

# Macquarie University – Central Animal Facility 13A Research Park Drive

# **Operational Management Plan**



# **Document Control**

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# 1 PURPOSE

To provide an overview of the operating procedures for the Macquarie University – Central Animal Facility for the purposes of the Development Application submission.

## 2 PROJECT OVERVIEW

This report accompanies a Development Application that seeks approval for the redevelopment of the Macquarie University Central Animal Facility (MQU Central Animal Facility).

The site is located at 13A Research Park Drive within the Macquarie University Campus, which is legally described as Lot 2000 in DP1305792.

Biomedical research at Macquarie University is supported by two animal facilities - the Central Animal Facility and the Zebrafish Facility.

The existing MQU Central Animal Facility is a research rodent facility currently located at 15 Research Park Drive adjacent to the site. The building is 20 years old and was subject to a refurbishment in 2012 and extension in 2019. The building has reached its capacity as a rodent research facility and can no longer support the research activities it is required to accommodate at present nor future growth.

The existing Zebrafish facility was constructed in 2010 and is part of a larger research facility within the Macquarie University Private Hospital. It is also currently at capacity and in need of redevelopment.

The proposed development comprises the construction of a new purpose-built facility that will accommodate the MQU Central Animal Facility (inclusive of a new Zebrafish facility) to support the growth in biomedical research at Macquarie University.

The Development Application seeks approval for the following components:

- Site preparation works including tree removal, earthworks and the relocation of existing demountable and storage containers located on the site;
- Construction and use of a three storey (including plant) building with a gross floor area of approximately 3,000m2 for the purposes of a biomedical research facility; and;
- Associated landscaping and public domain works.

For a detailed project description refer to the Statement of Environmental Effects prepared by Ethos Urban.

## **3 GENERAL PRACTISE**

The existing MQU – Central Animal Facility (15 Research Park Drive) is a research rodent facility. The existing Zebrafish facility (2 Technology Place) is an aquatic Office of the Gene Technology Regulator (OGTR). Both facilities are centrally managed as part of the Deputy Vice-Chancellor (Research) (DVC-R) portfolio. Additionally, both facilities are OGTR Physical Containment Level 2.

The proposed development will co-locate these two animal facilities into a new purpose-built facility.

The new MQU – Central Animal Facility is a core facility and will be shared by 13 research groups from the Faculty of Medicine, Health and Human Sciences and the Faculty of Science and Engineering (FSE).

Research activities within the MQU – Central Animal Facility are inclusive of the study of neurosurgery, neuronal pathways and degenerative neuronal diseases, chronic kidney disease, glaucoma, addiction, and cancer.

## 3.1 Governance

The MQU – Central Animal Facility will be operated by the Macquarie Animal Research Services (MARS), under the management of the Head of MARS, as part of the portfolio of the DVC-R. The rodent facility is and will continue to be managed by the Rodent Animal Facility Manager and the zebrafish facility is and will continue to be managed by the Aquatic Animal Facilities Manager.

# 3.2 Hours of Operation

The facility is manned by MARS staff during the hours of operation being 7am - 6pm Monday to Friday, however the facility is operational and accessible 24/7 for staff and researchers to work according to their project and animal needs.

## 3.3 Staff Numbers

The MQU – Central Animal Facility is to be shared by approximately 100 academic staff and Higher Degree Research (HDR) students, with the maximum building occupancy at any one time being no more than 50 people. In accordance with the facility's operation there will be no additional staff or students added to the campus, and the building will be managed by a few dedicated staff. The other MQU – Central Animal Facility building occupants come from various buildings on campus and will only be occupying the facility intermittently/ or for a few hours a day.

# 4 CERTIFICATION AND COMPLIANCE

The operating procedures for the MQU – Central Animal Facility being a PC2 animal facility are required to ensure compliance with, and are informed by the following:

- Office of the Gene Technology Regulator (OGTR) Guidelines and Standards (PC2 Microbiological and Animal facility)
- Department of Agriculture and Fisheries and Forestry (DAFF) guidelines (BC2 Microbiological)
- Australian/ New Zealand Standard Safety in Laboratories Part 3: Microbiological Safety and Containment (AS/NZS 2243.3)
- NSW Department of Primary Industries (DPI): Animal Research Establishment and Animal Supplier licenses
- Macquarie University's Institutional Biosafety and Animal Ethics Committees.

# 5 ANIMALS

## 5.1 Animals on site

The MQU – Central Animal Facility is to accommodate approximately 2,500 mouse cages, 320 rat cages and 20,000 Zebrafish.

Separate animal holding rooms have been accommodated in the proposed development for each species (rats, mice and zebrafish). This permits better experimental control, and reduces the potential for a widespread disease outbreak. In addition, separate rooms have been included for quarantine and isolation of animals.

#### 5.2 Animal Welfare

The University is certified by the NSW DPI as an Animal Research Establishment and Supplier.

All research at the University is governed by the Macquarie University Code for the Responsible Conduct of Research. The use of animals for scientific purposes at the University is governed by the Animal Research Act 1985 and Animal Research Regulation 2010 (NSW) incorporating the Australian Code for the Care and Use of Animals for Scientific Purposes and informed by the International Guiding Principles for Biomedical Research Involving Animals 2012 and the NHMRC Guidelines to promote the wellbeing of animals used for scientific purposes.

In addition, the University has an Animal Ethics Committee (AEC) that is composed according to the legislation. All of the University's husbandry practices are reviewed and approved by the AEC. Annual inspections are performed by the AEC in all of the University's facilities. Every four years these facilities are subject to a regulatory inspection by a third party that is reported to the NSW Department of Primary Industries.

#### 5.3 Animal enclosures

Mice and rats are held in individually ventilated microisolator caging.

The zebrafish are held in recirculating zebrafish aquatic systems.

All the animals are monitored and cared for daily by MARS staff and researchers.

#### 6 MECHANICAL SYSTEMS – ANIMAL HOLDING ROOM AIR HANDLING SYSTEM

#### 6.1 General

Air handling systems shall provide the following main functions in serving the animal spaces and meeting regulatory requirements:

- Suppling and exhausting airflow in sufficient volume to meet the air quality requirements and maintain containment in the spaces.
- Cooling and heating required to offset internal heat gains and ambient temperature fluctuations.
- Humidity control where required for animal welfare
- Airflow required to maintain pressure relationships.

## 6.2 Air Handling Strategy

Individual Air Handling Units (AHUs) shall be provided in the building to maintain temperature and air quality, based on the functional segregation requirements. All AHUs shall be located in the rooftop plantroom, ensuring all access and maintenance of the AHUs takes place outside of the PC2 laboratory areas.

#### 6.3 Air Quality Monitoring

Providing a constant volume system of 10 - 15 ACH is the accepted guideline to maintaining room air quality and subsequently cage air quality. While this range is generally effective, it doesn't take into account a number of facility management variables that would be outside the control of the HVAC system.

This blanket range of 10 - 15 ACH might over-ventilate a room containing fewer animals than original designed for, thereby wasting large amounts of energy, or under-ventilate a room containing more animals.

Active air quality monitoring allows ventilation rates to vary in accordance with the heat load and level of contaminants inside the room, saving energy whilst maintaining the appropriate ventilation levels for animal welfare and regulatory compliance.

#### 6.4 Pressure Control

Room pressurisation is achieved by mechanically creating air pressure differences between rooms to cause intentional air movement through room leakage openings and cracks around doors.

To control the pressures in each space, differential flow tracking control is being utilised. This method involves maintaining a volumetric offset between the supply and return/exhaust airflows through the use of airflow control devices or also known as venturi valves.

## 6.5 Fumigation

The MQU – Central Animal Facility is in compliance with the AS 2243.3 2022, which outlines the fumigation requirements for animal laboratories.

#### 6.6 Odour Reduction

The animals are sensitive to smells and this has been addressed in part by locating the facility's supply units away from anything that omits smells and fumes. Odours omitted from the animals are discharged through the building exhaust system. In order to mitigate external odours from the facility, the laboratory exhaust is designed to be a combined manifold system, which discharges vertically, at high velocity from the building. The manifolded system provides high levels of dilution as air from animal holding areas is mixed with high volumes of clean air from other areas of the building.