

## BACKGROUND NOTES: AUSTRALIAN SYNCHROTRON

### What the Australian Synchrotron is, and does

- The Australian Synchrotron is a world-class national research facility that uses accelerator technology to produce a powerful source of light – x-rays and infrared radiation – a million times brighter than the sun.
- A synchrotron is a machine about the size of a football field that accelerates electrons to almost the speed of light. The light is then channelled down beamlines to experimental workstations. The nine different experimental stations allow materials to be studied from atomic to macroscopic levels.
- Researchers at the Australian Synchrotron use the accelerator to drive innovation for industry through science. Synchrotron light is used in many fields to study numerous things, including:
  - Medical research such as the mechanisms of disease and new cancer radiation therapy treatments
  - Environmental sciences such as investigating cleaner industrial production technology
  - Agriculture such as plant genomics and soil studies to assist farming communities
  - Minerals exploration enabling rapid analysis of drill core samples and ore characterisation
  - Engineering allowing high resolution imaging of cracks and defects in structures

### Funding history

- Synchrotron science revolutionised experimental science techniques in the late 1970s, and for many years Australian scientists had to conduct their ground-breaking research overseas. Then in 1993, the Australian Science and Technology Council (ASTEC) recommended Australia build its own synchrotron and two years later, funding was granted for a feasibility study.
- In 2002, preparation and planning commenced for the facility's five year construction, thanks to many partners including the Victorian Government, University of Melbourne, ANSTO, the CSIRO, New Zealand consortium, Association of Australian Medical Research Institutes, the Queensland, New South Wales, Western Australia and South Australian state governments and La Trobe University. The Commonwealth Government also made a major contribution through the National Collaborative Research Infrastructure Strategy funds. These contributions helped complete one of the most significant additions to Australia's research and development infrastructure.
- In 2007 experiments began and the Australian Synchrotron was officially opened for all Australians and the international research community. Since then, funding to keep the Synchrotron operational has over short-term periods, which has limited long-term projects. The new \$520 million commitment from the Federal Government marks an unprecedented ten-year funding path for the facility, and will enable this facility to reach its absolute potential.