



Australian Government



ANSTO's Centre for Accelerator Science a Progress Update

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In the beginning ...

- GFC



- In 2009 the Australian Government announced that ANSTO would receive capital funding to develop a centre for accelerator science.
- Provide assurance that ANSTO can meet it's AMS and IBA commitments for the Australian research community
- Complements existing accelerator facilities at ANSTO and other accelerator labs in Australia

What have we asked for?

Two new accelerators have been purchased from NEC

- 1MV accelerator. Routine radiocarbon and actinides AMS
 - *Also capability to measure a variety of other long-lived radioisotopes, including ^{10}Be , ^{36}Cl*
- 6MV accelerator. Mixed AMS and IBA capabilities including:
 - AMS: a broad range of isotopes including but not limited to ^{10}Be , ^{26}Al , ^{36}Cl , ^{129}I and ^{236}U
 - IBA: beam lines including -
 - a confocal microprobe,
 - a time of flight elastic recoil detection analysis (ERDA),
 - a high resolution NRA and heavy ion RBS, and
 - an implantation beam line for a broad range of ions.

What have we asked for?

To support the new accelerators two new buildings have been designed and constructed

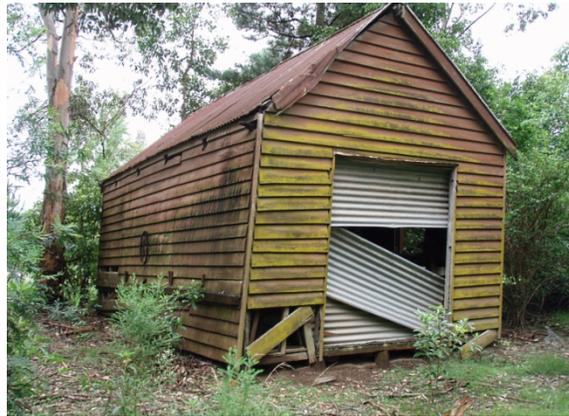
- a new accelerator building
 - Adjoins the existing ANTARES accelerator building
 - Doubles the footprint of the existing facility
- a new AMS chemistry building to produce samples
 - Provides all non-carbon AMS samples
 - Second stage will amalgamate all sample prep (includes all non-carbon) into one building

What have we asked for?

We wanted ...



they said we could have ...



we think we have ...

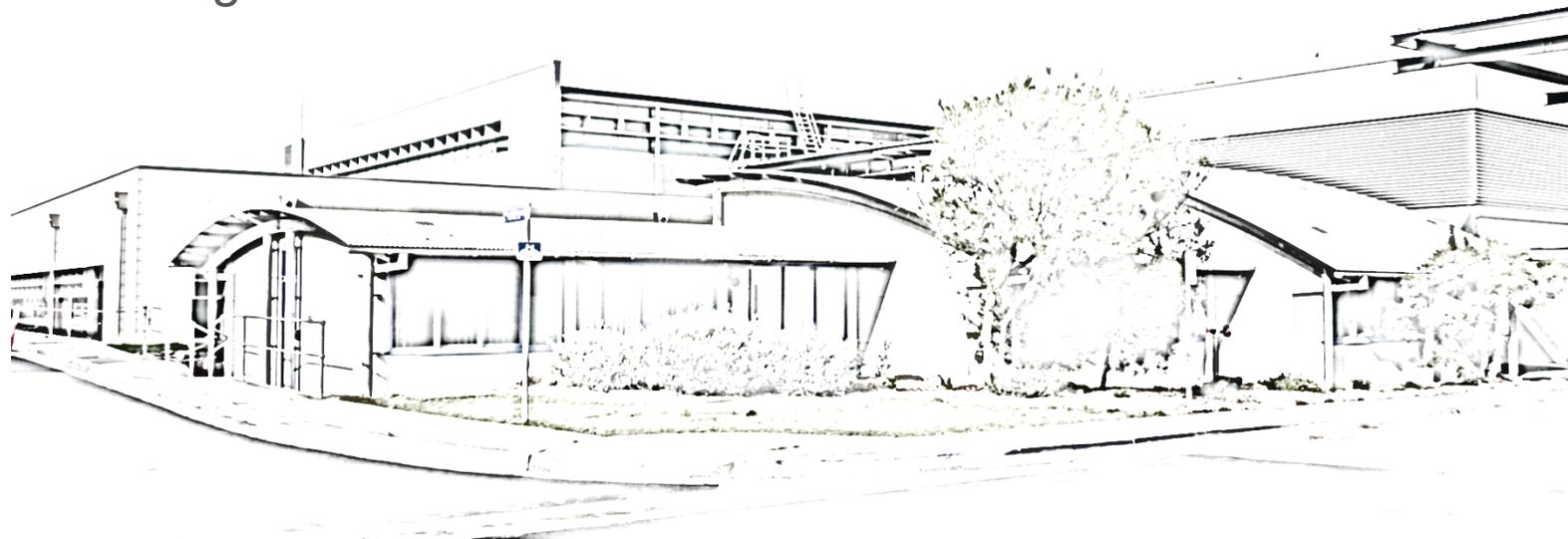




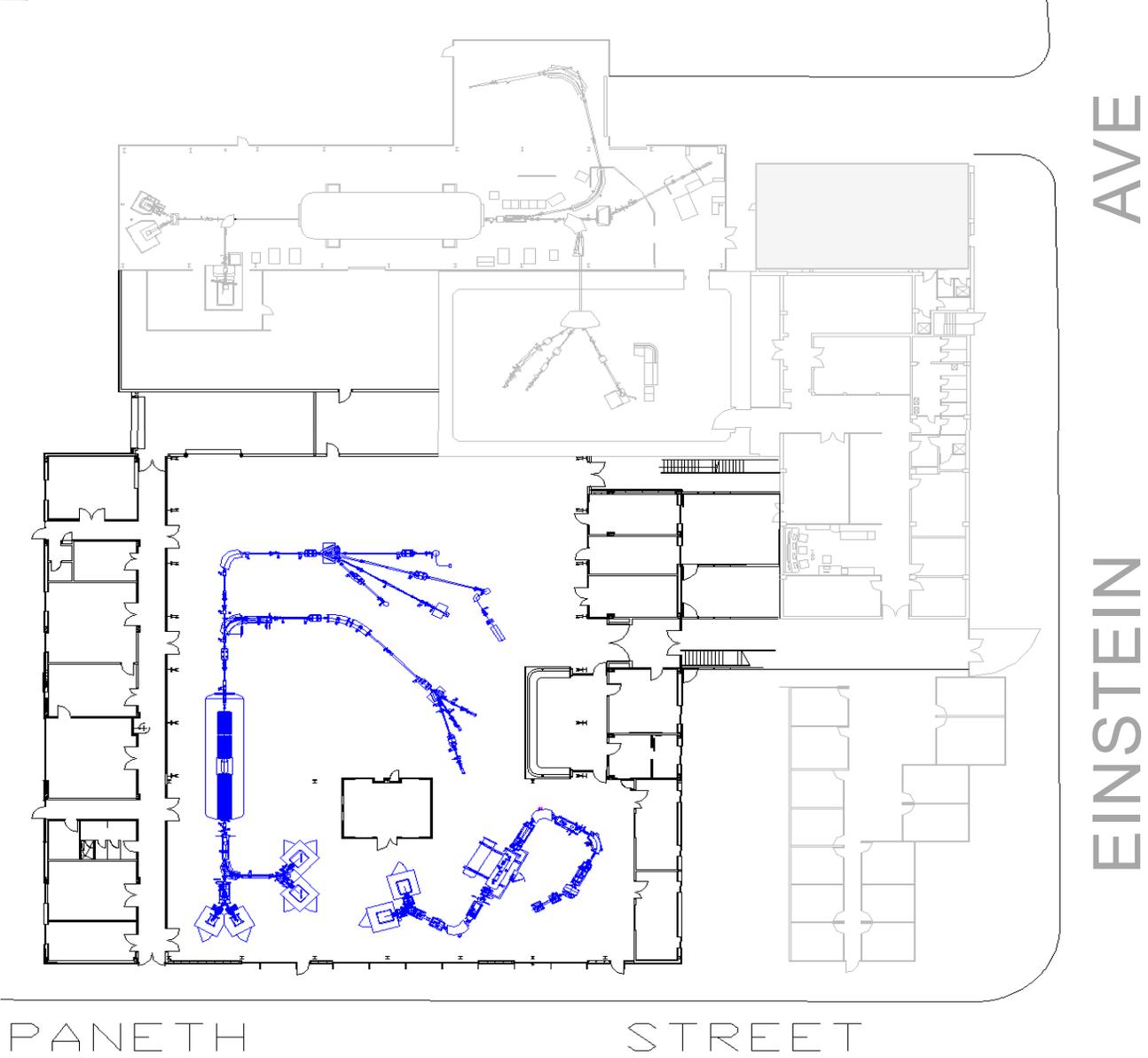
Design considerations

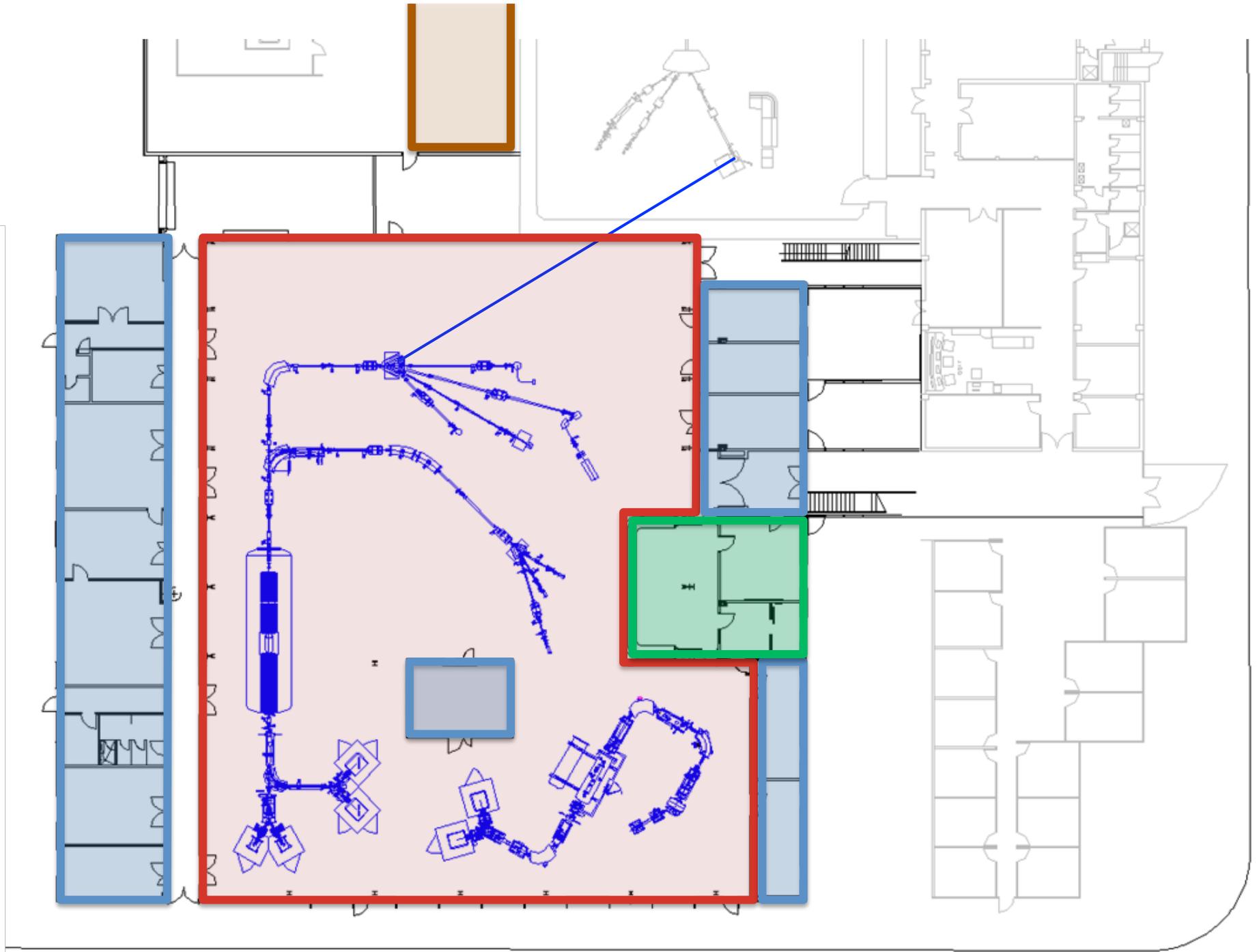
Starting with a blank canvas

- Physical factors
- Environmental factors
- Ergonomic factors
- Safety factors
- Resource management



Physical factors – Layout and Footprint



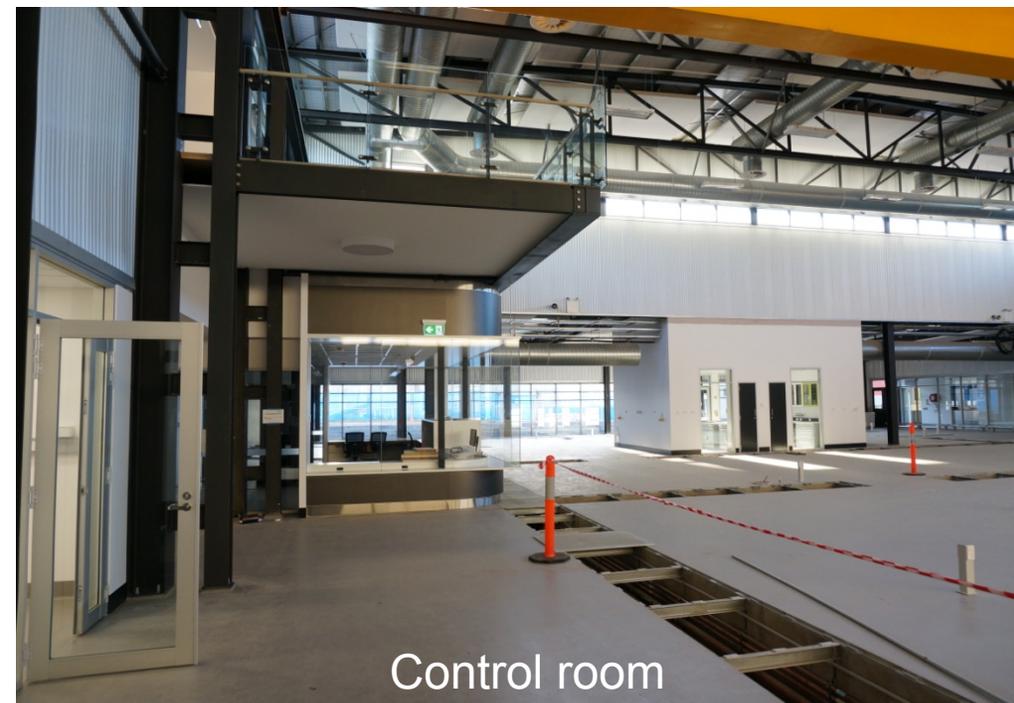




Cathode mounting room



Site for the 6MV accelerator



Control room



Site for the 1MV accelerator



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Process Cooling CHW System

ANSTO - B53 Accelerator Building

Tuesday, 4/16/2013 10:22:15AM
 General Fire Alarm NR
 Outside Air Temperature NR
 Outside Air Humidity NR

Chillers General Info

| | |
|-----------------------------|----|
| Total Chillers Amps Value % | NR |
| Common CHW Supply Temp | NR |
| Common CHW Return Temp | NR |
| Current Lead Chiller | NR |

Cooling Call

| | |
|-----------------|--------------------------|
| Cooling Call | NR |
| Manual Override | <input type="checkbox"/> |

Chiller Staging & Changeover

| | |
|-----------------------|----|
| Current Chiller Stage | NR |
|-----------------------|----|

PCCHW Bypass Valve Control

| | |
|---------------------|----|
| PCCHW System Bypass | NR |
|---------------------|----|

Other System Info

| | |
|-------------------------|-------|
| Cartridge Filter DP | NR |
| CHW Conductivity Sensor | NR |
| CHW pH Sensor | pH NR |

Cooling water



Gases



Lighting





Electronics workshop



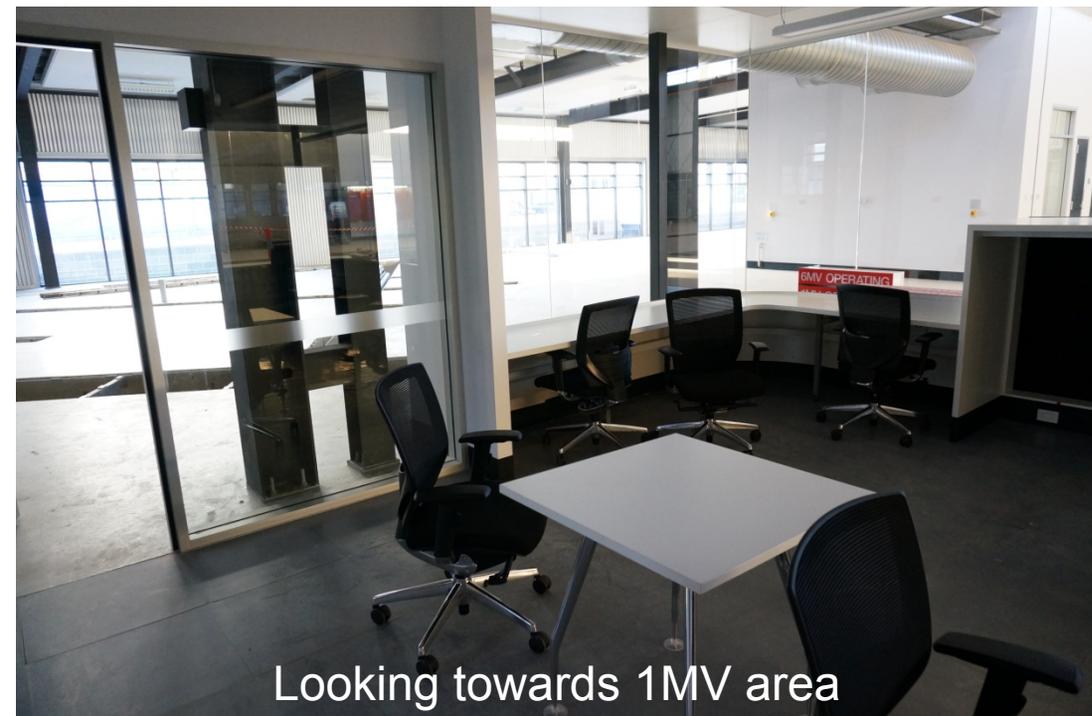
Vacuum engineering lab



Mechanical services lab



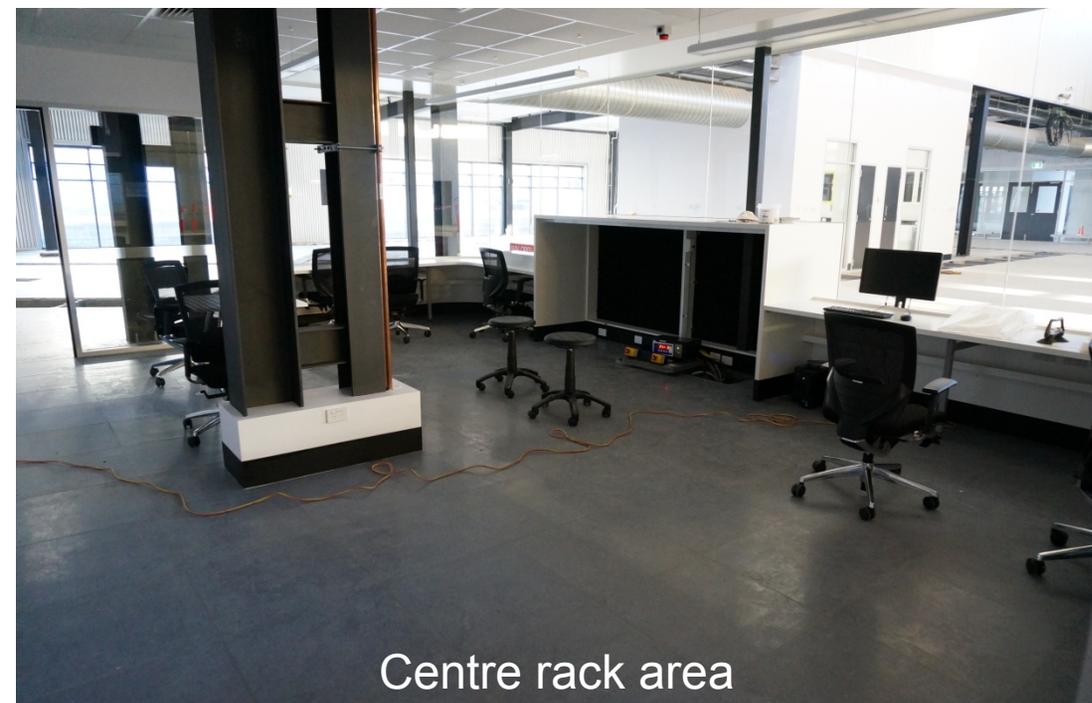
Ion Source cleaning room



Looking towards 1MV area



Looking towards 6MV area



Centre rack area

Control Room

Environmental factors

- Achieves a NABERS rating of 4.5/5
- Complies with the Energy Efficiency in Government Operations (EEGO) Policy.
- Additional features:
 - Natural lighting
 - Rainwater catchment
 - Well insulated to keep cool
 - Construction methods and materials





Gas depot and loading bay access



Rainwater pump system



High awning between buildings

Other efficiencies

Safety factors

- Fire alarms
- Access control
- Radiological protection
- Signage
- O₂ depletion monitors
- Alarm systems
- Worker comfort



Resource management

- Rationalising workshops
- Developing shared storage that we didn't have before
- BMS
- Operating status monitors
- Technical library

