Australian Government

Department of Defence

# HMAS *STIRLING*

# REDEVELOPMENT STAGE 3A

## Garden Island, Western Australia

## STATEMENT OF EVIDENCE
## TO THE
## PARLIAMENTARY STANDING COMMITTEE
## ON PUBLIC WORKS

Canberra, Australian Capital Territory

August 2015

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# HMAS *STIRLING* REDEVELOPMENT STAGE 3A

## Identification of the Need

1. HMAS *Stirling* is located on Garden Island in Western Australia and was named after Captain James Stirling, Royal Navy, who first landed on Garden Island in 1827 and then returned in 1829 to found the first formal European settlement in Western Australia.

2. HMAS *Stirling* is the primary operational support base for Royal Australian Navy (Navy) capability on the west coast of Australia and is the homeport for approximately half of the major combatant force, including submarines, major surface combatants, support vessels and embarked helicopter detachments. HMAS *Stirling* provides operational support to home-ported and visiting Australian, and occasionally allied, naval vessels. This support includes command, administration, training, live-in- accommodation and messing, ship replenishment, repair, maintenance, logistic and operational support. HMAS *Stirling* currently accommodates a working population of approximately 3600, comprising both Defence and civilian personnel, employed at or who use HMAS *Stirling* on a regular basis.

3. The existing infrastructure at HMAS *Stirling* has reached or is nearing the end of its design life and will not continue to effectively support Navy operations from Western Australia without immediate and substantial redevelopment.

### Background

4. HMAS *Stirling* was constructed in the 1970s and commissioned in 1978 as a forward operating base to support surface combatant, submarine, marine science and patrol boat operations, with a total ship and shore establishment of around 1500 personnel. In the early 1980s the Government commenced permanent basing of major fleet units in the West, then in 1987 announced its 'Two Ocean Basing' policy establishing the Navy's capability to deploy major fleet units for sustained operations off both the East and West coasts. As a result, HMAS *Stirling* was progressively developed for this new role, with work completing in 1999.

5. The most recent Defence White Papers in 2009 and 2013 reinforced this force disposition. The Defence White Paper 2009 identified five enduring Strategic Basing Principles to guide the future planning of the Defence Estate. The first of these states Defence base locations should be aligned with strategic requirements and ensure critical capabilities are suitably dispersed for security reasons. Defence White Paper 2013 reflected on the global strategic significance of the Indian Ocean and the national strategic interest of the North West Shelf. Tacitly this guidance has reinforced the strategic importance of HMAS *Stirling*, Australia's only Indian Ocean naval base, which is also located close to critical strategic infrastructure and industry support.

## Need for the Work

6. With most of the key infrastructure and facilities at HMAS *Stirling* approaching 40 years old, various facilities studies have been undertaken in the past decade and these have identified serious shortcomings in the condition and capacity of the base's engineering systems to meet current service demands. Given these shortcomings, the forecast growth in demand for these services will not be met.

7. Adding to the shortcomings in the base engineering services are maintenance problems arising from the advanced deterioration of existing structures due to the aggressive coastal environment. These deficiencies are already compromising service levels and operational effectiveness due to failure of some infrastructure elements. In addition, general facilities at HMAS *Stirling* are aged and no longer meet current functional requirements.

8. Building on the findings of these various studies and reports, this proposal focuses on addressing the following shortcomings in key base facilities, engineering services and infrastructure:

   a. the generating capacity and redundancy in the emergency power system is inadequate and the system is at the risk of a single point of failure causing the simultaneous loss of primary and stand-by power supplies;

   b. the incoming electrical power supply from the local utility (Western Power) grid is near capacity;

   c. the existing base electrical distribution system is aged, unreliable, vulnerable to

inconsistencies in Western Power's supply and extreme weather and is near full capacity;

d. the existing maritime structures are showing significant signs of reinforced concrete corrosion damage due to the aggressive coastal environment. These facilities are critical to providing effective operational support to surface ships and submarines;

e. the existing freshwater sewerage system treatment units are overloaded, sections of the sewerage pipelines are failing and the existing pump stations are in poor condition;

f. the existing saltwater sewerage (sullage) system is out-dated and cannot cope with the current demand;

g. the combined potable and fire-fighting water supply system is over 40 years old and is in poor condition. The piping network is subject to regular leaks and unable to comply with requirements of Defence's Manual of Fire Protection Engineering, statutory regulations or relevant Australian Standards;

h. the existing central thermal plant that serves eight buildings in the Operational area (Zone B) of the base is ageing, inefficient, difficult to maintain and is operating at capacity. Facilities in Zone A of the base are served by dedicated air conditioning plant in each building. In most cases, the equipment has exceeded its economic life and is in need of replacement. Several highly utilised mess and recreation facilities and the three physical training buildings are not air conditioned, limiting their amenity in the summer;

i. the existing hazardous waste facility was designed for half the capacity of materials currently handled and does not comply with the Australian Dangerous Goods Code and other applicable statutory regulations and codes for storage of hazardous chemicals;

j. the direct-buried copper supervisory system is at the end of its life and is only partially functional. The fibre optic communication system for the Defence Restricted and Secret networks was built in the mid-1990s and while it is fully functioning, it does not meet capacity, coverage and redundancy requirements;

k. the existing single pipe water main, located on the western side of the causeway, is

the sole source of potable water to HMAS *Stirling* and requires repairs due to age and corrosion;

l. due to the unavailability of bore water, potable water is used for essential irrigation of sports fields and areas of ceremonial significance such as the Quarterdeck and the Captain Stirling and the Z Force memorials;

m. the configuration of the base entrance causes significant traffic problems during peak periods and particularly during periods of heightened security. Key deficiencies include the lack of adequate truck pullover inspection bays and a return loop for rejected vehicles. Located next to the Base Entrance, TS ANZAC provides training facilities for the local Naval Cadet unit. The ageing transportable huts and salvaged sections of former ships have significant health, safety and access shortcomings;

n. many base roads are in poor condition. The internal road network lacks adequate separation for vehicles, cyclists and pedestrians, posing potential safety risks to road users;

o. the Submarine Training and Systems Centre has insufficient Public Address (PA) and Emergency Warning Intercommunications System (EWIS) speaker coverage.

p. the Base Health Centre no longer meets the requirements of the range of medical services being provided. With a greater focus on outpatient services, more doctors are now practicing in the facility, along with an increased focus in the areas of physiotherapy and psychology;

q. the external condition of the buildings at HMAS *Stirling* is generally good, however, brick mortar joints are deteriorating due to salt ingress and require repair. The internal fit-out condition of many buildings is generally well below standard, as a result of age and general wear and tear;

r. the clay tiles used in the construction of the original buildings are displaying signs of decay from salt ingress. The roof gutters and downpipes on many buildings are in poor condition and the resultant ingress of rainwater has caused extensive building damage;

s. the limited integration of the existing Closed Circuit Television (CCTV) and Intruder Alarm Systems compromises the effectiveness of force protection and security

measures being implemented on the base. In addition, some CCTV cameras and alarm panels are past their service life and do not meet current security standards;

t. the existing roof access provisions on many buildings at HMAS *Stirling* do not meet contemporary Australian Standards and present impediments to the Commonwealth meeting its work health and safety obligations;

u. the existing mess facilities have failed to keep pace with changes in functional requirements arising from evolving service delivery and the rationalisation of services and facility usage. Several mess buildings have work health and safety shortcomings and in some cases are not compliant with access standards. Deficiencies are also apparent in the building mechanical and electrical systems;

v. the existing car parking does not meet current demand. The existing footpath network does not effectively serve the pedestrian traffic between the car parks and the working accommodation nor separate them adequately from joggers and cyclists;

w. the existing Chaplain Centre does not meet the current demand for individual and group counselling, training and religious functions;

x. the absence of a mechanical lockout (isolation) capability on a wide range of building services plant and equipment is a significant impediment to implementing a safer regime for maintaining mechanical and electrical systems across the base; and

y. the existing physical training facilities were not purpose-built to meet modern Australia Defence Force physical training requirements and consequently are poorly configured for many requirements, fail to meet current Australian Standards for indoor sports activities and prevent the staff from maintaining an adequate access and safety regime in the activity spaces.

9. In July 2015, the Government approved the Project, inclusive of funding.

## Description of the Proposal

10. The HMAS *Stirling* Redevelopment Stage 3A proposal (the Project) will encompass a diverse array of project elements to address problems in all the major base engineering systems. The proposed works will include upgrading and/or repair of the existing road network, the combined potable and fire-fighting water supplies, the electrical power supply and

distribution system, the emergency power system, the base sewerage and sullage systems, and the existing data and communications infrastructure.

11. In addition to the works required to the base's engineering systems, the Project will also include works to redress functional shortcomings in the base entrance configuration, the deteriorating condition of the existing maritime structures, long term maintenance-related problems and the most pressing functional deficiencies identified in a number of key facilities.

## Project Location

12. HMAS *Stirling* is located on Garden Island and is connected to the mainland by a 4.2 kilometre causeway. HMAS *Stirling* is located approximately 10 kilometres west of Rockingham and approximately 45 kilometres south of Perth. The works included in the Project are located on Defence property and within the existing boundaries of HMAS *Stirling,* with the one exception being the proposed new power supply feeder to be provided by Western Power. Part of this proposed feeder will be on State owned land.

## Options Considered To Fulfil the Identified Need

13. Defence considered options for each project element, including refurbishing existing facilities. For most of the proposed works, the option to alter and add to existing facilities and infrastructure to meet functional requirements has been assessed as being the most cost-effective and feasible. New facilities are proposed where retention and re-use of existing facilities was not determined to be cost-effective.

## Environment and Heritage Assessment

14. All proposed works will be undertaken in accordance with Commonwealth Environmental Policies. An assessment of the potential environmental impacts has been completed and no significant impact has been identified as arising from this project. Accordingly, the need for a referral under the *Environmental Protection and Biodiversity Conservation Act 1999* is not considered to be necessary.

15. Defence will require a detailed Construction Environmental Management Plan (CEMP) to be developed by the construction contractor(s) prior to any construction work commencing. Defence has also engaged an independent Environmental Consultant to complete an Initial Environmental Review, which has highlighted environmental and heritage risks to be addressed in the Schematic Design Report and in the CEMP.

**Asbestos**

16. Defence's Asbestos Register for HMAS *Stirling* has recently been reviewed and updated, and will guide the identification and removal of asbestos during the construction phase of the project.

17. The scope of this proposal includes the upgrading of existing building assets that contain asbestos. Defence has also identified localised examples of shallow asbestos fragments in the soil, originating from the demolition of squatters' shacks that pre-dated the establishment of the base in the 1970s. Furthermore, some of the original water pipes identified for replacement under the project are constructed from materials that contain asbestos. Any asbestos removal and disposal activities will be conducted in accordance with the applicable State legislation and the appropriate environmental controls will be addressed in the CEMP.

**Site Contamination**

18. The scope of the project includes the refurbishment or removal of facilities that have been used for ship and submarine maintenance for many years. The sites of a number of these facilities, such as the existing sullage system, may be contaminated by residual hydrocarbon compounds. The potential for other forms of contamination at these sites is also high. The removal of contaminated material will be completed in accordance with Defence Environmental Policies and the applicable State legislation, and will be addressed in the CEMP.

**Heritage Considerations**

19. Heritage issues will be managed in accordance with the 2012 Garden Island Heritage Management Plan. With the exception of the provision of recycled water to the open spaces adjacent to the Captain Stirling and Z Force memorials, the proposed works will not have any

do not impact on any of the identified heritage assets, and will not impact on the heritage values at HMAS *Stirling*.

## Key Legislation

20. The following key legislation is relevant to this project:

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

    b. *Fair Work (Building Industry) Act 2012 (Cth);*

    c. *Work Health and Safety Act 2011 (Cth);*

    d. *Disability Discrimination Act 1992 (Cth);*

    e. *Fair Work Act* 2009 (Cth).

## Applicable Codes and Standards

21. The design of the proposed works will comply with all relevant and current Defence standards, Australian standards, codes and guidelines including, but not limited to:

    a. National Construction Code - Building Code of Australia;

    b. Defence Manual of Fire Protection Engineering; and

    c. Defence Estate Quality Management System.

## Consultation with Key Stakeholders

22. Defence has developed a consultation and communications strategy that recognises the importance of providing local residents, statutory authorities and other interested stakeholders an opportunity to provide input into, or raise concerns relating to the proposed redevelopment.

23. As part of this strategy, Defence has or will provide briefings to:

    a. the Hon Gary Gray AO, MP - Member for Brand;

    b. the Hon Mark McGowan, MLA – State Member for Rockingham;

    c. the following relevant authorities, including:

i. the City of Rockingham Council regards the base entrance works and other local matters;

ii. Western Power regards the proposed new power supply to the base; and

iii. Landcorp (WA) regarding their role in the Mangles Bay Marina development.

d. the following private corporations engaged in project initiatives in the vicinity of the island:

i. Cedar Woods regarding their role in the Mangles Bay Marina development; and

ii. Carnegie regarding the Perth Wave Energy Project.

24. Defence will also convene a public information session for the Project prior to the conduct of the Parliamentary Standing Committee on Public Works Hearing.

# Purpose of the Works

## Project Objective

25. The Project aims to upgrade and refurbish existing key infrastructure and facilities to meet the requirements of current and projected operational and support capabilities until at least 2030 by:

a. rectifying the serious shortcomings in the condition and capacity of base engineering systems;

b. rectifying the functional and capacity deficiencies of key buildings;

c. removing the limitations to meeting forecast growth;

d. redressing the non-compliant aspects of key facilities and engineering services with current Defence engineering, security, environmental or work health and safety standards, and applicable Australian Standards and Codes;

e. redressing current maintenance problems arising from the deterioration of the existing infrastructure, such as the base road network, that has exceeded its design life; and

f. redressing the deterioration in key maritime infrastructure.

## Detailed Description of the Proposal

26. The Project comprises 25 scope elements addressing shortcomings in all the major engineering support systems for the base and in a number of key base facilities. The proposed scope for each project element is addressed in the following paragraphs.

### Project Element 1: Central Emergency Power System

27. The existing Central Emergency Power System will be upgraded by constructing a new emergency power station to provide adequate backup power generation capability during electrical outages from the supply authority. Its location in reasonable proximity to, but separate from, the existing emergency power station will provide redundancy in the system to minimise the impact of single-point failures. Together, the two buildings will form a robust and flexible power supply system for the base that will provide the capacity to meet future electrical demand.

28. The proposed emergency power station will be a steel portal-framed, pre-cast concrete building. A high speed diesel generator associated switching and transformer equipment and modern control equipment will be installed. Three new rotary frequency converters[1], complementing the frequency converters in the existing powerhouse, will provide the 60Hz power required to support ships alongside. New incoming switchboards, a step-down transformer and a building auxiliary services transformer will also be provided. The new CEPS building will be connected to the base Building Management System via the Defence Engineering Services Network.

29. The proposed building envelope will be acoustically treated to reduce noise emissions from the installed equipment. Security and fire detection systems and a new fuel supply system will be provided for the diesel generator.

30. See Attachment 1 for details.

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[1] A frequency converter is required to convert the base power supply from 50Hz power to a 60 Hz power supply suitable for use by ships alongside.

**Project Element 2: Incoming Power Supply and Modifications to the Powerhouse**

31. The existing high voltage power supply to the base will be upgraded to increase capacity and improve reliability and redundancy by:

    a. providing a new dedicated incoming supply from Western Power's Rockingham substation to the existing Intake Sub Station at the base entrance; and

    b. providing new cabling to connect the existing Intake Sub Station to the proposed new Central Emergency Power Station via the causeway bridge.

32. The existing power station will be retained and upgraded to complement the revised electrical supply scheme by:

    a. replacing one of the ageing Blackstone generators with two high speed diesel generators;

    b. replacing one of the existing two rotary frequency converters and the obsolete static frequency converter with one new rotary frequency converter, which will work in conjunction with new frequency converters in the proposed power station to provide the total requirement for 60Hz shore power; and

    c. installing new electrical switchboard equipment, a new earthing system, a new control and monitoring system, new ventilation equipment, a fuel system for the generator and a modern fire indicator panel.

33. See Attachment 2 for details.

**Project Element 3: Base 11kV Power Distribution and Building Services**

34. The proposed upgrade of the existing base power distribution network will improve the reliability and capacity of this system. The proposed improvements to the existing network include:

    a. re-aligning and upgrading the overhead sections of the northern radial feeder to meet future load growth forecasts in the northern end of the base;

    b. clearing vegetation directly under power lines to comply with Garden Island Bush Fire Management Plan;

c. converting existing radials to ring mains to reduce the impact of single point failures through the establishment of various rings and alternative supply feeds from the existing and proposed power stations;

d. splitting both the northern and western ring feeders into two further ring feeders and creating a southern ring feeder from the existing southern radial feeder;

e. providing a new dedicated feeder to the Magnetic Treatment Facility; and

f. providing a new 60Hz power ring feeder to serve the Diamantina Pier.

35. In addition to these network changes, key substations will be re-configured to segregate the high and low voltage switch rooms and a number of pole-mounted substations will be replaced with pad-mounted substations. A new monitoring and control system will also be installed for the network.

**Project Element 4: Maritime Structures Remediation**

36. This project scope element includes the remediation of the following key maritime structures at HMAS *Stirling*:

a. Armament Wharf;

b. Diamantina Pier;

c. High Level Bridge;

d. Moresby Harbour;

e. Oxley Wharf; and

f. Parkes Wharf.

37. The proposed remediation of these wharves and piers involves a range of measures including concrete repair, repairs to steel structures, new lighting, protective coatings to guard rails and the repair of fender systems. Repair of the reinforced concrete elements of these structures will use one or a combination of the following methods:

a. Conventional Concrete Repair. This repair involves breaking out concrete along and behind the reinforcement, cleaning, checking and priming the exposed reinforcement,

installing sacrificial galvanic anodes and reinstating the repaired area with cementitious materials.

b. Protective Coating Application. Protective coatings are applied as a film forming on the concrete surface or penetrating into the concrete. These coatings will require reapplication as part of an ongoing and planned maintenance program to minimise future sea salt chloride ingress.

c. Installation of Cathodic Protection. Cathodic protection systems apply an electric current to the existing reinforcement to halt the corrosion process. These systems require ongoing monitoring and annual audits and are only used where conventional concrete repairs are not an economic solution.

38. In addition to the proposed remediation of the six primary maritime structures, the following remediation work is also proposed:

a. Service Tunnels. The proposed work in the Diamantina Pier to Parkes Wharf service tunnels includes minor conventional concrete repair, supplemented by the application of protective coating to the repaired areas and the application of a protective coating to all cracks on the repaired areas of the exposed roof.

b. Causeway. The proposed work on the causeway includes excavating, reshaping slopes, replacing existing rock armour and adding layers of rock armour. Repairs to the voids in the rock armour will be carried out and a berm will be constructed at sea level.

39. See Attachment 3 for details.

**Project Element 5: Sewerage System**

40. The existing freshwater sewerage system will be upgraded. Key elements of the proposed works include:

a. a package membrane type bioreactor sewage treatment plant located on the existing wastewater treatment site, to treat wastewater to a quality capable of being disposed of via the landscape irrigation system;

b. an upstream storage tank to balance the flow of wastewater through the bioreactor system;

c. new sludge drying beds to accommodate solid waste removed from the bioreactor treatment system;

d. a downstream treated effluent storage tank to collect treated effluent from the bioreactor treatment system;

e. a new electrical transformer and switchboard complete with monitoring and control system connected to the base electrical system;

f. the decommissioning of the three existing small package wastewater treatment plants; and

g. connection of the new sewerage treatment plant to the base Building Management System via the Defence Engineering Services Network.

41. In addition to installing the new plant, the sewer mains network will be upgraded by installing a network control system, replacing sections of gravity and pressure mains, connecting the Helicopter Support Facility, Torpedo Maintenance Facility and Fire and Damage Control Training Area to the sewerage network, and reconfiguring the sewerage network with new pressure pipelines to provide an increase in capacity.

42. See Attachment 4 for details.

**Project Element 6: Sullage System**

43. The existing sullage system is proposed to be upgraded with the proposed works including:

a. repairing the existing sullage tank;

b. installing treatment equipment;

c. connection of new treatment equipment to the base Building Management System via the Defence Engineering Services Network.

d. overhauling pump stations and installing a control and monitoring system;

e. replacing the asbestos cement rising main;

f. replacing all valves;

g. upgrading the treatment plant by:

i. constructing a new inlet structure with screens;

ii. modifying the existing Lagoon 1 to incorporate an anaerobic pond;

iii. converting Lagoon 2 to a maturation pond;

h. installing new transfer pumps and a solids separator system;

i. constructing two sludge drying beds; and

j. demolishing Lagoon 3.

44. See Attachment 5 for details.

**Project Element 7: Potable Water and Fire System**

45. The proposed scope of work in this element involves replacing the existing combined potable and fire-fighting water supply system with a new combined system, which will include new pipework, valves and pressure reducing valves.

46. To complement this proposed work, the following work is proposed:

a. new water meters will be installed and connected to the base Building Management System via the Defence Engineering Services Network;

b. the existing service to the Torpedo Maintenance Facility will be upgraded;

c. the existing fire booster pump station will be replaced;

d. all non-compliant fire hydrants will be replaced; and

e. new fire hydrants will be installed in areas of the base that have inadequate coverage.

**Project Element 8: Air Conditioning, Chillers and Boiler Systems**

47. In this scope element, all key equipment in the southern precinct Central Thermal Plant building will be replaced. This will include a new air conditioning unit for the control room, three new centrifugal chillers and pumps, three new cooling towers, pumps and controls, and new internal pipework for heated and chilled water. The in-ground chilled and heated water

distribution pipework will also be replaced in the southern precinct. The works will be staged to ensure continuity of service to critical buildings.

48. In addition to the proposed works in the southern precinct, building services will be replaced or new heating ventilation and air conditioning systems provided to key facilities in the northern precinct, including the:

    a. Joint Operations Command (except Server Room);

    b. Submarine Training and Systems Centre;

    c. Off-watch Centre;

    d. Sir James Stirling Mess Annex; and

    e. Sir James Stirling Mess.

49. See Attachment 6 for details.

**Project Element 9: Flammable/ Hazardous Goods and Waste Storage Areas**

50. A new flammable and hazardous waste store is proposed for construction on the site of the existing facility. The new facility will be a concrete structure, fitted with trade waste containment, fire detection and protection. The building services systems and alarms will be centrally monitored by connection to the base Building Management System via the Defence Engineering Services Network. In addition to the proposed store, a proprietary paint storage container will be provided close to the base sand blast and painting facility.

51. See Attachment 7 for details.

**Project Element 10: Communications and Supervisory System**

52. In this element, the base communications and supervisory system will be upgraded to address shortcomings in configuration, capacity and security. The base area network will be upgraded to enable Defence's restricted and secret networks in critical facilities to be connected in a configuration that improves reliability and redundancy. Optical fibre cabling will be provided to increase the capacity of the network.

53. The Defence Engineering Services Network will also be upgraded by providing optic fibre cabling, complemented with modern controllers and a new head-end unit. The integration of the building management system with this network will significantly improve the central monitoring and control of all key building, fire and energy management systems.

54. See Attachment 8 for details.

**Project Element 11: Mains Water Supply**

55. A significant program of repairs and upgrades is proposed for the existing mains water supply to the base. Over 30 defects in the existing mains water supply pipeline will be repaired using an approved corrosion protection repair system.

56. To complement these repairs, a new cathodic protection system will be installed and all existing valves will be fitted with insulating flanges to suit the cathodic protection system. New isolation (stop) valves will replace existing valves found to be in poor condition. A new flowmeter and isolation valve will be installed on the inlet pipe to the water storage tanks to monitor and record the water usage which will be reported to the base Building Management System via the Defence Engineering Services Network.

**Project Element 12: Recycled Water Reticulation**

57. In this scope element, a recycled water system is proposed and will include:

    a. a new pump and pipeline to deliver treated effluent from the treated water collection tank to the existing irrigation storage tank, and

    b. a new pump station to deliver treated effluent from the irrigation storage tank to the irrigation system.

58. The proposed system will be connected to the base Building Management System via the Defence Engineering Services Network to enable it to be centrally monitored and controlled. The upgraded irrigation system network will service the central playing field and the grassed areas adjacent to the Z Force and Captain Stirling memorials.

59. See Attachment 9 for details.

**Project Element 13: Base Entrance Enhancements and Training Ship ANZAC Refurbishment**

60. The proposed reconfiguration of the base entrance will significantly improve existing security and traffic management arrangements for Defence and civilian traffic entering and passing the base. The proposed works include:

    a. a new single-storey pass office, induction centre and entry control point to replace the existing pass office and security booth and which will include administrative office space, a pass control office, training room and amenities,;

    b. new security boom gates;

    c. a new crash barrier on the island side of the causeway in both lanes;

    d. a vehicle quarantine area and a wash down area; and

    e. a multipurpose car park.

61. The new vehicle entrance configuration will separate small and large vehicles and enable vehicles that have been refused entry to exit, without passing through the security point.

62. The new building will be equipped with appropriate security, fire and communications systems and will be connected to the appropriate Defence information and communications networks. The existing electrical supply and area lighting will also be upgraded.

63. Associated with the proposed work at the base entrance, the existing TS ANZAC buildings and structures will be upgraded or removed and replaced, where required, to comply with workplace health and safety standards. The electrical supply to the buildings will be upgraded and improved external lighting will be installed to the area around the buildings and to the parade ground. The asphalt surface of the parade ground will be repaired. The existing boat launching ramp will be extended and a rigging shed provided to ensure staff and cadets can safely prepare and launch their boats. Traffic control will be provided to enable staff and cadets with small boats to safely cross the main access road.

64. See Attachment 10 for details.

**Project Element 14: Road Reconstruction, Repairs and Resurfacing**

65. Significant road works are proposed to address the poor condition of many existing roads. The works proposed will vary from reconstruction to minor improvements and repairs to the existing pavements. The proposed works also include improvements to the associated drainage systems and ancillary roadway structures.

66. Key aspects of the proposed road works include:

    a. reconstruction and upgrade including replacement of road base in some cases and resurfacing in others, depending on extent and cause of damage; and

    b. upgrading Wickham, Baudin and Vancouver Roads to cater for aircraft towing loads.

**Project Element 15: Submarine Training and Systems Centre Remedial Works**

67. The proposed scope of works at the Submarine Training and Systems Centre will include :

    a. upgrading and extending the existing Public Address system throughout the entire facility;

    b. upgrading the existing Emergency Warning Intercommunications System, including the installation of a booster to increase the volume of the system; and

    c. installing a security system to meet Defence standards.

68. See Attachment 11 for details.

**Project Element 16: Health Centre Refurbishment**

69. The proposed scope of works in the Health Centre primarily comprises a refit of the working accommodation to meet the current demand for outpatient health services. The proposed refit will include upgrading physiotherapy, psychology, dental services, health records management and pharmaceutical storage areas and increasing the number of consulting rooms for doctors.

70. Complementary general upgrade works will include the provision of disabled toilets, disabled change rooms, renovation of some administration office space and the relocation of audio booths.

71. See Attachment 12 for details.

**Project Element 17: Buildings Internal and External Upgrades**

72. The proposed scope of work for this element addresses the poor internal and external condition of 36 key facilities. The scope of works in each facility has been specified in a detailed condition assessment.

73. The proposed internal upgrading works for each facility generally includes:

    a. repairs and maintenance of the floor, wall and ceiling finishes, replacing ceiling tiles, replacing carpet or floor finishes, repairs to internal and external doors, and general carpentry repairs to fixtures and fittings;

    b. repainting;

    c. replacing window seals; and

    d. minor repairs and/or replacement of the mechanical, electrical and fire services.

74. The proposed external upgrade works for each facility generally includes:

    a. repairs and maintenance of building fabric, including miscellaneous corroded metal work, fretted mortar, remediating deteriorated brickwork;

    b. repainting;

    c. repairing fencing and other ancillary structures;

    d. general carpentry work; and

    e. refurbishing roller doors.

**Project Element 18: Roof Tiles and Roof Plumbing**

75. The proposed scope of work for this element addresses the condition of the roof tiles and roof plumbing over 20 key buildings. The scope of works proposed for each building has been specified in a detailed condition assessment.

76. In general, the proposed scope includes high pressure cleaning of the roof tiles, repairs to gutters, replacement of gutters where required, provision of expansion joints in gutters and ridge caps and other general roofing repairs.

**Project Element 19: Closed Circuit Television Coverage (and Intruder Alarm)**

77. To improve security on base, the proposed scope of works in this project element includes a new centralised closed circuit television (CCTV) monitoring and control system which will integrate all the existing CCTV systems, allowing monitoring and management from a central control point. A back up control and monitoring point will be provided at the proposed Base Entrance facility. Additional CCTV coverage will also be provided to critical areas, such as the base entrance, the Explosive Ordnance Storage Area and key security points around the base.

78. In addition to this work, all existing intruder alarm system head end equipment and panels which are more than 10 years old will be replaced with new units.

**Project Element 20: Work at Height Access Systems**

79. The proposed scope of works in this project element is based on a detailed assessment, by a specialist height safety design services consultant, of the need for fixed work at height access systems in each building on the base by. In accordance with this assessment, fixed safe access systems are proposed for 36 key facilities. A number of these facilities will also require minor structural upgrading to enable the roof access systems to be installed.

**Project Element 21: Mess Facilities Upgrades**

80. Upgrade of the Junior Sailors' Mess is proposed to meet current functional requirements. The proposed scope of works includes installing new security grilles to all bar areas, providing air-conditioning for the TV lounge and function room, upgrade of the electrical services, lighting and emergency lighting, minor improvements to the northern outdoor veranda area and upgrade of the ablutions.

81. Additional enhancement of this scope has been identified for delivery should funds become available through competitive tendering or value management activities during the Project's delivery phase. This scope includes providing access ramps within the Sir James Stirling Mess, a covered pedestrian link between the Sir James Stirling Mess and Annex and upgrade of the interior fitout of the Off-watch Centre attached to the Junior Sailors' Mess.

82. See Attachment 13 for details.

**Project Element 22: Car Parking Rationalisation**

83. The proposed scope of this element addresses car parking for the Submarine Training and System Centre and the Torpedo Maintenance Facility. At the Submarine Training and System Centre, a significant increase in the number of parking bays is proposed by revising the existing parking bay arrangements and constructing a major extension to the existing car park. At the Torpedo Maintenance Facility, additional kerb-side bays are proposed.

84. In addition to the car parking works, a network of new and upgraded footpaths is proposed to assist pedestrian traffic movements across the base.

85. See Attachment 14 for details.

**Project Element 23: Chaplain Centre Extension**

86. This scope element proposes an extension to the Chaplain Centre to provide:

a. an expanded chapel space to suit a capacity of up to 120 persons;

b. a separate smaller dedicated multi-faith prayer room;

c. a staff kitchenette;

d. a formalised reception area;

e. a multi-purpose conference/staff/training/meeting room;

f. disabled/wheelchair access to the Chaplain Centre, Chapel and toilets;

g. toilet and disabled toilet facilities for the maximum occupancy of 120 persons;

h. additional office space; and

i. upgrade of the mechanical, electrical, hydraulics and fire services to meet the relevant standards.

87. See Attachment 15 for details.

**Project Element 24: Mechanical Lockout Capability**

88. The proposed scope for this element comprises the development of a policy for a standard system of mechanical lockout for all plant and equipment at HMAS *Stirling* to meet

contemporary workplace health and safety legislation. The policy will identify selected plant, switch rooms and equipment to be secured when maintenance work is being conducted and will include procedures for each specific lockout situation and appropriate training for the maintenance staff.

**Project Element 25: Physical Training Facilities Upgrades**

89. The proposed scope of this element includes the upgrade of the three facilities that currently provide venues for physical training activities. The proposed works include:

a. Gymnasium Building:

i. installing fixed glazing to the cardiovascular exercise area to provide acoustic separation;

ii. installing safety padding to the walls around the main gymnasium floor;

iii. installing disabled toilet/shower facilities and convert all existing multi-user communal shower stalls into individual shower cubicles;

iv. removing the theatre stage at east end of gymnasium floor;

v. installing a climbing wall in the gymnasium hall; and

vi. installing a ventilation system to change rooms and disabled toilet/shower.

b. Weights Room:

i. increasing the floor area in the weights room by removing the offices;

ii. refurbishing the ablutions and providing separate private shower stalls;

iii. upgrading the mechanical ventilation to change rooms; and

iv. air conditioning the weights room.

c. Swimming Pool Change Rooms. Reconfiguring and refurbishing the ablutions to eliminate the communal shower stalls and improve the standard of amenities and upgrading the ventilation system.

90. See Attachment 16 for details.

91. Due to the technical and dispersed nature of the works, as well as the large scale of HMAS *Stirling*, a number of the elements (including underground engineering services and small packages of works in multiple facilities) are not able to be clearly represented in an A4 format and therefore have not been depicted in the Attachments. These elements include:

a. Element 03 – Base 11kV Power Distribution and Building Services;

b. Element 07 - Potable Water and Fire System;

c. Element 11 - Mains Water Supply;

d. Element 14 - Road Reconstruction, Repairs and Resurfacing;

e. Element 17 - Buildings Internal and External Upgrades;

f. Element 18 - Roof Tiles and Roof Plumbing;

g. Element 19 - Closed Circuit Television Coverage (and Intruder Alarm);

h. Element 20 - Work at Height Access Systems; and

i. Element 24 - Mechanical Lockout Capability.

## Zone and Master Planning Considerations

92. All proposed facilities will be located in accordance with the current master planning guidance and with the Defence Estate Principles of Development. Site Selection Boards have been completed to confirm siting requirements for all proposed facilities and infrastructure.

93. There are no property issues related to this project as:

a. with the exception of the upgrading of the Western Power's supply network to the base, the proposed redevelopment works are within existing Defence properties;

b. there are no property acquisition or disposal aspects associated with this project and there will be no change to existing land use conditions;

c. there are no native title or indigenous land use agreement issues associated with this project; and

d. there are no accommodation or housing implications associated with this proposal.

## Planning and Design Concepts

94. The general philosophy adopted for the design of the proposed works incorporates the following key considerations:

a. new construction will be cost-effective and functional, low maintenance and energy efficient and of a style compatible with the proposed function and the existing base aesthetics;

b. conventional construction techniques and materials, particularly those commonly used in the local construction industry and consistent with the materials already used on the base, will be adopted where practicable. Due consideration of the extremely exposed and aggressive coastal environment, however, must be a factor in all choices of materials and detailing;

c. existing facilities and infrastructure will be re-used where appropriate to minimise capital costs; and

d. the proposed services and infrastructure will be flexible and provide for an appropriate level of growth.

## Acoustics

95. Attention to acoustic design measures in the proposed power station will ensure that the noise intrusion into the proposed control room will meet the requirements of AS/NZS ISO 717.1. Acoustic measures will also be incorporated in the equipment hall to reduce the acoustic emissions to the surrounding area.

## Water and Energy Conservation Measures

96. Defence is committed to Ecologically Sustainable Development (ESD) and the reduction in greenhouse gas emissions. Defence reports annually to Parliament on its energy management performance and on its progress in meeting the energy efficiency targets established by the Government.

97. This project has adopted cost effective ESD as a key objective in the design and development of project elements. The ESD targets and measures for the project have been balanced with other requirements for Defence buildings, including security, heritage considerations, and work health and safety considerations, to ensure that Defence's operational capability is not compromised. ESD measures have been incorporated into the design of most aspects of this proposal, with key examples of these measures including:

a. selecting energy efficient plant in all elements, where major service infrastructure plant is being upgraded or replaced;

b. sub-metering services, with meters generally being linked to the building management system;

c. optimising natural lighting;

d. recycling wastewater through the base irrigation system;

e. installing high efficiency rating plumbing fixtures;

f. recycling waste by segregating and collecting recyclable waste for disposal;

g. installing environmental controls for managing potential discharges form plant and equipment;

h. minimising the risk of an accidental discharge of waste into Cockburn Sound by replacing the existing Sullage Treatment plant;

i. selecting materials for optimal service life and/or their low or no maintenance characteristics; and

j. reducing use of polyvinylchloride products by selecting alternative cables.

## Provision for People with Disabilities

98. Access and facilities for people with disabilities will be provided in accordance with the Building Code of Australia, Australian Standard AS1428 and the Defence policy 'Disabled Access and Other Facilities for Disabled People' in the proposed new buildings. Accordingly,

the proposed facilities will be compliant with legislation, where applicable, and will include accessible kitchens, toilets and shower facilities. In some cases, the proposed works also include the upgrading of existing facilities to address the requirements of people with disabilities.

## Fire Protection and Security Measures

99. A major element of the Project will address the existing shortcomings in the base fire and security alarm monitoring systems. Where required, new or refurbished facilities will be connected to the upgraded security and fire alarm networks.

100. The fire engineering design for the new and refurbished facilities has been undertaken in accordance with the relevant Australian Standards, all applicable Legislation, Regulations, Codes of Practice and Guidance publications relevant in Western Australia and all applicable Defence requirements.

## Workplace Health and Safety Measures

101. The new or refurbished facilities to be provided as part of this proposed redevelopment will comply with the Department of Defence's Work Health and Safety Policy, the *Work Health and Safety (WHS) Act 2011 (Cth)*, Work Health and Safety (Commonwealth Employment – National Standards) Regulations and Defence WHS Manual.

102. 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.

103. Safety aspects of this proposal have been addressed during the design process and have been documented in a Safety in Design Report. No special or unusual public safety risks have been identified in the process. A Safety Plan will be required for the construction phase and prior to the start of any construction activities.

### Impact on the Local Community

104. The Project will not involve any increases in Defence military, civilian or contractor personnel at HMAS *Stirling* and therefore there will be no permanent impact on local housing or childcare services arising from this proposed redevelopment.

105. Aspects of the Project are expected to improve access to the base and reduce the risk of environmental impact from Navy's activities.

106. The construction phase of the Project will provide opportunities for local businesses to provide services as sub-contractors to the managing contractor.

## Cost Effectiveness and Public Value

### Outline of Project Costs

107. The estimated out-turn cost of this proposal is $366.8 million (excluding Goods and Services Tax). This estimate includes management and design fees, construction costs, information and communications technology, furniture, fittings and equipment, contingencies and a provision for escalation.

108. A net increase in operating costs is expected due to the construction of new facilities and both new and re-used facilities containing more technical and environmentally-compliant equipment, upgraded infrastructure and engineering services. The mature estimated cost of operating and maintaining the new or refurbished facilities and infrastructure provides the basis for future budgeting by the Defence Support Operations Division.

109. Notwithstanding the increase in operating costs, the Project will improve the capability of HMAS *Stirling* to meet its key operational support obligations, improve workplace health and safety on the base, improve security on the base, improve the capacity and effectiveness of the existing training and support facilities, and reduce or eliminate potential risks to the local environment.

## Details of the Project Delivery System

110. Subject to Parliamentary approval, a Project Manager / Contract Administrator will be appointed to manage the proposed works. A Managing Contractor form of contract is proposed to deliver the proposed works and accordingly, subject to Parliamentary approval, a Managing Contractor will be appointed to complete the design development, procure trades contractors and construct the works. The Managing Contractor form of delivery provides the Commonwealth with experience in buildability and fitness for purpose warranties, while promoting access for small to medium enterprises by sub-contracting design and construction trade packages.

## Construction Program

111. Subject to Parliamentary approval of this proposal, the design activities are expected to be completed by late 2016, with construction then expected to commence no later than mid-2017 and be completed in early 2020.

## Public Value

112. The Project will contribute significantly to both Defence preparedness and Navy capability outputs by ensuring facilities supporting Defence units and functions at HMAS *Stirling* remain fit for purpose and operationally effective.

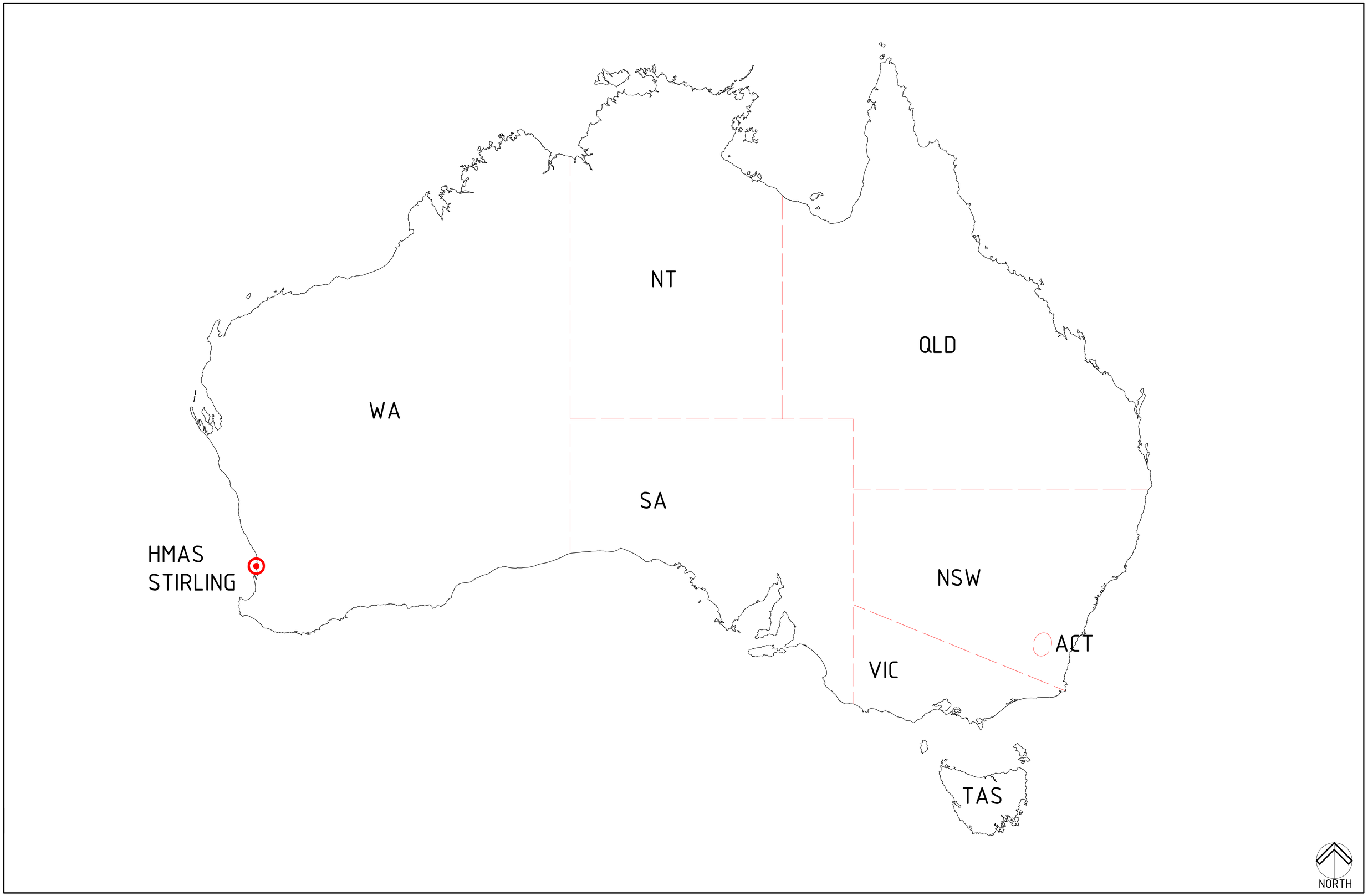
113. Existing facilities have been re-used where they feasibly can continue to meet the operational needs of Defence and to minimise operating costs and environmental impacts.

114. The Project will employ a diverse range of skilled consultants, contractors and construction workers and this employment could also include opportunities for up-skilling and job training to improve individual skills and employability on future projects.

## Revenue

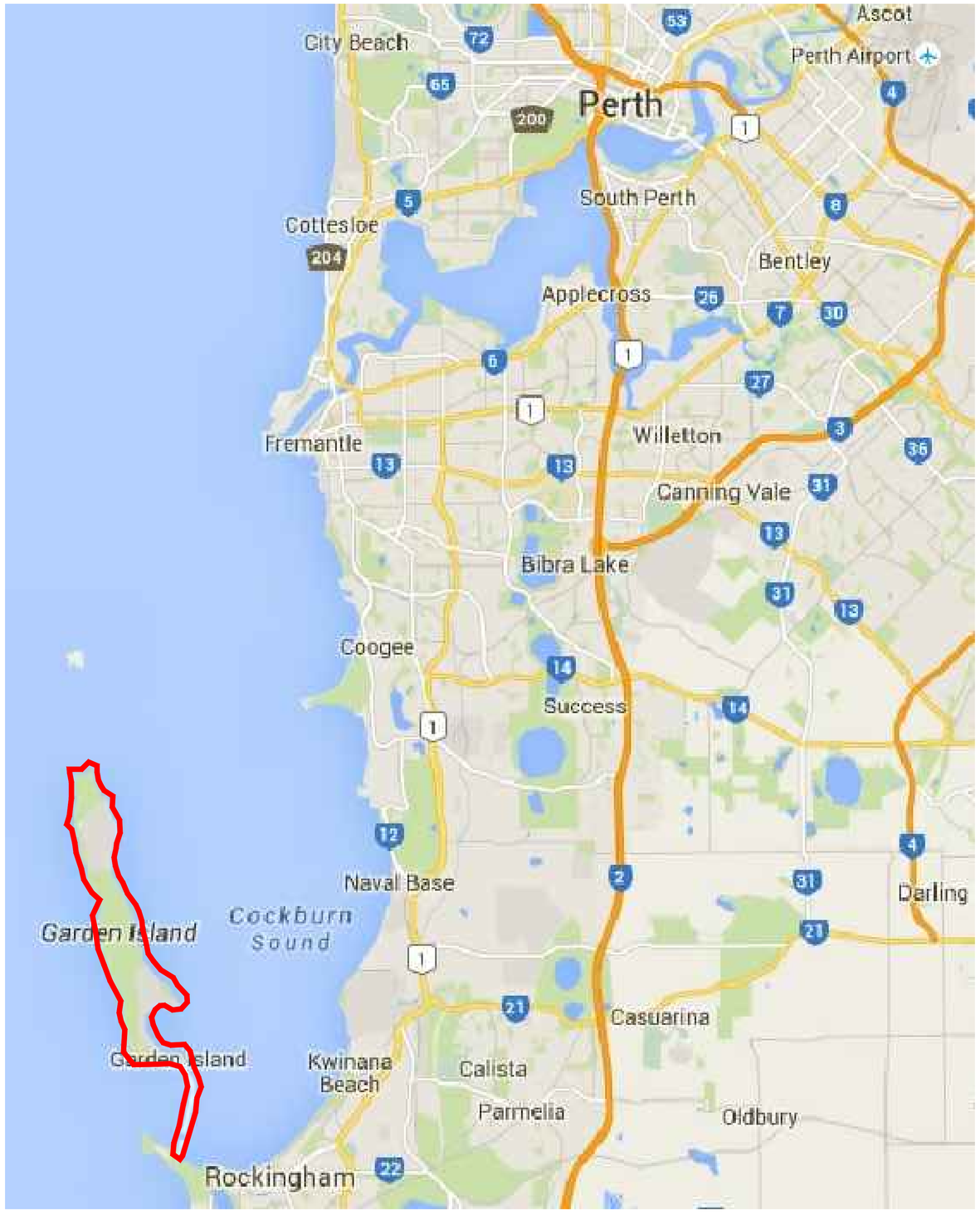
115. No revenue is expected to be derived from this project.

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




ATTACHMENT 01 - HMAS STIRLING SITE LOCATION

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




GREATER PERTH

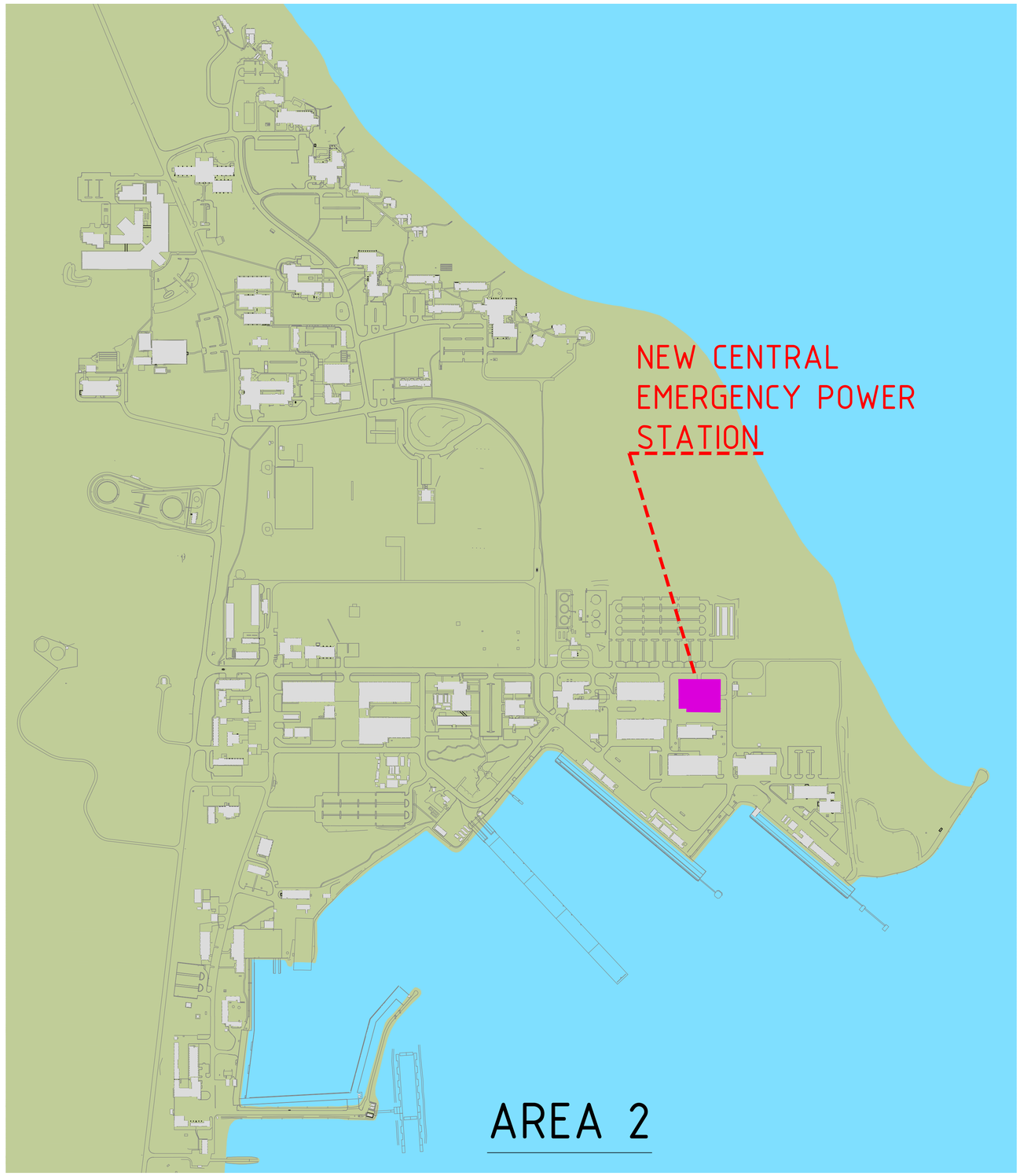

GARDEN ISLAND

NORTH

ATTACHMENT 02 - HMAS STIRLING REGIONAL PLAN

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND

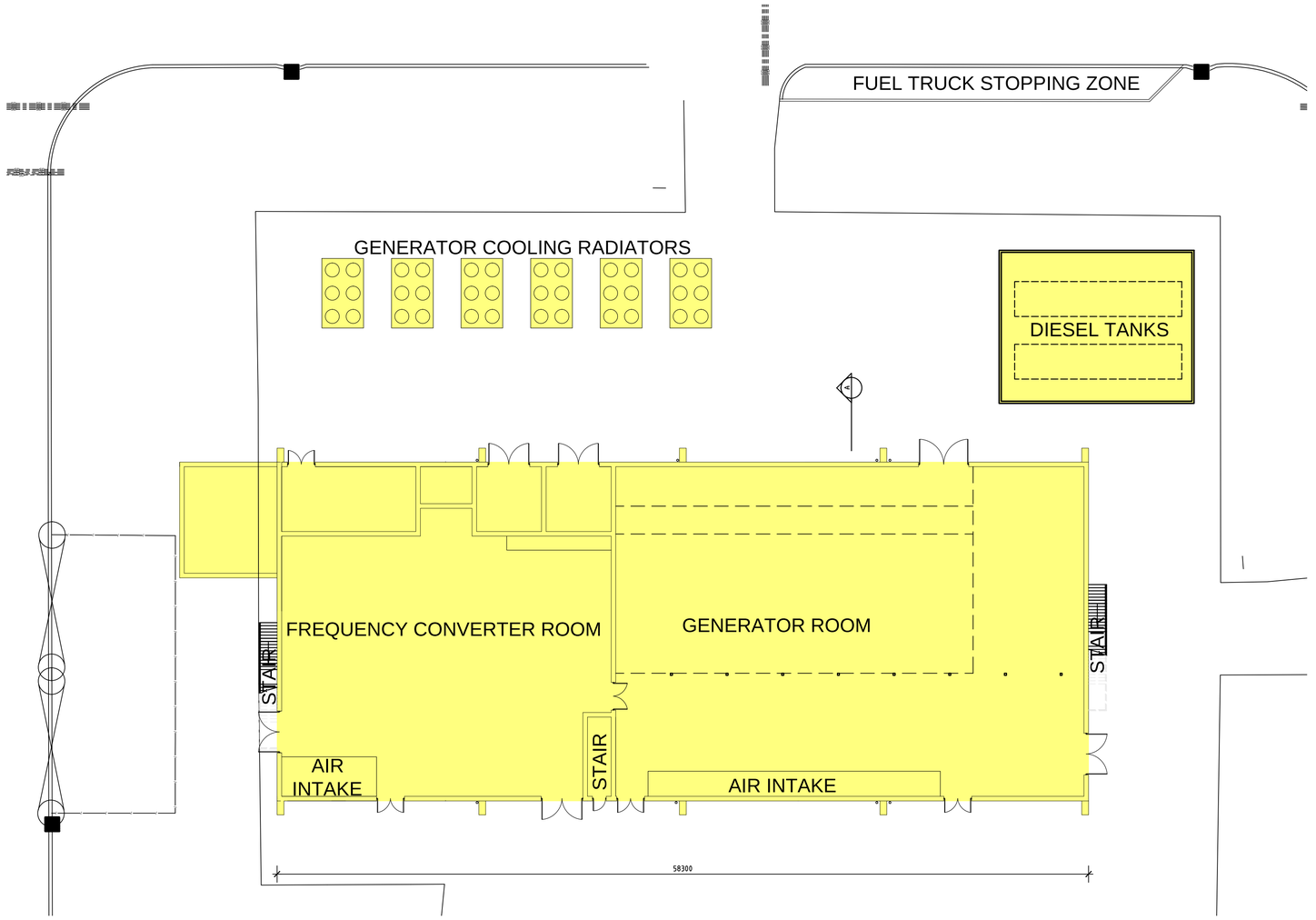



AREA 2

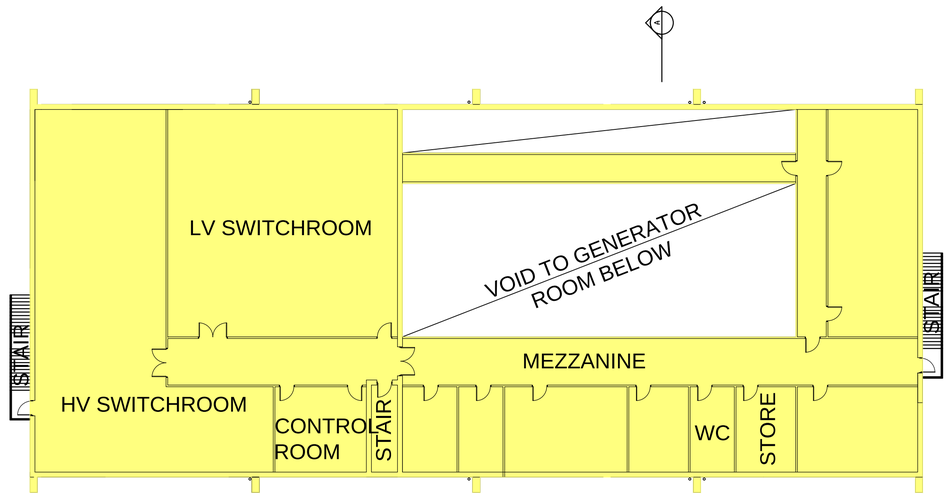
ATTACHMENT 03 - ELEMENT 01 - CENTRAL EMERGENCY POWER SYSTEM - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

| | PROPOSED |
|---|---|
| PROPOSED BUILDING | |




GROUND FLOOR

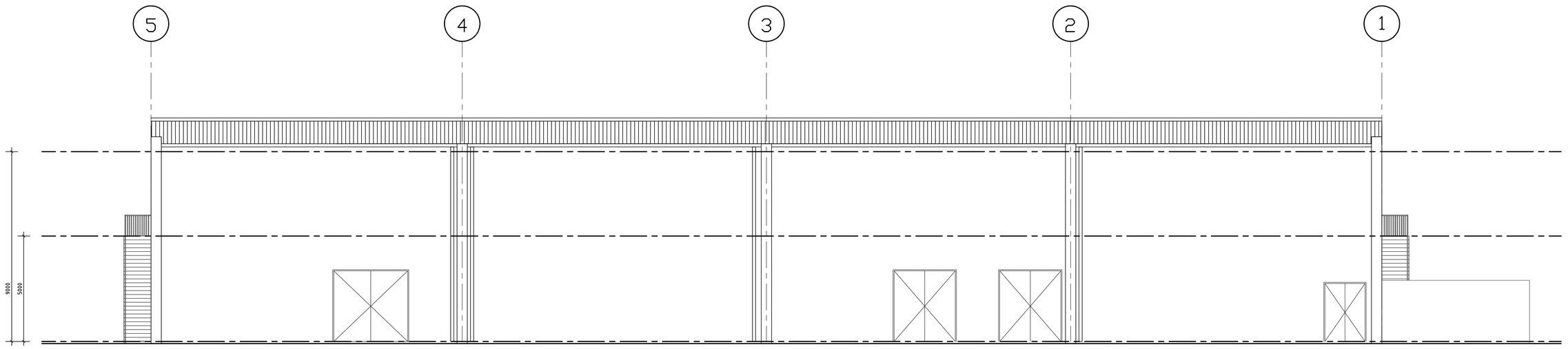



MEZZANINE FLOOR

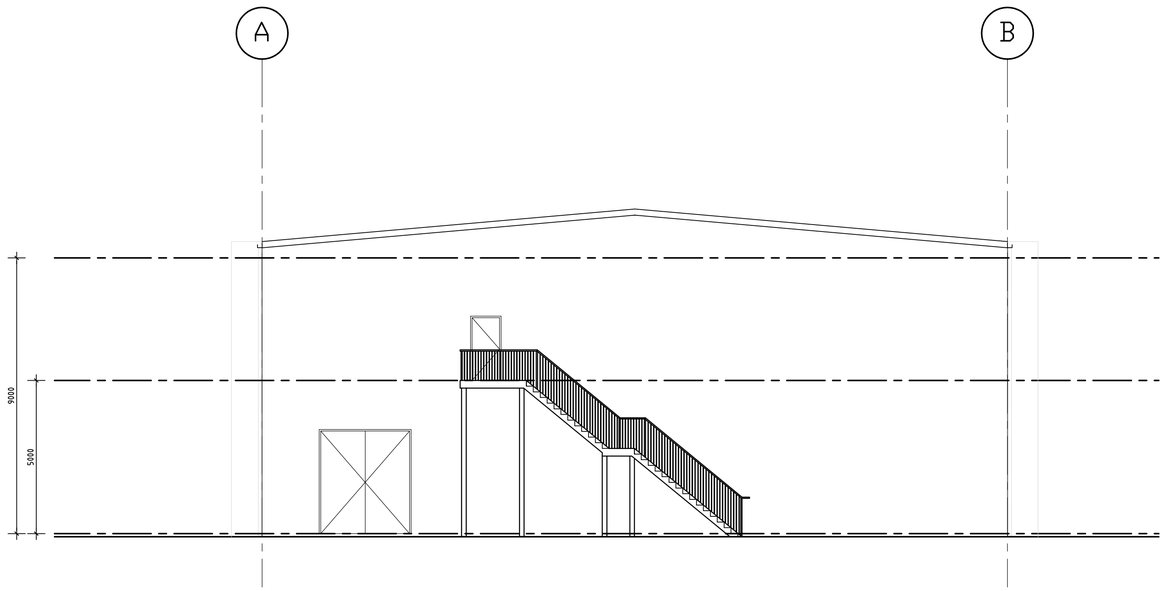
NORTH

ATTACHMENT 03 - ELEMENT 01 - CENTRAL EMERGENCY POWER SYSTEM - SHEET-02

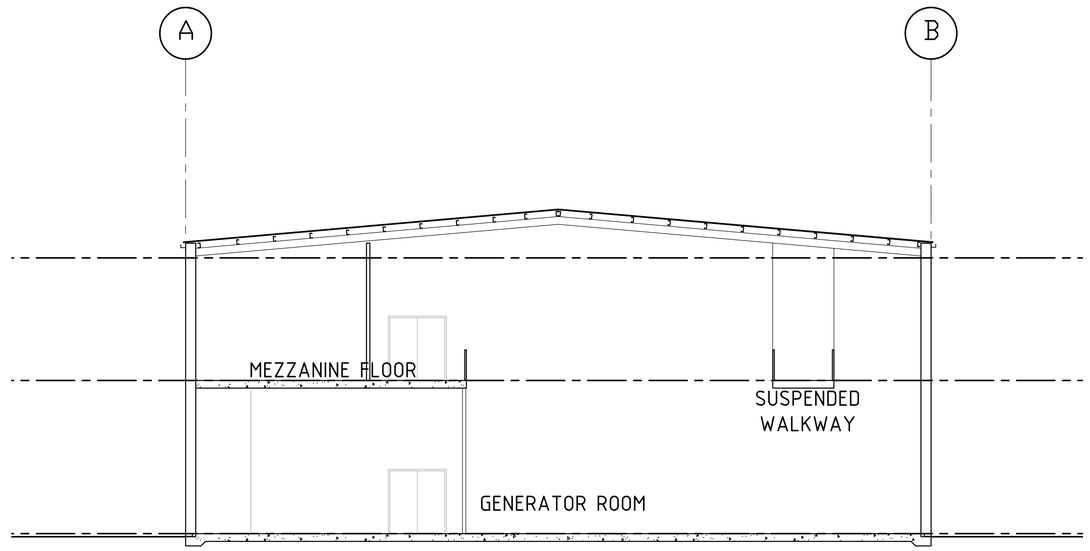
# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




NORTH ELEVATION




EAST ELEVATION




SECTION

ATTACHMENT 03 - ELEMENT 01 - CENTRAL EMERGENCY POWER SYSTEM - SHEET-03

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

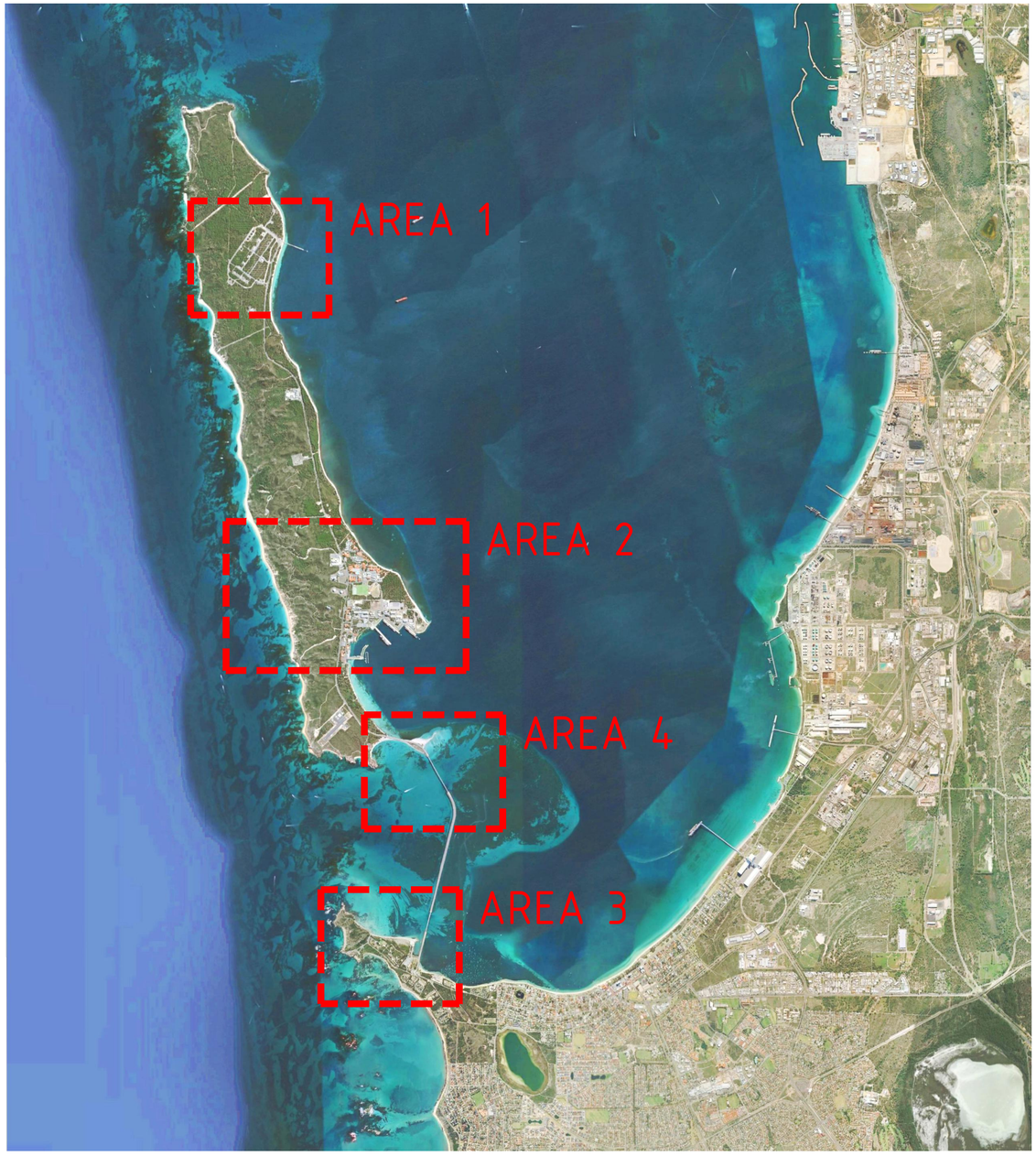

GARDEN ISLAND


AREA 2

NORTH

ATTACHMENT 04 - ELEMENT 02 - INCOMING POWER SUPPLY AND MODIFICATION TO THE POWERHOUSE (B17) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

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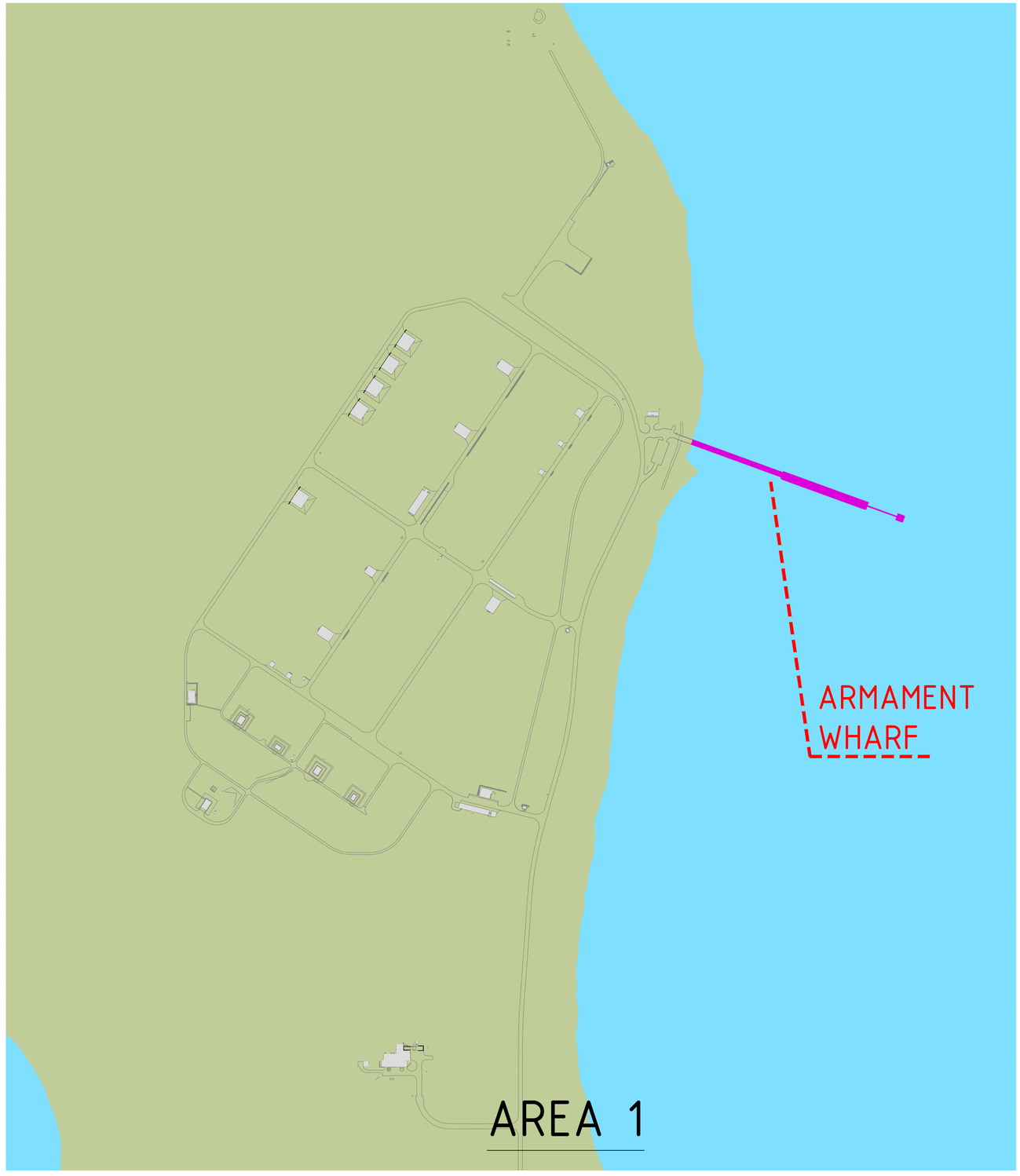


ATTACHMENT 05 - ELEMENT 04 - MARITIME STRUCTURES REMEDIATION - SHEET-01

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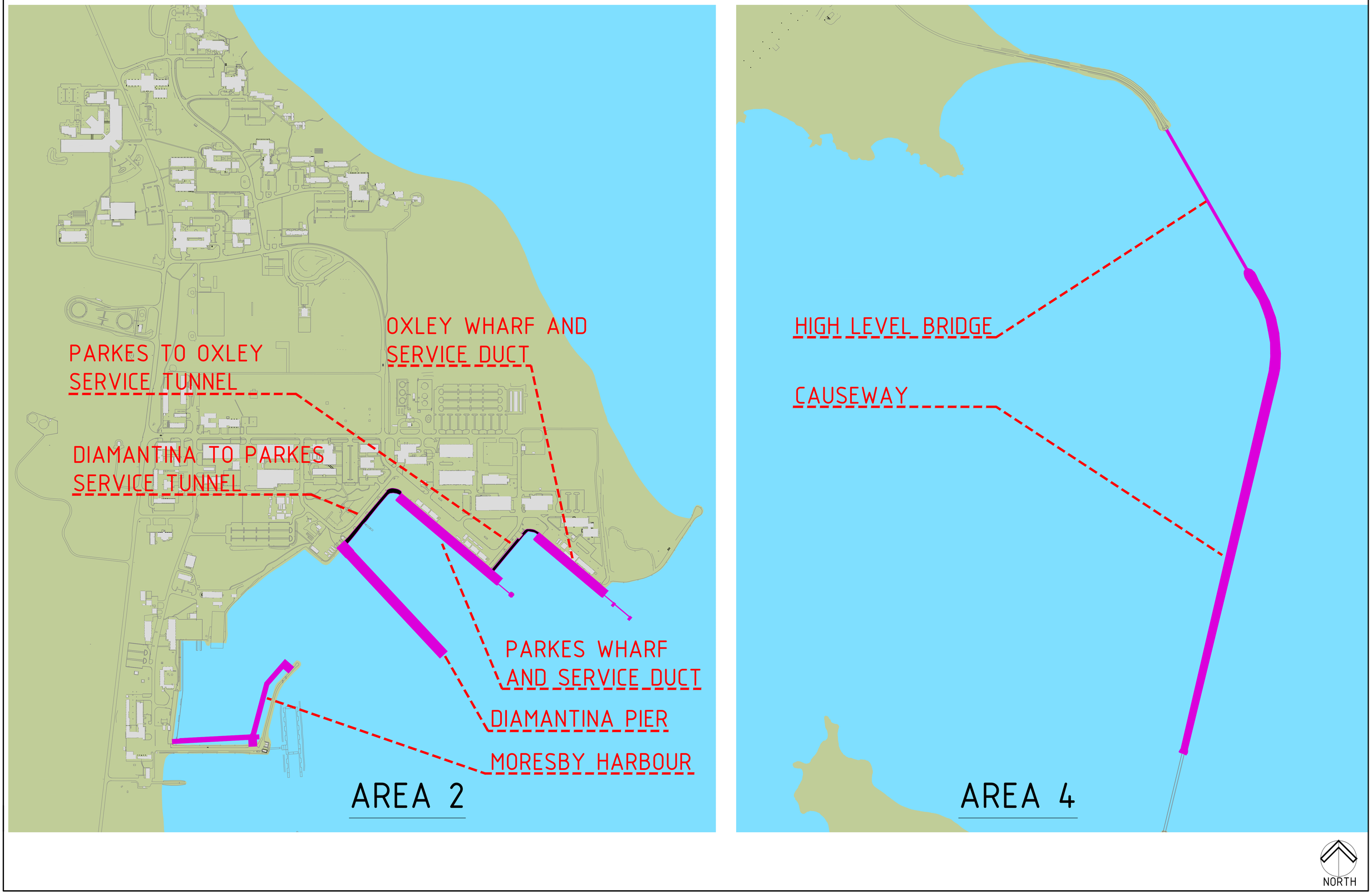
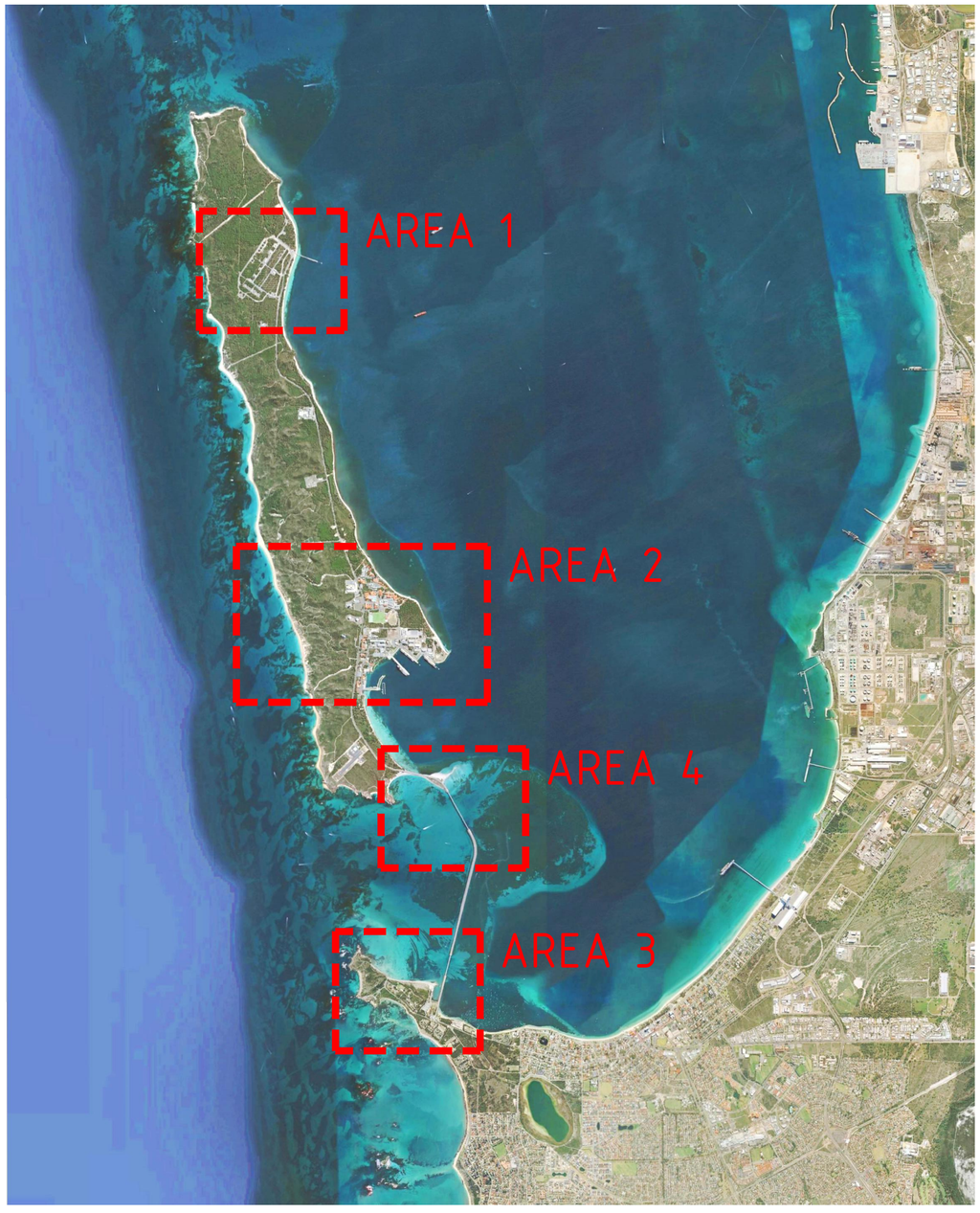



ATTACHMENT 05 - ELEMENT 04 - MARITIME STRUCTURES REMEDIATION - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

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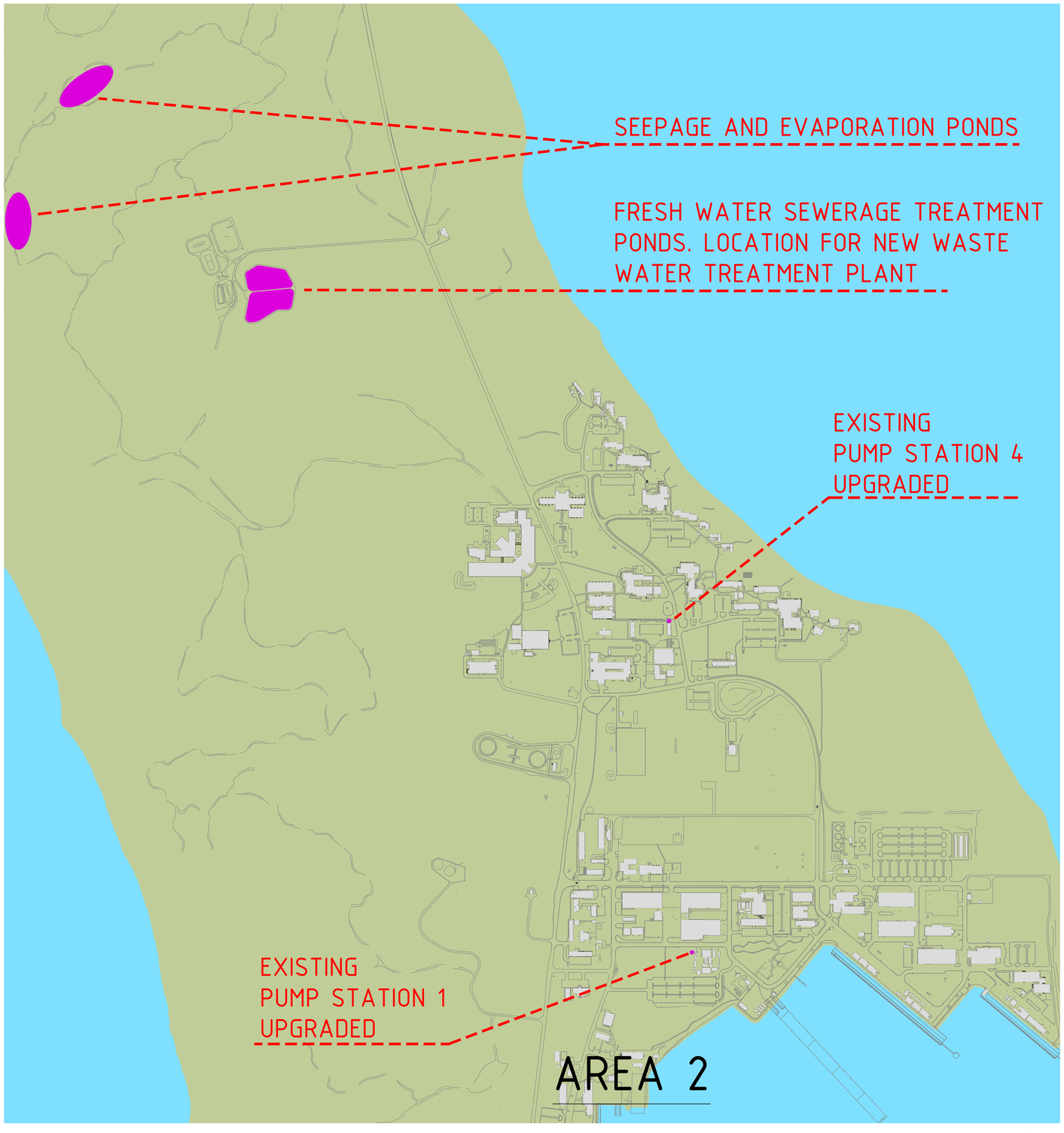
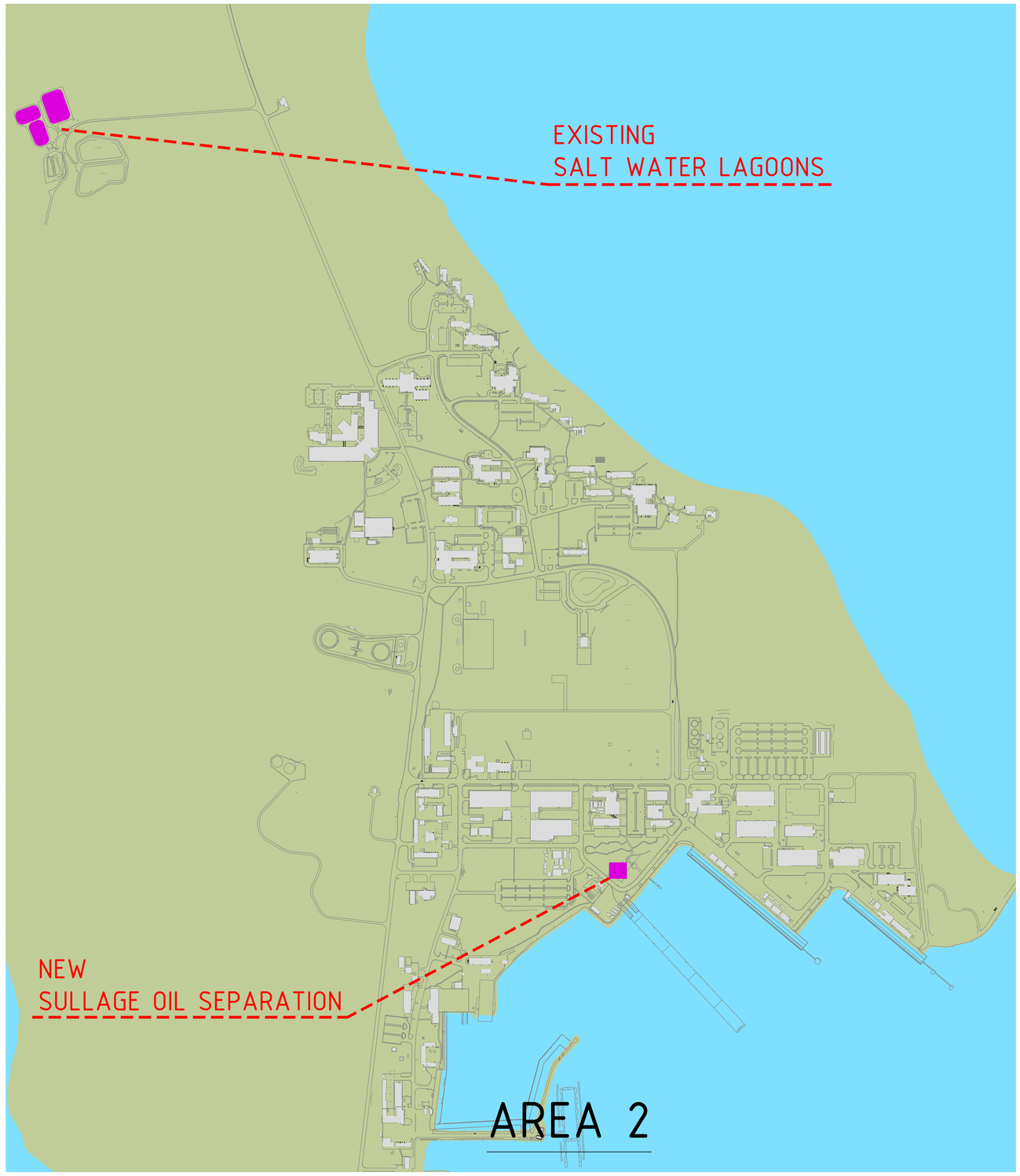


# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

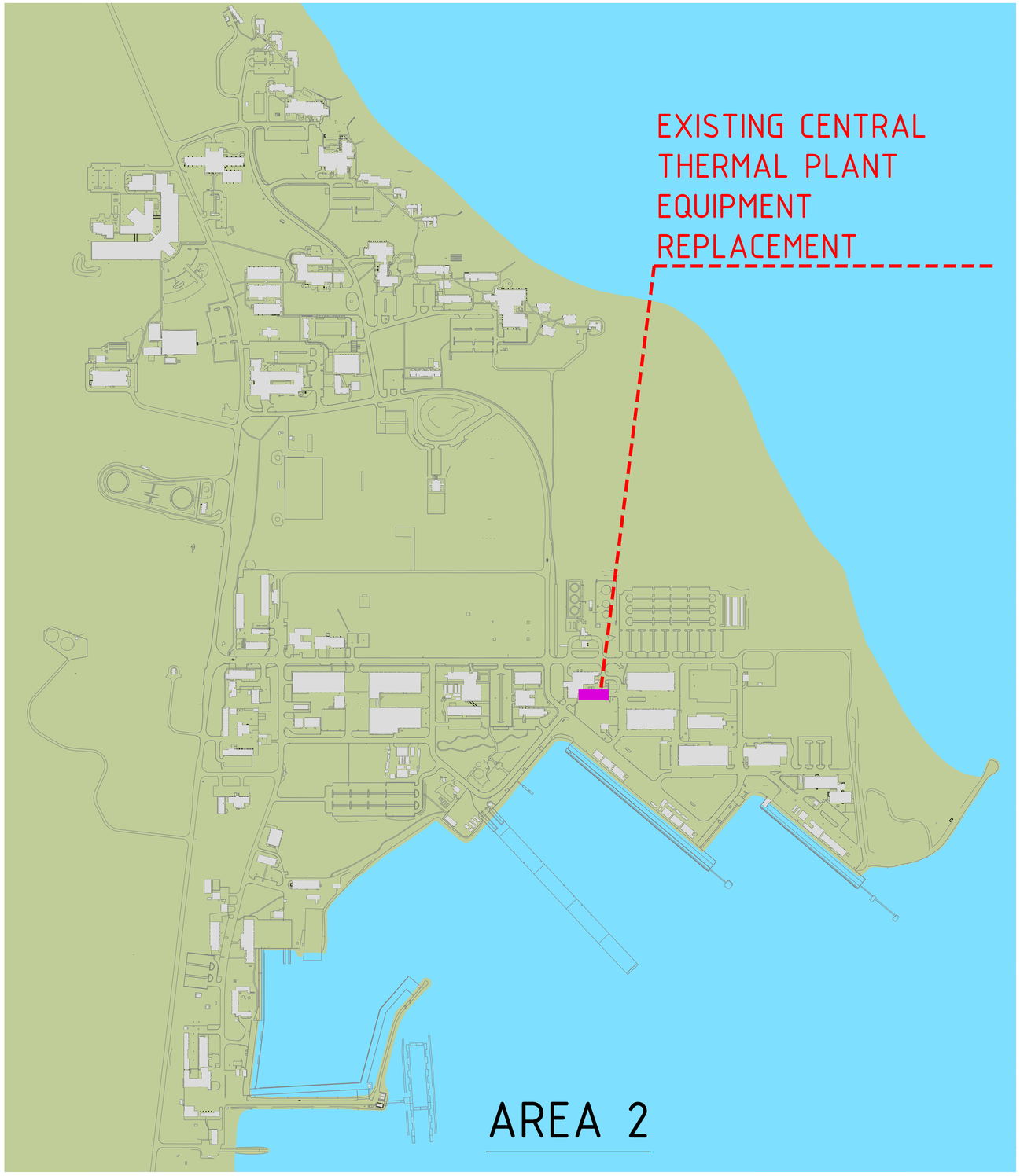

GARDEN ISLAND




ATTACHMENT 07 - ELEMENT 06 - SULLAGE SYSTEM - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND



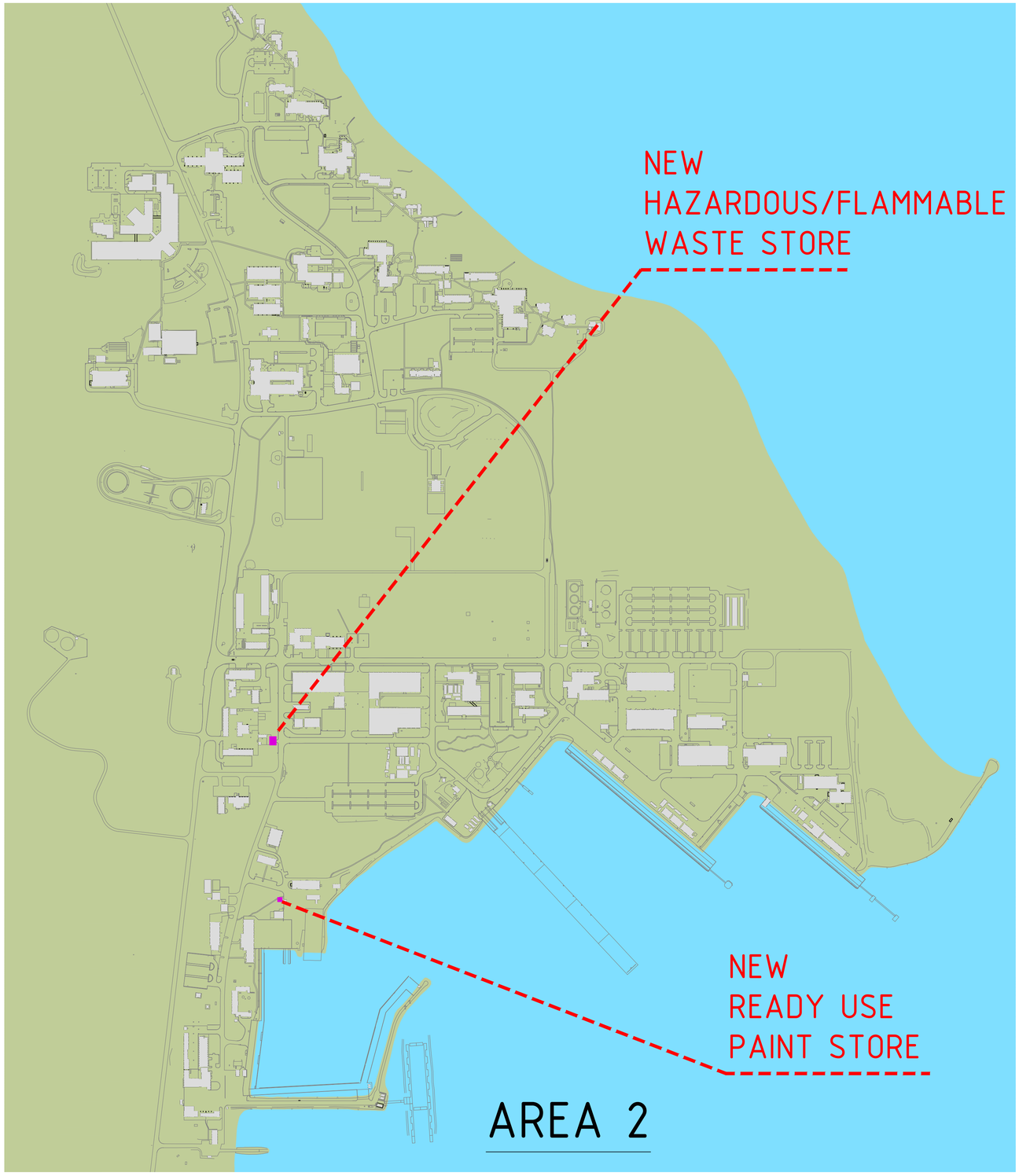

AREA 2

NORTH

ATTACHMENT 08 - ELEMENT 08 - AIR CONDITIONING, CHILLERS AND BOILER SYSTEMS - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND



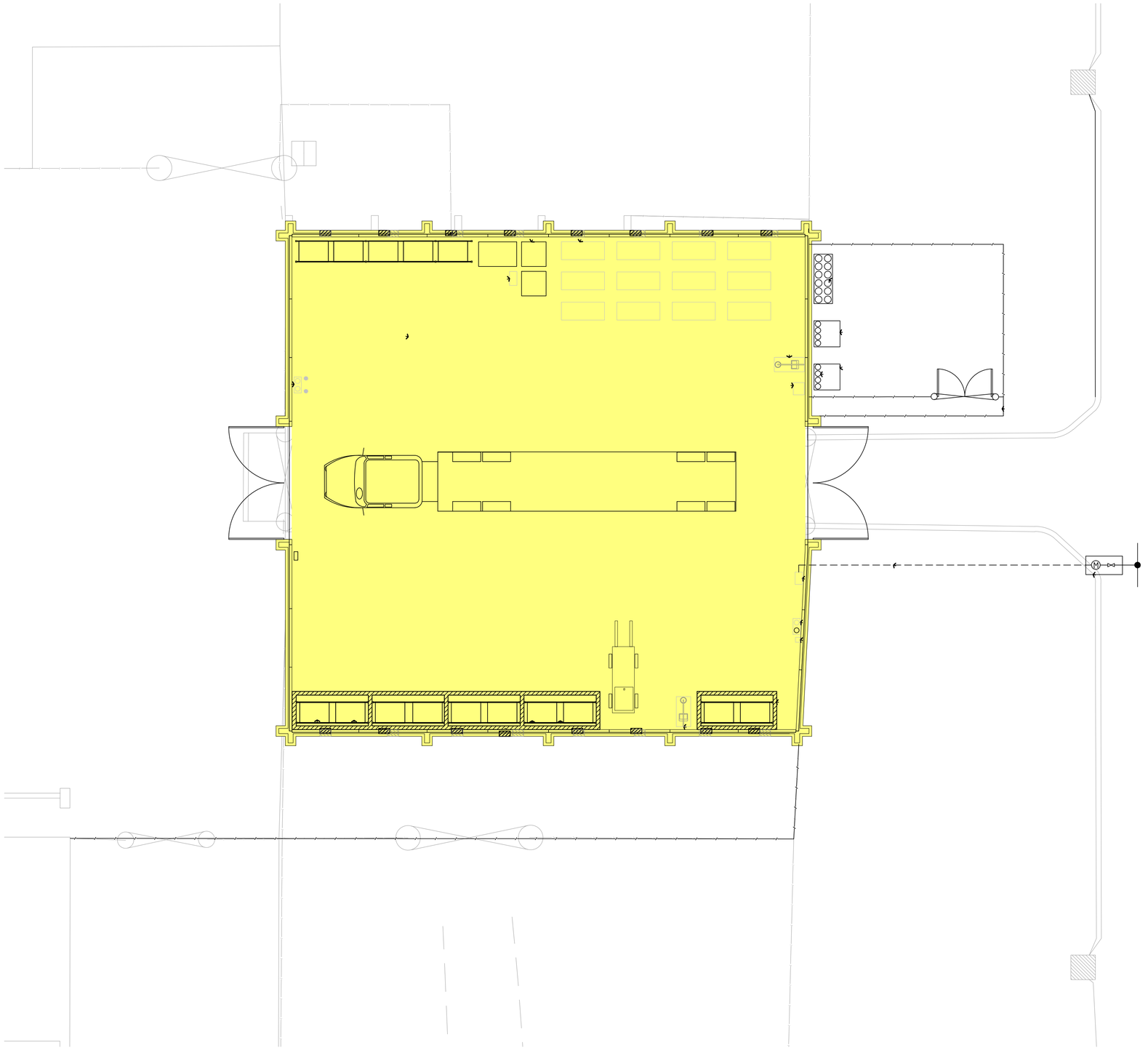

AREA 2

NORTH

ATTACHMENT 09 - ELEMENT 09 - FLAMMABLE/HAZARDOUS GOODS AND WASTE STORAGE AREAS - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

| | PROPOSED |
|---|---|
| HAZARDOUS GOODS | |



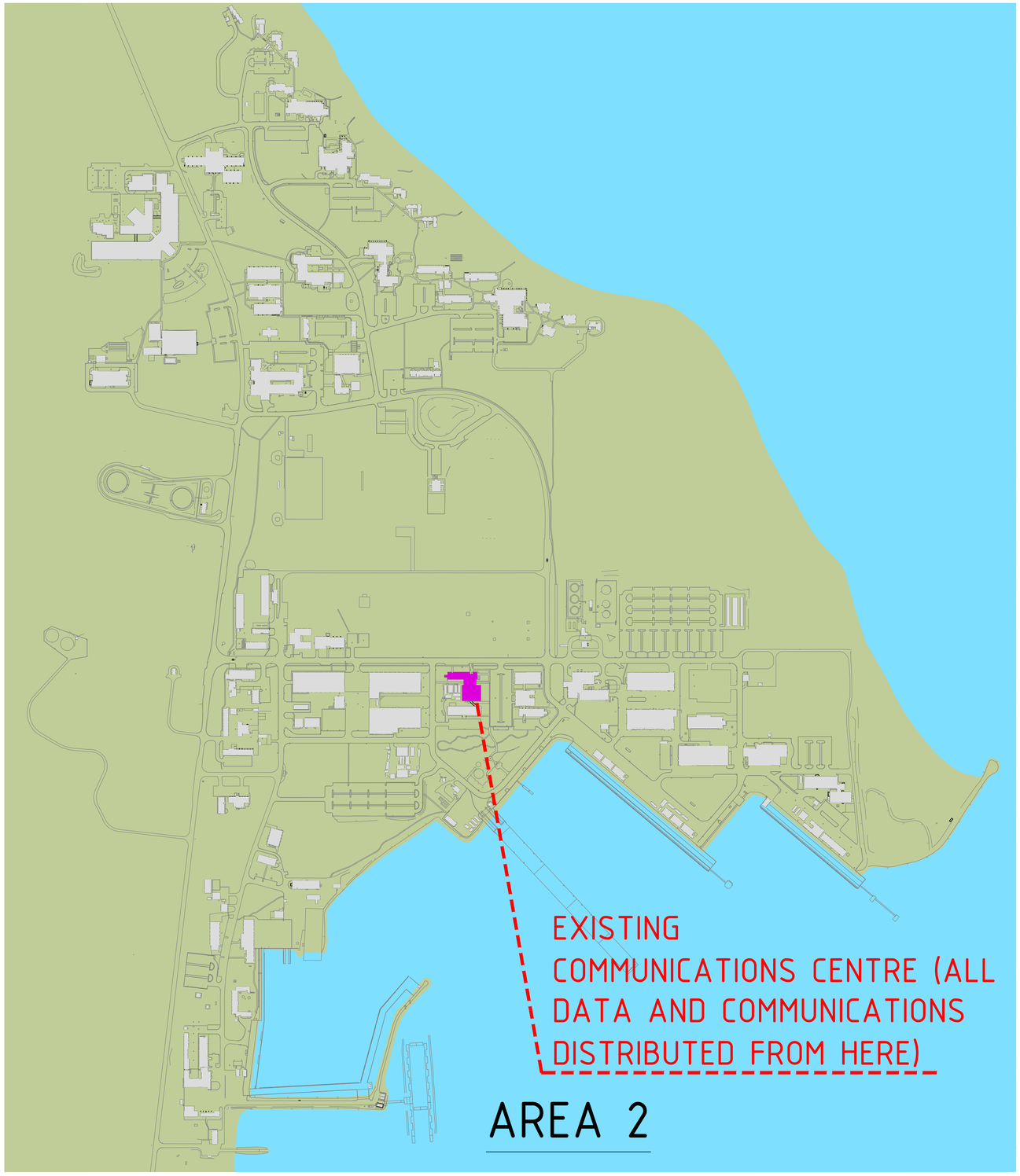
GROUND FLOOR - PROPOSED

NORTH

ATTACHMENT 09 - ELEMENT 09 - FLAMMABLE/HAZARDOUS GOODS AND WASTE STORAGE AREAS - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND



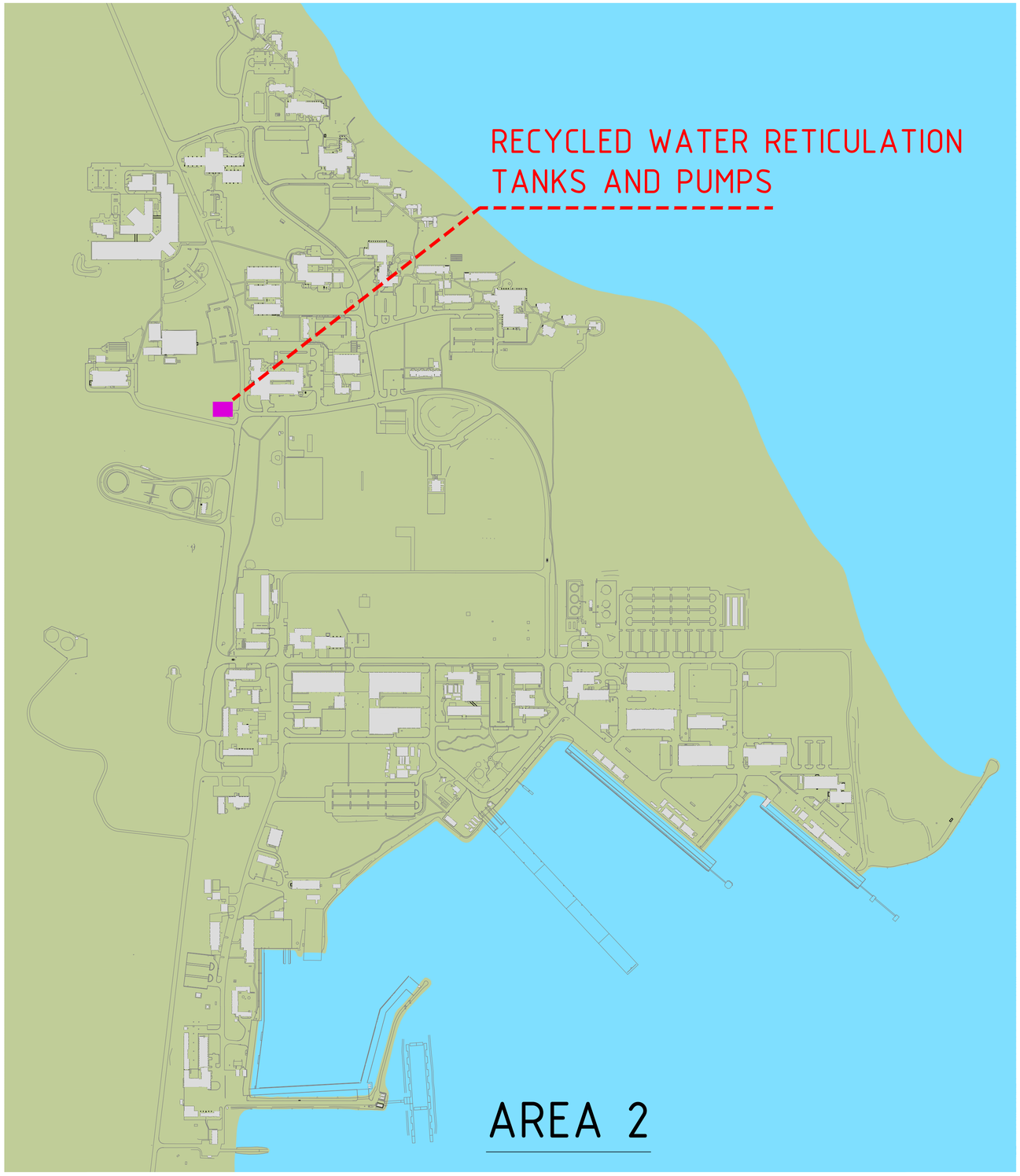

AREA 2

NORTH

ATTACHMENT 10 - ELEMENT 10 - COMMUNICATIONS AND SUPERVISORY SYSTEM - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND



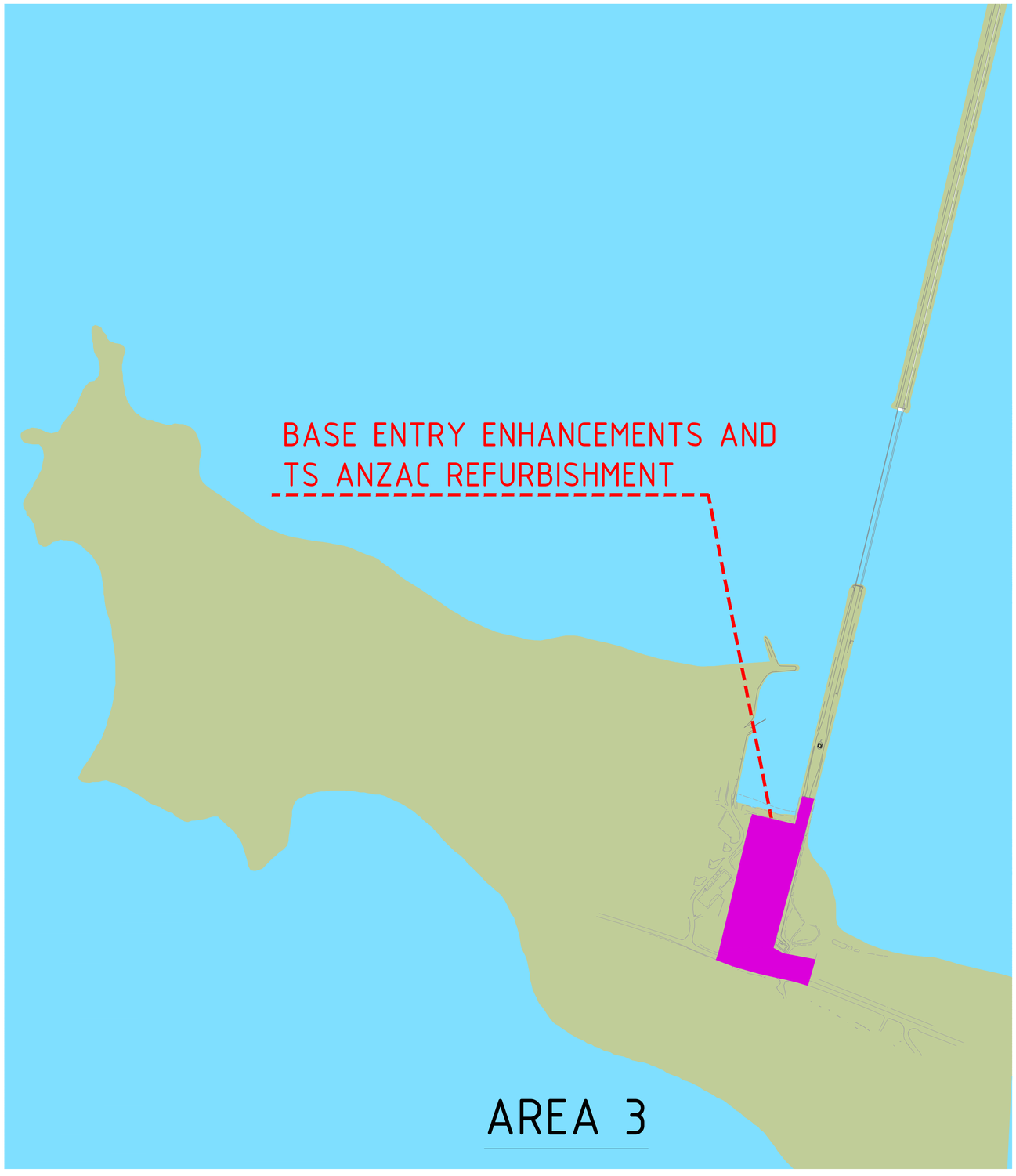

AREA 2

NORTH

ATTACHMENT 11 - ELEMENT 12 - RECYCLED WATER RETICULATION - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND

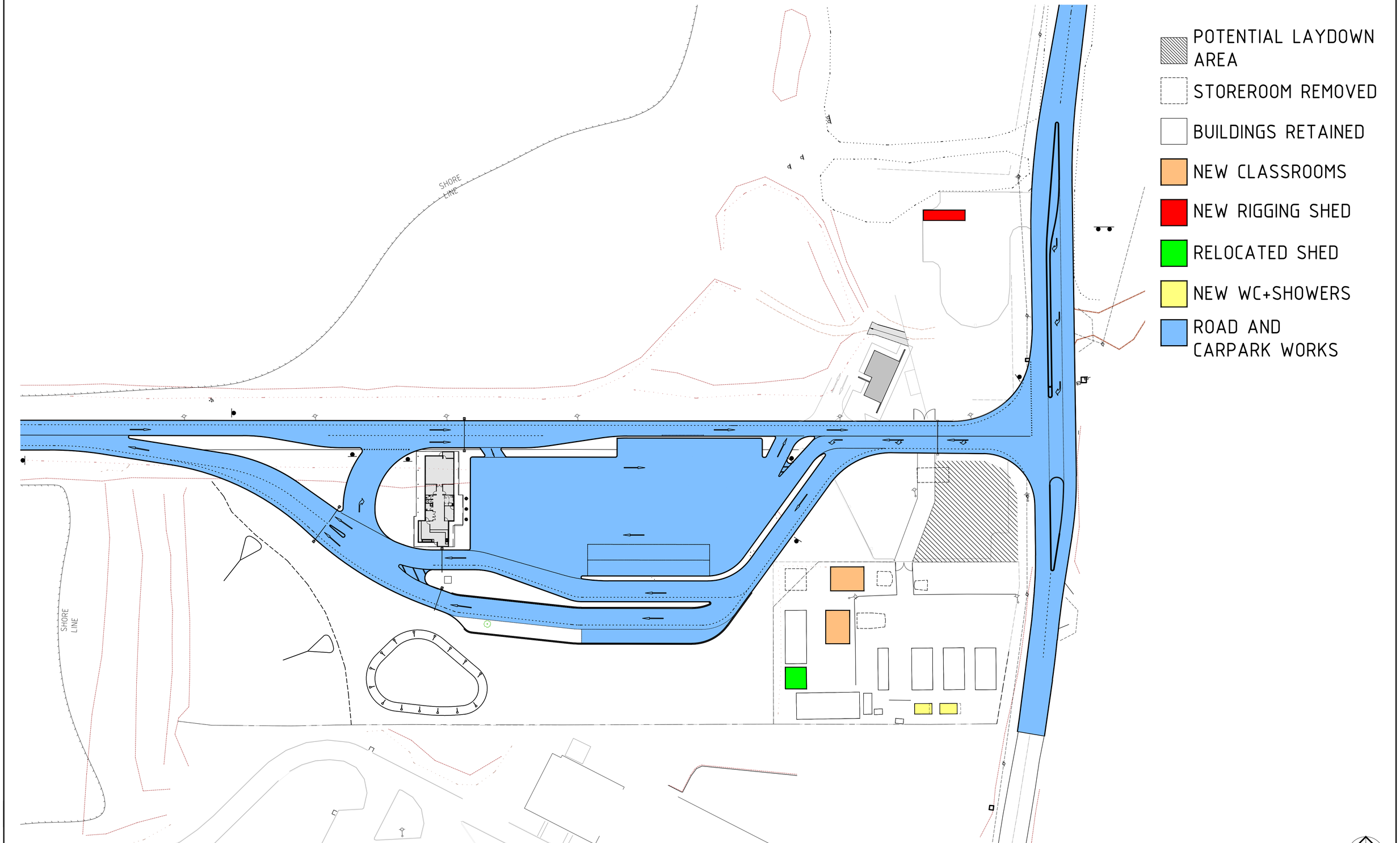



AREA 3

NORTH

ATTACHMENT 12 - ELEMENT 13 - BASE ENTRY ENHANCEMENTS AND TS ANZAC REFURBISHMENT - SHEET-01

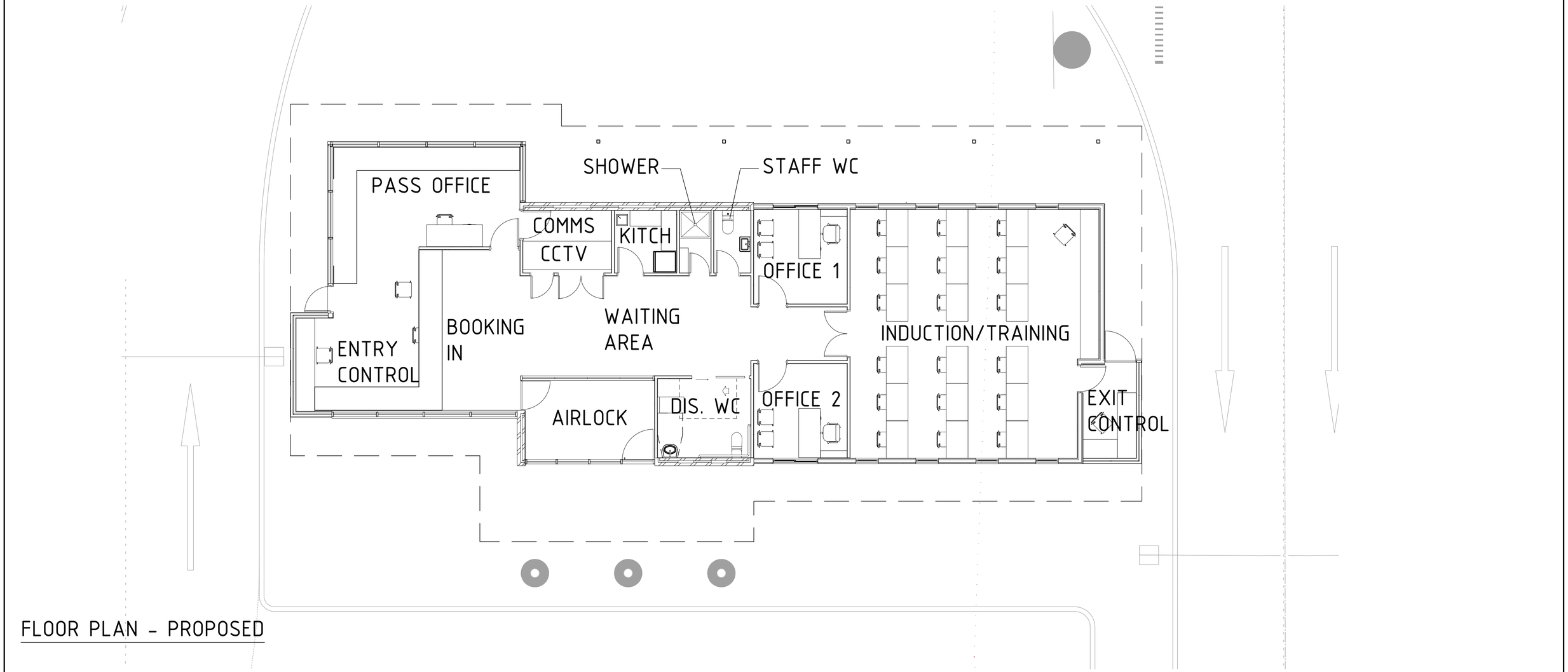
# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A



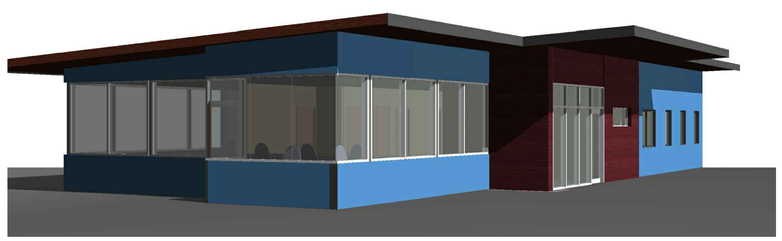

## SITE PLAN - PROPOSED WORKS

ATTACHMENT 12 - ELEMENT 13 - BASE ENTRY ENHANCEMENTS AND TS ANZAC REFURBISHMENT - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




FLOOR PLAN - PROPOSED



3D VIEW 1

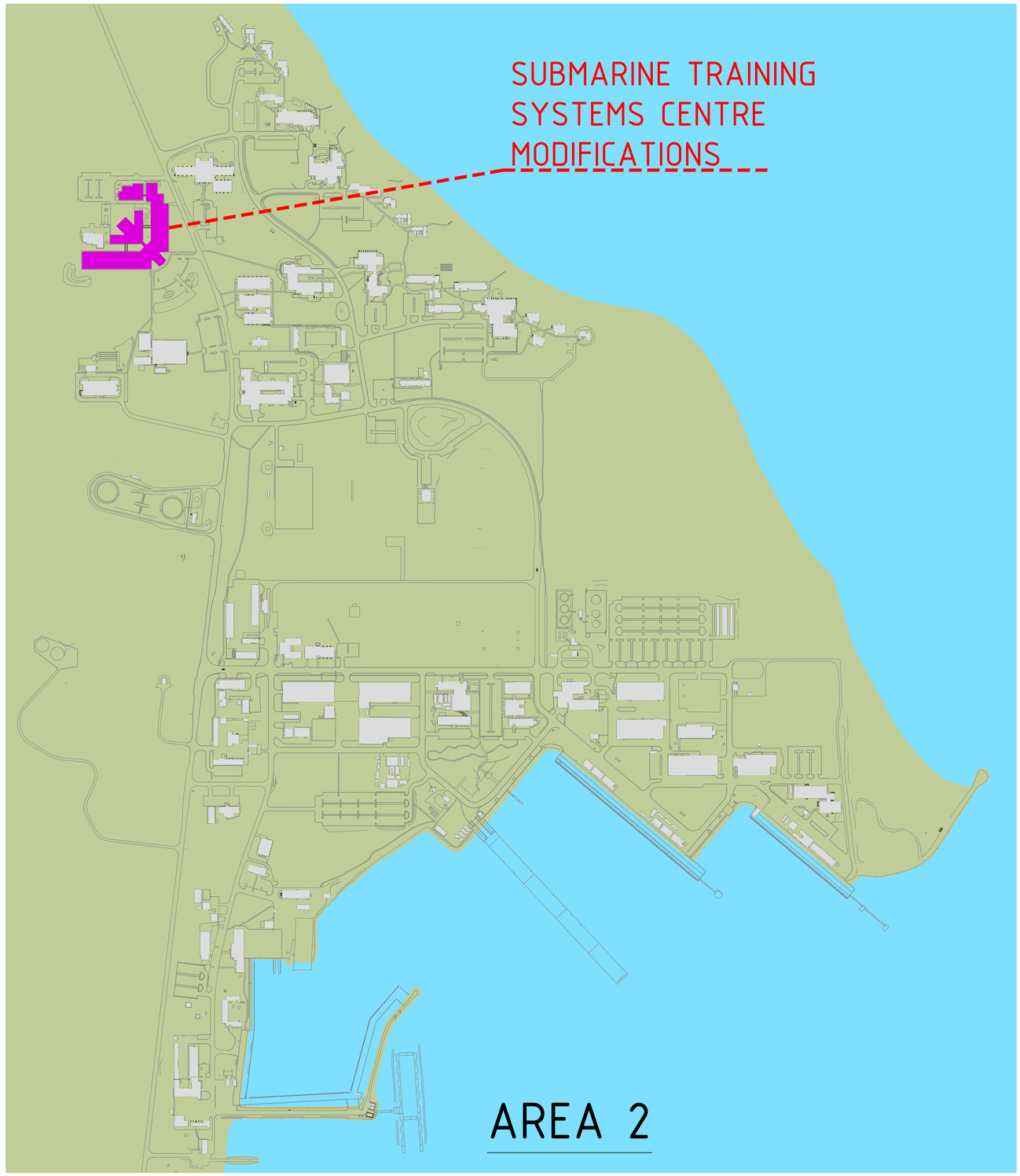
3D VIEW 2

NORTH

ATTACHMENT 12 - ELEMENT 13 - BASE ENTRY ENHANCEMENTS AND TS ANZAC REFURBISHMENT - SHEET-03

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND

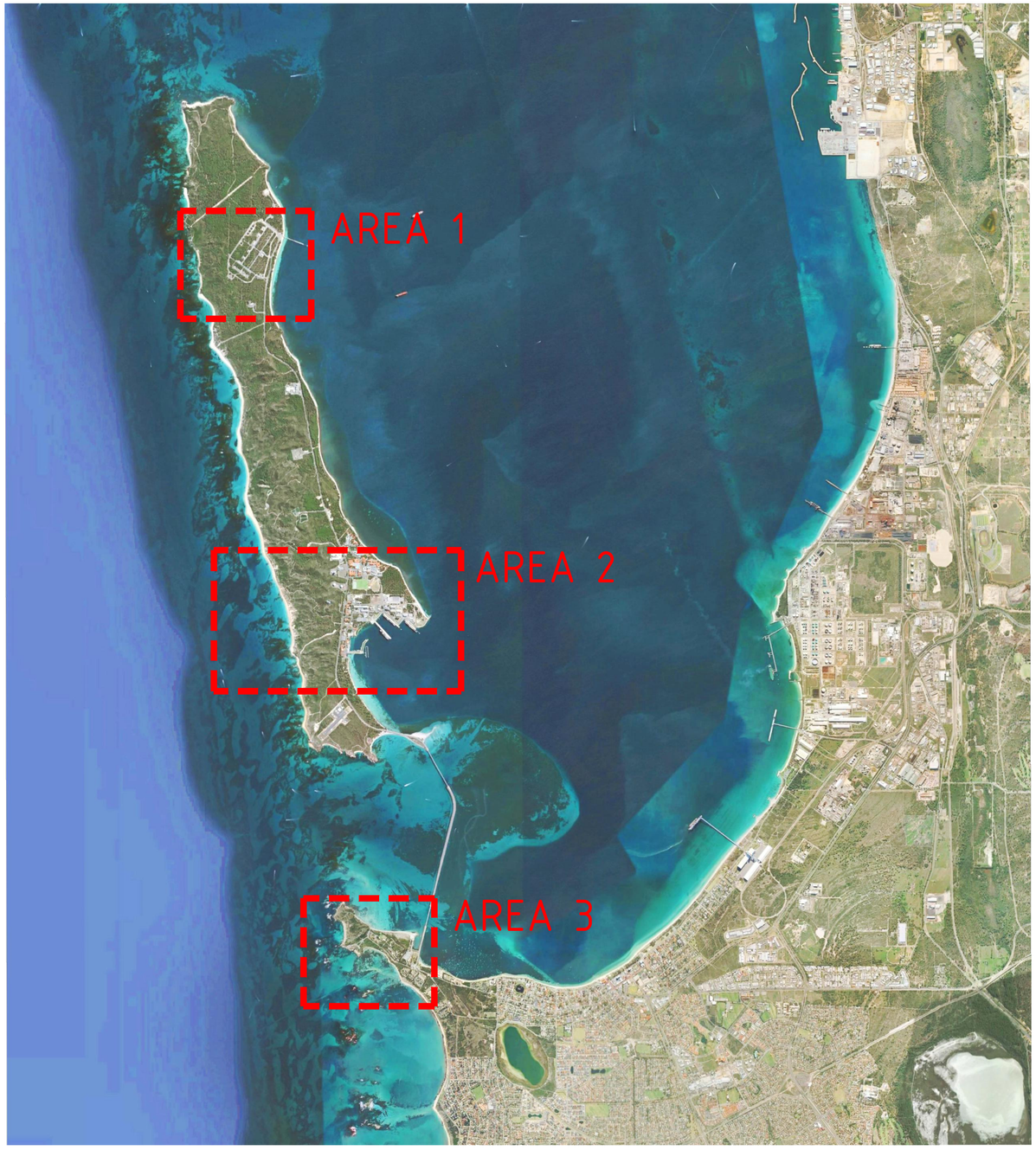



AREA 2

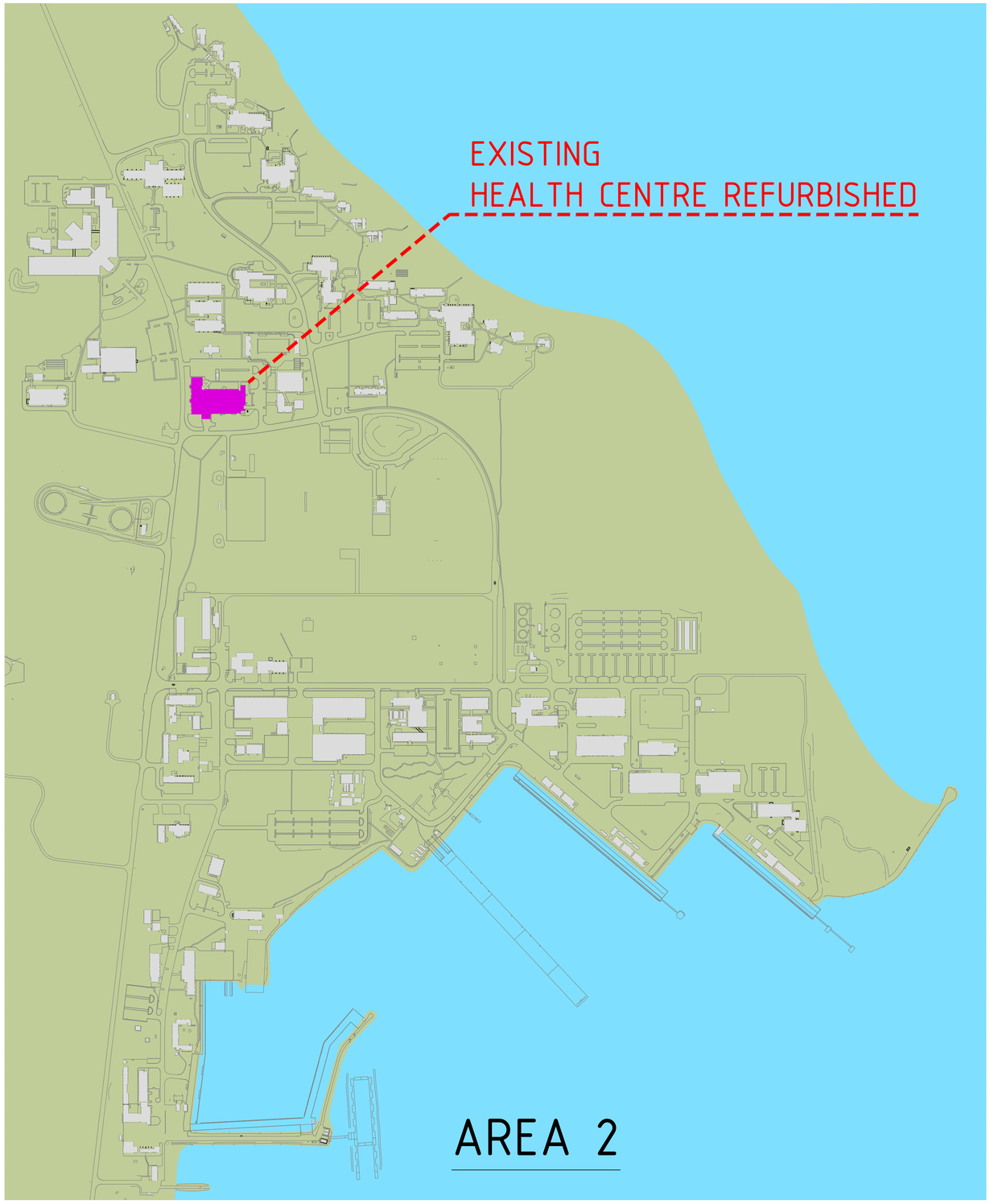
NORTH

ATTACHMENT 13 - ELEMENT 15 - SUBMARINE TRAINING SYSTEMS CENTRE (STSC) MODIFICATIONS (B81) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




GARDEN ISLAND

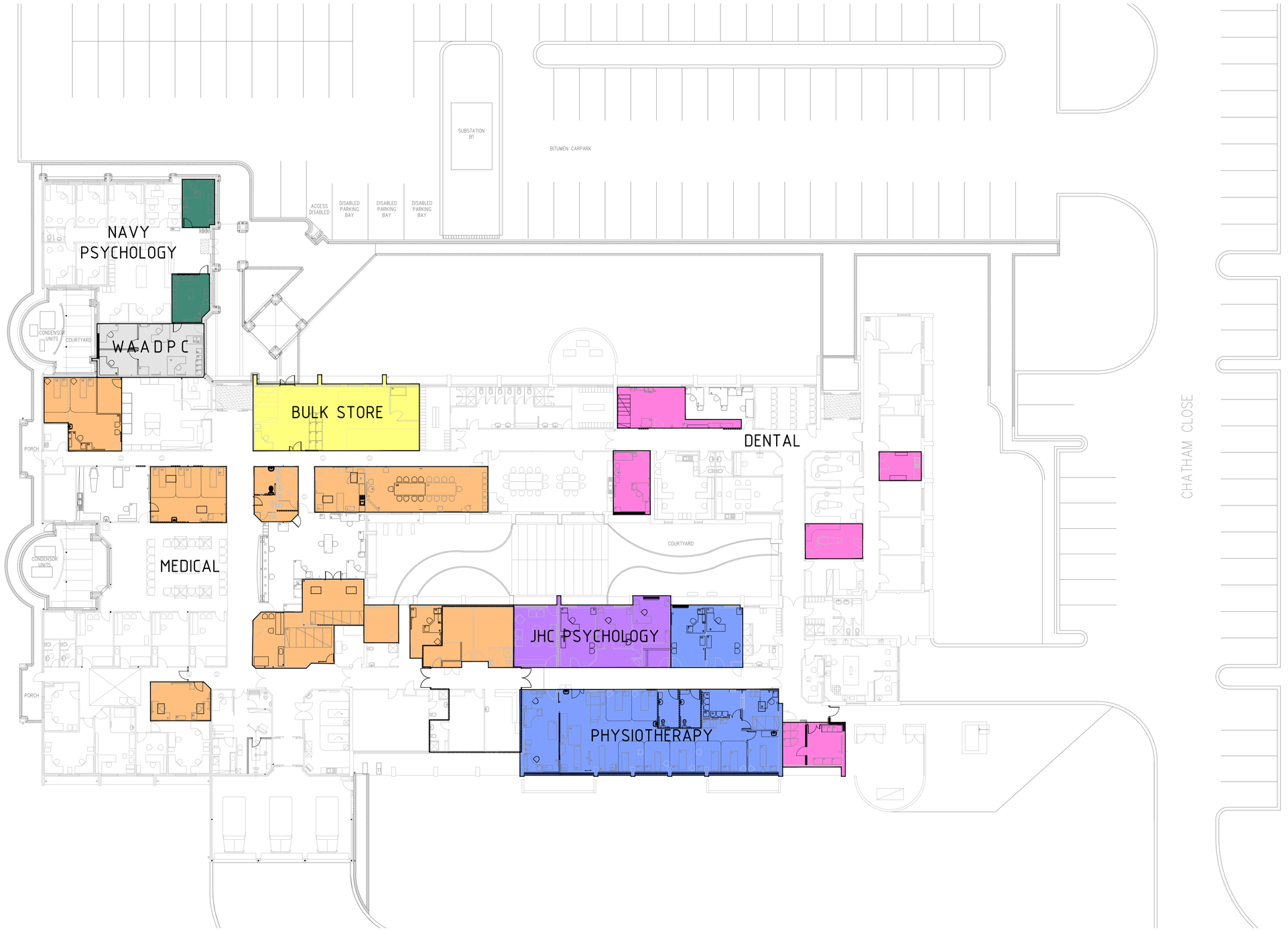



AREA 2

NORTH

ATTACHMENT 14 - ELEMENT 16 - HEALTH CENTRE REFURBISHMENT (A13) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A




| | PROPOSED CHANGES |
|---|---|
| DENTAL | |
| PHYSIOTHERAPY | |
| NAVY PSYCHOLOGY | |
| MEDICAL | |
| STORE | |
| WAADPC | |
| JHC PSYCHOLOGY | |

FLOOR PLAN-PROPOSED CHANGES

NORTH

ATTACHMENT 14 - ELEMENT 16 - HEALTH CENTRE REFURBISHMENT (A13) - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

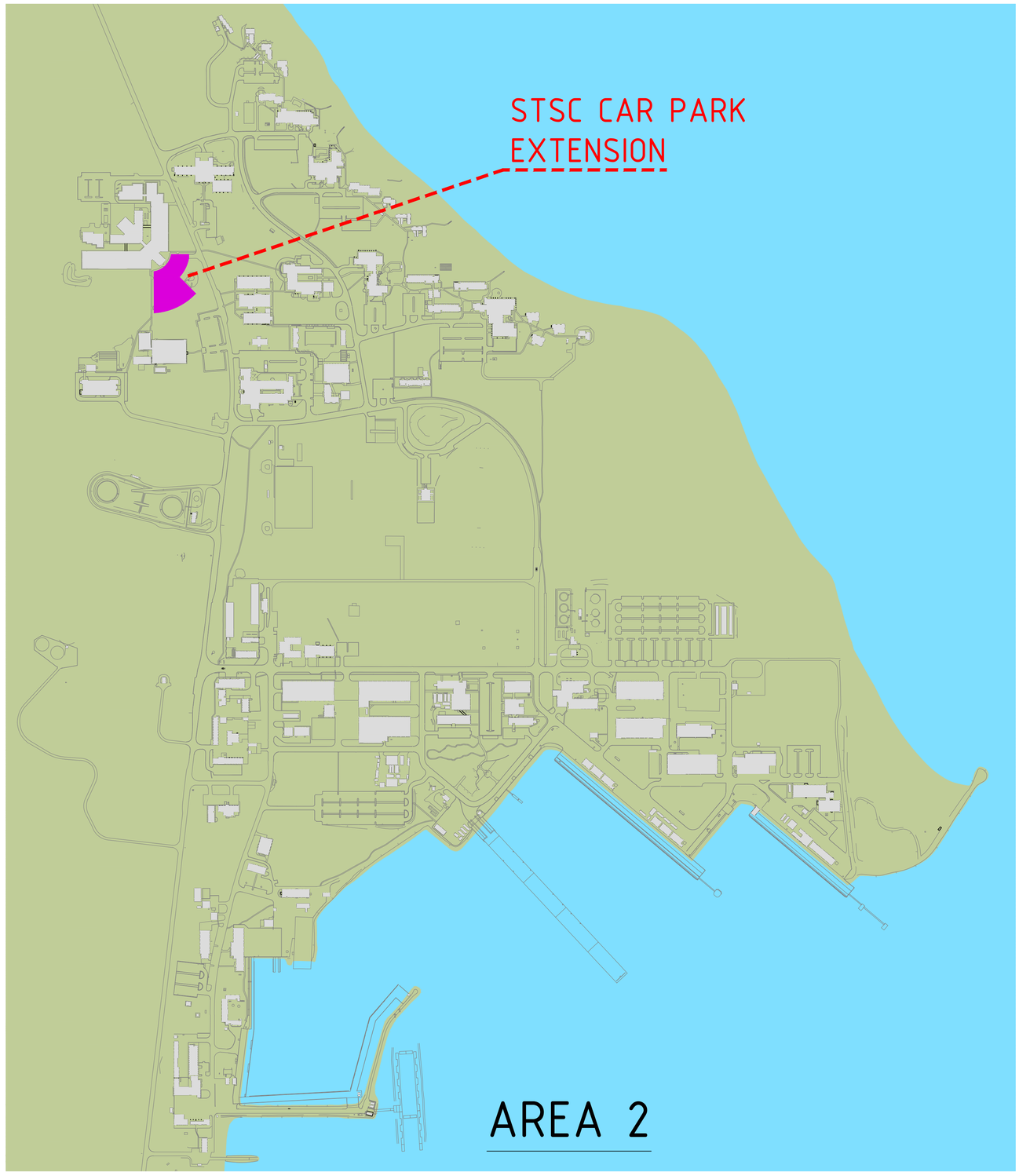

GARDEN ISLAND


AREA 2

ATTACHMENT 15 - ELEMENT 21 - MESS FACILITIES UPGRADES (A2,A4 AND A10) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND




AREA 2

ATTACHMENT 16 - ELEMENT 22 - CAR PARKING RATIONALISATION - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A


GARDEN ISLAND

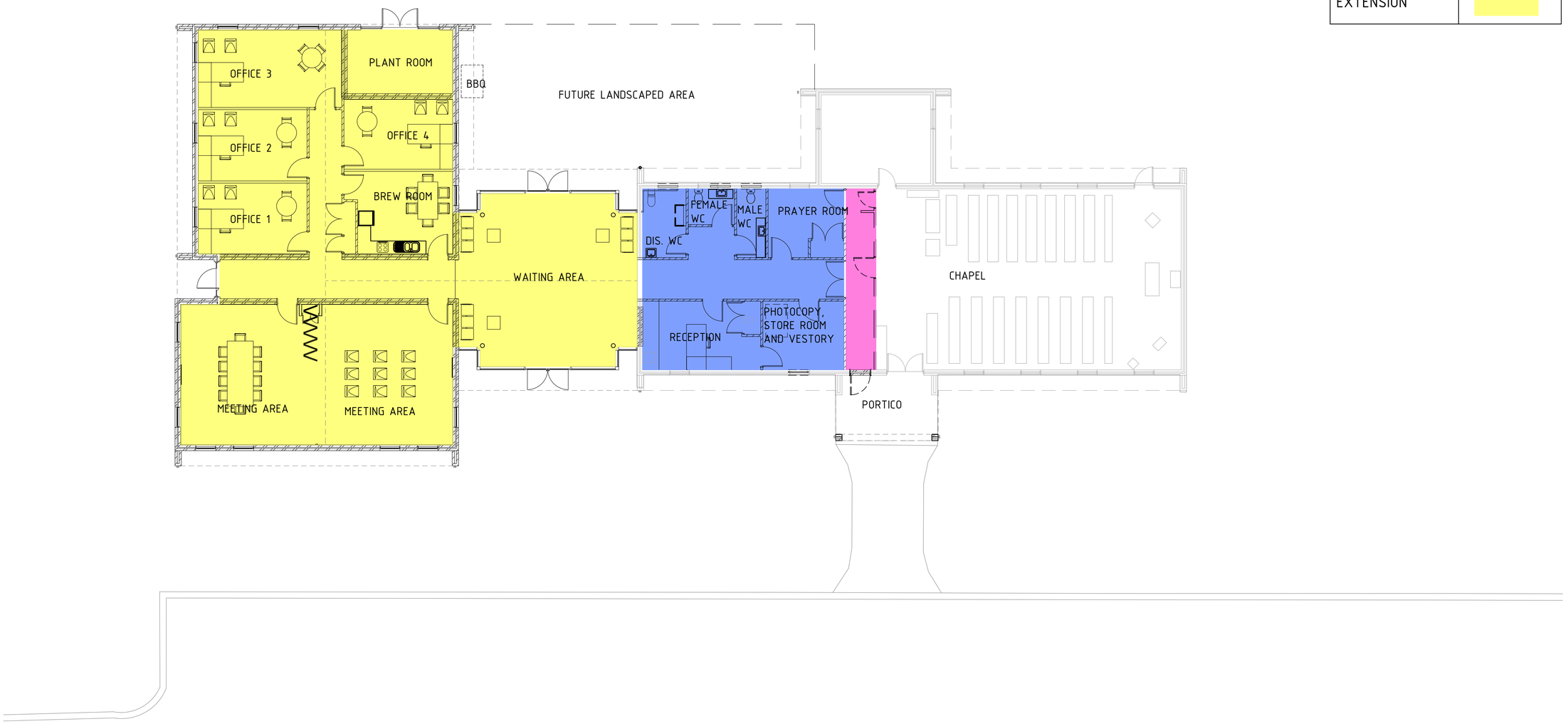

AREA 2

NORTH

ATTACHMENT 17 - ELEMENT 23 - CHAPLAIN CENTRE EXTENSION (A33) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

| | PROPOSED CHANGES |
|---|---|
| CHAPEL | |
| RECONFIGURED ROOMS | |
| BUILDING EXTENSION | |



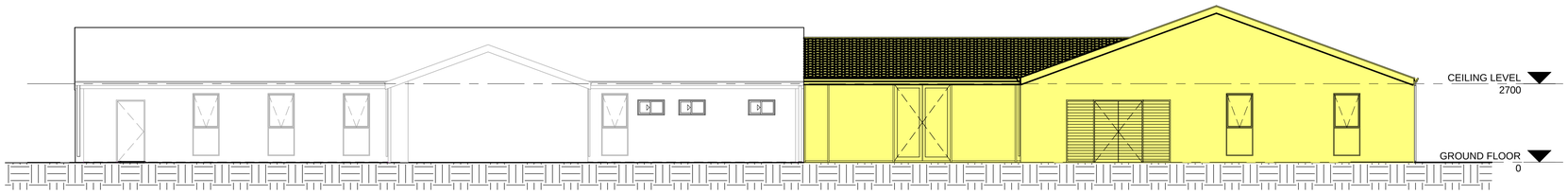

FLOOR PLAN-PROPOSED CHANGES

NORTH

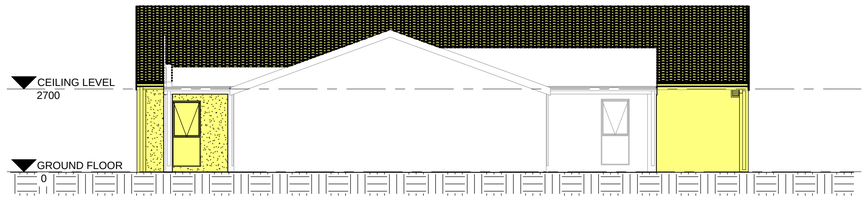
ATTACHMENT 17 - ELEMENT 23 - CHAPLAIN CENTRE EXTENSION (A33) - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

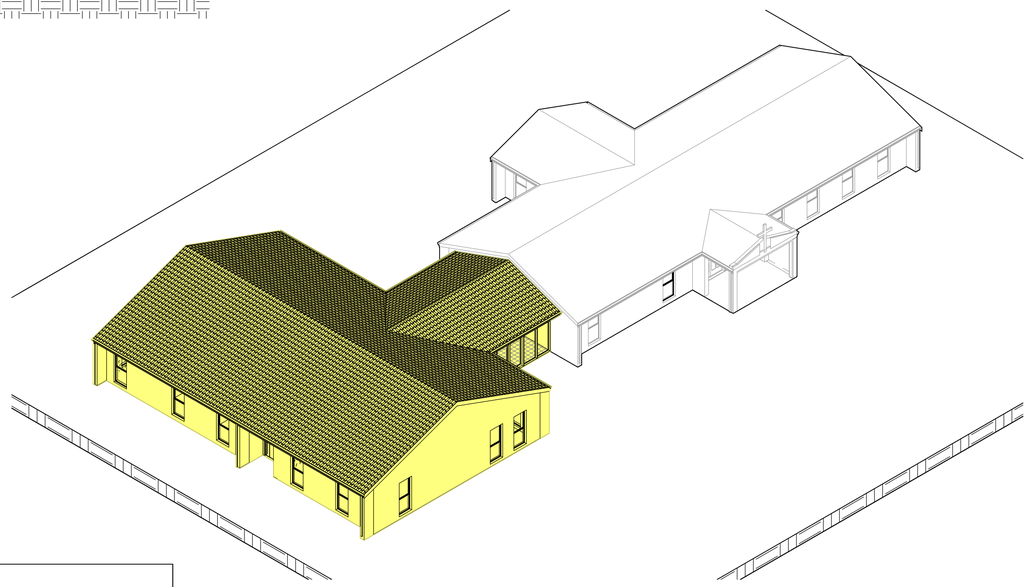
| | PROPOSED CHANGES |
|---|---|
| BUILDING EXTENSION | |

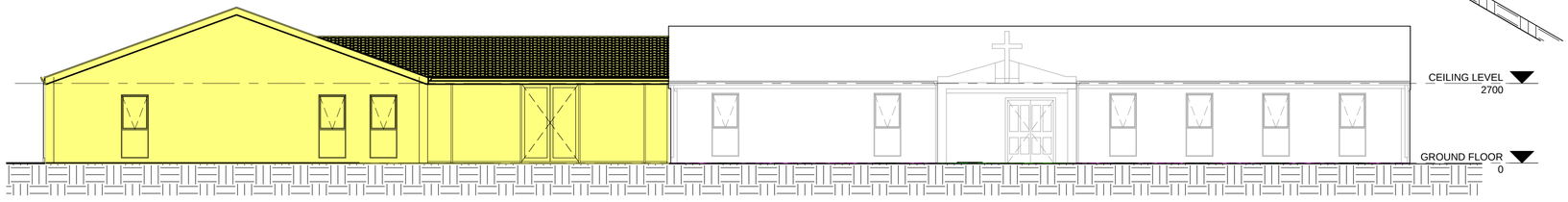



NORTH

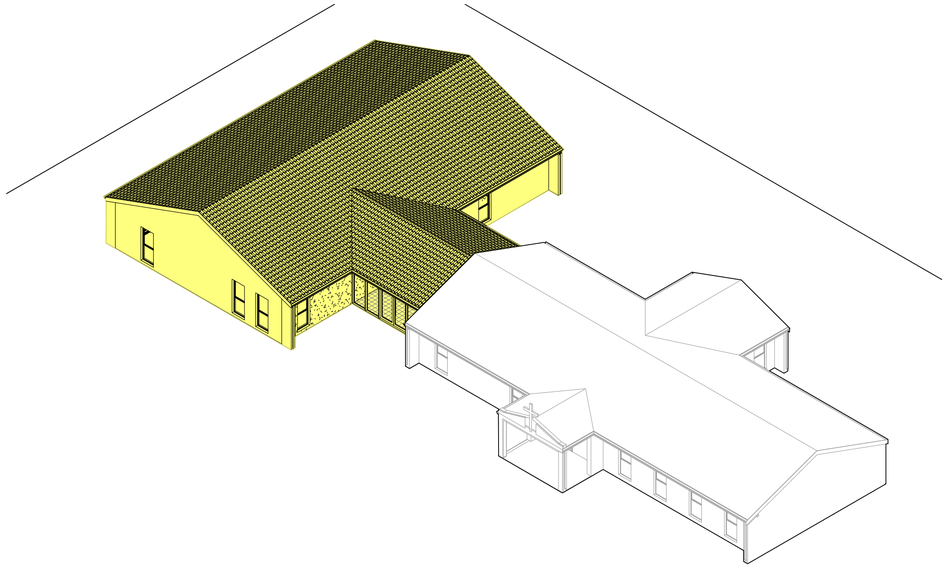


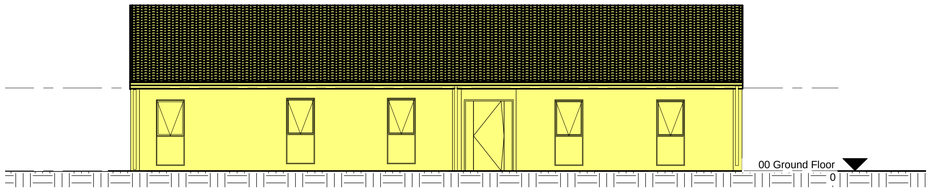

EAST






SOUTH






WEST

ELEVATIONS AND ISOMETRIC VIEWS

ATTACHMENT 17 - ELEMENT 23 - CHAPLAIN CENTRE EXTENSION (A33) - SHEET-03

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

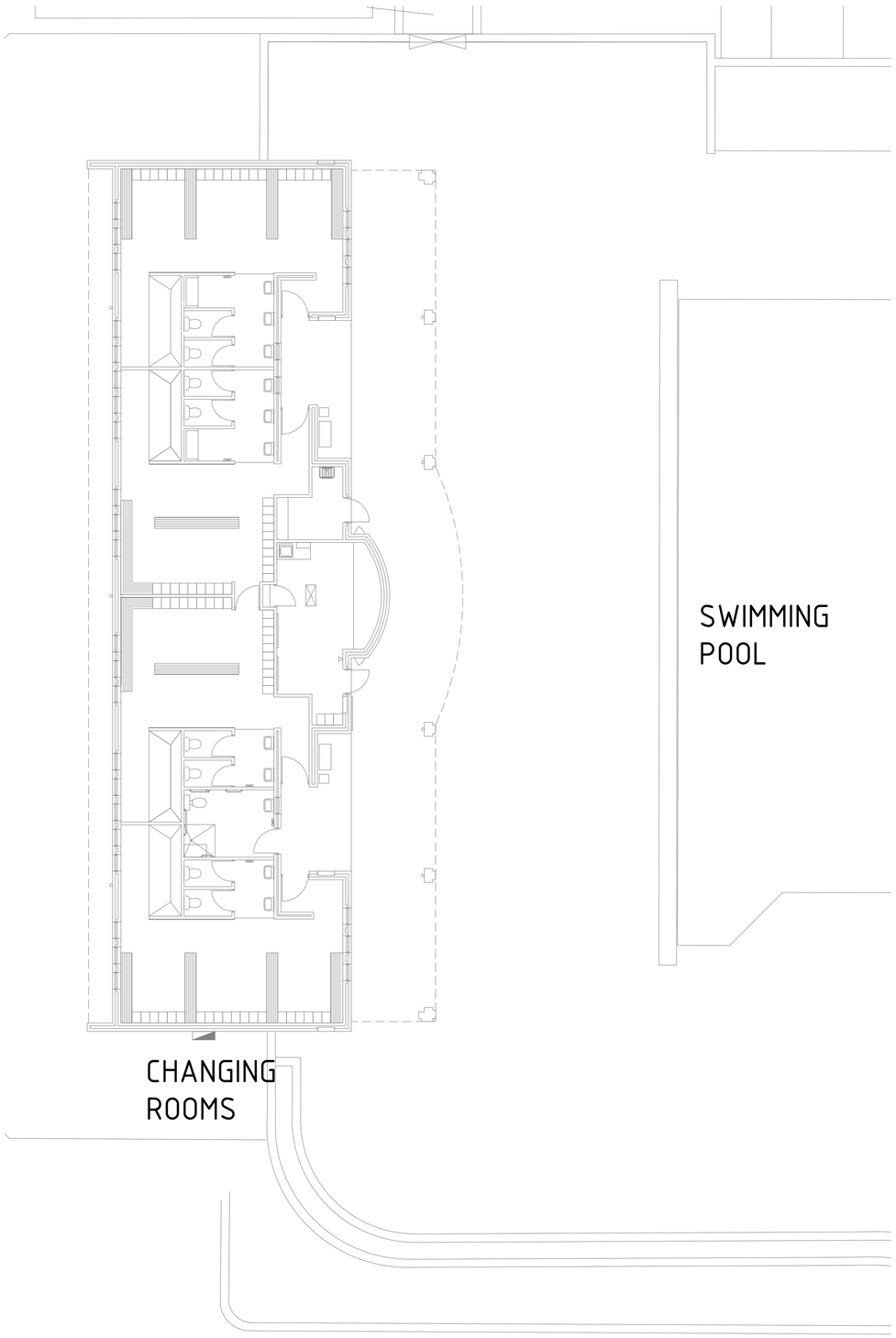

GARDEN ISLAND


AREA 2

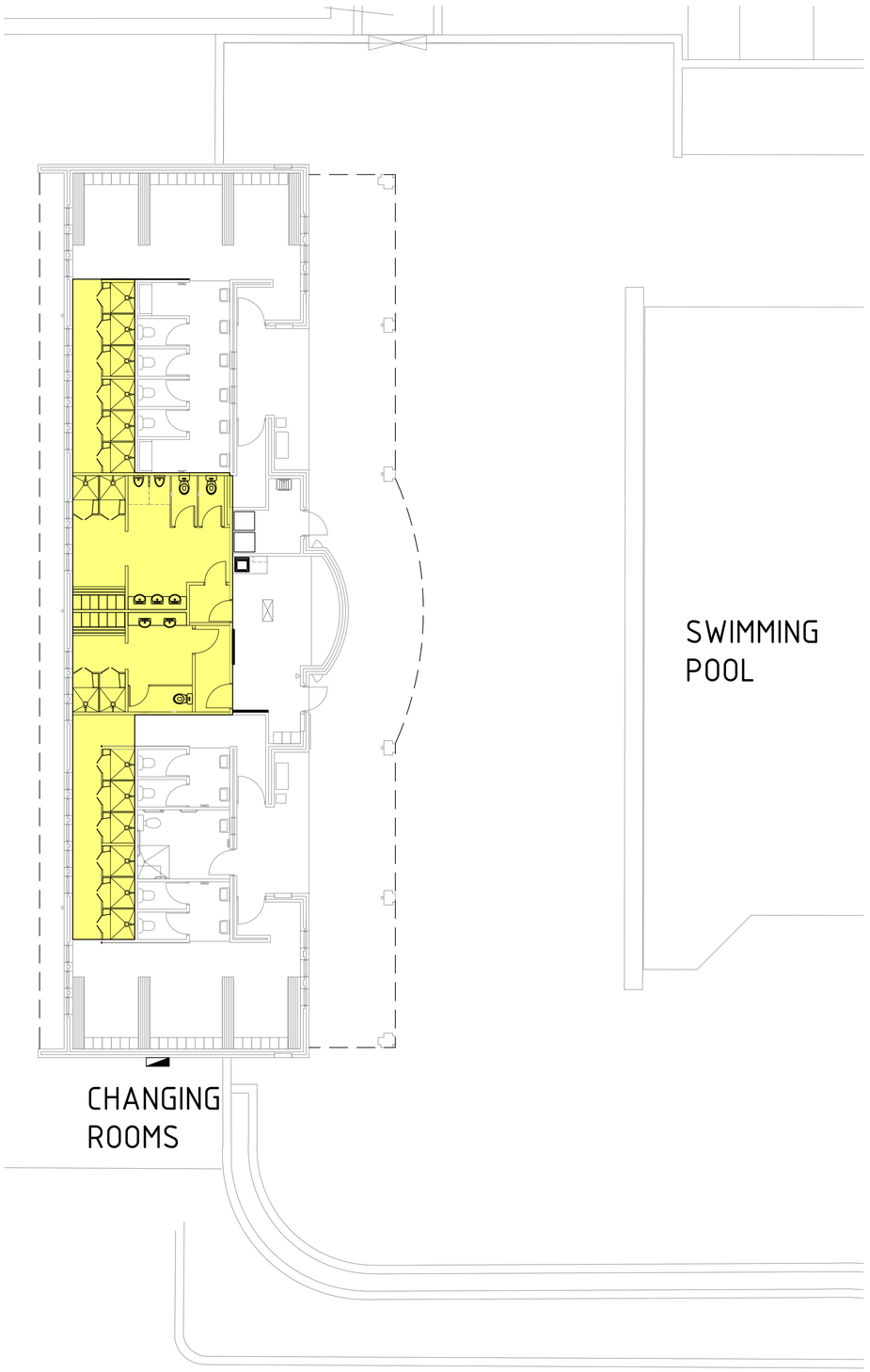
ATTACHMENT 18 - ELEMENT 25 - PHYSICAL TRAINING FACILITIES UPGRADES (A12,A14 AND A48) - SHEET-01

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

| | PROPOSED |
|---|---|
| CHANGING ROOMS | |




FLOOR PLAN - EXISTING



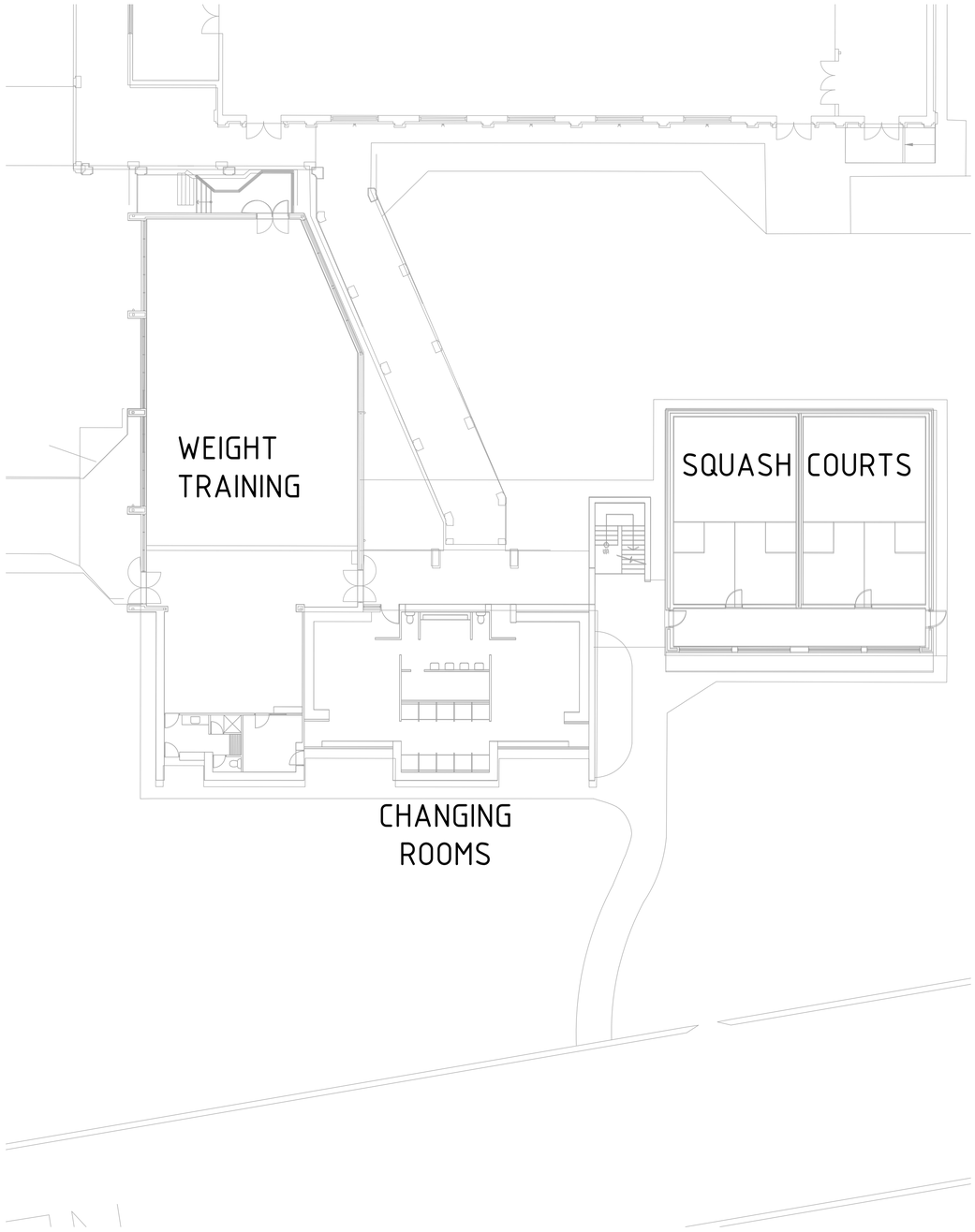

FLOOR PLAN - PROPOSED

NORTH

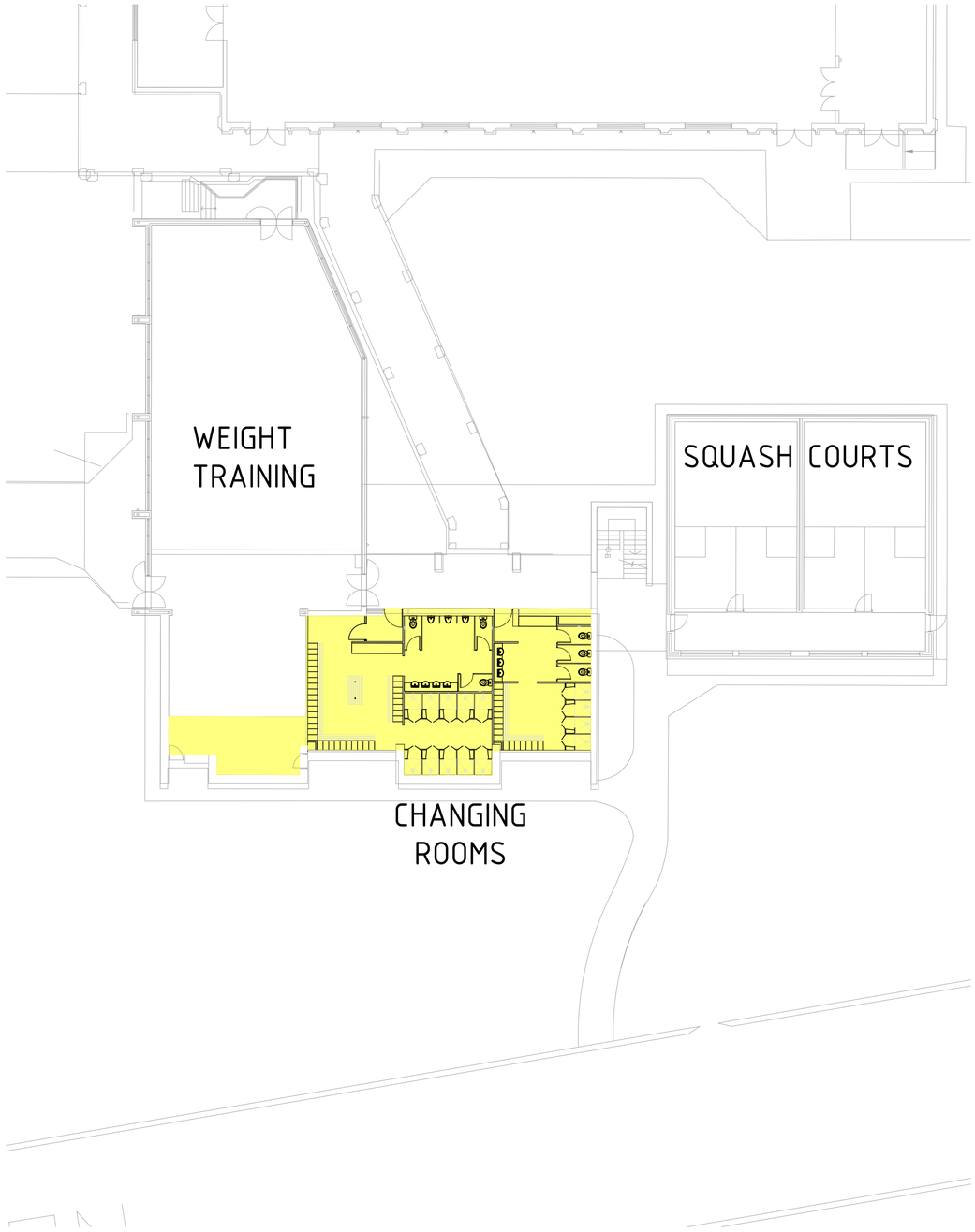
ATTACHMENT 18 - ELEMENT 25 - PHYSICAL TRAINING FACILITIES UPGRADES (A12,A14 AND A48) - SHEET-02

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

| | PROPOSED |
|---|---|
| CHANGING ROOMS | |




GROUND FLOOR - EXISTING

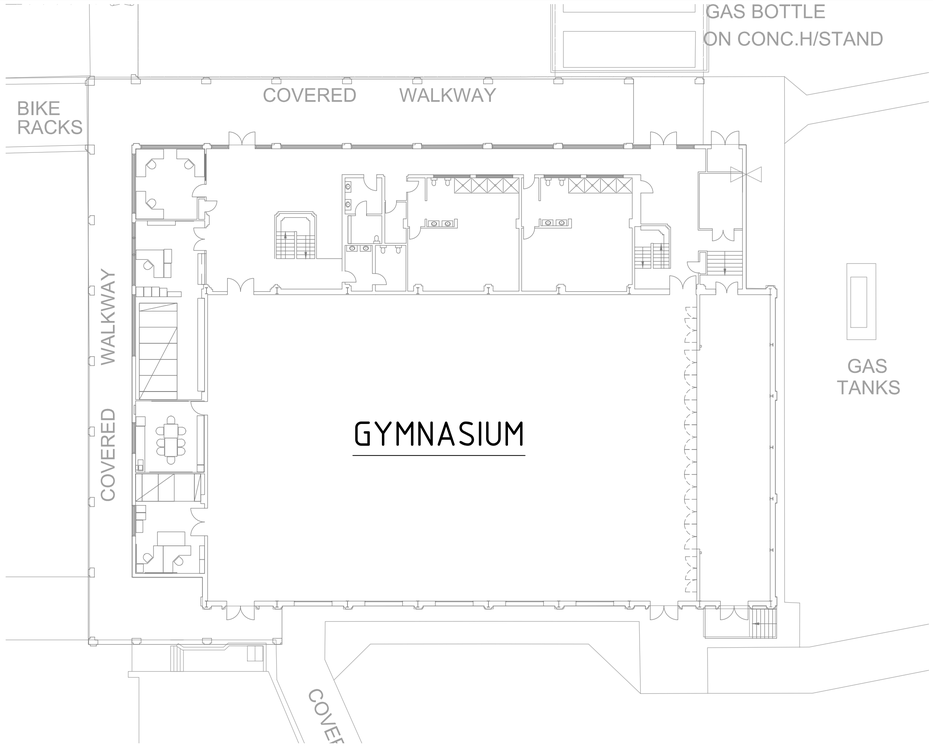



GROUND FLOOR - PROPOSED

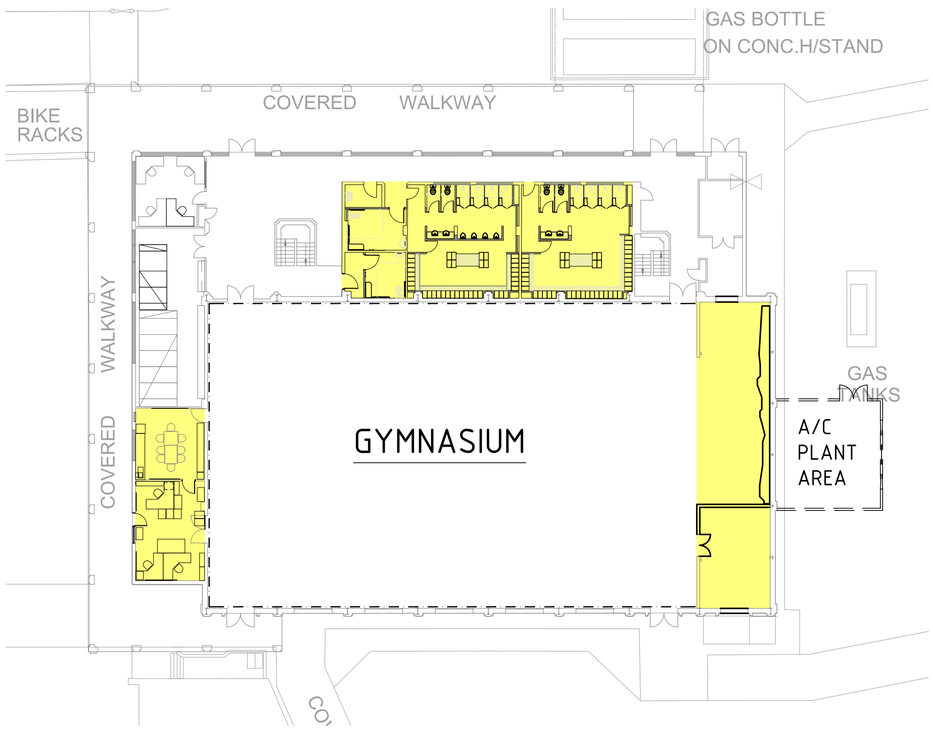
NORTH

ATTACHMENT 18 - ELEMENT 25 - PHYSICAL TRAINING FACILITIES UPGRADES (A12,A14 AND A48) - SHEET-03

# N2184 HMAS STIRLING REDEVELOPMENT - STAGE 3A

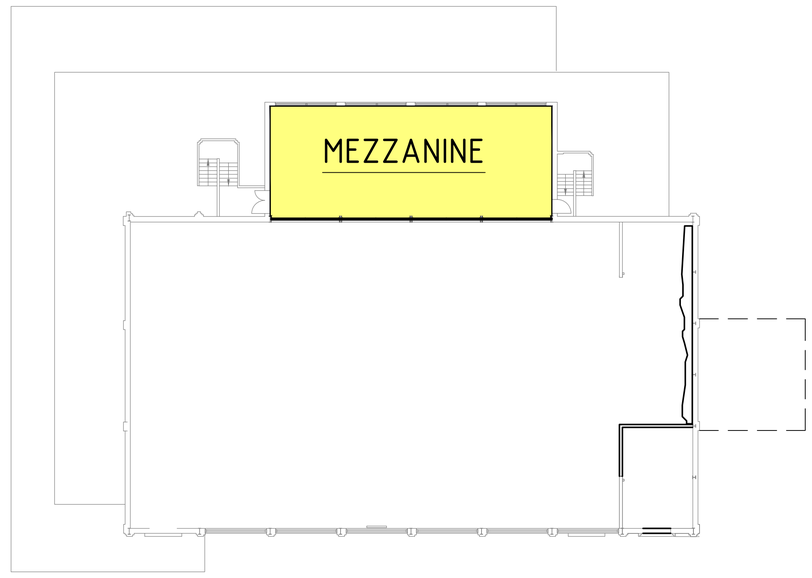



GROUND FLOOR - EXISTING




GROUND FLOOR - PROPOSED

| | PROPOSED |
|---|---|
| GYM | |




MEZZANINE FLOOR

NORTH

ATTACHMENT 18 - ELEMENT 25 - PHYSICAL TRAINING FACILITIES UPGRADES (A12,A14 AND A48) - SHEET-04