CSIRO Myall Vale: New Cotton Breeding Research Facilities Project

Australian Cotton Research Institute, NSW

Statement of Evidence

to the

Parliamentary Standing Committee

on Public Works

15 August 2018

Contents

Need for the Works

Introduction

1. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national science agency and one of the largest and most diverse research agencies in the world. CSIRO has more than 5,000 experts based in 57 centres throughout Australia and overseas.

2. Since its inception in 1926, CSIRO has played a vital role in shaping Australia and generating wealth for the nation. The organisation and its scientists have established an international reputation for excellence and achievement in basic and applied research and delivering innovative solutions for industry. Its work contributes to the ongoing prosperity of Australia's primary and secondary industries, to the creation of new technologies, products and techniques for the continuing development of Australia's agriculture, manufacturing and service-based industries.

3. The CSIRO Myall Vale site is located at the Australian Cotton Research Institute, owned by the NSW State Government, near Narrabri, in Northern NSW. The site is used by CSIRO and NSW Department of Primary Industries (DPI) staff. CSIRO is in the process of signing a new 15 year agreement (with a 10 year extension option) with the NSW State Government to utilise facilities on site.

4. CSIRO scientists at the CSIRO Myall Vale site are responsible for undertaking research in the areas of cotton breeding and crop management. CSIRO's work in the cotton industry is world leading with CSIRO responsible for developing new cotton varieties for planting seed, and research into crop management strategies for delivery to the Australian industry. The cotton industry is the largest natural fibre industry in Australia, with strong demand from overseas markets.

5. The cotton breeding team develops cotton plant varieties with high yield, high fibre quality, and is pest and disease resistance. To complement this the integrated cotton management team develops research solutions to maximize the outcomes from these varieties addressing both productivity and efficiency challenges faced by the industry. Research emphasis in both

teams include efficient crop nutrition, irrigation, and pest management. Water use efficiency and insect pest resistance management are high priorities.

6. CSIRO researchers at Myall Vale extensively collaborate with colleagues nationally across CSIRO, with universities and appropriate commercial partners to ensure appropriate delivery of outcomes and maximize impact. The CSIRO Myall Vale site serves as a point of interaction for CSIRO with rural regional communities. The staff carry out scientific research to assist Australian agriculture (with a focus on cotton) to be sustainable, productive and profitable. In doing this it supports the Australian industry to remain ahead of overseas competitors in terms of yield, fibre quality, and resource use efficiency. A profitable and sustainable cotton industry has provided considerable resilience to rural communities. Other research agencies in the Narrabri area have or are currently investing in new laboratories and other infrastructure. CSIRO facilities are by comparison, becoming increasingly outdated, function poorly, are inefficient and carry increasing work health and safety risks.

7. The CSIRO Myall Vale site has been responsible for delivering research outcomes that have achieved significant and broad national impact in the areas of plant breeding, plant science, irrigation management, crop nutrition, plant and crop physiology, entomology and insect ecology, crop simulation modelling, and the development of computerized decision support.

8. The industry has invested strongly in research with CSIRO. Currently CSIRO as a whole constitutes almost half of the total cotton research effort. CSIRO expect the demand for breeding and production based research will remain strong into the future. This is especially the case with rising cost of production for cotton producers and challenges associated with climate and access to adequate water supplies.

9. The existing Cotton processing, equipment workshop and laboratory research facilities which CSIRO utilise at the Myall Vale site were constructed in the 1970’s and are no longer fit for purpose. The existing facilities are too small, have no room for expansion, create inefficient workflows, restrict scientific research on the site, have high maintenance costs and are increasingly posing work health and safety risks to staff. CSIRO has committed to a project to deliver new cotton breeding and research facilities, which are custom designed to resolve the work health and safety issues on site, increase productivity, address current

inefficiencies and allow CSIRO to undertake world leading research in modern facilities to support the Australian cotton industry. This is also important for CSIRO to attract the best and brightest research talent to support agricultural research.

Background

10. The CSIRO Myall Vale site is co-located on the NSW DPI Australian Cotton Research Institute site, near Narrabri, in Northern NSW. The Myall Vale, Australian Cotton Research Institute site accommodates approximately 70 CSIRO staff and 40 NSW DPI staff.

11. NSW DPI and CSIRO research topics do not overlap on site, but are synergistic. CSIRO's research on the site is focused in the areas of cotton breeding and integrated crop management. NSW DPI research focuses on weed, disease and soil management as it relates to cotton growing.

12. CSIRO cotton breeding research on the site, includes the breeding of cotton varieties (genetics) which involves significant crop management in the field, harvesting of cotton lint and seed, processing the samples where seed and lint are separated, and the testing of fibre quality. Other plant material is also sometimes collected to meet broader scientific needs.

13. CSIRO has engaged an industry partner Cotton Seed Distributors (CSD), who is responsible for the commercialization and large scale growing and distribution of cotton varieties developed by CSIRO. CSD are located 20 minutes away from the CSIRO Myall Vale site and have just invested (~$100M) in larger scale new facilities to service the future needs of the Australian industry, which includes a response to industry expansion. Construction of the CSD new facilities was completed in late 2017.

14. CSIRO's integrated cotton management team undertakes important research that underpins successful delivery of CSIRO's varieties by Australian cotton growers. Research includes increasing understanding and management of cotton insect pests which pose a significant risk to cotton crops, investigations into crop nutrition to improve fertilizer use, agronomy and physiology studies to improve resource use efficiencies (eg. water). This work requires CSIRO scientists to grow crops in the fields and undertake measurements and collection of samples from crops, plants, and soils. Funding for this research comes from substantial support from industry research grants.

Need for the works

15. The existing cotton processing, plant and equipment workshop and laboratory research facilities, which CSIRO utilise at the Myall Vale site were constructed in the 1970's and are no longer fit for purpose. The existing facilities are too small, have no room for expansion, create inefficient workflows, restrict scientific research on the site, have high maintenance costs and pose work health and safety risks to staff.

16. The proposed new facilities will support the work of three unique teams on the site and allow activities which are currently dispersed across the site, due to a lack of appropriately sized available facilities, to be co-located in appropriate locations. The cotton breeding and processing team activities are intended to be relocated from a number of sheds, which cater for individual breeding and processing processes, into the new cotton processing facility. The cotton research team activities are intended to be relocated from across the site in a number of sheds, the main administration building and a DPI laboratory into a central location. The machinery maintenance team will be relocated into a new plant and equipment workshop which is appropriately sized and located to handle new, larger, farm machinery.

17. Although the site is owned by the NSW State Government and some facilities on site are shared, such as the main administration building, facilities required for specific scientific use by one organisation are generally provided by the organisation which requires them. The two existing laboratories on the site are owned by NSW DPI. A third laboratory which CSIRO was utilising for research was decommissioned and has not yet been replaced which has resulted in a lack of appropriate laboratory facilities. The current cotton breeding support facility is owned by CSIRO. CSIRO has confirmed that the NSW DPI is supportive of CSIRO providing upgraded dedicated facilities on site, further evidenced by an extension of the current licencing arrangements for a further 15 years.

18. CSIRO has been located on the site for over 40 years. CSIRO and NSW DPI have an excellent collaborative working arrangement on the site. The research undertaken by both organizations in the field complements each other. CSIRO research has expanded over the years and the facilities occupied by CSIRO researchers are no longer large enough to meet CSIRO's needs. CSIRO has invested in several bespoke facilities on the site to assist with meeting its research objectives, including glass houses and machinery sheds. The investment

in cotton research crops at Myall Vale is a long term strategic for investment for CSIRO. NSW DPI does not have any other facilities which are appropriate for the work which CSIRO is planning to undertake and DPI is not in a position to build further facilities for CSIRO to lease.

Cotton processing facility

19. CSIRO staff need access to a dedicated cotton processing facility to support cotton breeding and processing activities including, preparation of planting seed, ginning of seed cotton, acid delinting of seed, seed storage, seed treatments, fibre quality testing instruments, and to accommodate technical staff that support these operations. The current facility was constructed in 1974 to house two permanent technical officers as well as seed storage, fibre testing laboratory, acid delinting facility, cool room, and work area. The cotton breeding technical team has now grown to 21, so there is considerable crowding in the work area and for office space with limited computer access for data handling and processing. There are now two cool rooms, one dedicated to regulated Genetically Modified seed to comply with Office of Gene Technology Regulator (OGTR) requirements. These areas are now completely inadequate for the work given the expansion of the breeding and effort. A new initiative to improve seedling vigour of elite germplasm also requires space to house seed counting and packing equipment.

20. In the current cotton breeding facility the building foundations are crumbling, walls are cracking, the roof leaks and the floor strength is inadequate for a seed storage shelving and stacking system required to address work health and safety risks. Refurbishment is not feasible for the existing breeding shed as the current building is too small and foundations are too weak to carry pallet racking and use of a forklift, which is required for future storage needs. The acid delinting system has been upgraded, but this had to be installed in a separate facility which significantly impedes efficient workflow and productivity. Cotton breeding has an ongoing need to develop new germplasm with improved yield, fibre quality and disease resistance. Outcomes of these efforts have expanded to provide the platform for future delivery to cotton industries to an expanding Australian industry and globally. On top of breeding new varieties for improved yield and quality there is increasing effort needed to breed varieties that have genetically modified protection traits. Each additional trait is a separate breeding effort. As such, the complex mix of traits and germplasm requires the

highest standard of science delivery which needs appropriate facilities. The current facilities compromise our ability to deliver on the commitments CSIRO has made to our commercial partners.

21. The delivery of a new cotton processing facility would resolve work health and safety risks with the current facilities and provide appropriately sized facilities to cater for the current and future workload of the cotton breeding group. The new cotton processing facility has also been designed to provide appropriate working space around heavy equipment to reduce risk to staff and improve productivity. CSIRO staff require access to dedicated laboratories to process and handle soil and plant material taken from the field, to rear and handle live insect material that is used to monitor pesticide resistance, and to undertake general research as required by the industry. This research is important to CSIRO's long term involvement in the cotton and other cropping industries. This research is currently being undertaken in dispersed facilities across the site, which are generally at their end of their useful life (having been constructed in the 1970s), too small, do not comply with current standards and not fit for their current purpose.

Laboratory facility

22. The need of the cotton research group is for a dedicated laboratory research facility to support effective operation and is described in the following three research components:

    a. General research.

    b. Insect resistance research.

    c. Plant and soil research.

23. It is not feasible to refurbish the existing laboratories in-situ due to insufficient space to meet current and future research requirements and the aged core infrastructure underpinning the current facilities. The NSW DPI has also expressed a desire for CSIRO to move laboratories and research activities out of the main office administration building and separate laboratory and office activities.

24. **General Research Laboratory** - Current and future CSIRO research depend upon access to general purpose laboratory facilities, which includes the ability to undertake wet chemistry

and handling of electronic equipment used in the field. Specific research planned to be undertaken in this laboratory includes research investigating the need for improvements of plant physiology to improve in heat tolerance, water use efficiency, and resilience to climate change. Currently elements of this work are being conducted in a former laboratory, which was decommissioned and never replaced, and an existing wet chemistry laboratory that was created out of office space in the main office administration building. The current laboratory has dilapidated cupboards, cramped sample storage areas, insufficient bench space, a poorly sited fume hood creating poor workflow. The laboratory door opens the wrong way and is not fire rated, creating work health and safety risks. Further, there is no general laboratory area for visiting scientists or research students to use, which is limiting investment in CSIRO research at the site.

25. **Plant and Soil Research Laboratory** - This research is crucial for investigating the efficient use of nitrogen fertilizer and other key cotton nutrients, as well as understanding the role of soil improving carbon storage and reducing Greenhous Gas Emissions. There is significant ongoing research to improve water use efficiency of limited water resources from groundwater and the Murray Darling river system. Considerable measurements of soil and plant material are taken to determine the growth and physiology of crops to assess new management practices and plant varieties in their ability to improve efficiency outcomes (nutrition, water or carbon). Outcomes from this research will provide new recommendations to industries to sustain economic, social and environmental outcomes. Current plant and soil research facilities are dispersed throughout a number of site sheds on site, which are not fit for purpose and create workflow inefficiencies and work health and safety risks. A significant amount of soil grinding currently occurs outside in the heat in summer due to a lack of dedicated processing space indoors. Space limitations of the existing sheds are also limiting possibilities for investment in new equipment to improve processing efficiencies and safety outcomes.

26. **Insect Resistance Research Laboratory** - This research is focused on monitoring for naturally occurring “resistant moths” with resistance to the proteins contained within CSIRO cotton plant varieties that help control pests. The moth monitoring program provides important insights that help the cotton industry to actively undertake management strategies to avoid the chances of resistant moths developing. This activity is crucial to the

sustainability of the Australian cotton industry and to CSIRO's investment in cotton varieties.

27. The existing insect resistance research laboratory facilities are dispersed across the site and are not fit for purpose. Current bench space is insufficient to accommodate the work and has the facilities have undergone ad-hoc modifications to inadequately patch up problems. The current moth rearing rooms are attached to the end of a NSW DPI laboratory and are at capacity. The layout of the moth rearing rooms are poorly suited for future expansion. The current moth food preparation areas are located within available space in the main office administration building, which creates workflow inefficiencies and work health and safety risks. The current facilities are too small and are incapable of expansion to allow for CSIRO to accept further research funding to expand activities in this area.

28. The construction of a new laboratory facility will resolve workflow inefficiencies and work health and safety risks identified in the current facilities and allow CSIRO research staff to be co-located in a central research facility adjacent to the main office and administration building. The location of the new laboratory facility is also in accordance with NSW DPI preference to separate office administration and scientific research activities, which is in line with modern work health and safety principles. The co-location of staff from across the site in a central new laboratory facility will also encourage collaboration between research teams and improve site amenity.

Plant and equipment workshop

29. The current plant and equipment workshop is neither wide, nor tall enough to fit new machinery and equipment (such as cotton pickers which have continued to increase in size). The current plant and equipment workshop arrangement does not have a big enough capacity to meet current and future demand and the layout of the current facility creates workflow and safety risks. The location of the existing workshop also increases heavy vehicle traffic through the middle of the site which creates work health and safety risks for staff.

30. Delivering a new plant and equipment workshop would allow this facility to be appropriately sized to fit the current and future range of vehicles used on the site. The

location of the new plant and equipment workshop to the north of the precinct will also remove risks surrounding heavy vehicle traffic movements through high traffic pedestrian areas in the center of the site.

Purpose of the Works

Project objectives

31. The objectives of this project are to:

    a. Provide fit for purpose, updated and appropriate facilities to support CSIRO staff to undertake required activities on site.

    b. Resolve Work Health and Safety issues on site.

    c. Provide facilities with opportunities for future expansion to meet the future cotton breeding and management research demands of the industry.

Description of the proposal

32. To meet the project objectives CSIRO are proposing the development of three new facilities on site:

    a. A cotton processing facility - to be constructed on the western side of the precinct.

    b. A laboratory facility - to be constructed adjacent, but separate, to the main office and administration building.

    c. A plant and equipment workshop - to be located to the north of the site.

33. The project will also be responsible for demolishing existing sheds on site which are no longer fit for purpose to make way for the new laboratory facility.

34. The project will also deliver all associated infrastructure to the new facilities, including new roads, electricity and information technology cables, sewage, storm water and fire suppression systems.

35. The location of the new facilities will assist to separate cotton processing operations and heavy vehicle movements away from the main office and administration buildings. The laboratory facility will be located in the centre of the site adjacent to the main administration wing and close to other laboratory facilities.

36. The laboratory facility will include two new laboratories, cold rooms, equipment storage and sample processing facilities. The new laboratory will be able to cater for approximately 20 people. The new plant and soil laboratory will be able to cater for six CSIRO staff.

37. The cotton processing facility will include new sample storage areas, processing rooms, work rooms, controlled temperature cold rooms, and an operations/staging area. The facility will cater for up to 30 staff to operate in the facility during the peak of the cotton processing season.

38. The plant and equipment workshop will include higher and wider undercover work bays to fit new farming machinery. This new facility will allow the two plant and equipment workshop staff to work in safer conditions. The plant and equipment workshop will also include a high speed internet connection to allow staff to run diagnostic tests on machinery.

Options Considered

Other options considered

39. The project considered the following options to meet the project objectives:

    a. Option A: Refurbish existing facilities on site.

    b. Option B: Do nothing.

    c. Option C: Build new facilities in a single structure on site.

    d. Option D: Build new facilities in separate structures on the site.

    e. Option E: Consideration of other investment opportunities.

40. CSIRO agreed that undertaking "Option A: Refurbish existing facilities" was not a viable option. The existing Cotton Breeding Support Facilities were constructed in the 1970s and a recent survey of facilities, undertaken by the design team, found that they are not fit for purpose. The existing facilities are too small to house all the equipment and staff required. The building foundations are crumbling and the floor strength is not adequate to operate a forklift and install a seed storage stacking system to resolve health and safety issues within the facility. The project also noted that there were no other appropriately sized facilities on site that CSIRO could lease and refurbish.

41. The existing laboratory facilities were either inadequate, or no longer existed, for the research work required to be undertaken. The current laboratory facilities, located within the main administration building owned by the NSW DPI, are not sufficiently sized to meet the current or future requirements. NSW DPI, as the owner of the administration building, has expressed a preference to decommission these laboratories and refurbish the space for further office accommodation for use by either CSIRO or the NSW DPI staff. The NSW DPI has expressed a preference for the laboratory facilities to be located within a separate facility. The agronomy/crop physiology laboratory had been decommissioned due to the need to provide further office accommodation within the main administration building and

work, health and safety (WHS) issues. A replacement laboratory has not yet been delivered, impacting on CSIRO's ability to accept scientific grants and conduct research on site.

42. CSIRO agreed that "Option B: Do nothing" was not a viable option due to the work health and safety risks posed by working in unsuitable facilities and lack of capacity to meet current and future scientific research. This option also didn't align with CSIRO's strategic plan to invest in staff and facilities that have a profound impact on national challenges. The existing cotton processing and laboratory facilities were all built in the 1970s and are no longer fit for purpose. The facilities now pose work health and safety risks and are not designed for the requirements of modern day research. Without investing in modern facilities that provide staff with the tools necessary to complete their research in a safe and productive manner, CSIRO risks being unable to attract and retain talent to undertake future research in the industry.

43. CSIRO agreed that "Option C: Build new facilities in a single structure on site", was not a preferred option as the footprint of the building was too large and the functional relationships between the operations occurring within the cotton processing and the laboratory areas did not justify moving both facilities to the rear of the site. This move would jeopardise the opportunity to collaborate with the NSW DPI research staff and risked impacting on relationships between staff on site.

44. CSIRO decided that "Option D: Build new facilities in separate structures on the site" was the preferred option. The cotton processing facility will be located in a separate facility on the western side of the precinct and include facilities to support the functions of field staff who will be interacting with this facility. The new laboratory facilities can be constructed behind the main administration building, satisfying the NSW Department of Primary Industries' preference to separate laboratory facilities from the main administration building. The plant and equipment workshop will be constructed on the northern side of the precinct to allow safe access for heavy machinery.

45. All staff will retain existing office work spaces within the main administration building and new work spaces will be generated for staff moving from facilities that will be demolished. This options allows staff to retain an office presence within the main administration and gain scientific benefits from co-location and integration with the NSW DPI scientists.

46. CSIRO also considered the possibility of obtaining investment from another organisation to help fund the works and decided that this was not a viable option. Initial investigations identified that whilst there could be some synergies in research, the size of the proposed new facilities were based upon CSIRO user needs. Investment from another organisation would require the facilities to be expanded to accommodate any additional research needs. A risk was also identified that the project could be unnecessarily delayed if it chose to wait for another organisation to obtain funding for the works. It was decided that this was an unacceptable risk to the project and CSIRO agreed to move forward based on facilities appropriately sized for CSIRO's research needs.

Reasons for adopting the proposed course of action

47. The preferred proposal provides value for money for the Commonwealth as the design most appropriately addresses the particular needs of each facility within the available site. The new laboratory facility will provide increased laboratory space, in line with current standards, for staff in a central location. The new laboratory layouts will allow for more efficient process flow and allow room for future expansion of research activities. The co-location of laboratories will also allow efficiencies to be gained by sharing general lab facilities and machinery among research projects.

48. The new cotton processing facility will provide a more efficient workflow for staff, provide increased storage areas and resolve work health and safety issues identified on site. Storage areas have been designed to make the best use of available space and assist in reducing WHS concerns associated with the storage of cotton. The cotton processing facility has been designed so that noisey delivery and cotton processing activities are located at the far end of the building to reduce disruption to the rest of the site. Dust extraction, heating, cooling and task lighting systems in the cotton processing area have also been specifically designed to reduce WHS risks to staff.

49. The demolition of redundant buildings will reduce maintenance costs on site and resolve work health and safety risks.

Scope of the Works

Project location

50. The CSIRO Myall Vale site is located, in the Myall Vale region, in Northern NSW, on the Kamilaroi Highway, approximately 22 kilometre (km) north-west from Narrabri towards Wee Waa, NSW.

51. The CSIRO Myall Vale site is located within the NSW Department of Primary Industries Australian Cotton Research Institute (ACRI) site and is owned by the NSW State Government. The site has an area of approximately 277 hectares of which 183 hectares are irrigated, is situated on the banks of the Namoi River, and is in the centre of NSW's main cotton production areas.

52. The site contains cotton growing fields, site sheds, a main administration building, glass houses and support facilities. Drawings of the site are located in Attachment A: Drawing A001 Proposed Site Context Plan and Attachment B: Drawing A002 Existing Conditions and Demolition Plan.

Project scope

53. The scope of the proposed works is to:

    a. Deliver a new cotton processing facility.

    b. Deliver a new laboratory facility.

    c. Deliver a new plant and equipment workshop.

    d. Deliver new associated roads and infrastructure.

    e. Demolish redundant facilities on site.

Site description

54. Three independent sites were selected for the new facilities. The sites were selected based upon the operations of the new facilities and their integration with existing site buildings and infrastructure. The sites selected were deemed to be the most appropriate locations for the proposed new buildings by the project design team. These site locations were supported by the NSW DPI, on behalf of the NSW State Government as the owner of the land.

55. The site for the new cotton processing facility is located towards the west of the main administration building. This site is located away from the centre of the site and is appropriate to undertake cotton processing work. The site also provides easy access to Minoru lane for trucks.

56. The site for the new laboratory facility is located centrally on the site and directly to the north of the main administration building. This site is located near existing laboratories and office accommodation and will consolidate laboratories in a central locations.

57. The site for the new plant and equipment workshop is located on the northern side of the precinct, at the north end of the primary access road within the site, adjacent to the main machinery storage shed. This site is located in an area with similar operations and separates heavy machinery movements away from the laboratory and office administration areas towards the centre of the site.

58. Roads and associated infrastructure will be designed to connect the selected sites to the main road network and services infrastructure connections.

59. The proposed locations of the new facilities are detailed in Attachment D: Drawing A012 Proposed Site Plan.

Information on zoning and approvals

60. The Myall Vale site is located on NSW Crown Land. The proposed works are consistent with the use of the site.

Details of land acquisition

61. CSIRO is in the process of signing a new 15 year lease agreement (with a 10 year extension option) on the Myall Vale site. The NSW DPI, on behalf of the NSW State Government has given in principal approval to CSIRO to construct the new facilities on the site in accordance with the lease agreement. As part of the detailed design process, CSIRO will obtain official approval from the lessor to build on site. The ownership of the land will be retained by the NSW State Government. Any impact of the addition of the proposed new facilities on site will be considered under the terms of the existing leasing arrangement.

62. CSIRO owns approximately 15 buildings on site and shares numerous other DPI owned buildings on the site. The existing site facilities occupancy arrangement is demonstrated in Attachment C: A003 Existing Ownership and Occupancy Site Plan. The anticipated post construction site facilities occupancy arrangement is detailed in Attachment E: A013: Post – Construction Ownership and Occupancy Site Plan. Following the construction of the new facilities and demolition of the old facilities (owned by CSIRO) the ratio of CSIRO owned buildings on site is not expected to change. At the conclusion of the site lease agreement, if a new agreement is not reached, CSIRO will be required to remove any buildings that the licensor does not accept to take ownership of.

Details of applicable codes and standards

63. The new facilities will be built to comply with all relevant codes and standards including:

    a. The National Construction Code (NCC).

    b. *Disability Discrimination Act 1992* (DDA).

    c. Office of the Gene Technology Regulator (OGTR) guidelines.

    d. Relevant Australian Standards (AS).

64. A Building Certifier will be engaged to certify compliance of the works.

65. All Head Contractors engaged to undertake construction work will be assessed for Office of the Federal Safety Commissioner (OFSC) accreditation.

Planning and design philosophy

66. The philosophy of the design of the proposed facilities include:

    a. Increased collaboration and community on site.

    b. Design of modern facilities with opportunities for future expansion and flexibility to meet future scientific needs.

    c. Design of facilities consistent with the other facilities on site and the ability of local contractors to construct and perform maintenance on the facility.

    d. Plan to consolidate operations to drive operational efficiencies and provide shared services where appropriate.

67. The facilities are designed to match other similar facilities on site, where the floor level is raised above the natural ground level by approximately 1000 millimetre (mm), to be above the established flood level that generally prevails on this site. As a result, the building sits on a concrete substructure that in turn provides a platform for vehicular access and pedestrian traffic above the nominal flood level.

68. The siting of the new buildings was determined after significant analysis of the current site and its operations including vehicular access requirements, and to utilise the current road networks to best affect. Also, the intention is to minimise the demolition of building stock, noting that the land is not owned by CSIRO and most of the existing buildings are leased to CSIRO.

69. The proposed buildings have been designed to allow construction to be undertaken in a staged approach to minimise disruption of scientific activities occurring on site.

Staging of the Works

70. The new project facilities are located in three independent locations across the site. Existing facilities on site are required to be kept operational throughout the construction period. A staged construction approach to the facilities is required to ensure that existing scientific

research activities, occurring in various locations across the site are not interrupted during the demolition and delivery of new facilities.

71. The works will be delivered in two stages. Stage 1 work includes the construction of the plant and equipment workshop to the north of the site and the cotton processing facility to the west of the site. The construction and commissioning of these two new facilities will allow operations occurring in the centre of the site to vacate existing facilities, which will be impacted by construction work for the new laboratory facility, and relocate into new facilities. A staged solution will also allow existing cotton processing equipment, planned to be re-used, to be relocated and commissioned in the new facilities with minimal downtime. The functional and spatial provisions in the new cotton processing facility align with the operational need and thereby facilitate the demolition of the functions currently housed in the construction zone for the new Laboratories.

72. Construction of stage 2 work will include the demolition of existing facilities and construction of the new laboratory facility in the centre of the site. Demolition of the CSIRO building and relocation of a demountable workers facility, will create the open space required for the construction of the new laboratory facility in its preferred location. Existing laboratory functions are either located in the existing main office administration building or in a facility in the glasshouse precinct and hence are unaffected by the construction program and delivery. These research functions will be the last items to move into the new facilities. This staged approach will result in limited disruption to any operations for CSIRO on the Myall Vale site.

Architecture

73. Based on both current and future operational frameworks, the new proposal provides the following functional activities and spaces:

74. The new **cotton processing facility** operates as a standalone gable end industrial-type building for processing cotton and is composed of a number of spaces and functional activities based on briefed workflow generally comprising the following three defined sectors as follows:

75. The **western sector** of the building is a high bay space for up to four high pallet storage and gin accommodation including the following:

    a. Enclosed delivery and hardstand for semi-trailers and other vehicles – both road and field vehicles.

    b. Pallet racking store – four pallets high.

    c. Gin shed - High bay space to accommodate gins and dust extraction equipment.

    d. Temperature controlled drying room for moisture removal of handpicked field cotton prior to processing through the gins.

    e. Bale press zone.

    f. Seed treating and grading room to accommodate process of grading to separate seed for processing and waste seed rejection.

    g. Acid delinting facility.

    h. Temperature and humidity controlled rooms for seed storage.

    i. Associated stores and receipt/dispatch areas.

76. The **breezeway sector** is a north/south link-way between workrooms and gin shed capable for pallet truck (potentially forklift) access to the north loading and unloading area. This area addresses the need for segregation between the two different functional zones of the cotton processing facility and offers a safer workplace environment by segregating high bay space and its drier processes from cleaner and low bay work (standard 3 metre ceiling height). It is a delivery point for smaller items receipt or dispatch items.

77. The **workrooms sector** is a low-rise facility including the following:

    a. High Volume Instrument (HVI) lint testing for testing of lint in a controlled environment.

    b. Workrooms for seed processing, including cold rooms and freezer rooms.

c. Cotton processing facility operations – a multi-purpose space for operational briefing and after hours shift work meals and hot-desks to support in-process administrative tasks and after hours secure work area.

78. The design of the new facilities also includes opportunities for future expansion and consideration of future technology. For example, CSIRO staff currently manually fill approximately 100,000 seed packets per year. Investigation with users has identified a future aspiration to move to an automated seed sorting and packing system. Allowance has been made within the design for this system to be able to be fitted within the current cotton processing facility workroom design envelope.

79. The new **laboratory facility** operates as a standalone skillion roof laboratory comprising the following three defined sectors as follows:

a. The general purpose and resistance laboratories including Physical Containment Level 1 (PC1) and Level 2 (PC2) capable open plan laboratories and support spaces.

b. Proposed new central field support unit including clean workplace to calibrate electronic equipment, storage for controlled small-scale field equipment and cleaning and servicing of small scale field equipment.

c. The new Plant and Soil Facility laboratory for receiving and preparation of soil and plant samples, dehydration equipment, soil and plant grinding and associated cold rooms and stores.

80. **Office space for CSIRO staff** - all office staff will be accommodated in the current NSW DPI main administration office building for their permanent desk-based tasks outside the laboratory or cotton processing facility workplace. The cotton processing facility design does include eight hot desks to facilitate the completion of specific activities relevant to the work being undertaken within the facility. The laboratory facility design also includes a small write up area to support activities being undertaken with the new laboratory facility.

81. Floor plans of the facilities are included in Attachments G: Drawing A101 Proposed Floor Plan – New Laboratory Facility, Attachment H: Drawing A102 Proposed Floor Plan – New

Cotton Processing Facility and Attachment I: Drawing A103 Proposed Floor Plan and Section– New Plant and Equipment Workshop.

Materials and Furnishings

82. External materials have been selected for thermal performance, ease of maintenance and appropriateness for construction technology in rural NSW.

83. The new **cotton processing facility** – Construction materials and finishes proposed are:

    a. The external building fabric shall be insulated metal clad profiled sandwich panel wall and roof cladding.

    b. Generally, internal walls to the gin shed areas of machinery shall be sheet metal cladding with colorbond finish or sandwich panel.

    c. Internal walls to workrooms shall will be plasterboard lined with paint finish. Controlled environments, namely, cold room, freezer room or (14 to 18) degree short term storage facility will be in sandwich panel construction.

    d. The gin shed flooring will be burnished and sealed concrete.

    e. Workroom floors will be mostly sheet vinyl with 150mm high integral coving.

    f. Ceilings shall comprise acoustic tiles, suitable to laboratory operations.

    g. Windows shall be powder coat aluminium framing with openable sections and flywire to appropriate areas only.

    h. Furniture is to be movable or mobile wherever possible to maintain principles of flexibility and reconfiguration.

84. The new **laboratory facility** – Construction materials and finishes proposed are:

a. The external building fabric shall generally be insulated sandwich panel metal cladding with colorbond finish. The plant and soil laboratory area shall be insulated sheet metal cladding with colorbond finish to all external walls and roofing.

b. Internal walls will be metal stud lined with plasterboard or impact resistant Compressed Fibre Cement (CFC) panels with paint finish. Controlled environments including cold rooms and freezer rooms will be in sandwich panel construction.

c. Floors will be mostly sheet vinyl with 150mm high integral coving. In the plant and soil facility, floors to be polished concrete with penetrating sealer. Cold rooms to have non-slip sheet vinyl.

d. Ceilings shall generally comprise of sheet plasterboard suitable to laboratory operations or CFC panels. In the plant and soil laboratory area the ceiling finish to be underside of sandwich panel construction.

e. Windows shall be powdercoat aluminium framing with openable sections and flywire to appropriate areas only.

f. Furniture is to be movable or mobile wherever possible to maintain principles of flexibility and reconfiguration.

85. The materials and furnishings will be easy to clean and address biosecurity considerations.

86. Attachment F: Drawing A020 Material and Finishes References, contains images of proposed materials reference in the design of the cotton processing facility and the laboratory facility.

Structural and Civil design

87. The laboratory and cotton processing facility designs both consist of portal frame structures. The industrial side of the cotton processing facility is a portal frame shed spanning 25m, constructed on pier footings. The floor is a 200mm thick industrial concrete pavement constructed on approximately 900mm of controlled fill. The slab is designed to cater for pallet racking loads (approximated at 50kN on a 1.2m grid). External wall are colorbond

clad insulated panels supported by wall girts. Ventilation is provided along the ridge of the shed.

88. The workspace and amenities area of the cotton processing facility has a lower roof and incorporates glazing on the northern and eastern elevations. The interior finishes and use of this area have necessitated a stiffer structural arrangement than the industrial area of the building. A raft slab has been used for the floor in this area supporting portal frames and internal steel posts and roof beams provide bracing. Internal partition walls are expected to be lightweight steel frame or insulated panel with fibre-cement sheet linings. A control joint between the two structural arrangements allows for differential movement.

89. Further investigation of the new laboratory and cotton processing facility building designs will be undertaken to determine if lightweight steel framing is a cost-effective alternative to the portal frames.

90. Drawings of the cotton processing facility structure are available at Attachment M: Drawing A502 Sections – New Cotton Processing Facility and Attachment K: Drawing A402 Elevations – New Cotton Processing Facility.

91. Drawings of the new laboratory facility are available at Attachment J: Drawing A401 Elevations – New Laboratory Facility and Attachment L: Drawing A501 Sections – New Laboratory Facility.

92. The plant and equipment workshop will be an industry standard sized portal shed on a concrete slab.

Mechanical services design

93. The mechanical services for each building will be designed according to the function and needs of each building. The purpose of the mechanical service systems is to provide mandatory ventilation, thermal comfort and air quality facilities in accordance with specific user needs and the requirements of the current NCC, applicable codes and Australian Standards.

94. **Site Gas Service** - Gas serving the proposed new buildings will be reticulated from the existing site-wide bulk LPG vessel. The LPG will be run to the new buildings in an underground trench, which will be shared with other services where possible.

95. **Central Plant** - Due to the substantial distance between the buildings, a dedicated central plant for the new cotton processing building and a dedicated central plant for the new laboratory building will be provided. The central plants will include air cooled chillers, gas fired heating hot water heaters, and air compressors to provide chilled water, heating hot water and compressed air for the heating, ventilation and air conditioning (HVAC) systems and client equipment. Key items of central plant will include redundancy so that in the event of failure, of a single key item of plant, a second unit will maintain continuity of supply to critical areas.

96. **HVAC Systems** - The general heating, ventilation and air conditioning (HVAC) systems vary across the facilities and have been selected through consideration of practicality, performance, energy efficiency, capital costs and ongoing maintenance and operating costs. The HVAC systems consist of: air handling systems utilizing chilled water and heating hot water, reverse cycle air conditioning units, radiator (hot water) panel heaters, mechanical ventilation, and natural ventilation.

97. **Controlled Environment Areas** - There are a number of "special" areas within the buildings that require tightly controlled internal conditions. These spaces will include HVAC systems that are designed for the application. Some examples include:

    a. Cold rooms and freezer rooms will include a duty/duty cooling plant arrangement, such that in the event of failure of one item of plant, the remaining unit will continue to operate and maintain conditions.

    b. Controlled environment room will include duty/duty cooling plant, and duty/duty dehumidifiers.

98. **Dust Extraction** - The cotton preparation process can generate considerable dust, and accordingly the design response includes a number of dust collection systems incorporating industrial dust collectors, filters and dust receptacles. The dust collectors will be manifolded to serve approximately 50% of the cotton gins so that in the event of failure of a single dust

collector the remaining 50% of the cotton gins may continue to operate as normal. Dust extraction will also be provided to the plant and soil laboratory, plant and soil grinding equipment.

99. **Future Flexibility** - In the interest of future flexibility, a number of features have been incorporated into the design such as:

    a. The provision of duplicated infrastructure/plant equipment allowing for redundancy and provision of spare capacity in heating and cooling plant.

    b. Space allowance for future plant.

    c. Provision of general exhaust systems with spare capacity for additional exhaust.

    d. Expandable Building Management System (BMS).

    e. Provision of spare capacity in mechanical-electrical supplies and switchboards.

    f. Provision of spare capacity in site reticulation systems.

Electrical, Dry Fire Detection and Communication services design

100. All electrical and communications services will be designed to meet the requirements of the current NCC and applicable Australian Standards, and CSIRO structured cabling system specification.

101. **Power supply** - Power supply for the new buildings will be derived from the existing 500 kVA substation and associated site main switchboard. The following electrical loads are anticipated:

    a. New cotton processing facility: 205 kVA

    b. New laboratory facility: 96 kVA

102. The loads from the new buildings will utilize all spare capacity currently available from the substation and bring it to the maximum design capacity.

103. **Electrical switchboards** - Electrical switchboards will be provided for distribution and protection of power within the buildings.

104. The switchboards will include the following features:

    a. Separate digital check meters for monitoring of lighting and power consumptions.

    b. Surge diverters for protection of electronic equipment from interferences caused by lightning and startup currents of large equipment.

    c. Earth leakage protection will be provided via modules incorporated within the circuit breakers for lighting and power circuits.

105. **Lighting systems** - Energy efficient and long life Light-emitting Diode (LED) luminaires will be provided as lighting system for the new buildings.

106. Luminaires will be selected to suit the required applications including special conditions such as PC2, cold room and hot rooms etc. where specific finishes and Ingress Protection (IP) rating will be required.

107. An intelligent lighting control system will be provided. The system will incorporate energy saving features including presence sensors, sensors for daylight harvesting, time scheduling. Simple manual on/ off control by light switches will be considered in laboratories or to support processes when there are risks of injuries to personnel if lighting can be accidentally switched off during operation.

108. Emergency and exit lighting system will be managed from a central computer for monitoring and testing purpose to Australian Standard: AS 2292.2.

109. External lighting will be controlled by photoelectric switch combined with a timer and to be controlled by auto-off-manual selector switches.

110. **Power system** - Single phase and three phase power outlets will be provided for general purpose power and specific equipment required within the building.

111. Dedicated submains will be provided to mechanical and hydraulic services as required.

112. Power outlets in areas subject to mechanical impacts will be IP65 rated, chemical resistant property will also be specified as applicable.

113. Power outlets and isolators will be generally mounted on wall, cable duct or service pedestals to suit the applications.

114. **Dry Fire Detection Services** - A sub- fire indicator panel will be provided to each new building, connected to the main Fire Indicator Panel in the main administration and offices building via underground fire network cable.

115. Fire protection requirements will be in accordance with the Building Code and applicable Australian Standards. Generally, smoke detectors will be provided within the buildings for early detection of fires.

116. Where dust and/or high humidity are present, heat detectors will be provided.

117. In noisy areas, visual alarm using coloured strobe lights will be provided.

118. Emergency warning speakers will be provided within the building in conjunction for annunciation of alert and evacuate messages during fire events. The speaker will be in the form of ceiling recessed speakers and horn speakers to suit the room types and ceiling structure.

119. **Communications** - A telecommunications room will be provided in each new building for communications services, connected to the main server room in the main administration and office building via underground fibre optic cables.

120. Communications cabinet(s) will be provided in the telecommunication room to house active and passive communication equipment.

121. Cat 6A integrated data and voice communications outlets will be provided to work spaces within the building as necessary, connected to patch panels within the communication cabinet(s).

Hydraulics and Fire Protection services design

122. All hydraulic and fire protection services will be designed to meet the requirements of the current NCC and applicable Australian Standards.

123. **Domestic Cold Water Supply** - New domestic cold water branches have been proposed to be extended from the existing water reticulation mains located as close as possible to serve the new buildings. All new branches will be provided with isolation valves for individual building isolation.

124. The two existing water reticulation mains within the site of the new laboratory facility are proposed to be relocated and decommissioned to allow construction of the new building.

125. **Fire Protection Services Water Supply –** Similar to the domestic cold water supply, new fire protection water services branches have been proposed to be extended from the existing fire services water reticulation mains located as close as possible to serve the new buildings. All new branches will be provided with isolation valves for individual building isolation.

126. **Sanitary Waste and Trade Waste Drain** - Sanitary waste branches complete with neutralizing pits have been proposed to be extended from the existing sewer mains located as close as possible to serve the new buildings. The new branches will be provided with septic pumps and tanks if necessary, located externally to the new building site. Tank and pump requirement will be confirmed in later stage.

Demolition

127. The new cotton processing facility is on open brownfield land and does not require any demolition. The tennis court will be demolished to make way for the new west linking road to this facility. There will be some tree demolition along the avenue to the south and south-west of the manager's house.

128. In order to provide a large enough site area for the new laboratory facility, some demolition work is required including the existing CSIRO building and carport. Where buildings are not required to be demolished, but are unsuitable for their current use, CSIRO plans to retain and repurpose these structures as additional low grade storage facilities for site use.

129. The relocatable staff room is CSIRO-owned and will be relocated prior to construction of the new laboratory facility.

130. A Demolition Drawing Site Plan is included at Attachment B: Drawing A002 Existing Conditions and Demolition Site Plan.

Acoustics

131. The new cotton processing facility will contain appropriate acoustics to separate ginning and other heavy machinery operations from work being undertaken at the other end of the facility.

132. The new laboratory facility will contain appropriate acoustic treatment to minimize the noise of plant and soil grinding activities to other occupants of the building and nearby facilities.

Provisions for people with disabilities

133. Equitable access provisions have been included within the design of each new building in accordance with the requirements of the DDA and the NCC. Provisions include accessible toilets, entry ramps and accessible parking.

Environmental considerations

134. The proposed new buildings plan to implement best practice sustainable design within the constraints of meeting the client objectives, whilst ensuring that whole of life value is a key consideration in every sustainable design solution. Environmental design considerations include:

    a. Natural ventilation wherever possible.

    b. Mechanical ventilation only, where work will be undertaken in the cooler periods of the year and only a small amount of air movement is needed.

    c. Chilled water and heating hot water systems that offer high coefficient of performance operation.

d. Zoning of conditioned areas on a like-by-like basis to avoid re-heating and energy wastage.

e. Low pressure duct and pipe systems that reduce system pressure and associated fan energy.

f. Variable speed fans and pumps to ensure the equipment only operates at the speed needed for the task.

g. Power metering to allow facilities and maintenance staff to monitor and make adjustment to services to ensure that the buildings use energy efficiently.

h. BMS with HVAC time scheduling and "unoccupied" modes.

135. Other considerations to reduce energy and water use include the orientation of the building. The design will also consider the CSIRO Carbon Strategy and other energy and sustainability policies. It is expected that the new facilities will exceed the BCA Section J compliance targets.

136. An initial environmental assessment has been undertaken by the project design team. A further environmental assessment will be undertaken during the project detailed design phase taking into account the Environmental Protection and Biodiversity Conservation Act 1999 and the NSW State Government Environmental Planning and Assessment Act 1979.

Heritage issues

137. An initial heritage assessment undertaken by the project did not identify any heritage issues associated with the project. This will be confirmed during the project detailed design phase.

Childcare provisions

138. There are no childcare facilities being provided within the scope of this project.

Flood protection

139. Flood protection measures have been considered within the design of each building. To avoid future property damage due to flooding, the new facilities will be located within a

flood protected zone approved for building. The new facilities will be raised above the existing ground level. Appropriate drainage will be installed around the facilities to reduce the risk of other buildings in the area flooding due to the new construction work and changes to the runoff paths.

Security protection measures

140. Security measures have been considered within the design of the new facilities and will match existing site security requirements.

141. A security risk assessment will be undertaken as part of the detailed design to determine any additional security requirements required, based on the research planned to be undertaken within the new facilities and CSIRO security policies.

Workplace health and safety measures

142. During delivery of the works, workplace health and safety will be monitored by the Project Governance Board. The project Head Contractor will have to comply with OFSC accreditation. All project contractors will be required to have appropriate Safety Management Plans in place before commencing any work on site. All contractors will have to undertake a site induction.

143. The delivery of the new facilities will assist to resolve a number of work health and safety issues on site, identified in paragraphs 15 - 28 of this submission, which are currently being managed through management strategies. This will allow for researchers to conduct research in a safer and more secure environment. During the future operation of the facilities workplace health and safety will be monitored by the site manager in accordance with site policy.

Landscaping

144. The project will include the delivery of new roads and car parking to connect the new cotton processing and laboratory facilities to the rest of the road network in an efficient manner.

145. The project will also provide some minor landscaping around the new facilities to replace trees and shrubs impacted by the construction work.

Consultation

146. CSIRO has consulted with site staff on the design and layout of the new facilities. Consultation has also been undertaken with Myall Vale NSW DPI Site Manager in relation to the location of the new facilities. Site staff have been supportive of the investment in new facilities on site to resolve WHS issues. Staff feedback into the design process has included input to ensure that rooms are sized appropriately to accommodate machinery and improve workflow.

147. CSIRO has consulted with the NSW State Government, as the primary lease holder, to gain in principal approval to construct the new facilities on the Myall Vale site. The NSW State Government are supportive of the planned investment on site by CSIRO.

148. CSIRO has also consulted with their industry partner, CSD in relation to their plans for the new facilities. CSD have been supportive of planned investment in the region and have provided feedback to CSIRO on lessons learnt from the recent CSD capital investment in similar facilities. CSIRO has also engaged industry experts to provide advice on the design of the new facility and the associated services.

149. Over the coming period CSIRO plan to consult with the local community including, local residents, statutory authorities, NSW DPI local staff, State and Local Members and other interested parties to provide input into the design process.

Impact on local community

150. During the construction phase of the project, it is anticipated that opportunities for the local community will arise in the building and construction labour market. The works may also provide opportunities for manufacturers and distributors.

151. During the construction phase of the project there will be additional construction traffic entering the Myall Vale site from the highway. Impacts will be mitigated by use of a second entrance to site for use by construction vehicles. The construction of the new facilities are not anticipated to have a long term impact on traffic in the region.

152. There is expected to be increased noise levels on site during the construction phase of the project. This will only affect Myall Vale site occupants. Attempts will be made to mitigate the effects of construction noise in conjunction with site staff during the project construction phase. Once constructed, CSIRO is not anticipating any increased noise levels for staff on site as all noisy equipment is being relocated away from the main administration building.

Associated plans and drawings

153. The facility Concept Design Drawings are available at Attachments A to M.

Cost Effectiveness and Public Value

Outline of project costs

154. The total estimated outturn cost of the works proposed is $19.8 million (inclusive of GST and all consultant fees). A detailed breakdown of the cost of the main project elements is provided within the confidential cost estimate Submission 1.1 (provided to the PWC Secretariat separately).

155. The project is being internally funded by CSIRO. The CSIRO Capital Works Budget contains appropriate allowance to cover the anticipated cost of the works.

156. It is anticipated that the construction of the new facilities and demolition of redundant assets will reduce site maintenance costs, which are shared amongst NSW DPI and CSIRO as the two site occupants.

Details of project delivery system

157. The construction works will be delivered in a staged approach to minimize disruption to scientific output on site. Construction Stage 1 will consist of the construction of the plant and equipment workshop and the cotton processing facility, towards the north and west of the site. This will allow staff to decant into the new facility and allow for the demolition of unused buildings.

158. Construction Stage 2 of the project will include the demolition of existing buildings on site to allow for the construction of the new science laboratory facility.

159. It is anticipated that the new cotton processing facility, demolition and laboratory facility works will be awarded to a single Head Contractor via an open tender approach to the market to complete the full scope of works. This will help to ensure that there is sufficient funding available to complete all stages of work before any construction commences on site.

160. It is anticipated that the plant and equipment workshop work will be awarded as a separate head contract to a construction contractor. This will allow specialist local construction companies to compete to construct this element of the project.

161. The project governance structure will ensure that the project is being delivered in line with best practice procedures and that each stage of the project is scrutinized to ensure value is being provided.

Construction program / project schedule

162. Subject to Parliamentary approval of the project, it is anticipated that construction will commence in the middle of 2019 and be completed by January 2021.

163. The major project milestones and anticipated dates, are outlined in the following table below:

Activity	Anticipated Date
Concept Design Complete	May 2018
P80 Cost Plan Complete	June 2018
Parliamentary Referral to PWC	August 2018
Parliamentary Approval Achieved	November/December 2018
Detailed Design Complete	February 2019
Construction Head Contractor For Tender Documentation Complete	March 2019
Construction Head Contractor Engaged	May 2019
Construction Commence	June 2019
Construction Stage 1 Complete	May 2020
Construction Stage 2 Complete	January 2021
12 month Defect Liability Period Complete	January 2022

Table 1 – Anticipated Project Milestones

Public Value

164. The public value associated with these facilities will be realised through supporting CSIRO's ability to continue to deliver scientific solutions to assist with achieving cutting edge research outcomes for the Australian and international cotton industry.

165. This project will significantly contribute to the capabilities of CSIRO to undertake cotton breeding research in the Myall Vale area. The development of new facilities will help to maintain CSIRO's position as a world leader in the cotton breeding research area and assist CSIRO to attract researchers to the area.

166. The delivery of these facilities will also result in the employment of a diverse range of skilled consultants, contractors and construction workers, to undertake the works required.

Revenue

167. The facilities provided by this project are not designed to drive revenue; however, the delivery of new facilities will allow CSIRO future room to expand their activities in the fields of cotton research and breeding. Delivering modern, fit for purpose facilities with room for future expansion may assist to drive more revenue in the future from an increased capacity to accept industry research funds, and to develop and patent new technology.

Attachments

A. A001 Proposed Site Context Plan

B. A002 Existing Conditions and Demolition Site Plan

C. A003 Existing Ownership & Occupancy Site Plan

D. A012 Proposed Site Plan

E. A013 Post- Construction Ownership & Occupancy Site Plan

F. A020 Materials and Finishes References

G. A101 Proposed Floor Plan – New Laboratory Facility

H. A102 Proposed Floor Plan – New Cotton Processing Facility

I. A103 Proposed Floor Plan and Section– New Plant and Equipment Workshop

J. A401 Elevations – New Laboratory Facility

K. A402 Elevations – New Cotton Processing Facility

L. A501 Sections – New Laboratory Facility

M. A502 Sections – New Cotton Processing Facility

CSIRO Myall Vale Cotton Research New Facilities
PWC Drawing Set

for the CSIRO at the Australian Cotton Research Institute

Revision 03

14 Aug 2018

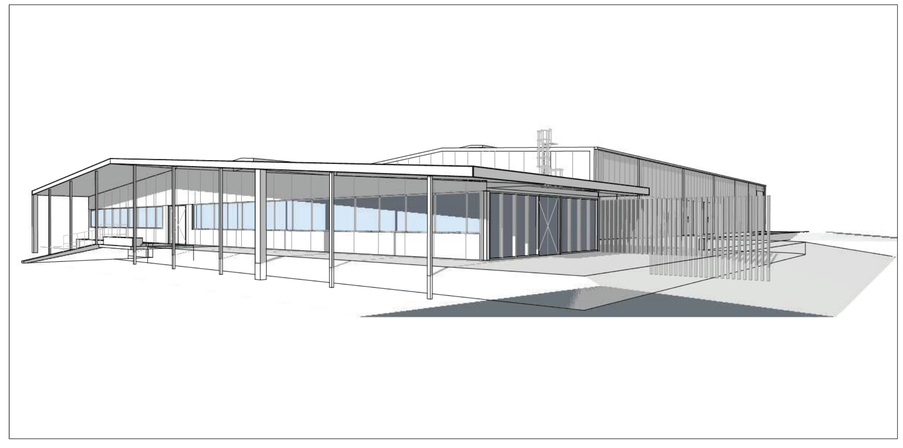
ISSUED 14 Aug 2018

L D
ARCHITECTS

ARCHITECTURAL DRAWINGS

Sheet	Title	Version
A000	Project Details & Sheet List	03
A001	Locality Plan & Proposed Site Context Plan	03
A002	Existing Conditions & Demolition Site Plan	03
A003	Existing Ownership & Occupancy Site Plan	03
A012	Proposed Site Plan	03
A013	Post - Construction Ownership & Occupancy Site Plan	03
A020	Materials & Finishes References	03
A101	Floor Plan: New Laboratory Facility	03
A102	Floor Plan: New Cotton Processing Facility	03
A103	Floor Plan & Section: New Workshop	03
A401	Elevations: New Laboratory Facility	03
A402	Elevations: New Cotton Processing Facility	03
A501	Sections: New Laboratory Facility	03
A502	Sections: New Cotton Processing Facility	03

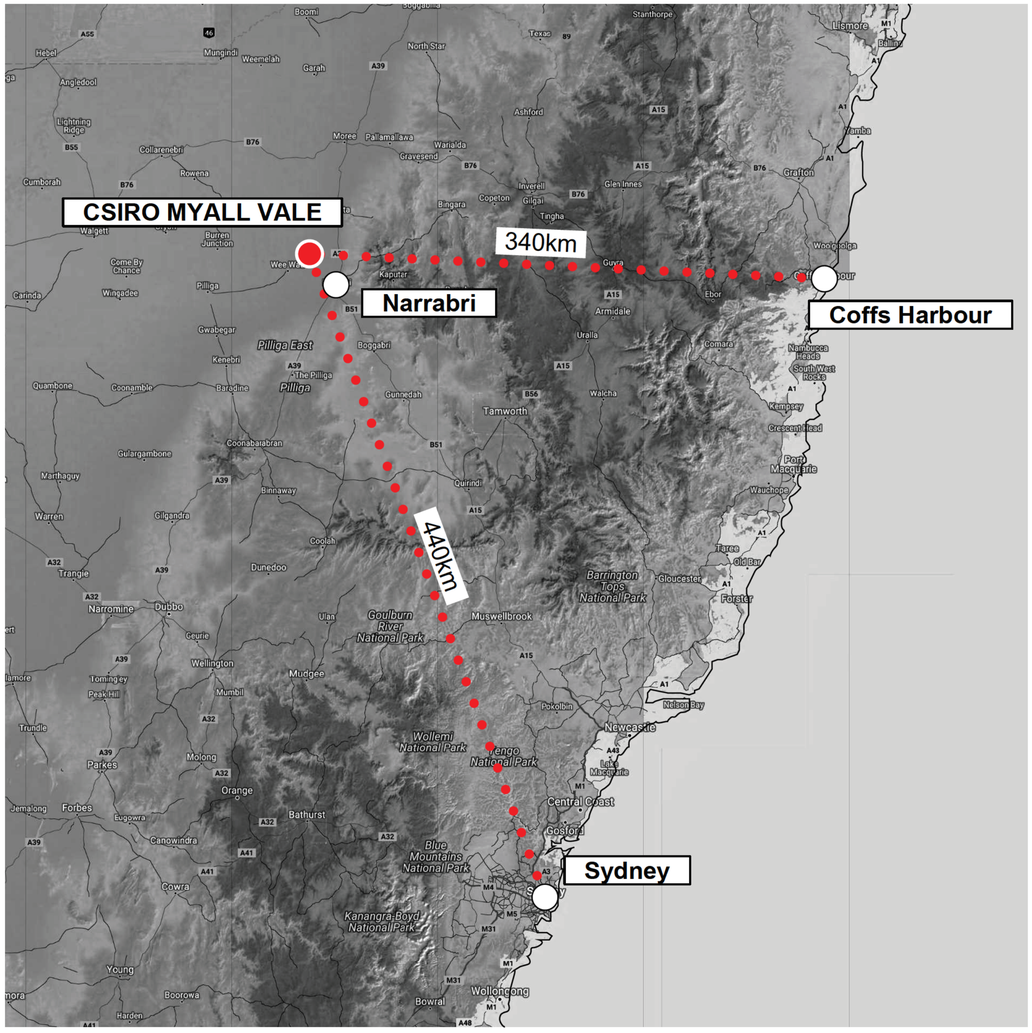
01 - View 01
New Laboratory Facility



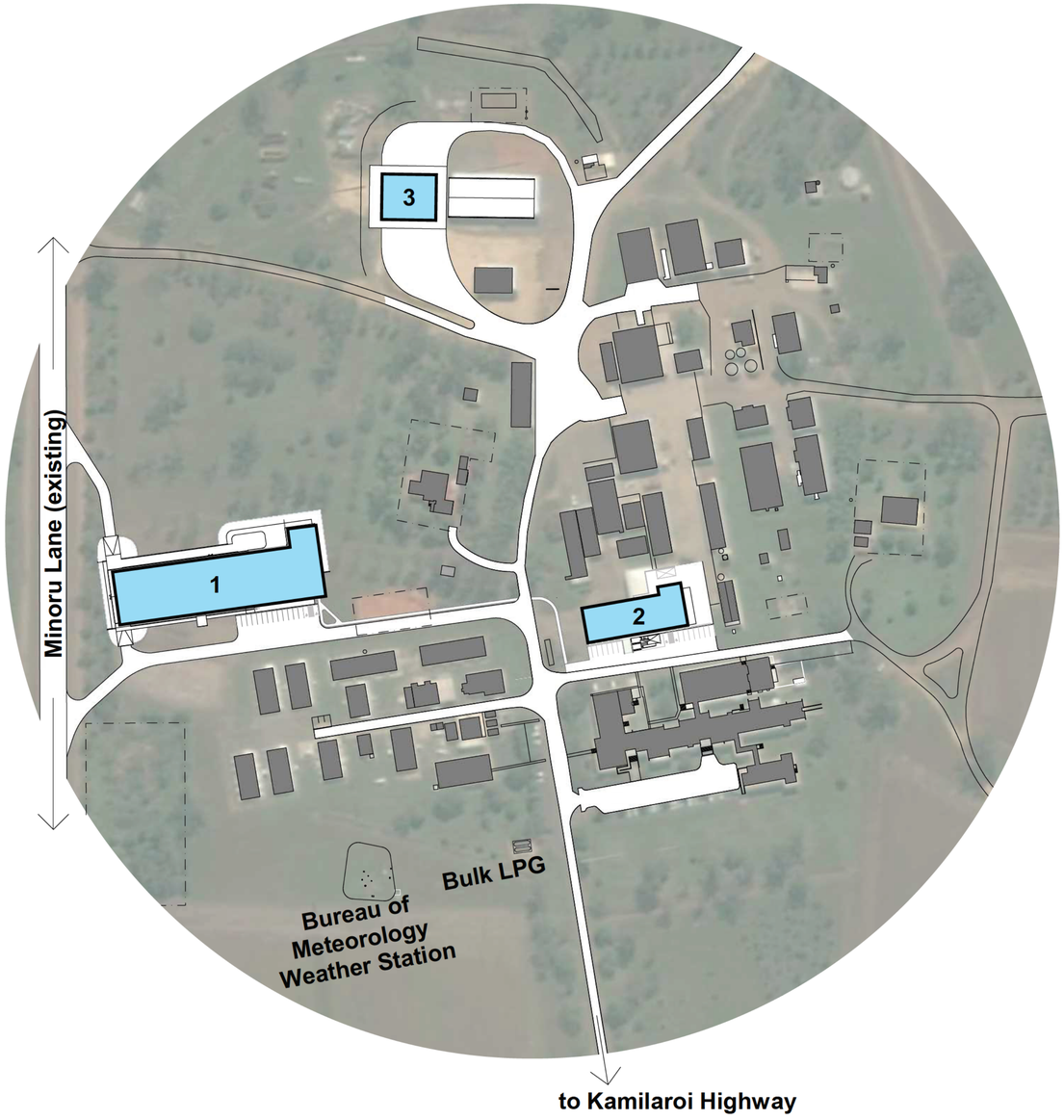
02 - View 02
New Cotton Processing Facility

CSIRO Myall Vale Cotton Research New Facilities
Project Details & Sheet List

A000



01 Locality Plan
-



02 Proposed Site Context Plan
-

Legend

1 New Cotton Processing Facility
2 New Laboratory Facility
3 New Workshop
New Building
Existing Building
Road

CSIRO Myall Vale Cotton Research New Facilities
Proposed Site Context Plan

0 50 100 200 m

A001

Legend

- Existing Building
- Existing Road
- Demolition
- Relocate building/equipment

1 Demolish existing tennis court

2 Demolish trees

3 Summary of Works to area of proposed New Laboratory Facility site:
- Demolish existing buildings and pathways
- Demolish acid collection chamber
- Demolish section of hardstand
- Demolish and reinstate pumping station
- Demolish lunch room/office, to be located in new building
- Demolish existing trough
- Relocate delinting dust extraction tower and equipment
- Retain electrical pillar and switchboard
- Retain existing path
- Retain existing hardstand
  Repurpose delinting building

CSIRO Myall Vale Cotton Research New Facilities
Existing Conditions & Demolition Site Plan

0 25 50 100 m

A002

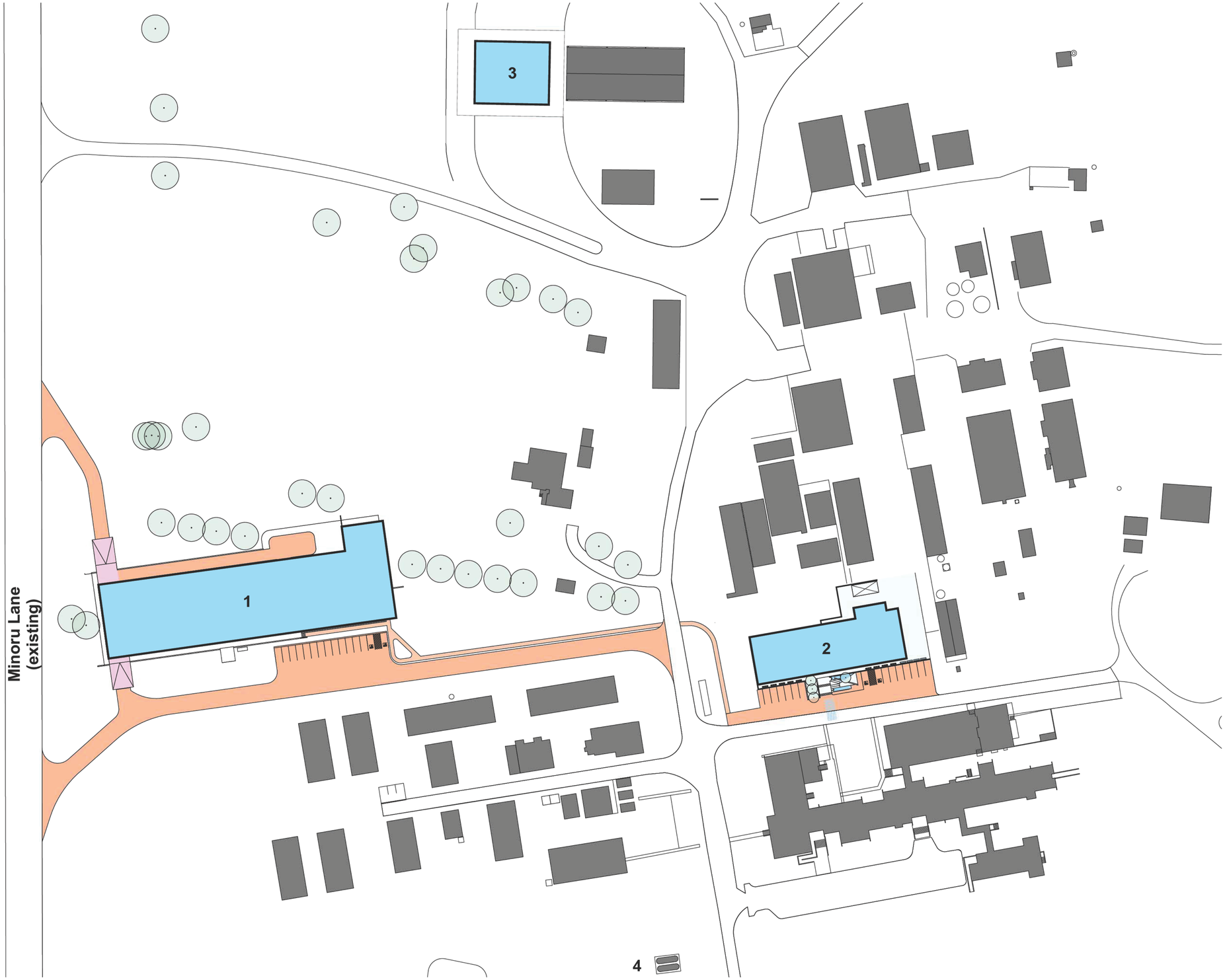
Legend

- CSIRO owned and occupied
- CSIRO owned and shared
- DPI owned and shared
- DPI owned and occupied
- CSIRO activities to be relocated to new facilities

CSIRO Myall Vale Cotton Research New Facilities
Existing Ownership & Occupancy Site Plan

0 25 50 100 m

A003



Legend

- Existing Building
- Existing Road
- Proposed gravel road
- Proposed sealed road
- Proposed new building
- 1 New Cotton Processing Facility
- 2 New Laboratory Facility
- 3 New Workshop
- 4 CSIRO Gas Tanks Bulk LPG

CSIRO Myall Vale Cotton Research New Facilities
Proposed Site Plan

0 25 50 100 m

A012

Minoru Lane (existing)
New Cotton Processing Facility
Machine shed 3
New Workshop
Machine shed
Dwelling
Machine Shed 2
Shed
Shed
Shed
Washbay
Meals/
Shed
Soybean shed
Machine Shed 1
Grain shed
Cotton shed
Workshop
Polly Cage 1
Soils building
Machine Store
Shed
Car shed
Potting Shed
Polly Cage 2
Dwelling
Store
Sub-station
Store
New Laboratory Facility
Muppet Laboratory
Staff Amenities
Carpark
Glasshouse 4
Glasshouse 2
Glasshouse 1
Potting shed
Insectary 3
Glasshouse 8
Glasshouse 6
Insectary 2
Green house
Glass house 9
Glass house 7
Glass house 3
G/house 5
Glass house 4
Insectary 1
Carpark
Administration and Offices
Carpark
Tech Resource Centre
Bureau of Meteorology Weather Station
CSIRO Gas Tanks Bulk LPG

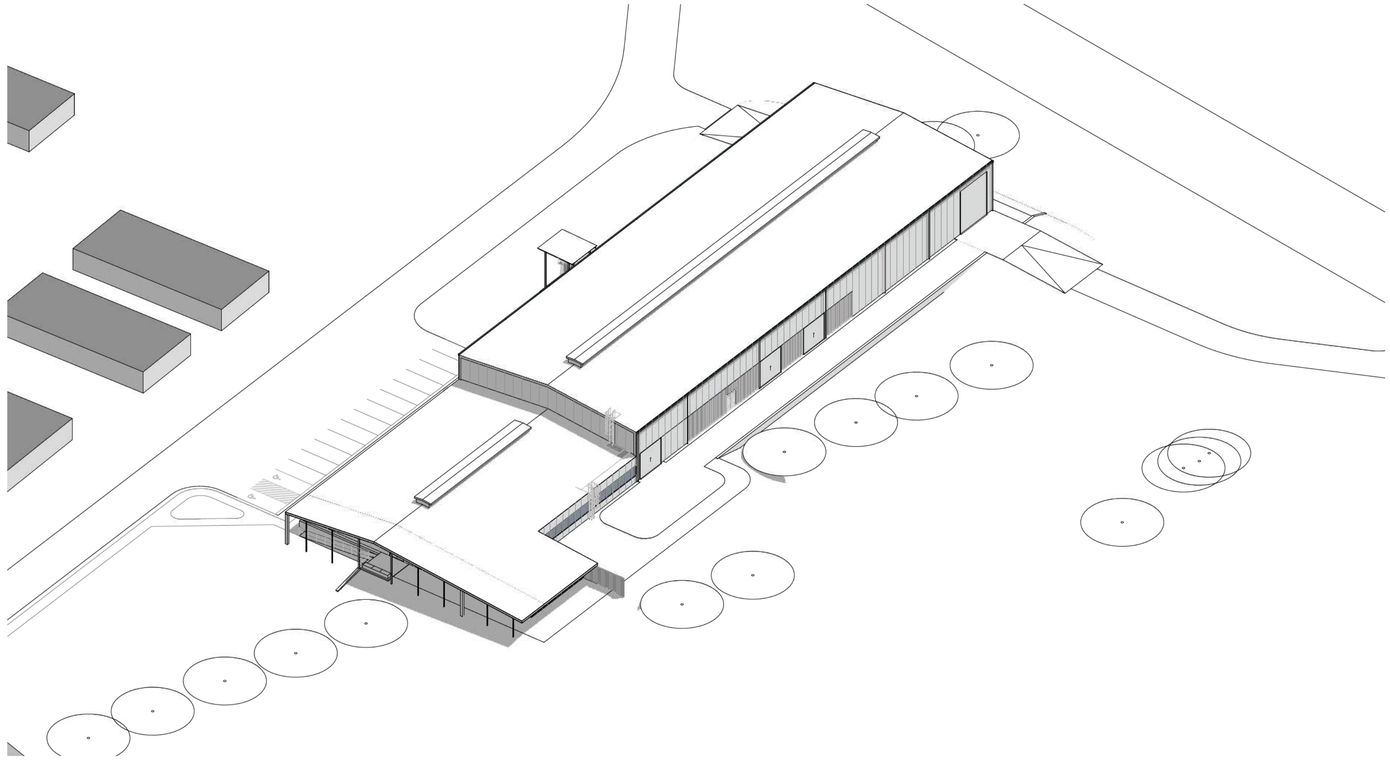
Legend

- CSIRO owned and occupied
- CSIRO owned and shared
- DPI owned and shared
- DPI owned and occupied

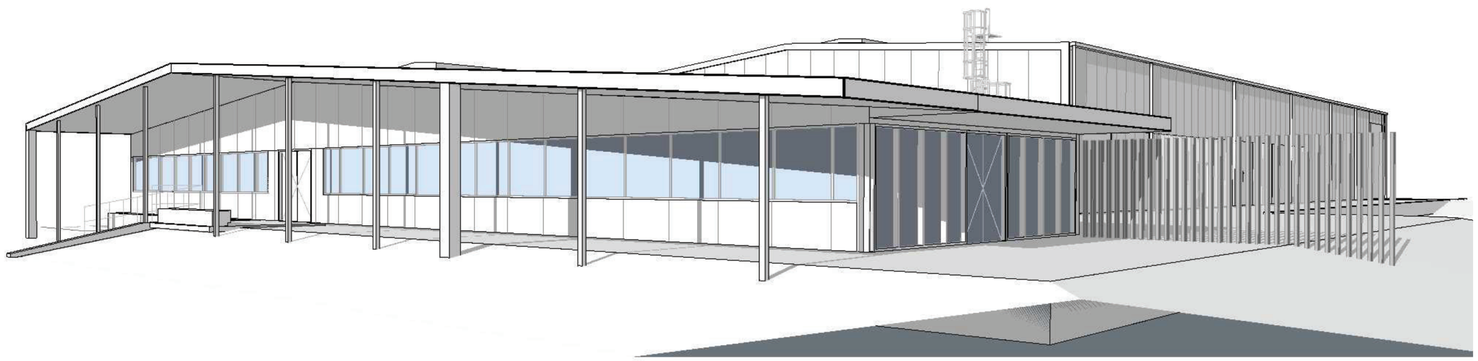
CSIRO Myall Vale Cotton Research New Facilities
Post-Construction Ownership & Occupancy Site Plan

0 25 50 100 m

A013



01 - Isometric View
New Cotton Processing Facility

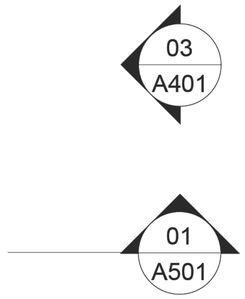


02 - View 1
New Cotton Processing Facility

03 - External Material References
New Cotton Processing Facility

CSIRO Myall Vale Cotton Research New Facilities
Materials & Finishes References

A020



Legend

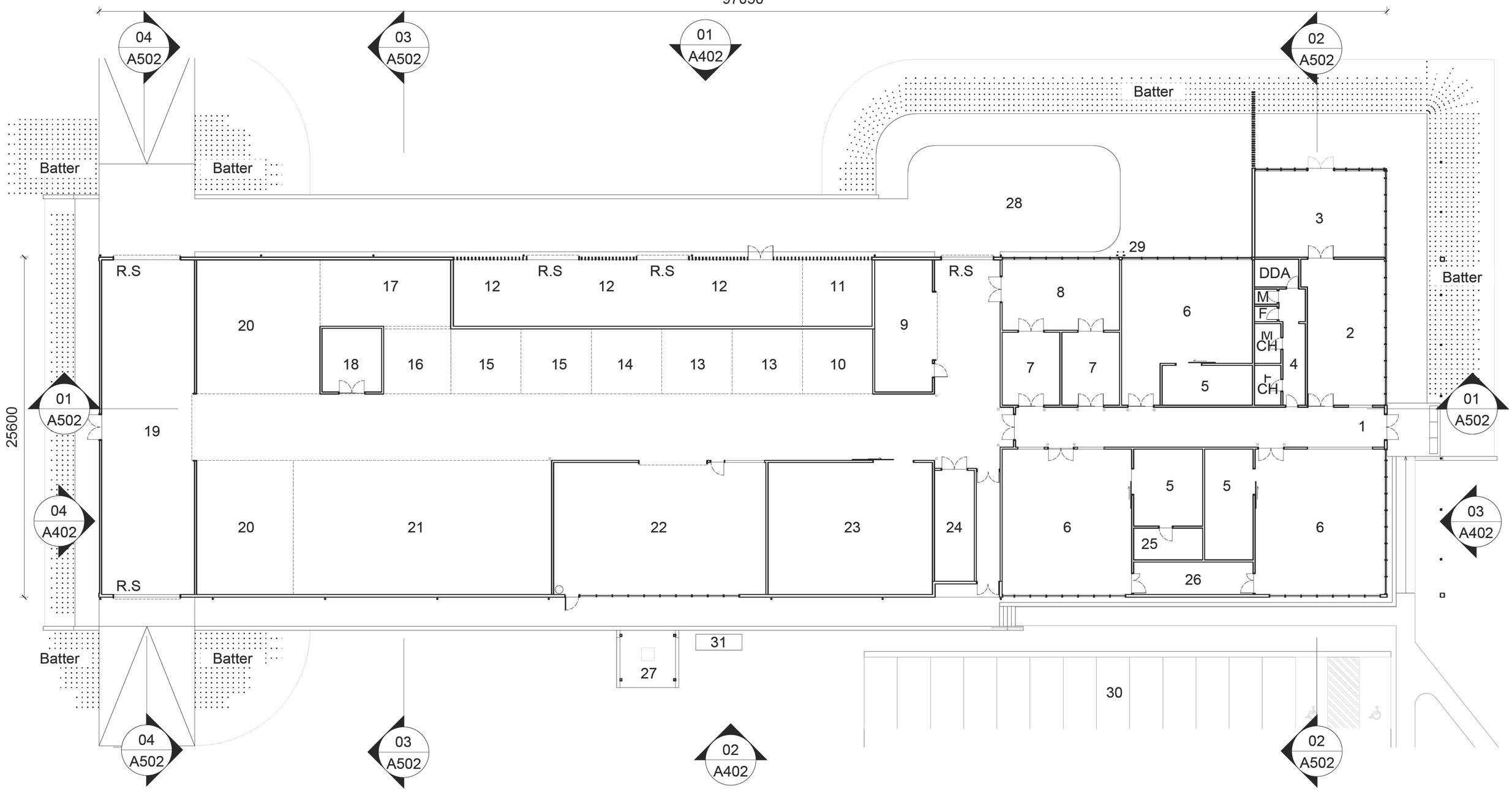
1	Entry
2	Laboratory Write-up
3	Ante-room 01 - General
4	Ante-room 02 - Entomology
5	DDA WC
6	Susceptible Moths
7	Resistant Moths
8	Ante-room 03 - Wash-up
9	Cold Room 01
10	Ante-room 04 - Wash-up
11	Larvae Room
12	Entomology Lab
13	Equipment Room
14	Fridge & Freezer Store
15	Wash-up / Waste Holding
16	Combined Agronomy + Nutrition Lab
17	Dirty Equipment Service
18	Field Equipment Store
19	Clean Calibration
20	Soil Grinding
21	Plant Grinding
22	Cold Room 02
23	Receiving Area
24	Link Corridor
25	Dehydration Room
26	Roof Access Ladder
27	Plant Area (Covered)
28	Plant Area (Uncovered)
29	Breezeway
30	Carpark

RS Roller shutter

CSIRO Myall Vale Cotton Research New Facilities
Proposed Floor Plan: New Laboratory Facility

0 5 10 20 m

A101



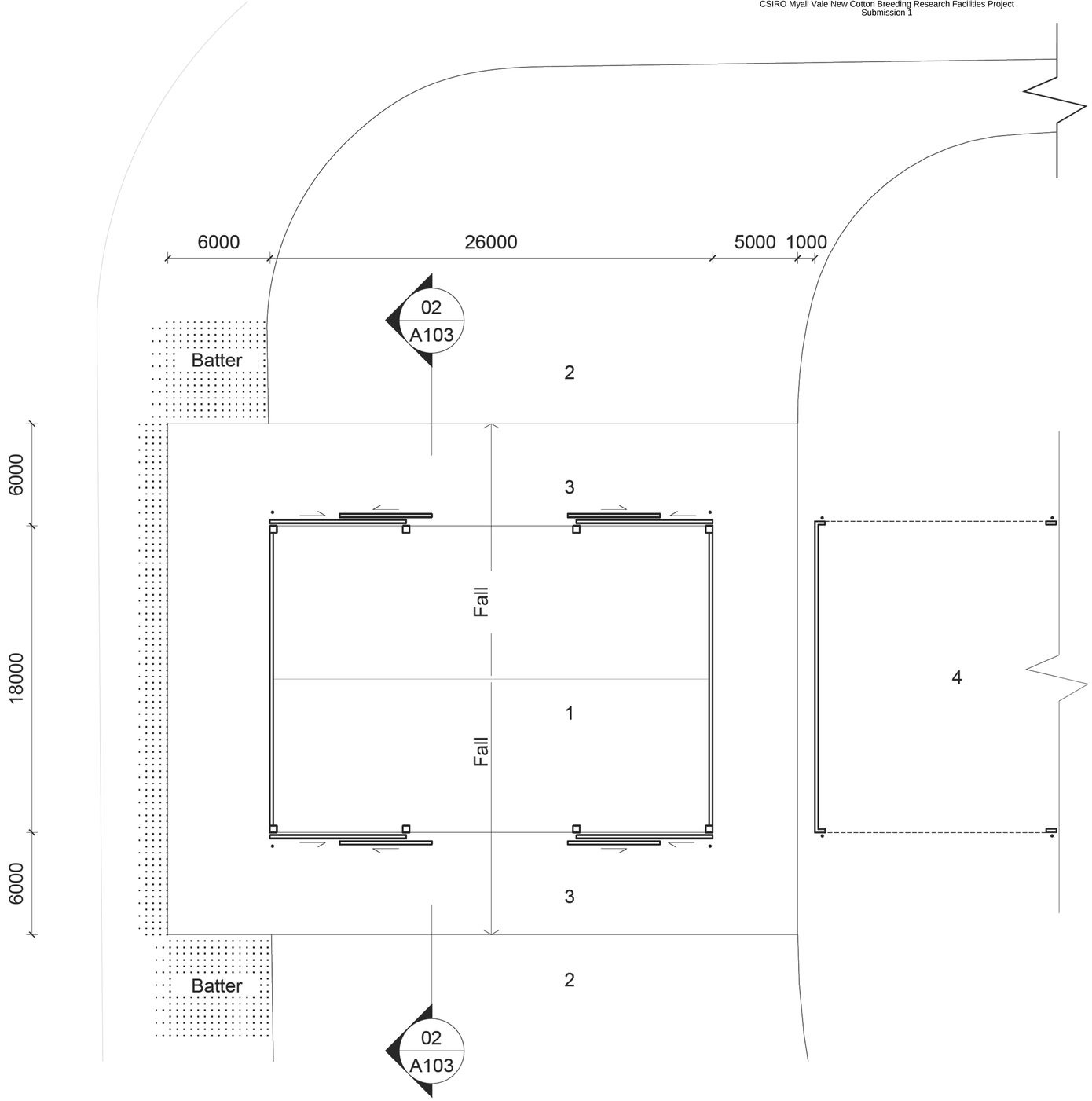
Legend

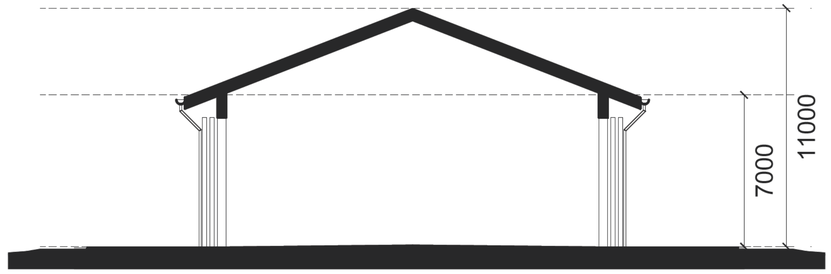
1	Entry	9	Seed Treating/Grading	17	Big GIN	25	Freezer Room
2	Breeder's Workspace	10	GIN	18	Drying Room	26	Workroom Link
3	Breeder's Multi-function Space	11	Store	19	Delivery Hardstand	27	Dust Extraction (relocated equipment)
4	Amenities - Change Rooms & Toilets	12	Dust Extraction Equipment	20	Seed Cotton Store	28	Vehicle Turnaround
5	Coldroom	13	30 SAW GIN	21	Pallet Racking - Storage	29	Roof Access Ladder
6	Workroom	14	Bale Press	22	Acid De-linting Facility	30	Carparking area (unsealed)
7	HVI Ante-room	15	20 SAW GIN	23	RH Controlled Environment	31	Neutralising Pit
8	HVI Lab	16	Roller GIN	24	Store	RS	Roller shutter

CSIRO Myall Vale Cotton Research New Facilities
Proposed Floor Plan: New Cotton Processing Facility

0 5 10 20 m

A102





02 Section
-

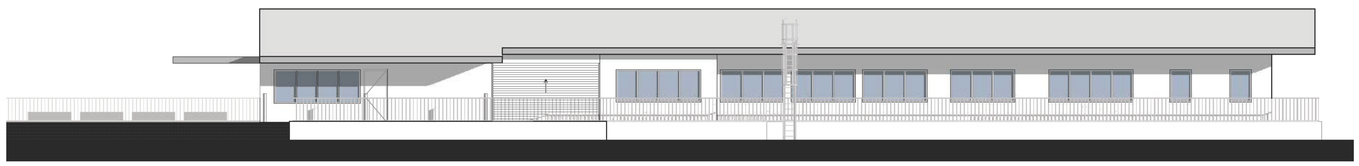
Legend

1 New Workshop
2 Access Road (imported fill with road base gravel on top)
3 Concrete Slab & Crossover
4 Existing Shed (dirt floor)

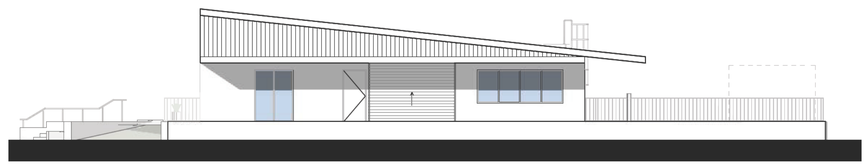
CSIRO Myall Vale Cotton Research New Facilities
Proposed Floor Plan: New Workshop

0 5 10 20 m

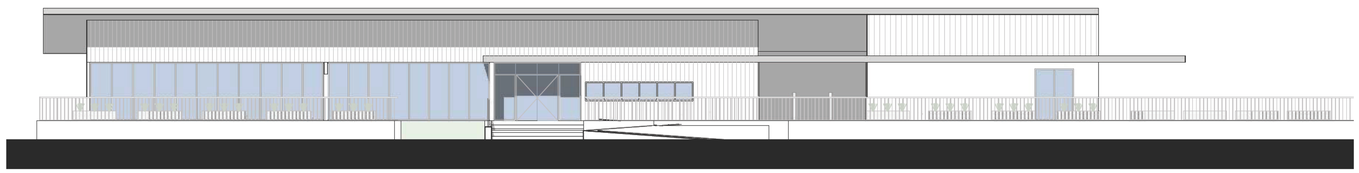
A103



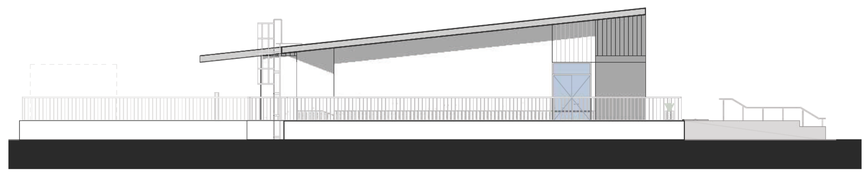
01 North
-



03 East
-



02 South
-

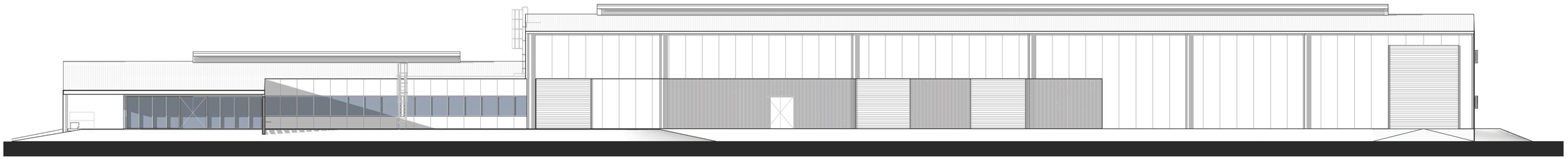


04 West
-

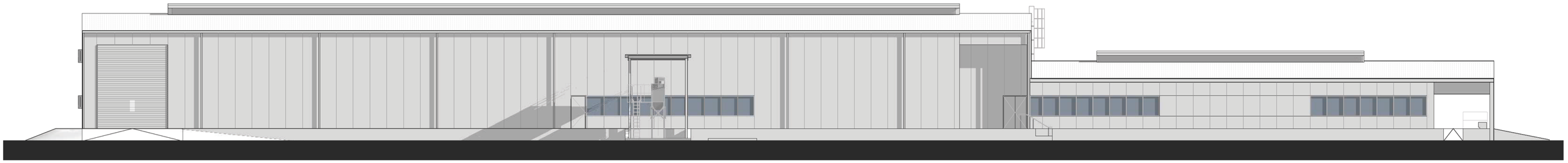
CSIRO Myall Vale Cotton Research New Facilities
Elevations: New Laboratory Facility

0 5 10 20 m

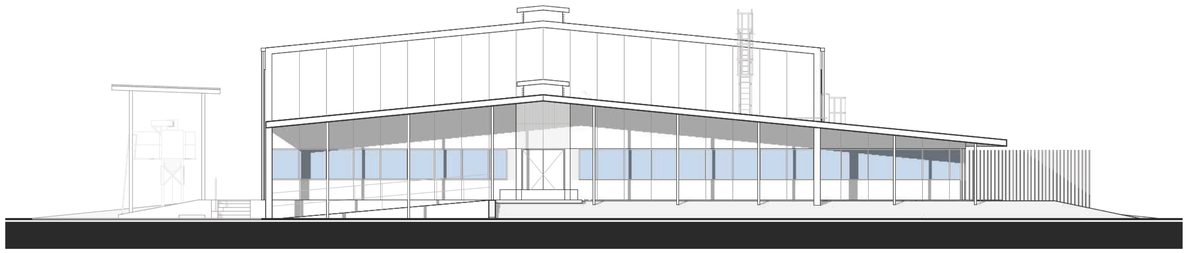
A401



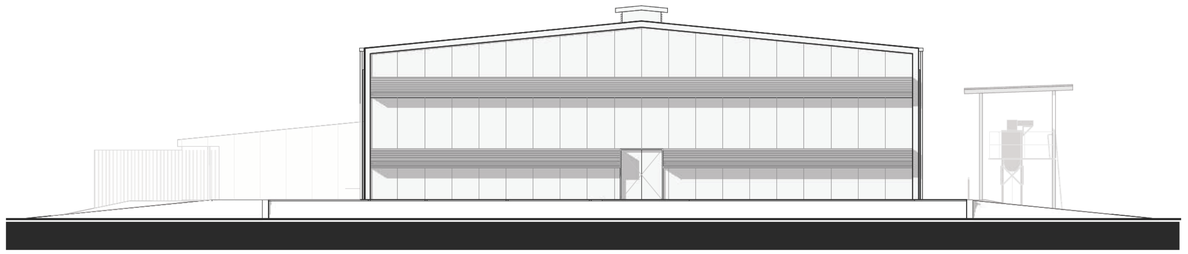
01 - North



02 - South



03 - East



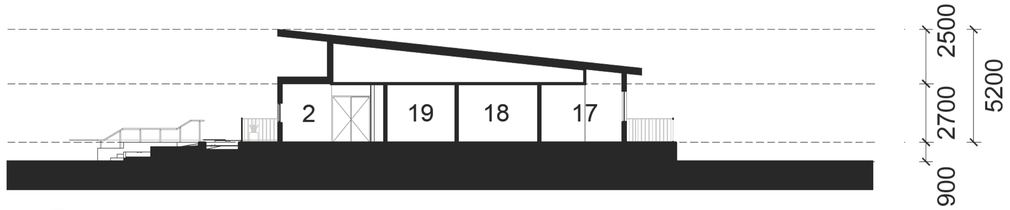
04 - West

CSIRO Myall Vale Cotton Research New Facilities
Elevations: New Cotton Processing Facility

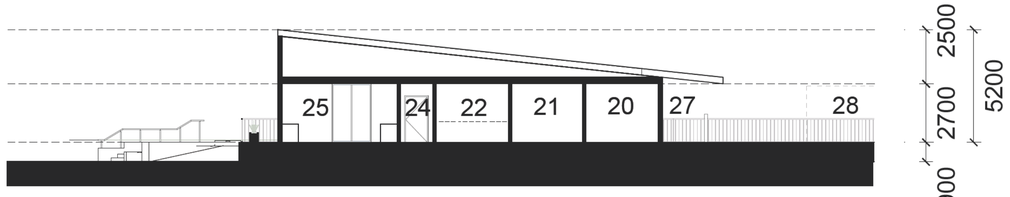
0 5 10 20 m

A402

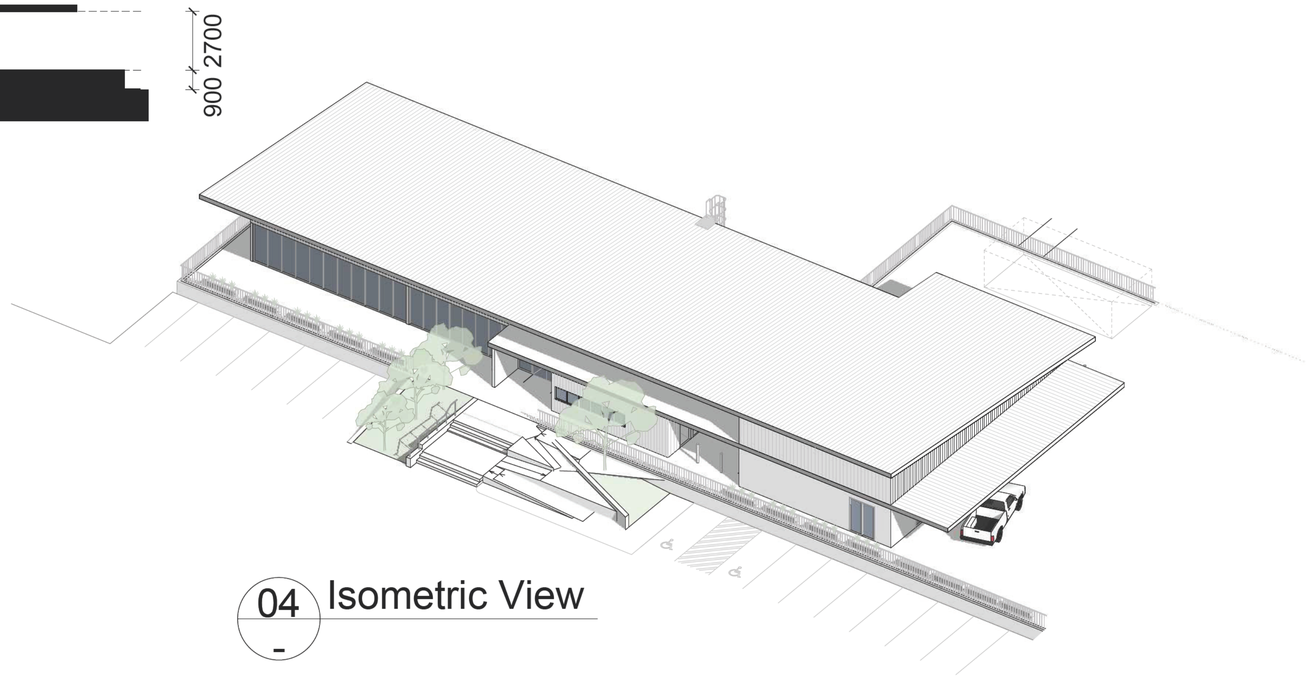
01 - Section 01



02 - Section 2



03 - Section 03



04 - Isometric View

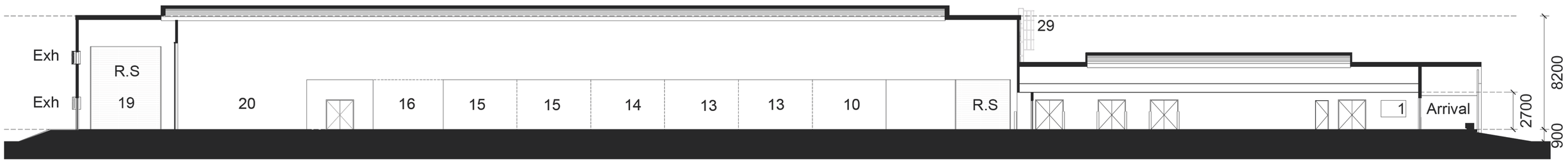
Legend

1	Entry
2	Laboratory Write-up
3	Ante-room 01 - General
4	Ante-room 02 - Entomology
5	DDA WC
6	Susceptible Moths
7	Resistant Moths
8	Ante-room 03 - Wash-up
9	Cold Room 01
10	Ante-room 04 - Wash-up
11	Larvae Room
12	Entomology Lab
13	Equipment Room
14	Fridge & Freezer Store
15	Wash-up / Waste Holding
16	Combined Agronomy + Nutrition Lab
17	Dirty Equipment Service
18	Field Equipment Store
19	Clean Calibration
20	Soil Grinding
21	Plant Grinding
22	Cold Room 02
23	Receiving Area
24	Link Corridor
25	Dehydration Room
26	Roof Access Ladder
27	Plant Area (Covered)
28	Plant Area (Uncovered)
29	Breezeway
30	Carpark
RS	Roller Shutter

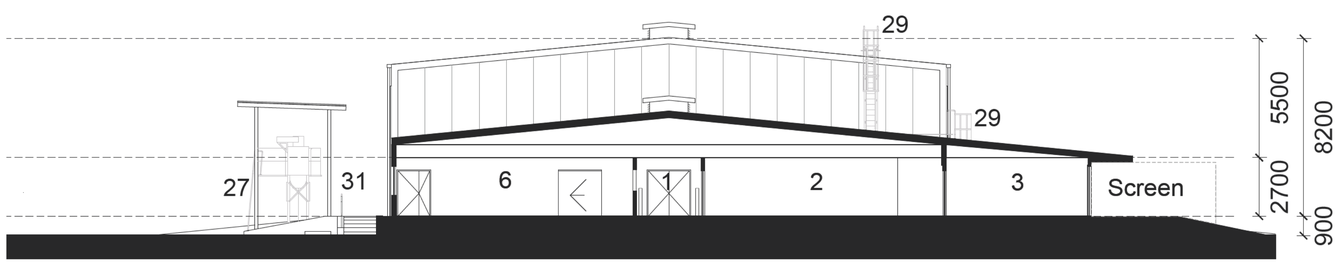
CSIRO Myall Vale Cotton Research New Facilities
Sections: New Laboratory Facility

0 5 10 20 m

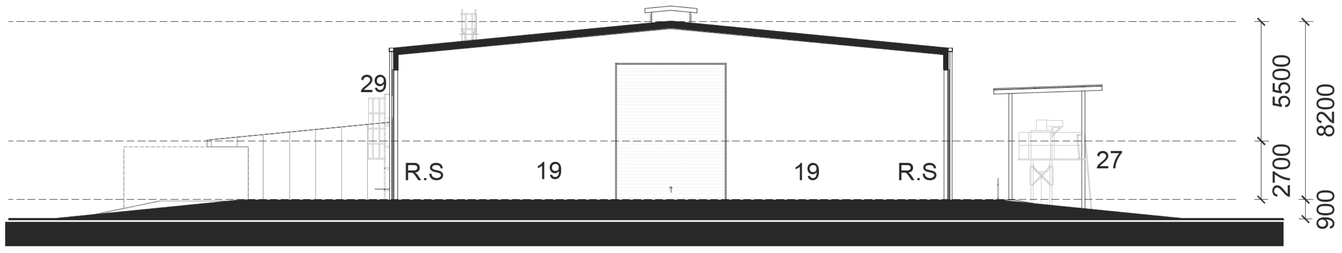
A501



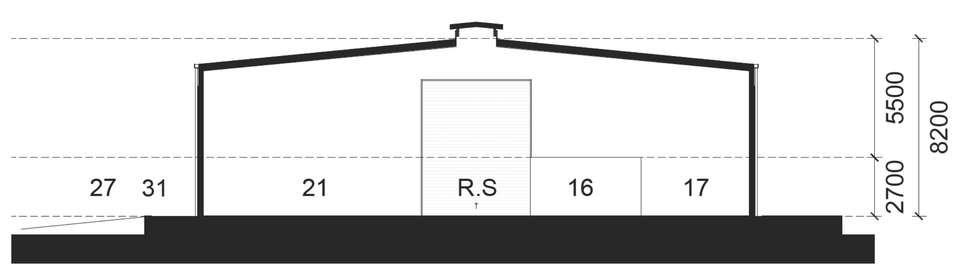
01 Section 1
-



02 Section 2
-



03 Section 3
-



04 Section 4
-

Legend

1	Entry
2	Breeder's Workspace
3	Breeder's Multi-function Space
4	Amenities - Change Rooms & Toilets
5	Coldroom
6	Workroom
7	HVI Ante-room
8	HVI Lab
9	Seed Treating/Grading
10	GIN
11	Store
12	Dust Extraction Equipment
13	30 SAW GIN
14	Bale Press
15	20 SAW GIN
16	Roller GIN
17	Big GIN
18	Drying Room
19	Delivery Hardstand
20	Seed Cotton Store
21	Pallet Racking - Storage
22	Acid De-linting Facility
23	RH Controlled Environment
24	Store
25	Freezer Room
26	Workroom Link
27	Dust Extraction (relocated equipment)
28	Vehicle Turnaround
29	Roof Access Ladder
30	Carparking area (unsealed)
31	Neutralising Pit
RS	Roller Shutter
Exh	Exhaust

CSIRO Myall Vale Cotton Research New Facilities
Sections: New Cotton Processing Facility

0 5 10 20 m

A502