. This opportunity needs to be strongly linked to the translation of research results, the support of start-ups and small businesses and industry outcomes in the broader innovation ecosystem. For this reason, ANSTO's forward planning is emphasising the need for a Graduate Institute and strong innovation capacities associated with our landmark infrastructure in Victoria and New South Wales. This will assist ANSTO, our peers and partners to address the unique challenge we face in attracting staff in research, translational roles and engineering.

ANSTO has a strong capacity to support long-range planning for landmark infrastructure. Predictable operation of these assets and their highly technical staff capabilities are of crucial importance as we seek to strengthen our science and technology position and its value creation in our society. We operate in a region that is rapidly developing world-class skills where the long-term advantage is no longer based on individuals and small groups for innovation to succeed. A responsive and effective mix of organisations can improve outcomes for the economy and drive personal and national well-being in a sustainable environment.

Community expectations of publicly-funded research organisations are focused on relevance, responsiveness and engagement. A skilled science and technology workforce requires young people to make decisions and choose their subjects at school and decide on future interests far earlier than was the case a decade ago. ANSTO will continue to grow and develop outreach, and partner with like-minded organisations, to create the conditions where young people will be attracted to science and technology, engineering, mathematics and medicine (STEMM) in greater numbers, so that the workforce of the future will not be disadvantaged relative to our peers in the region and globally.

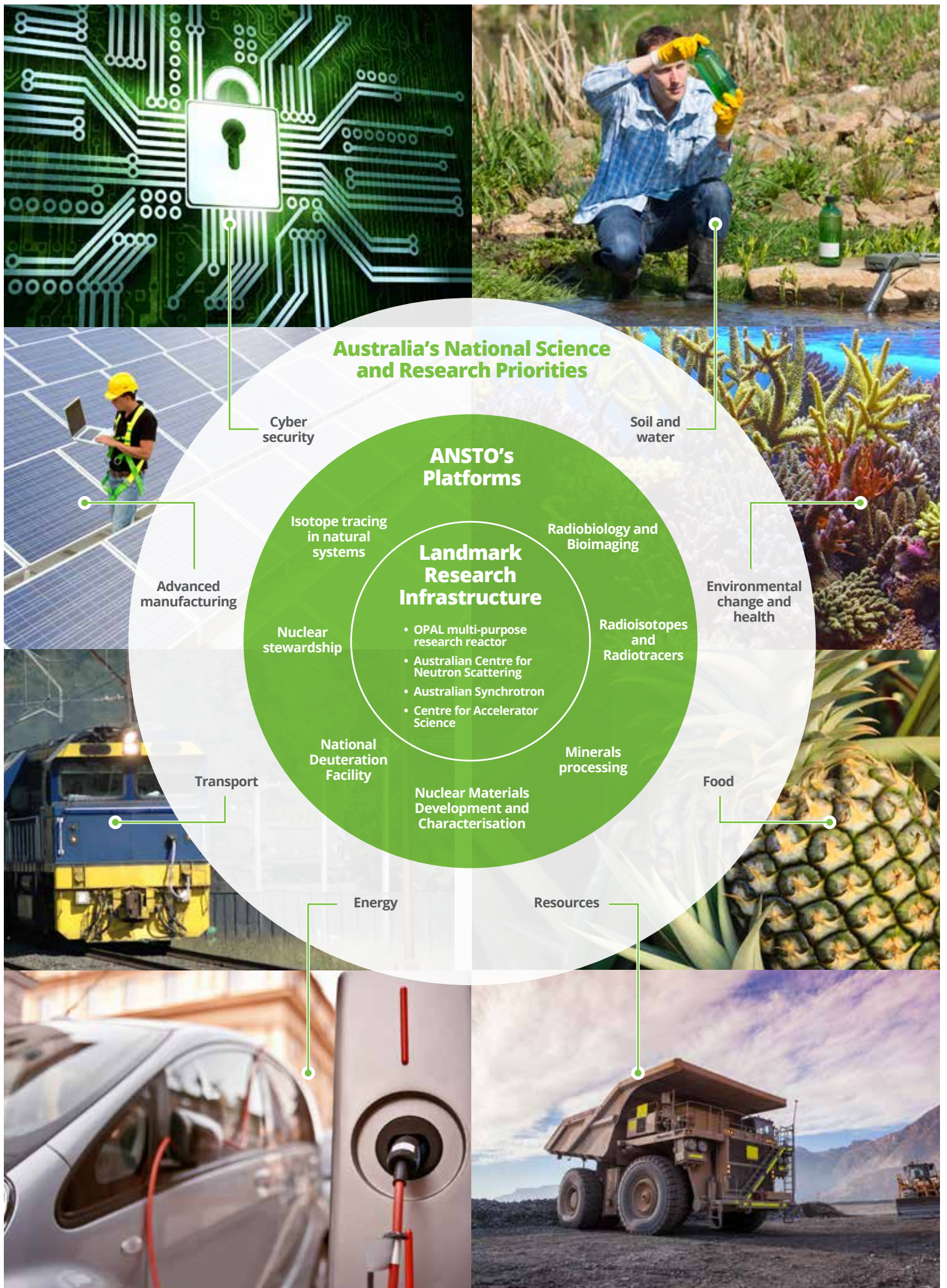


Figure 2: ANSTO's capabilities link to the strategic research priorities identified by the Australian Government. The figure above indicates the wide reach of our research infrastructure and expertise. This key national and landmark infrastructure and the associated expertise service some 7,800 users across Australia and New Zealand.

Core capabilities

ANSTO's core capabilities lead to improved knowledge, innovative capacity and healthcare through nuclear-based facilities, research, training, products, services and advice to Government, industry, the education sector and the Australian population. Our programs contribute to this through the operation and strategic management of landmark and national research infrastructure and the application of ANSTO's unique nuclear expertise for research, specialised nuclear advice, education and training, and the provision of products and services.

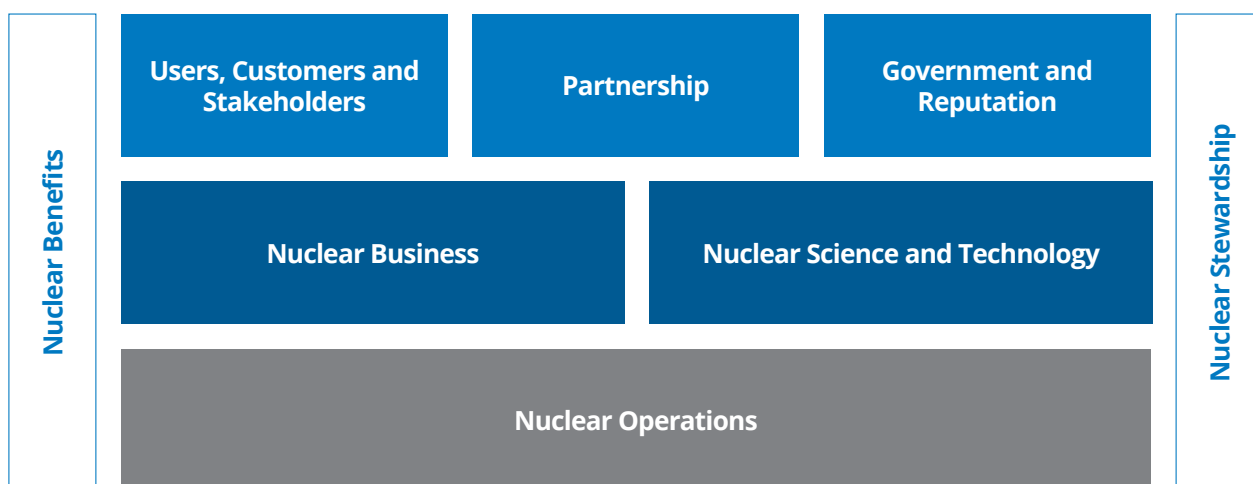


Figure 3: This figure shows key components of ANSTO's capability to deliver to our stakeholders.

ANSTO provides benefits to our society by means of our Nuclear Business and our Nuclear Science & Technology and Landmark Infrastructure. Complementing this are a number of activities in which we undertake Nuclear Stewardship on behalf of Government to ensure that Australia's reputation and leadership in the peaceful use of nuclear technology develops over time. By emphasising benefits and stewardship, we can be responsive to a wide range of institutions in Australia and internationally.

Nuclear Operations encompasses the operation of Australia's world-class multi-purpose reactor, OPAL, the provision of essential radiation safety and assurance services to ANSTO and the management of radioactive waste from the production of medical radioisotopes and nuclear research. Planning for a significant ten year shut down of OPAL in 2019 is underway. Provision has been made for the extension of waste management facilities at our Lucas Heights campus and these projects are now underway. The first shipment of OPAL Spent Fuel is intended to be transported to France by

mid-2018. ANSTO now has a framework in place to secure the management of Spent Fuel for the life of the OPAL reactor.

In order to ensure that there is an underlying strategy to our activities, ANSTO develops strategic objectives to inform our planning in the development of our performance frameworks.

One of ANSTO's key modalities to deliver value is through partnerships. Partnership and collaboration have formed the foundation of ANSTO since our establishment. The very nature of research depends upon partners working together so they might better understand and solve complex problems in the world around us.

ANSTO remains a strong government partner, providing trusted advice across Government. Research partnerships from across many industries and sectors facilitate the provision of expert advice and access to our landmark infrastructure.

Major projects

ANSTO is developing a suite of major projects to support our mandate. These projects are in different stages of development. Some projects have reached the construction and commissioning phase while others are being workshopped with stakeholder communities to ensure that the projects are aligned with national objectives.

Development of an Innovation Precinct and Graduate Institute

ANSTO is developing a proposal for an Innovation Precinct which will be home to ANSTO's proposed Graduate Institute, a nuclear science and technology innovation hub and a broader innovation and technology park. Consultations have been held with stakeholders from higher education and industry sectors during FY16, and we intend to increase these activities and formalise planning in FY17.

The Precinct will bring together scientific partners and businesses to provide a unique environment with opportunities to embrace world class expertise, teaching, research and industry-ready graduates in one location. The aim is to establish a global scale nuclear science and technology centre to train and develop future scientists, engineers and technologists, foster innovation with emerging technologically astute experts in an 'ecosystem' that is attractive to industrial users.

The Innovation Precinct will be an extension of ANSTO's existing 100-hectare technology campus at Lucas Heights, Sydney. The Innovation Precinct will link ANSTO's expanding research and an industrial user base to innovation services, incubation and growing businesses.

The Graduate Institute aims to establish a more formal program with approximately 300-400 graduate and postgraduate students undertaking research studies at ANSTO in Sydney and Melbourne. At any given time, there are approximately 120 postgraduate researchers from over 30 universities who spend time as postdoctoral researchers directly leveraging ANSTO's infrastructure and platforms.

Carbon Therapy

There is an opportunity to establish a National Carbon Cancer Therapy and Research facility for Australia. Carbon-ion therapy is at the cutting-edge of cancer treatments that can potentially be applied to a wide range of patient groups including children with intractable and otherwise untreatable forms of cancer. Carbon-ion therapy

is emerging as the premier next generation cancer treatment, with a number of facilities already established in Western Europe, Japan and China. While Australia has begun to investigate more mature technologies such as proton therapy, we lag significantly behind the many advanced nations now adopting cutting edge carbon-ion technology.

There is growing global interest in and commitment to carbon-ion therapy as evidence of cost-effectiveness and patient outcomes accumulates. International experience demonstrates that carbon-ion treatments can be a cost-effective addition to traditional therapies. For example, in Italy carbon-ion therapy costs less than chemotherapy courses and has no side effects. Additionally carbon-ion therapy can reduce the number of treatments needed by cancer patients.

ANSTO will continue to explore and support opportunities for a carbon-ion therapy centre in Australia over the coming years.



ANSTO's proposed Graduate Institute aims to establish a more formal program for graduate and postgraduate students undertaking research studies at ANSTO.

Mo-99 Production Facility

The Mo-99 Production Facility will be commissioned and commence operations during 2017. It will enable ANSTO to provide up to 25 per cent of the global demand for molybdenum-99 (Mo-99), which is the precursor to technetium-99m (Tc-99m). Tc-99m is used in 80 per cent of diagnostic nuclear medicine procedures – approximately 45 million medical procedures worldwide every year.

ANSTO's Mo-99 Production Facility will be able to supply all of Australia and New Zealand's requirements, as well as providing much needed security to the global requirement for Mo-99 after the shutdown of the National Research Universal reactor in Canada in October 2016.

The capability to supply such a large proportion of the Mo-99 world demand is a combination of the design and scale of the Mo-99 processing plant, as well as the ability to utilise the highly reliable irradiation capacity of the OPAL reactor and ANSTO's proven production and logistics capabilities.

This project has particular significance on the world stage because it uses proliferation-proof low enriched uranium.

Synroc plant

ANSTO is demonstrating its commitment to developing longer term waste mitigation strategies in a first of a kind facility that will process intermediate level liquid waste from nuclear medicine production.

This plant is underpinned by ANSTO's Synroc technology, which immobilises and reduces the volume of nuclear waste. The specific application will be to use Synroc to process Mo-99 liquid waste (SyMo). SyMo will also allow ANSTO to treat existing waste generated from earlier nuclear medicine production. The plant final design is supported by a technology demonstration plant which will be completed in the first quarter of 2017. The operation of this plant will permit us to finalise the SyMo design.

In addition, ANSTO will use the SyMo plant to showcase Synroc technology to both domestic and international nuclear communities. International interest in this development is strong, with potential future technology transfer projects under discussion.

Radiopharmaceutical Processing Facility

In the coming years, ANSTO will be seeking to undertake a capital program to upgrade our radiopharmaceutical processing capabilities. A proposal for a radiopharmaceutical manufacturing facility that will meet current and future compliance requirements, increased demand and the

introduction of new diagnostic and therapeutic agents for Australia is in development.

The scope of the facility will enable ANSTO to provide the reliable production of a range of radiopharmaceuticals for current and future Australian health care needs to 2056. The facility will be designed to have processing capabilities for products under development or to be introduced into Australia. The design will incorporate modern manufacturing techniques, automation and long-term maintainability. The design phase of the plant will leverage domestic and international experience in order to secure reliable future supply of a range of critical medical isotopes.

The current facility at ANSTO has supplied millions of doses of lifesaving medicine to hospitals and pharmaceutical suppliers across Australia, but will come to the end of its operating life in 2018.

ANSTO Enterprise

ANSTO Enterprise is a program to digitise and integrate ANSTO's processes and systems and implement best practice. This will be done through deployment of SAP as the principal business tool in support of our integrated business planning process. It will harmonise asset management across our sites and for our national and landmark infrastructure. Many current processes in our nuclear business will be digitised in a single system for the first time. Upon completion, the suite of systems that will be introduced include a learning management system to provide transparency on the training status of all staff, a budget forecasting tool and a travel management system.

The end results of the digitisation and integration of end-to-end systems and processes are achieving long term efficiencies, as well as enabling greater transparency to minimise operational surprises. ANSTO Enterprise will deliver a reliable information and decision-making support mechanism for ANSTO's current and future capabilities and operational needs.

National Radioactive Waste Management Facility

We provide technical support and advice in relation to the Australian Government's efforts to establish a National Radioactive Waste Management Facility for Australia. Our expert capability to do so stems from the decades of experience we have in safely dealing with radioactive waste, effectively engaging and educating the community about nuclear science and technology and from our knowledge of international best practice in radioactive waste management developed through our extensive overseas networks.

Strategic objectives

ANSTO has established five strategic objectives that will drive and inform our capability development and service delivery over the next four years, to fulfil our purpose and functions. These objectives have been aligned with our core values to link the development of ANSTO's culture to drive outcomes that are valued in our society. They are supported by ANSTO's five year Business Plan. ANSTO's key performance indicators are reported annually through the Portfolio Budget Statements.



Figure 4: Our strategic objectives have been expanded to include a focus on people.



Strategic objective 1: Putting people first

To equip and empower our people to respond to the growing nuclear science and technology needs of Australia and the world.

- a. Organisational renewal:** To support an engaged, flexible, inclusive and empowered workforce with a focus on diversity and gender equity initiatives.
- b. Safety and security culture:** To continue to strengthen our commitment to provide a safe, secure and healthy workplace.
- c. Growth and development:** To support the learning and development objectives of our people to allow them to reach their full potential.
- d. Agility:** To equip and empower our people to work effectively in diverse environments and across boundaries, locally, regionally and internationally, and with industry, government, researchers and academia.

People, culture and safety are central to everything we do at ANSTO. Having the right people with the right skills, who are empowered and working effectively and safely, is the primary enabler for achieving ANSTO's purpose and strategic objectives.

Our safety culture works within the context of a strong regulatory framework, including oversight from the Australian Radiation Protection and Nuclear Safety Agency, the Therapeutic Goods Administration, Comcare and the Australian Safeguards and Non-Proliferation Office. ANSTO

will continue to engage its regulators in proactive dialogue to ensure continuous improvement in its safety, security and environmental performance.

ANSTO's diverse workforce, with more than one third involved in research, is based at various locations. Having our people located across Australia and internationally creates great opportunities for sharing skills and building capabilities, as well as challenges in maintaining common values.

Significant workforce planning has been undertaken to develop strong links with universities and industries to secure the pipeline for future specialists in nuclear science and technology. Particular importance has been placed on ensuring opportunities at ANSTO for the next generation of STEM professionals.

ANSTO has established an Engineering Council to provide a consistent approach to engineering and specialised technical services across the organisation. The Council undertakes ANSTO-wide workforce planning for staff in these roles, develops resource plans for our capital programs and ensures these highly specialised staff members have options to develop their careers.

ANSTO has committed itself to achieving greater diversity and gender equity by 2030. ANSTO is a member of the Science in Australia Gender Equity (SAGE) program, which is designed to improve gender equity and diversity in STEM. The first stage of this commitment is working to achieve a bronze level Athena SWAN accreditation.



Having the right people with the right skills, who are empowered and working effectively and safely, is the primary enabler for achieving ANSTO's purpose and strategic objectives.

Strategic objective 2: World class science and technology outcomes

To create innovative solutions to complex problems and provide new insights into our world.

- a. Aligned research:** To engage in research that has scientific and commercial impact and aligns with Australia's science and research priorities, with a focus on human health, the environment and the nuclear fuel cycle.
- b. Partnerships and collaboration:** To build strategic partnerships and collaborations to leverage more effective research and innovation outcomes for Australia.
- c. Build human capital:** To develop the next generation of nuclear scientists and engineers and promote STEM careers in Australia.

We undertake research and development that nimbly responds to the important issues and key challenges facing Australia. At ANSTO, we apply our unique nuclear expertise to research into areas of national priority including human health, water resource management and environmental change, food security, national security and the nuclear fuel cycle.

During 2015, we reviewed how we could provide greater access to our world-class landmark and national research capabilities to enable great research outcomes from the wider user community that are aligned to Australia's national science and research priorities.

The review incorporated input from our staff, research partners, collaborators and users, leading to the full implementation of our new Nuclear Science & Technology and Landmark Infrastructure operating model in 2016 to enable ANSTO's delivery of further high impact research over the coming years. Under this new operating model, ANSTO will also seek to align more with industry and business to explore funding opportunities outside of traditional sources.

ANSTO undertakes research in three broad areas:

The Nuclear Fuel Cycle

Research under this theme extends to all aspects of the nuclear fuel cycle, and currently includes: (i) the development of improved fuels for advanced reactor designs; (ii) investigation of materials for use in nuclear systems, structures and components, and the effects of irradiation and high-temperature on their structural properties; and (iii) the development of immobilisation/encapsulation techniques for existing and potential new waste streams from nuclear processes.

Environment

Research under this theme applies nuclear-based techniques to fill critical knowledge gaps which will inform sustainable management strategies and capacity to respond to environmental challenges. Our focus currently includes: (i) water resources sustainability; (ii) environmental change; and (iii) contaminant impacts.

Human Health

Research under this theme aims at reducing the risks which lead to population health impairment and disease. Focus currently includes (i) understanding and early mitigation of environmental (biological, chemical, physical, societal) risk impact on health; (ii) understanding the impact of radiation on living systems; and (iii) maintaining good health through improving food quality and function.

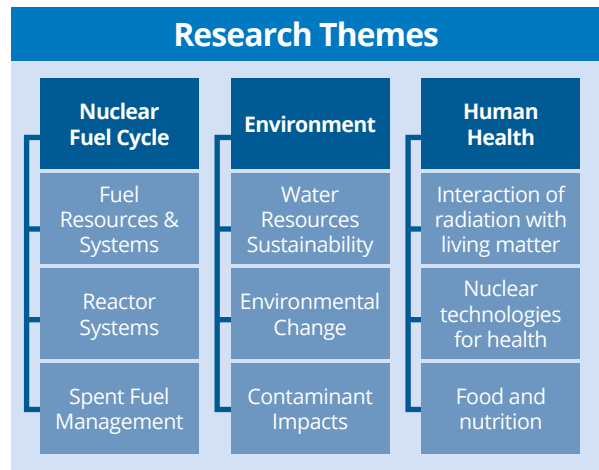


Figure 5: Schematic representation of ANSTO's research themes. These will be the basis of our strategic partnerships and collaborations to amplify the outcomes and benefits of research and technology development at ANSTO

ANSTO will continue to participate in its existing strategic international and bilateral research collaborations to ensure Australian scientists are connected to a global network of experts and important global research projects. These important partnerships give Australian scientists access to some of the world's most sophisticated research infrastructure, techniques and researchers, enabling discoveries that benefit Australia and the world. In the coming years, we will continue to mature and grow our partnerships in alignment with our strategic priorities.

Strategic objective 3: Strategic management of landmark and national infrastructure

To serve users, enable world-class research and create economic impact and benefit.

a. Meet user requirements for quality and reliability:

To provide excellent service to our user base and engage them in future planning.

b. Operational Excellence: To provide effective and efficient utilisation, best-practice facility operation and continual improvement.

c. Asset management and expansion: To strategically plan and invest in the lifecycle and development of landmark and national research infrastructure to serve the needs of users, collaborators and partners.

Our strategic development, effective use and maintenance of our infrastructure is crucial to Australia's economic and social prosperity.

ANSTO became the owner of the Australian Synchrotron on 1 July 2016, following the Australian Government's commitment of \$520 million in operational funding as part of the National Innovation and Science Agenda. During 2016-2017, our focus will be on full integration of the Australian Synchrotron into ANSTO, creating greater research capacity for Australia and a national approach to Australian landmark research infrastructure.

The Australian Synchrotron's capacity and capability can be expanded to ensure research using this platform remains at the cutting edge as the funding package includes operational funding for any new beam lines, the construction of which is

funded by third parties. Over the coming years, ANSTO will be actively seeking capital co-contributions for the new beam lines from stakeholders such as governments, universities, industry and potentially international users.

Similarly, ANSTO will be seeking to grow its neutron scattering capabilities in an instrument suite connected to the OPAL multi-purpose reactor.

The OPAL multi-purpose reactor (through the Australian Centre for Neutron Scattering) and the Australian Synchrotron attract approximately 5,000 Australian and international researcher and industry users every year and there is an opportunity to continue to develop our user programs.

In 2017, we will introduce the ANSTO Research Portal to provide the national and international user community with better access to all of ANSTO's landmark and national research facilities (including the Australian Synchrotron).

Many of our buildings at the Lucas Heights site are reaching the end of their service and design life. Over the coming years, we will be undertaking essential upgrades to ageing and deteriorating critical site infrastructure to maintain safety and efficiency.

Performance Measures

Table 1: Performance measures as reflected in the Australian Government Portfolio Budget Statements 2016-17, Budget Related Paper No. 1.12

| Achievement of a high standard of operational efficiency for ANSTO's landmark and national research infrastructure for the benefit of research, business and nuclear medicine production. | | | | |
|---|---------|---------|---------|---------|
| Target | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
| OPAL Reactor: | | | | |
| a) Total availability of OPAL (% of days at power) | 77% | 82% | 62%* | 82% |
| b) Planned availability of OPA (% of actual operating days scheduled) | 96% | 96% | 96% | 96% |
| Australian Synchrotron (% machine availability based on 16 week rolling average) | 95% | 95% | 95% | 95% |
| Australian Centre for Neutron Scattering (Average of % of days operated per available time) | 85% | 85% | 85% | 85% |
| Centre for Accelerator Science (Average % of days operated per available time) | 65% | 65% | 65% | 65% |

* Due to planned OPAL shutdown

Strategic objective 4: Nuclear expertise and advice

To provide expert advice, education and services to support Australia's nuclear policy and strengthen Australia's nuclear knowledge base.

- a. Trusted advice:** To assist the government in protecting the national interest through the provision of specialised nuclear advice and support.
- b. International engagement and leadership:** To engage with key international nuclear organisations and contribute to global and regional nuclear discussions to implement Australian government policy and ensure that Australia remains a nuclear science and technology leader.
- c. Nuclear education:** To provide resources that meet the needs of the education and academic communities, and demonstrate the benefits of nuclear science and technology.
- d. Engage and inform:** To provide timely, relevant and accessible information for multiple stakeholders and audiences to enhance public knowledge of ANSTO's work.

Under the ANSTO Act, and as the custodian of Australia's nuclear expertise, we have the responsibility to support and engage with the community and a wide range of stakeholder groups at all levels, both within Australia and internationally, to provide trusted advice and support Government in undertaking its international roles and obligations.

As mandated by the ANSTO Act, we play a vital role in providing expert advice to the Australian Government on all matters relating to nuclear science, technology and engineering, and contribute to and inform policy-making in this area. We do this through frequent engagement with our Minister, the Minister's office, the Department of Industry, Innovation and Science and the Chief Scientist of Australia.

We provide expert and technical advice across Australian Government portfolios, particularly to the Foreign Affairs and Trade portfolio in the areas of peaceful uses of nuclear energy, nuclear security and nuclear non-proliferation. We have contributed to major inquiries such as the *South Australian Nuclear Fuel Cycle Royal Commission* and to expert working groups, including the Chief Scientist's expert working group for the *2016 National Research Infrastructure Roadmap*. In addition, we host science and technology liaison events to provide parliamentarians with information about the role of nuclear science and technology in Australia.

As well as supporting the Australian Government's interactions with the International Atomic Energy Agency (IAEA), ANSTO provides direct support to the IAEA in a number of areas. ANSTO staff serve on high-level committees and participate in IAEA missions and activities in the areas of nuclear security, nuclear safety, nuclear law, environmental studies, human health, and waste management. ANSTO acts as the interface between the Agency and Australia on all matters related to nuclear applications and technical cooperation.

ANSTO has strong involvement with the Nuclear Energy Agency (NEA) in Paris including representation on its Steering Committee for Nuclear Energy (the highest policy-setting body) and the Nuclear Development Committee. We will continue to engage in the NEA's High-Level Group on the Security of Supply of Medical Radioisotopes, which is a major forum to engage with the nuclear medicine industry.

We will continue to coordinate Australia's contribution to the Forum for Nuclear Cooperation in Asia to share experience and knowledge in our region. Support of Australia's participation in the Global Initiative to Combat Nuclear Terrorism, including ANSTO's role as Chair of the Nuclear Forensics Working Group and representation on the Implementation and Assessment Group, will continue to support ANSTO's recognised role as a leader in nuclear security issues.

We will continue to be the proud custodian of Australia's nuclear capabilities, including maintaining the measurement standard for radioactivity, the Becquerel, and supporting an active program in nuclear forensics (ensuring Australia has the necessary tools to prevent and respond to nuclear security threats).

ANSTO has a comprehensive education and outreach program, connecting with thousands of high school and primary school students and teachers each year. Activities include tours of the facilities, school incursions, virtual tour programs and a range of educational events.

ANSTO is an expert advisor to the IAEA on the development of education and outreach materials for developing countries.

ANSTO provides information to stakeholders and engages the wider community through a variety of activities and events, including our Fact or Fiction shows and Citizen Science programs; through our web and social media platforms and traditional media.

Strategic objective 5: Nuclear business and innovation

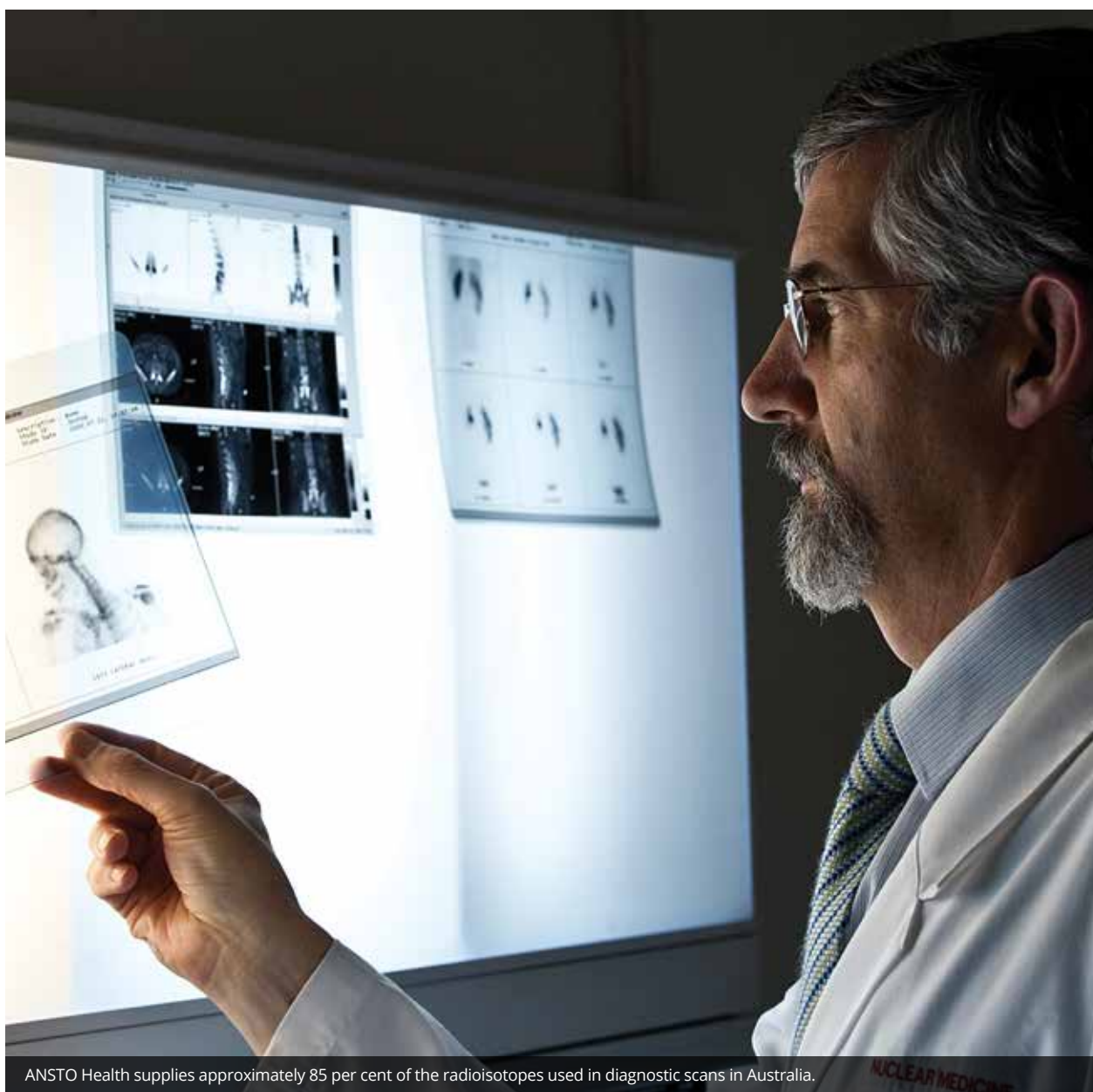
To provide services and products to our customers that benefit the broader community.

a. Responsive service: To operate our businesses to effectively serve our clients and the community.

b. Translate research: To leverage and translate research outcomes into new products and services.

c. Realise new opportunities: To serve new markets, create opportunities and introduce new products and services for the benefit of the Australian people and industry.

ANSTO Health manufactures and distributes radiopharmaceuticals throughout Australia and increasingly to overseas patients. These products are



ANSTO Health supplies approximately 85 per cent of the radioisotopes used in diagnostic scans in Australia.

used in nuclear medicine scans to help diagnose a wide range of diseases and illnesses including cancers, cardiac conditions, skeletal injuries and hyperthyroidism. ANSTO Health also produces and distributes therapeutic products which represent a novel way of treating hitherto hard-to-treat cancers, representing a significant growth opportunity for ANSTO.

Currently, ANSTO Health supplies approximately 85 per cent of the radioisotopes used in diagnostic scans in Australia. ANSTO currently delivers the equivalent of 10,000 patient doses of Mo-99 across Australia each week.

Over the period of the plan, ANSTO will increase supply of current and new therapeutic agents to the domestic market and will continue to provide a consistently reliable supply of isotopes. In turn, this will ensure the accuracy and speed of diagnosis – leading to the most appropriate clinical management and treatment of these life-threatening conditions for Australians.

ANSTO Health will work with domestic and international partners to improve access to established and new products, supporting the production of nuclear medicine to support medical treatments in Australia, the developing countries in Asia Pacific and in the broader global community.

We will continue to support clinical trials of the isotope, Lutetium-177 which, when combined with various molecules, has the potential to treat a variety of cancers, including neuroendocrine tumours.

ANSTO Radiation Services is focused on being the pre-eminent national radiation safety training centre in Australia. As a high-calibre and comprehensive provider of radiation protection consultancy and instrument calibration, there is a favourable outlook for the continued growth of this area.

ANSTO Minerals provides consulting and process development services to the minerals industry, as well as undertaking long-term R&D focused on the needs of future clients. The focus is to enhance our ability to bring together technology and economic evaluations on behalf of our clients and develop and manage ANSTO and client-owned Intellectual Property for mutual benefit. ANSTO Minerals has specialised facilities that permit laboratory studies and pilot scale operations for adding value to naturally occurring radioactive minerals and related minerals processing operations.

ANSTO supplies irradiation services to get optimal performance for microelectronics based on single crystal silicon. The ingots are irradiated in the OPAL reactor and returned to customers for supply further along the microelectronics supply chain. ANSTO has secured some 40 per cent market share. The focus is on improving logistics and better defining customer needs in a market that has a cyclical character. A key focus is to anticipate how greater value can be created for existing and new customers and to continuously improve our processing capabilities.

Table 2: ANSTO Subsidiaries operate in the context of our Corporate Plan to enhance our capabilities or provide transitional arrangements as we reorganise our activities

| ANSTO Subsidiaries | Jurisdiction of Operation | Status |
|--|--|--|
| Australian Synchrotron Holding Company Pty Ltd | Victoria | Will be deregistered following the termination of its role during FY17. |
| Synchrotron Light Source Australia Pty Ltd | Victoria | Currently employs AS staff. After transfer of staff to ANSTO, the company will be deregistered. |
| PETNET Australia Pty Limited | New South Wales | Operating provider of cyclotron-based radiopharmaceuticals. |
| ANSTO Nuclear Medicine Pty Ltd | New South Wales (incorporated in Victoria) | Currently under review in relation to production of Mo-99. |
| ANSTO Inc | USA | Retains a presence in the USA related to previous project activities undertaken to develop nuclear solutions in that jurisdiction. |

Organisational capabilities

Organisational Excellence

Organisational Excellence combines our commitment to customers, effective planning for predictable outcomes and responsive operations to continuously improve our products and processes. At the organisational level we deploy the excellence approach to plan, deliver and report on our progress. It ensures attention to our customers, effective planning of supply to meet demand and the associated financial outcomes with a 24 month rolling forecast and five year plan.

The ANSTO Enterprise project described earlier will play a major role in digitising our current processes. During the course of 2017, our focus is on simplifying the monthly cycle of meetings (this is being piloted from July 2016 to October

2016) and fully incorporating the benefits of integration of the Australian Synchrotron into ANSTO.

Business planning framework

ANSTO has refined its business planning cycle to support responsiveness to the Public Management Reform Agenda.

The updated business planning framework was adopted by the ANSTO Board in June 2016. It ensures the coherence of our planning and agreed timescales in the annual cycle. The current phasing of the review of the Corporate Plan for this year was July and August, but this will move to be better sequenced within our overall planning cycle. ANSTO's key performance indicators are reported annually through the Portfolio Budget Statements.

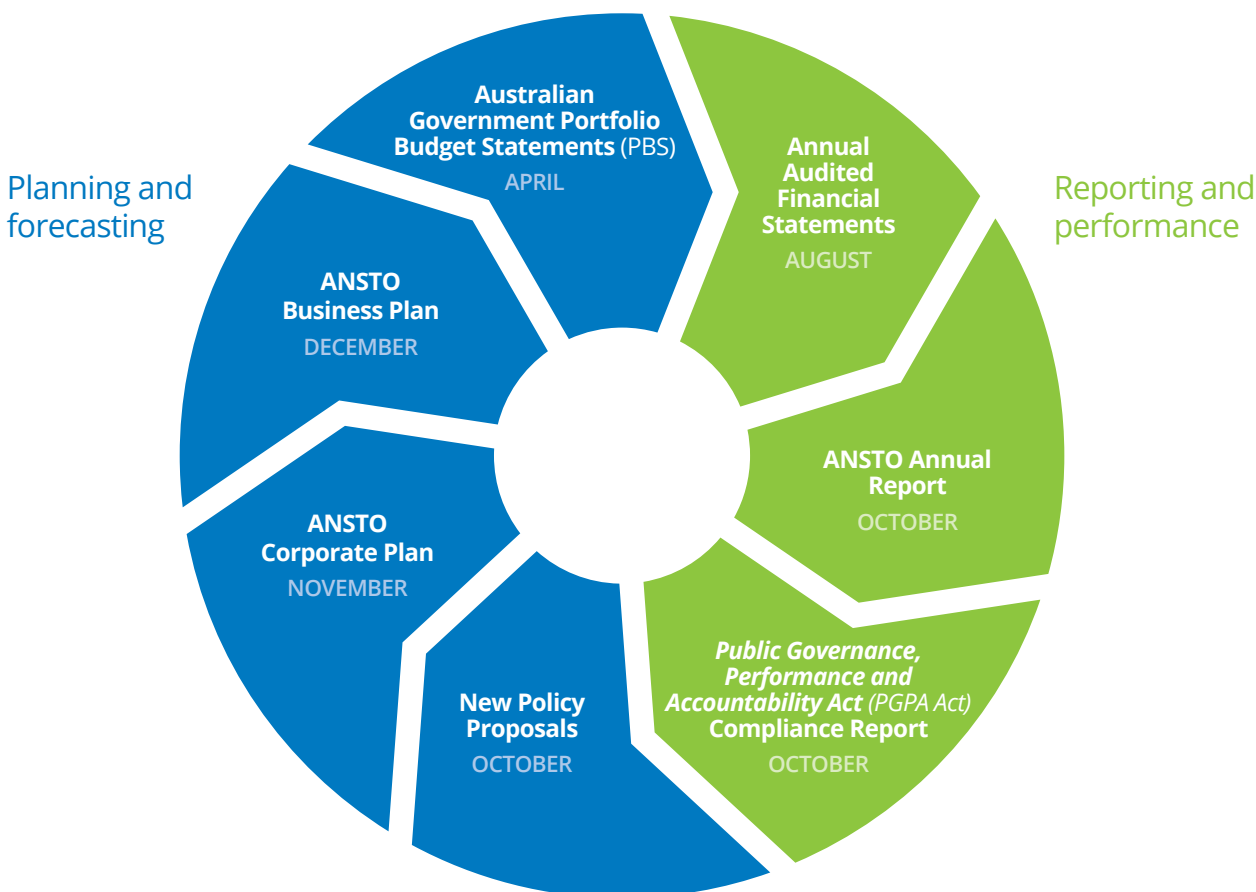


Figure 6: The updated business planning framework.

Governance and risk management

The ANSTO Board provides oversight of ANSTO's systems of risk management, compliance and internal control, setting the boundaries for acceptable risk-taking (risk appetite) and performance variability (risk tolerances) as we pursue our strategic and business objectives. Management is accountable to the Board for designing, implementing, monitoring and continuously improving these systems; and for their integration into the day-to-day activities of the organisation.

The ANSTO Board has a Risk and Audit Committee in compliance with section 16 of the Public Governance Performance and Accountability (PGPA) Act 2013.

The Committee provides independent assurance and assistance to the Board on the appropriateness of ANSTO's systems of risk oversight and management and systems of internal control, and its external accountabilities and legislative compliance.

The primary duties of this Committee are overseeing the adequacy and effectiveness of ANSTO's:

- governance framework
- risk management process and framework – including insurance arrangements and business continuity/disaster management
- fraud, corruption prevention and business ethics strategies
- overall internal control environment and specific elements of the control environment – including the optimisation of assurance coverage through the adoption of a combined assurance model, legal and regulatory compliance management process and framework
- quality, safety and environmental management systems and performance
- external financial reporting
- Internal Audit function – including approval of Internal Audit plans, review of Internal Audit reports and monitoring management's implementation of Internal Audit recommendations.

At executive and management level, the Risk Oversight Committee is responsible for oversight of governance, risk and compliance. ANSTO aligns its risk oversight and management practices to relevant standards and frameworks, including:

- Australian/New Zealand Standard ISO 31000:2009 (Risk Management Principles and Guidelines)

- Australian/New Zealand Standard ISO 19600 (Compliance Management System)
- ISO 19600:2014 (Compliance Management System)
- Fraud Control Plan
- COSO Internal Control – Integrated Framework (Internal Control)
- Australian/New Zealand Standard ISO 9001 (Quality Management System)

The Boards of our subsidiaries, ANSTO Nuclear Medicine Pty Ltd and Synchrotron Light Source Australia Pty Ltd also have Risk and Audit Committees that undertake a similar role to the Risk and Audit Committee of the ANSTO Board.

ANSTO endeavours to understand and effectively manage risks to minimise losses while maximising opportunities. ANSTO takes a structured, consistent and ongoing approach to risk and compliance management and consistently strives to improve its risk management practices, risk awareness and the overall risk culture. Effective risk management is viewed as essential to achieving our strategic and business objectives, by understanding and appropriately responding to threats and opportunities to not only ANSTO but also our subsidiaries.

Compliance Management is a key element of ANSTO's internal control framework and is integrated with our Risk Management framework. ANSTO's compliance landscape is complex but we enable our staff by training initiatives and an annual management certification process. In 2016, the ANSTO Board endorsed a new Fraud Control Plan established under the Public Governance, Performance and Accountability Act 2013 which will further enhance our Risk Management framework. This framework is supported by 'best practice' processes, procedures, guides, toolkits and enabling technology, as well as competent people, measured by appropriate performance measures and assured by appropriate mechanisms.



Australian Government



Locations

Lucas Heights | Camperdown | Clayton