Australian Government

Department of Defence

DEFENCE HIGH PERFORMANCE COMPUTING CENTRE

Edinburgh, South Australia

STATEMENT OF EVIDENCE TO THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

August 2018

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Defence High Performance Computing Centre

Need for the Project

Aim of the Project

1. The aim of the Project is to provide the enabling facilities and infrastructure for a secure, centralised 'supercomputer' capability to undertake advanced research, development, modelling and experimentation and can store, manage and process large volumes of diverse data sets. The facilities include associated secure visualisation, training, briefing and laboratory facilities. The Project will integrate new high security / high integrity high performance computing capabilities efficiently at Defence Science and Technology (DST) Group Edinburgh.

Location of the Project

2. The Project proposes to deliver works at DST Group Edinburgh, South Australia.

3. DST Group Edinburgh delivers support to the Australian Defence Force on operations, sustainment and improvement to current capability, and development of new and emerging capabilities. As a very large science and technology precinct, DST Group Edinburgh manages its own secure computer network with a role to provide expert, impartial and innovative application of Science and Technology for the defence of Australia and its national interests. It is the largest Defence science and technology site in Australia, providing research facilities for approximately 1,200 personnel with a total workforce of approximately 2,000.

Need for the Project

4. DST Group contributes to Australia's defence and national security through its capacity to reduce and mitigate strategic and operational risks, and to create and maintain a capability edge. To retain this edge, DST requires a secure, centralised 'supercomputer' capability for advanced research, development, modelling and experimentation.

5. The Project is intended to deliver a new fit for purpose facility at the DST establishment in the Edinburgh Defence Precinct, consisting primarily of a secure high

performance computing centre, capable of a capacity expansion, a visualisation capability[1] and training facilities. This will provide the DST and the Australian Defence Organisation with a secure capability for high fidelity modelling and simulation it currently does not possess.

6. The scope of the Project has developed since its inception in 2006, in parallel with advances in computing technology. In December 2010 the Project received Departmental approval with a budget of $29.8 million; however, the Project was subsequently placed in suspense until November 2015 due to project funding constraints.

7. The Project recommenced with the release of the Defence White Paper [2] 2016 and the Defence Integrated Investment Plan. The Defence Integrated Investment Plan stated 'New investment will establish a centralised, networked, supercomputer capability that will support advanced research, development, modelling and experimentation across Defence'. This generated the Advanced Science and Technology (S&T) Support to Research and Modelling Project with Phase 1 including the provision of facilities for secure, centralised high performance computing.

8. In parallel to recommencement, DST conducted an analysis of high performance computing capability needs that resulted in a report titled "Capability Requirements for Secure Computational Science Facilities in Defence Science and Technology Group." The analysis recognised that DST required a secure computer centre with sufficient physical capacity to house future specialised high performance computing infrastructure and access to DST's classified research networks. The report also noted that DST was in the process of

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[1] Researchers realise that visualisation of scientific data can provide an understanding of the phenomenon or data being studied. Immersive virtual reality is a core technique for handling the growing amount of data from large parallel computations or advanced data acquisitions. The immersive virtual reality systems take advantage of human skills at pattern recognition by providing a more natural environment where a stereoscopic display enables depth perception and peripheral vision to provide contexts that harness human intuitive abilities.

[2] Defence White Paper Page 34 Section 1.22 - The Government recognises that Australian defence industry and scientific and technological research and development institutions have a critical role in providing the national support base upon which Defence relies to manage strategic risk. Defence White Paper Page 83 Section 4.2 - To ensure Australia maintains an Australian Defence Force with the highest levels of military capability, the Government is making a significant long-term investment in Defence's warfighting equipment and supporting systems, research and development, and the skills and training of our Defence people.

replacing its existing secure computer centre facilities at Edinburgh with new facilities. The high performance computing facility needs were readily integrated, through design, with little impact to project schedule but significant enhancement to the final capability outcome sought consistent with the Defence White Paper 2016.

9. In May 2017 the scope of the Project was adjusted to include:

   a. high security / high integrity data centre with high performance computing capability.

   b. secure digital visualisation and auditorium facilities.

   c. dedicated, secure meeting, training, and laboratory facilities appropriate to the programs supported by the facility.

10. In December 2017, the Project was known as the Defence High Performance Computing Centre.

11. The inclusion of the Information Communication Technology Project, which requires 2.5MW of computing power expandable to 5.0MW, relies upon on a mid-life upgrade project (now called 'Edinburgh Defence Precinct Mid Term Refresh Project'). The unapproved Edinburgh Defence Precinct Mid Term Refresh Project will aim to upgrade the available supply to the DST facilities and infrastructure providing for the expansion of High Performance Computing Centre capacity.

Proposed Facilities Solution

Scope of Project Works

12. Comprehensive master planning, site investigations, stakeholder consultation, whole-of-life cost analysis, and design development was undertaken to establish the works required under the Project to address each need.

13. The following four options were developed:

   a. **Option 1.** Do nothing.

   b. **Option 2.** Expand or alter existing facilities – a replication of Building 73 conventional low power data centre with no visualisation capability, additional meeting or training facilities.

c. **Option 3.** Construct a new purpose design high power – 5.0MW centralised high security / high integrity high performance computing data centre with visualisation and training facilities.

d. **Option 4.** Construct a new purpose design high power – 2.5MW load managed centralised high security / high integrity high performance computing data centre with visualisation and training facilities.

14. **Option 1: Do nothing.** This option is not considered to be viable as DST's existing information communication technology services and visualisation facilities are at capacity, with no possibility for expansion or upgrade, without compromising important advances in Defence technologies. It also does not deliver the facilities needed for secure centralised high performance computing as proposed to enable the Information Communication Technology Project. It is not possible to meet the need for increased data centre and information systems services, nor additional training and secure visualisation facilities through organisational or management changes. The Project has explored the feasibility of some similar regional facilities for some of the functional requirements (eg. training and visualisation facilities), and concluded there are none available to meet the requirement.

15. **Option 2: Replication of Building 73 Conventional Data Centre with no additional meeting or training facilities.** This option reflects the original in budget option of $29.8 million, before funding contributions from the Information Communication Technology Project and DST were agreed to by Government, and can only deliver a conventional low power data centre with no increased functionality or capacity. It also does not deliver any additional meeting or training facilities, nor does it deliver the facilities needed for secure centralised high performance computing required for the Information Communication Technology Project. The option does not provide the enhancements to capability required, and is not considered to be viable.

16. **Option 3: 5.0MW Centralised High Security / High Integrity High Performance Computing Data Centre with visualisation, briefing, meeting and training facilities.** This option is the preferred option but is unaffordable. It has the same building design and services solution as Option 4. It includes installation of the additional computing cooling and power supply, and management equipment required to achieve

5.0MW of computing power capacity. It also includes a High Voltage upgrade to the site[4] to meet the demands for the additional computing power in accordance with the current Edinburgh Defence Precinct High Voltage Master Plan and the future unapproved Edinburgh Defence Precinct Mid Term Refresh Project.

17. **Option 4: 2.5MW Load Managed Centralised High Security / High Integrity High Performance Computing Data Centre with visualisation and training facilities.** This option has been designed to provide facilities to achieve the required capability outcomes, particularly for the Information Communication Technology Project. It is within the available budget of $68.8 million, including augmentation of existing data services on site, a high performance computing data centre with 2.5MW of computing capacity (load managed within site capacity limitations) with the spaces and building services infrastructure to enable capacity to be expanded to 5.0MW once it is available. This option also provides the required secure visualisation, laboratory, training room facilities and staff working areas to fully harness the human dimensions of the proposed high performance computing capability, and 148 replacement and new car parking spaces.

18. Option 4 represents the best value for money solution to the Commonwealth to address the need from a whole of life perspective. The design includes optimised space and building services infrastructure to allow for cost effective expansion and importantly, the flexibility to mitigate disruption to critical operations during any expansion works.

19. Option 4 proposes to deliver a combined building facility, collocating a high performance computing data centre and secure training and briefing facility, and includes:

a. a new high security / high integrity high performance computing data centre capability.

b. secure visualisation and auditorium facilities.

c. dedicated DST secure meeting, training and laboratory facilities.

d. increased new car parking capacity required to support the facilities' function.

[4] The unapproved Edinburgh Defence Precinct Mid Term Refresh Project will provide general High Voltage upgrades including that required to enable an expansion of the high security / high integrity High Performance Computing data centre to the full intended 5.0MW. Subject to Parliamentary approval construction is planned to commence in early 2020 and be completed by early 2022.

Planning and Design Concepts

20. The philosophy for the design of the proposed works is based on:

a. providing cost-effective, functional, low maintenance, energy efficient design options compatible with proposed functions and existing aesthetics.

b. where possible, adopting conventional construction techniques and materials commonly used by the construction industry, and consistent with those already used.

c. applying appropriate durability measures to reduce ongoing maintenance, and achieve the proposed design life.

d. providing flexible services and infrastructure to accommodate an appropriate level of growth.

21. The planning and design concepts adopted are intended to deliver a building which has the capacity and capability to accept the installation of up to 2.5MW of high security / high integrity high performance computing by the Information Communication Technology Project. The associated visualisation, tele-conferencing, training and laboratory spaces have also been incorporated. Spatial and services backbone provision has been made for future cost and time effective implementation of the intended full 5.0MW high security / high integrity high performance computing capacity and capability. This is achieved through flexible spatial provisions within the data hall, layout of plant and equipment in the plant rooms for ease of planned additions of equipment, and the provision of redundancy in the cooling and power engineering systems within the building.

22. The building form is simple and robust to minimise on site construction time and maximise off site fabrication in two simple rectilinear building envelopes connected with a glazed foyer linked with a series of low-pitched roofs derived from internal functional requirements. The building is mostly of two levels of 8,930 m2 gross floor area with the single level entrance foyer connecting the data centre, and training and briefing facilities associated with data visualisation. The upper storey predominantly compromises of a plant room to service the data hall and auditorium areas. The internal structure of the building utilises formed concrete wall panels to address the security performance and the intensive services associated with activities contained within. Externally the walls are both load and non-load bearing precast concrete.

23. The approach to the architectural design of the facility is based on:

a. the layout required to support the high security / high integrity high performance computing capability.

b. simple, durable and robust architecture mutes the built form but meets the users functional, security and acoustic requirements.

c. orientation to be sympathetic to the prominent site entry location.

d. internal environmental quality that supports personnel productivity.

e. a focus on sustainability for assessing design solutions in a whole of life manner in accordance with Defence's 'Smart Infrastructure' policies and procedures.

f. efficient integration of architecture and engineering services.

g. engineering system design that is deliberately sufficiently flexible to accommodate function change over the lifecycle of the facilities, particularly within computing facilities where technological change is rapid.

Relevant Legislation, Codes and Standards

24. The following legislation, standards, codes and guidelines are applicable:

a. *Public Works Committee Act 1969 (Cth)*

b. *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*

c. *Fair Work (Building Industry) Act 2012 (Cth)*

d. *Work Health and Safety Act 2011 (Cth)*

e. *Disability Discrimination Act 1992 (Cth)*

f. *Fair Work Act 2009 (Cth)*

g. *Building and Construction Industry Improvement Amendment (Transition to Fair Work) Act 2012 (Cth)*

h. *Defence Act 1903 (Cth)*

i. Defence Force Regulations 1952

j. National Construction Code – Building Code of Australia

k. Defence Manual for Infrastructure Engineering Electrical (MIEE)

l. Defence Manual of Infrastructure Engineering - Bulk Fuel Installation - Design

m. Smart Infrastructure Manual

n. Defence Estate Quality Management System

o. American National Standards Institute / Telecommunications Industry Association-942 Data Centre Certification

p. Defence Manual of Fire Protection Engineering (MFPE).

25. Subject to parliamentary approval, an accredited Building Certifier will certify the compliance of the design and the compliance of the completed works.

Land and Zoning

26. The proposed works are consistent with uses prescribed in relevant Defence zoning instruments, including the Zone Plan Report for Edinburgh Defence Precinct 2007 and the Defence Estate Principles of Development.

27. The delivery of Option 4 does not involve the acquisition, disposal or leasing of any land or property by Defence. There are no required or proposed changes to zoning as a result of this project. The location does not require Local or State Government approval.

Structure

28. The structural design of the proposed hardstand and the building has taken into account local geotechnical conditions, and are in accordance with the relevant Australian Standards and Codes. Appropriately qualified and experienced geotechnical and structural engineers have been engaged in the design of the proposed facility.

29. The proposed structural form is a result of several design parameters, including cost, building security zone and services reticulation requirements, speed of onsite construction, and maximising off-site work.

30. Structural steel framing has typically been adopted for the main building elements and are:

a. a stiffened structural raft footing system to suit the highly reactive (H1-D) clay soils on site.

b. steel columns supporting simply supported steel roof beams with cold formed steel purlins and metal roof sheeting.

c. load bearing reinforced concrete walls supporting a cast in-situ reinforced concrete plant room slab.

d. roof and wall bracing for stability.

31. The design includes the use of a preformed reinforced concrete wall system for the internal load bearing walls to expedite construction time on site and eliminate the need for concrete wall formwork. This system can be reinforced, and concrete core filled on site to satisfy acoustic and Defence security requirements for the facility.

Civil Design

32. The facility civil design includes the main building floor area and hard standing areas of approximately 1,055 m^2. The civil design aggregates the requirements of the project's traffic, parking and stormwater objectives and includes:

a. a hardstand area for up to a 19 metre semi-trailer for complete fuel deliveries and smaller vehicles for general goods delivery, and

b. a one-way access road to the northern side of the building.

Mechanical Services

33. The design of mechanical services systems in the building are driven by the different use of the two major components of the buildings, being the data centre for the high performance computing and the training, meeting and ancillary areas. The mechanical design philosophy, and therefore scope in terms of sizing of plant, pipework, equipment and spatial layout is based on Option 3 (5.0MW system); however; the plant scope provided with the Project budget meets Option 4 (2.5MW system) and is readily expandable to 5.0MW. This philosophy has been adopted to reduce the future capital costs to Defence and operational impacts on the facility as DST progressively expands the High Performance Computing system.

Data Centre Thermal Plant

34. The high performance computing data centre cooling is based on providing four (2.5MW load) of the planned six (5.0MW load) water cooled chillers, plus associated

building and ventilation air cooling requirements. The Project scope includes the N+1[5] redundant water pipework for Option 4, with spatial and connection allowances for the future expansion to the final 5.0MW configuration, ensuring the data centre information technology equipment cooling requirements are maintained during plant and equipment outages and maintenance events. The Data Centre Infrastructure Management System will turn on the standby chiller, pump or cooling tower if any duty plant fails.

35. The mechanical plant is served by three active and one catcher power tiers, and the main supply switch board to achieve a N+1 redundancy.

Training, Meeting, Laboratory and Ancillary Areas

36. The training, meeting, laboratory and ancillary areas air conditioning plant is based on water cooled heat pump air conditioning units. These units are connected to the condenser water system for zone heating and cooling requirements. Small communications areas will be served by duty only fan coil units.

37. Proposed ventilation systems to be installed are designed to suit the room use and function. All heating, ventilation and air conditioning plant will be integrated and controlled by the central Data Centre Infrastructure Management System.

General Mechanical Services Exhausting

38. All plant rooms will incorporate roof cowls and louvres to allow outside air transfer to the zone air handling units during normal and economy cycle operation.

39. The Uninterrupted Power Supply Battery Rooms will have a mechanical exhaust system to remove any possible accumulation of hydrogen gas from the battery charging process. All amenities will be mechanically exhausted at the ceiling level through egg-crate grilles.

40. The mechanical design has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance Publications relevant in South Australia and Defence requirements.

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[5] N+1 redundancy is the level of resilience defined by Telecommunications Industry Association (TIA) 942 Tier 3 requirements that ensures power and cooling availability in the event of component failure. Components have at least one backup component.

Hydraulic Services

41. The site has a reticulated potable water system serviced from the South Australia Water Network. The domestic water supply will be from the existing base site infrastructure via a water meter and inline strainers, and reticulated through the building. To aid the management of water usage, 'smart' water meters which allow for continuous monitoring of electrical consumption, will be used and interfaced with the Building Management System for local and remote monitoring.

42. The potable water systems have been designed to provide the usage rates needed to meet the cooling requirements for an ultimate information technology equipment load of the 5.0MW High Performance Computing Data Centre. The building has dual water supply feeds to meet the Tier 3[6] requirements.

43. Heated water will be generated by electric heat pumps to improve the energy efficiency of the building, and will be reticulated to all relevant fixtures and tapware via local service valves to facilitate minimum disruption during maintenance.

44. All building, sanitary plumbing and drainage for all drains, vents, fixtures and fittings are designed as a gravity system with connection to the existing sewer systems on site.

45. The hydraulic design has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance Publications relevant in South Australia and Defence requirements.

Electrical Services

46. The electrical systems for the High Performance Computing Data Centre component of the facility are designed for a high performance computing equipment load of 2.5MW, and total future high performance computing equipment load of 5.0MW. A

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[6] **Tier-3: Concurrently Maintainable Site Infrastructure**
A data center which has redundant capacity components and multiple independent distribution paths serving the computer equipment. Typically, only one distribution path serves the computer equipment at any time. The site is concurrently maintainable which means that each and every capacity component including elements which are part of the distribution path, can be removed / replaced / serviced on a planned basis without disrupting the Information Communication Technology capabilities to the End-User. It has protection against most physical events.

modular design is provided with multiple power tiers which are able to be added to in the future.

47. The existing electrical supply has been assessed to determine its ability to support the planned high performance computing equipment load of an initial 2.5MW, and ultimate 5.0MW and requires new high voltage infrastructure, including two new high voltage rings at DST Edinburgh to support the facility consistent with Defence's Edinburgh Defence Precinct High Voltage Master Plan. The data centre is designed to comply with Tier 3 requirements for emergency power generation with 12 hours of onsite fuel storage and uninterrupted power supply, with concurrent maintainability of high performance computing infrastructure.

48. The Data Centre Infrastructure Management and Generator Control System provided allows energy usage, switchgear status, uninterrupted power supply status, static transfer switch status, generator, load bank, and power factor correction monitoring and control. This allows the facility to be operated within the site power supply limitations and meet planned operational energy targets.

49. The training, meeting, laboratory and ancillary areas have a standard electrical system design which includes a provision for 25% future expansion capacity as required by Defence.

50. The electrical design has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance Publications relevant in South Australia and Defence requirements.

Fire Protection

51. The fire engineering design has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance Publications relevant in South Australia, and Defence requirements. The South Australian Metropolitan Fire Service has been consulted about the design.

52. The building has been classified under the Manual of Fire Protection Engineering as a Major Asset – Non Critical. Therefore fire protection above the standards for this type of building is not required.

53. The fire detection system for the high performance computing within the data centre will be a multi-point aspirating smoke detection system. This system provides the earliest possible warning of an impending fire hazard given it has multiple levels of alarm. Communications and electrical rooms have a similar but simpler system. Standard smoke detectors will be provided for all other areas except for lunch rooms and toilets / showers where heat detectors will be used.

Communications

54. The communications engineering design has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance Publications relevant in South Australia and Defence requirements.

55. The works include classified data networks that are aligned with the operational requirements of the proposed facilities.

56. Network connections are also required to support the following engineering services:

a. Security

b. Building Management System

c. Data Centre Infrastructure Management System

d. Emergency Lighting Testing System

e. Fire Alarm Monitoring

f. Defence National Sub-Metering Program

g. Access Control Security System linked to site Gallagher access control system for all Zone 4 rated areas.

57. Audio visual systems will be provided throughout the facility, with the exception of the data centre. The facility includes a dual purpose unclassified and classified video conference room.

Security Measures

58. There is no public access to the proposed facility, and entry to the proposed facility will be through the controlled access point at the main entry gate. The proposed

building has been designed for the appropriate security classification as stipulated by Defence requirements.

59. The physical security zones throughout the facility have been designed in accordance with the relevant Australian Security and Intelligence Organisation Technical Notes. The facility includes zones appropriate to meet operational and functional security requirements.

Acoustics

60. Specific acoustic treatments are provided to address external noise, internal noise, room acoustics and building services noise, in accordance with applicable standards for acoustic design to enable areas to be acoustically separate. Areas designed with specific acoustic criteria include the visualisation auditorium, video conferencing room and meeting rooms, the analytics laboratory, and data centre offices.

Work Health and Safety

61. The proposed facility will comply with the *Work Health and Safety (WHS) Act 2011 (Cth)*, Work Health and Safety (Commonwealth Employment – National Standards) Regulations, and relevant Defence policies.

62. In accordance with Section 35(4) of the *Building and Construction Industry Improvement Act 2005 (Cth)*, contractors will also be required to hold full work health and safety accreditation from the Office of the Federal Safety Commissioner under the Australian Government Building and Construction Work Health and Safety Accreditation Scheme.

63. Safety aspects of the Project have been addressed during the design process, and have been documented in a Safety in Design report completed by the design consultants. No unusual public safety risks have been identified in this process. The Project, through inclusion in the Head Contractor Tender documentation, will require the successful Head Contractor to submit a comprehensive Work Health Safety Plan for the construction phase and prior to the start of any construction activities.

Materials and Furnishings

64. Materials and furnishings will be selected from those readily available locally for their functionality, durability, low maintenance and ecologically sustainable design properties.

65. The external walls are predominantly a mixture of load bearing precast façade, metal cladding, and powder coated or natural anodised aluminium framed fixed glass and louvres. Structural framing is steel, and where exposed externally and internally is provided with a low maintenance finish. Internal walls will mainly consist of formed concrete wall panels with impact resistant plasterboard painted with 100% acrylic paint where required to provide low maintenance and maintainable finishes. Floors will generally be anti-static in the laboratory and workshops. Floor coverings will be provided to office, administration, foyer, auditorium, conference and classrooms. Ceilings throughout working, training and administration areas of the facility will be a mixture of acoustic tiles and plasterboard, with architectural form ceilings in the foyer and auditorium. A painted concrete ceiling will be used in the data hall.

Landscaping

66. In accordance with the well-established approach to the Defence sites at Edinburgh, and in a dry, low rainfall State, landscaping treatments will be minimal. Preference will be given to indigenous, regionally appropriate local native species. Drought tolerant plants and naturally occurring native grasses with low ongoing watering requirements, which have low long term maintenance requirements, deter bird breeding are included in the design. There is minimal 'feature' planting to enhance the setting of the new facility and complement the existing nearby flora.

Childcare Provisions

67. There is no requirement for additional childcare facilities under this project as it does not increase base populations.

Provisions for People with Disabilities

68. Access for people with disabilities will be provided in accordance with the Building Code of Australia, Australian Standard 1428 and the *Disability and Discrimination Act 1992 (Cth).*

Environmental Sustainability

69. Defence is committed to ecologically sustainable development to improve natural resource efficiency. This is achieved through the implementation of policies and strategies in energy, water and waste, to support its commitment to the reduction of energy consumption, potable water consumption and waste diversion to landfill. This proposal addresses Commonwealth policy by adopting cost-effective and ecologically sustainable development practices as a key objective in the design of the new facilities. To achieve this objective, the proposed building will comply with:

a. Section J of Volume One of the Building Code of Australia, National Construction Code 2015 Energy Efficiency

b. Part 3.12 of Volume Two of the Building Code of Australia, National Construction Code 2015

c. Energy Efficiency in Government Operations policy

d. Defence Smart Infrastructure Manual.

70. The measures include:

a. **Energy targets:** The facility type means it is ineligible for a formal National Australian Built Environment Rating Scheme star rating. However, based on energy modelling results, the office equivalent spaces achieve a level of performance equivalent to a 4.5 Stars National Australian Built Environment Rating Scheme Energy Tenancy rating in accordance with the Smart Infrastructure Manual requirements.

b. **Measures to reduce energy and water use:** The Project design includes for the following energy environmentally sustainable design principles:

   a. water efficient sanitary fixtures

   b. water and energy use metering and management systems

   c. energy efficient appliances including hot water systems (air sourced heat pumps)

   d. low maintenance, non-irrigated landscaping

   e. building fabric exceeds Building Code of Australia Part J energy efficiency requirements by 20%.

71. The ecologically sustainable measures proposed for the Project have been balanced with other requirements for Defence buildings, including security and work health and safety considerations, to ensure that Defence's operational capability is not compromised.

Potential Impacts

72. Defence has conducted rigorous assessments to identify potential environmental and local community impacts and propose suitable mitigation measures. These include:

a. **Visual Impacts:** There are no potential visual impacts to the local community due to the location of the facility within the DST Edinburgh site which is well removed from any local residential or commercial areas.

b. **Noise Impacts:** There are no potential noise impacts to the local community due to the operational use of the facility, and the location of the facility within the DST Edinburgh site which is well removed from any local residential or commercial areas.

c. **Heritage Impacts:** The local indigenous group, the Kaurna People, have been involved in the development of the Project. The environmental assessment of potential impacts to indigenous heritage concluded that the site location proposed would not have significant impact on known areas of cultural significance, and noted that the works are proposed to be located on existing disturbed areas.

d. **Traffic, Transportation and Road Impacts:** The Adelaide Metro Bus Service (Route No. 421) stops in Third Avenue at the main gate into the DST Edinburgh site, approximately 100 metres from the proposed building site. Third Avenue is the primary public road into the site and Fifth Avenue is a secondary freight access. Both Third and Fifth Avenues are accessed from West Avenue, which runs in a south-west / north-east direction through the Edinburgh Defence Precinct. West Avenue primarily services the Edinburgh Defence Precinct and the Edinburgh South and Edinburgh North industrial areas and is not considered to be a busy road. The closest residential area is 1.5 kilometres

to the east of West Avenue, east of the Adelaide Metro Railway. Accordingly, there are no traffic concerns created by this proposal.

e. **Existing Local Facilities:** There are no potential impacts on existing local facilities due to the operational use of the facility and the location of the facility within the DST Edinburgh site which is well removed from any local residential or commercial areas.

73. The Project will not have a significant impact on existing environmental and heritage values and is not required to be referred to the Minister of Environment and Energy under the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth).*

Consultation with Key Stakeholders

74. A community consultation and communications strategy has been developed that recognises the importance of providing local residents and other interested stakeholders an opportunity to provide input into, or raise concerns relating to the proposed works.

75. A variety of internal and external stakeholders have been engaged during project development to date, and further consultation will be conducted. These include:

a. Nigel McBride, Chief Executive Office, Business SA, Chamber of Commerce and Industry, South Australia

b. Nick Champion, Federal Member for Wakefield

c. Jon Gee, South Australian Member for Taylor

d. Gillian Aldridge, Mayor of the City of Salisbury

e. Steven Marshall, Premier of South Australia and Minister for Defence and Space Industries

f. The Kaurna People.

Cost Effectiveness and Public Value

Project Costs

76. The estimated total capital out-turned cost of the Project is $68.8 million (excluding Goods and Services Tax). This includes management and design fees, construction costs, information and communications technology (provided by Chief Information Officer Group, but excludes the high performance computing and associated

components to be provided by the Information Communication Technology Project), furniture, fittings, equipment, contingency and a provision for risk and escalation.

77. An increase in operating costs is expected as a result of the proposed works. This is due to the introduction of a new high performance computing capability being introduced to the site.

78. Environmentally sustainable design principles have been incorporated into the design, resulting in greater efficiencies and reduced costs over the design life.

Project Delivery System

79. A Project Manager / Contract Administrator has been appointed by the Commonwealth to manage the works and associated administration of the contracts during the Planning and construction Phases.

80. A Design Services Consultant has also been appointed to undertake the design of the facilities.

81. Subject to Parliamentary approval of the Project, Defence intends to engage one Head Contractor via a two stage open tender, using the Defence Head Contractor Contract (HC-1 2003) construct only methodology to construct the Project in accordance with Defence's 100% completed design. The Head Contractor will deliver the project works in accordance with, but not limited to, all current National Construction Code / Building Code of Australia guidelines, Commonwealth Procurement Rules, Australian Standards, Defence standards, guidelines, policy and procedures, and Work Health and Safety legislation.

Construction Program

82. Subject to Parliamentary approval of the Project, design activities are expected to be completed by late 2018, with construction expected to commence from early 2019 for completion in mid 2020.

Public Value

83. Defence has comprehensively assessed public value, opportunities and benefit to the community as a result of the proposed works:

a. **Meeting capability needs:** DST provides leading science and experimentation inputs to the development, fielding and operational

employment of Defence capabilities. Modern high performance computing capabilities are being introduced and will be employed across an array of Defence considerations fundamental to the effectiveness of Australia's Defence against a wide range of threats and threat scenarios. This proposal, to provide the necessary facilities for the introduction of new High Performance Computing and visualisation capabilities to DST consequentially has intrinsic value to all Australian's in providing for their Defence.

b. **Employment opportunities:** The Project will employ a maximum workforce of approximately 160 personnel, and an average construction workforce of approximately 105 personnel.

c. **Economic impacts:** The Project will employ a diverse range of consultants, contractors and construction workers that may include opportunities for up-skilling and job training to improve individual skills and employability on future projects.

d. **Local industry and Indigenous business involvement opportunities:** The Project will provide the potential to utilise local businesses, including indigenous business for suppliers of construction materials and labour and thereby presents an opportunity to boost activity in the local economies.

e. **Existing infrastructure services:** This is not applicable as the Project will connect into existing on site infrastructure services.

Below the Line Items

84. There is no Below the Line Items for this project.

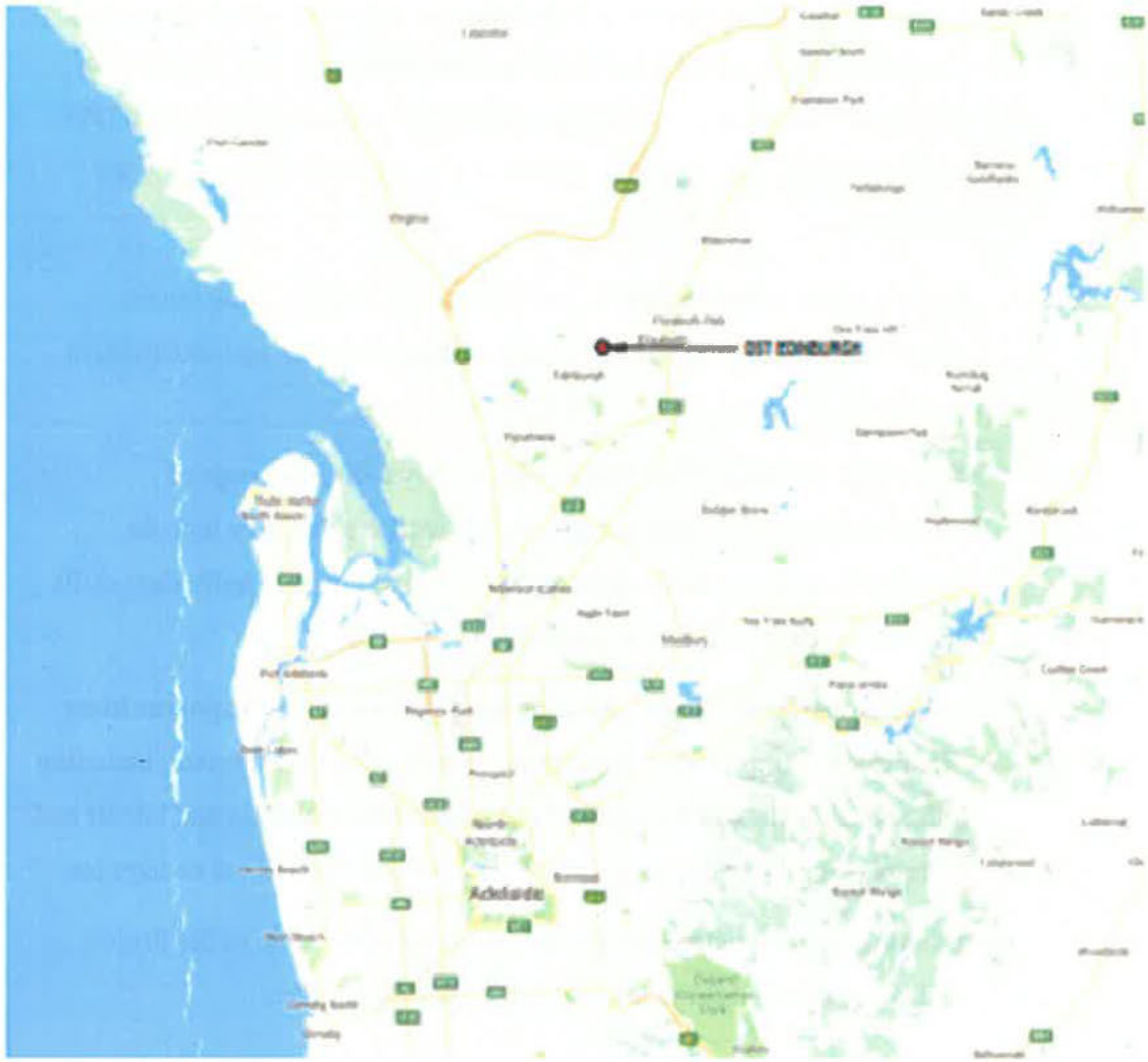
Revenue

85. No revenue is expected to be derived from this project.

Attachments

1. Locality Plan – DST Edinburgh, South Australia
2. Site Plan – DST Edinburgh, South Australia
3. Defence High Performance Computing Centre Floor Plans and Elevations
4. Defence High Performance Computing Centre Architects Perspective Views

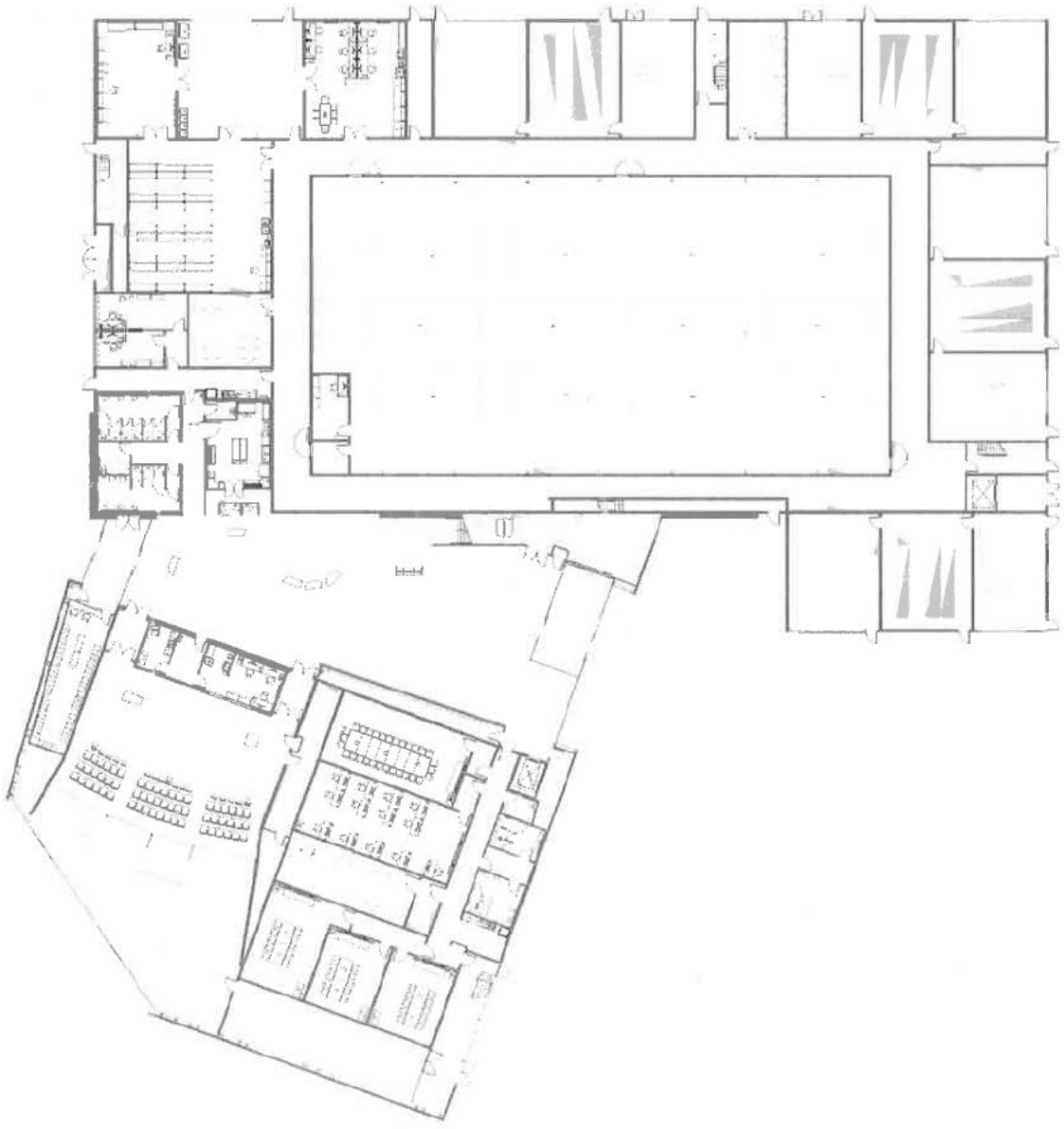
Attachment 1: Locality Plan – DST Edinburgh, South Australia



LOCATION MAP

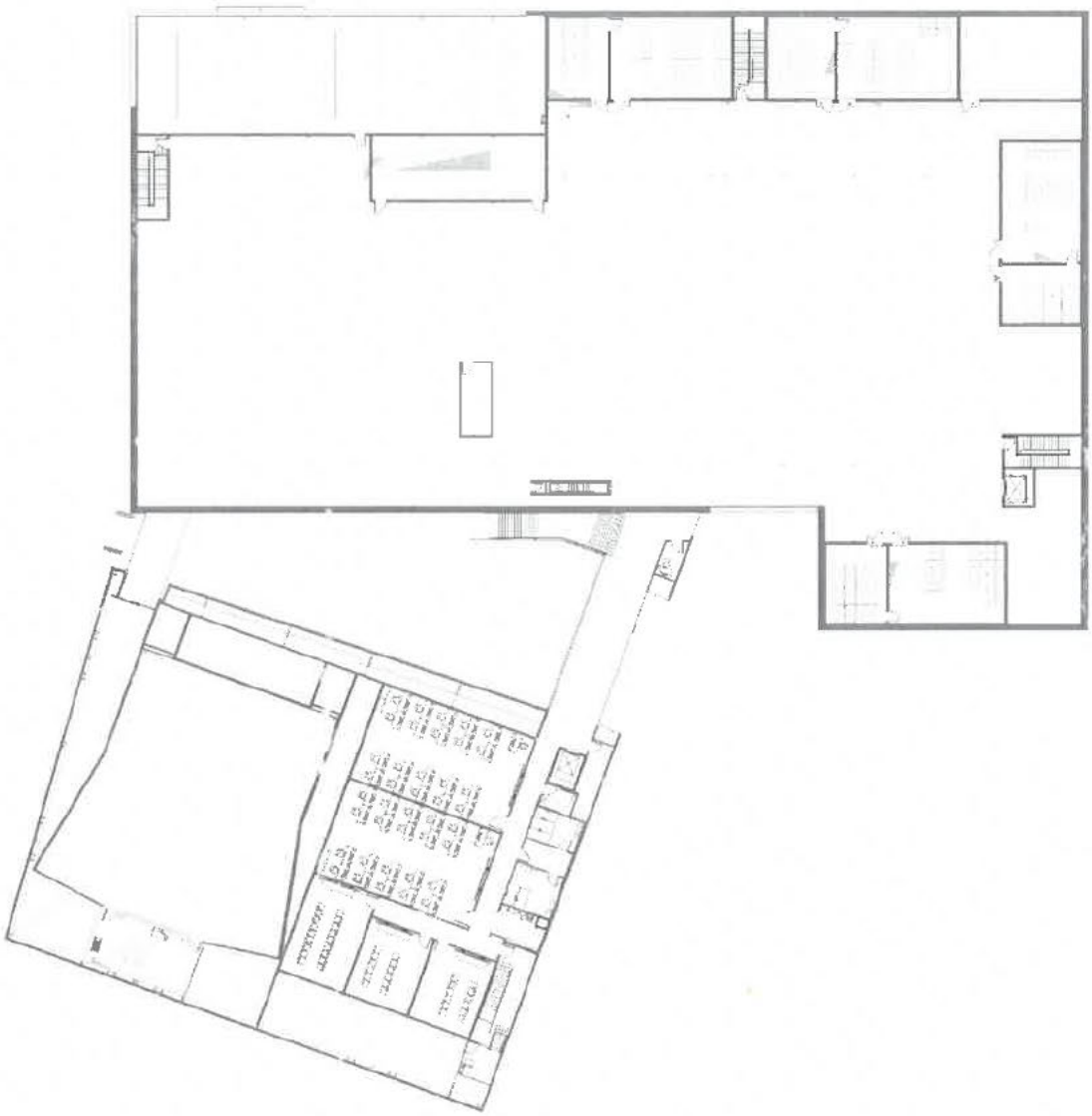
Attachment 2: Site Plan – DST Edinburgh, South Australia

Attachment 3: Defence High Performance Computing Centre Floor Plans and Elevations



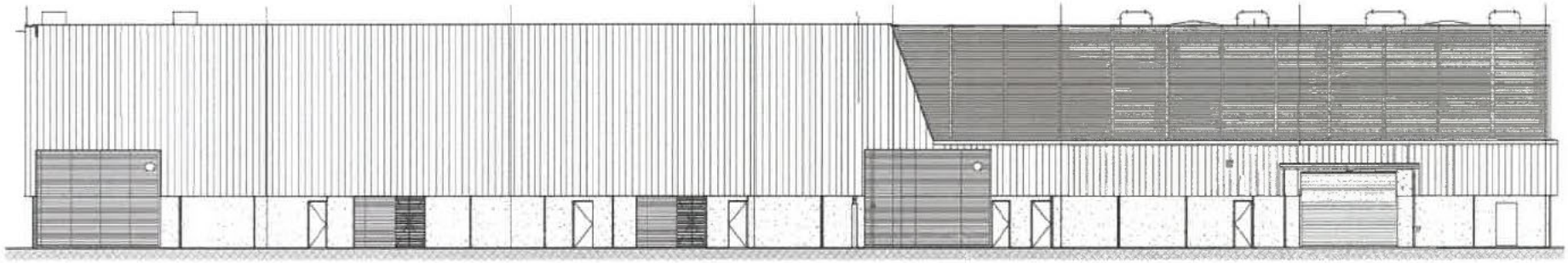
Ground Floor Plan

Attachment 3: Defence High Performance Computing Centre Floor Plans and Elevations

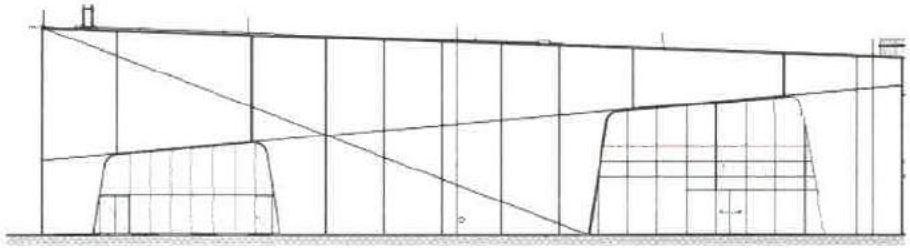


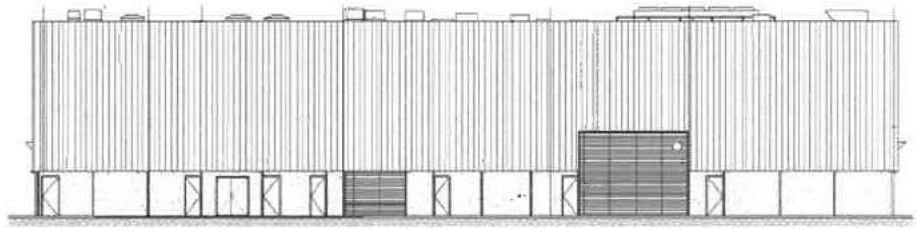
First Floor Plan

Attachment 3: Defence High Performance Computing Centre Floor Plans and Elevations



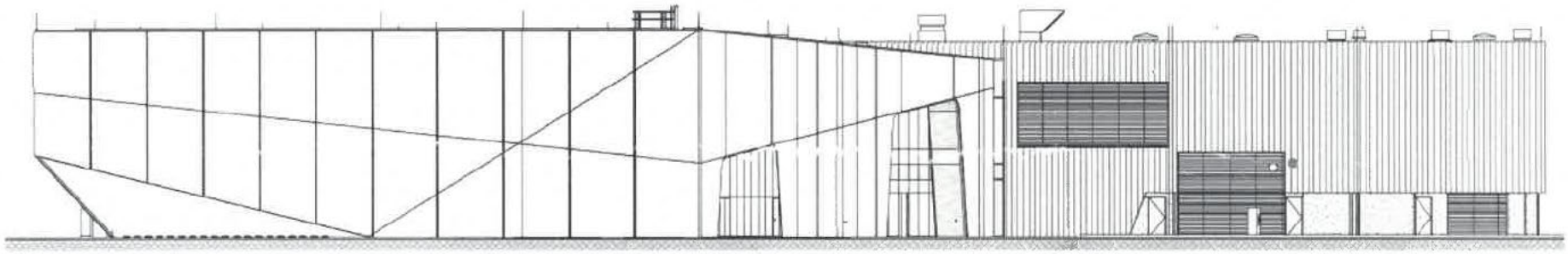
North Elevation



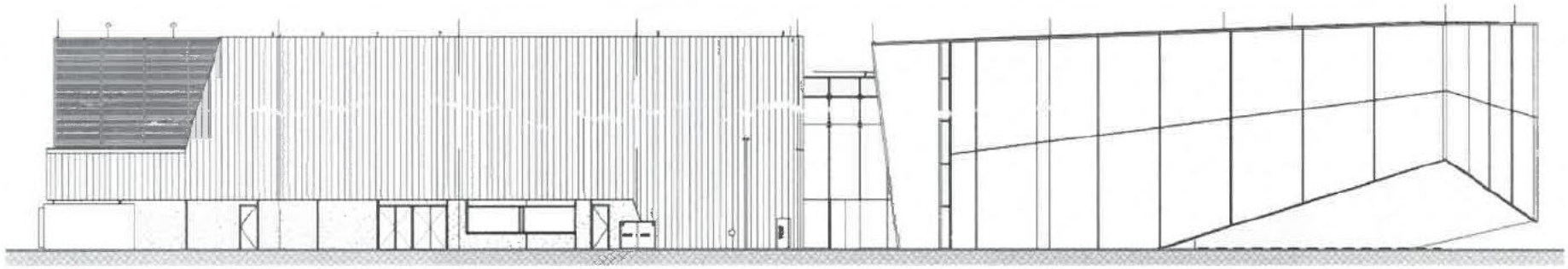


East Elevation

Attachment 3: Defence High Performance Computing Centre Floor Plans and Elevations

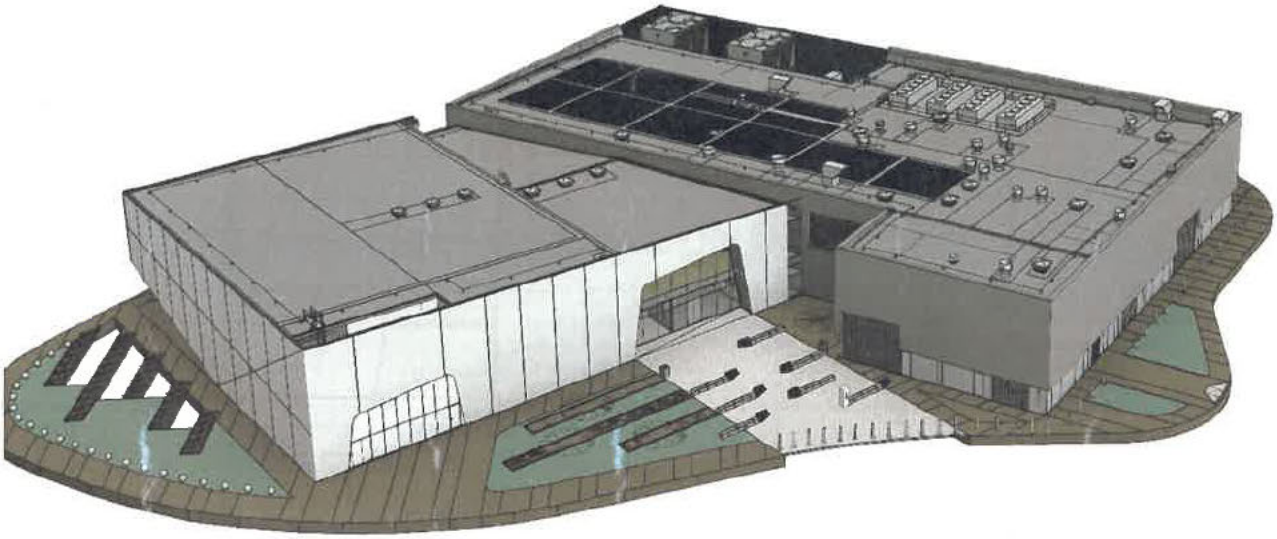


South Elevation

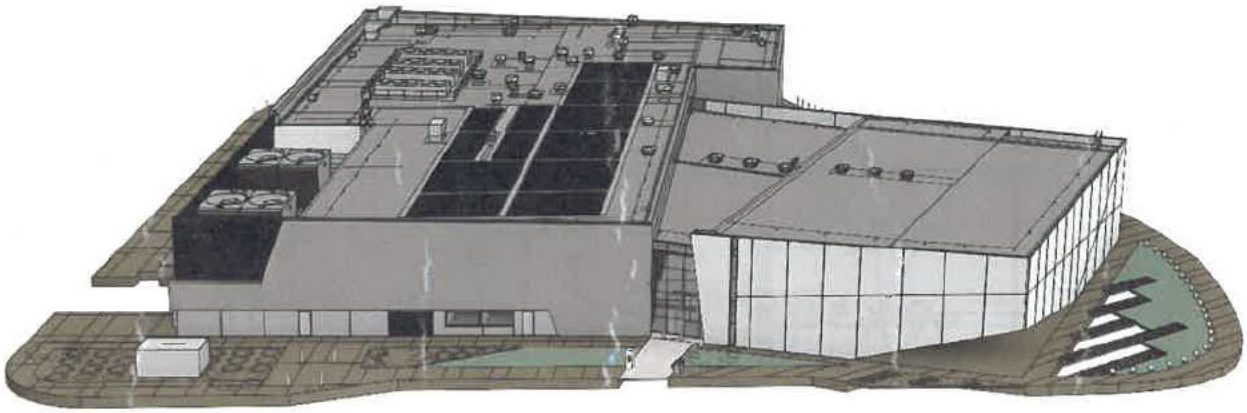


West Elevation

Attachment 4: Defence High Performance Computing Centre Architects Perspective Views



South East Aerial View



West Aerial View