Australian Government

Department of Defence

STAGE ONE OF THE GARDEN ISLAND (EAST) CRITICAL INFRASTRUCTURE RECOVERY PROGRAM

(PRODUCTION WHARVES)

Garden Island (East), Sydney, New South Wales

STATEMENT OF EVIDENCE
TO THE
PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS

Canberra, Australian Capital Territory

February 2017

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Contents

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Identification of the Need

1. The Garden Island Defence Precinct (GIDP) comprises HMAS *Kuttabul*, Fleet Headquarters, Fleet Base East (FBE), the Captain Cook Graving Dock (CCGD), AC Lewis House, and the Woolloomooloo Car Park. The site is located approximately two kilometres from Sydney's Central Business District, to the immediate north of the suburb of Potts Point. A location plan is provided at Attachment 1.

2. The GIDP is a key operational and support base for the Royal Australian Navy (RAN) in support of Defence operations. The GIDP wharves, engineering services and buildings provide the critical facilities and infrastructure required to securely and efficiently berth, replenish, maintain and repair RAN ships. A map showing the location of the critical facilities and infrastructure is provided at Attachment 2.

Existing Infrastructure Condition, Capacity and Compliance Issues at the GIDP

3. In late 2012, Defence identified the need to undertake a comprehensive technical assessment of the condition, compliance and capacity of the wharves, and associated berthing infrastructure and engineering services at the GIDP. Of particular concern was the age of these facilities and infrastructure; the requirement to home-port increasingly larger RAN ships such as the *Canberra Class* Amphibious Assault Ships (LHD) and the *Hobart Class* Guided Missile Destroyers (DDG); and the requirement to provide periodic berthing space for visiting RAN and large allied warships such as the United States Navy amphibious ships.

4. In response, the *Garden Island Technical Assessment of Wharves and Berthing Infrastructure* (GITA) was completed in early 2014. The GITA identified significant deficiencies with the GIDP wharves, engineering services and supporting infrastructure such as cranes. The most

severe issues identified were the poor condition and limited capacity of the Cruiser Wharf and Oil Wharf as well as the capacity, compliance and condition across the base's engineering services including electrical supply, potable water and sewerage.

Critical Infrastructure Recovery Program

5. A Critical Infrastructure Recovery Program (CIRP) was developed to address the most significant issues identified in the GITA. The CIRP was then separated into two stages to enable the critical works to the Cruiser Wharf and Oil Wharf to be developed ahead of the remaining works as follows:

    a. Stage One to deliver works to remediate the Cruiser Wharf and Oil Wharf; and

    b. Stage Two to deliver remediation works to the remaining wharves and base-wide engineering services including electrical, fuel, potable water, compressed air and seawater.

6. Stage Two will be the subject of a separate submission to the Parliamentary Standing Committee on Public Works in the future.

Background

GIDP is an Enduring Defence Base

7. The RAN has maintained a presence on Garden Island since the mid-1800's, initially to assure the defence of Sydney Harbour, and in later years as Navy's major fleet base on the eastern seaboard in support of national Defence capability.

8. The GIDP remains an enduring strategic base underpinning Australia's ability to project maritime power into the immediate neighborhood, the Pacific Ocean Region, the Southern Ocean Region, and further afield. It is a complex industrial site which directly supports maritime capability and operations by providing essential ship berthing, replenishment, maintenance and repair facilities and infrastructure. Ready availability of wharf space is a key element of this support system. The total length of berth space at GI is 1,678 metres. While there are 9 major ships currently home-ported at GIDP with a combined length of 1,636 metres, this will increase to 10 major ships in the relatively near term with the introduction of

the new Guided Missile Destroyers and the replacement Replenishment Tanker which will increase the combined length to 1,818 metres. This apparent shortcoming may be exacerbated, on those occasions when all home ported ships are alongside, by the need to include a maneuvering distance of between 10 and 20 metres between individual ships, depending on their size.

9. Of particular importance to the GIDP is the 345 metre CCGD, located at the core of the Precinct. Its operation involves ships entering the dock before water is pumped away, with ships then resting on individually located keel blocks to facilitate inspection and repair of their underwater components. The CCGD is an enduring strategic asset. It is the largest dry dock in the Southern Hemisphere, and is the only facility in Australia capable of both docking ships with over 12,000 tons displacement and providing emergency docking. This includes emergency docking for RAN ships as well as commercial ships unable to dock elsewhere in Australia. The RAN will continue to operate three amphibious ships and two replenishment ships of this size.

10. The RAN's presence in and around Sydney Harbour is a highly complex network of interlinked facilities. There are strong operational support, training and administrative synergies between the GIDP and other Sydney Defence establishments including HMA Ships *Penguin* (Balmoral), *Watson* (Watsons Bay) and *Waterhen* (Waverton); the Defence Fuel Installation (Chowder Bay); and the Navy Training Systems Centre (Randwick).

11. Since at least 1978, Defence has extensively assessed and reviewed the long-term future of the GIDP on regular occasions and there has been almost continuous consideration of its potential relocation since 2006. Any such consideration must include either the complete relocation of the GIDP and most or all interlinked Sydney Defence establishments at substantial cost, or accept that relocation of the GIDP in isolation would result in it being dislocated from other important training, accommodation, logistic support, dry docking, engineering and general support functions currently provided in Sydney.

12. Successive reviews have concluded that there is no realistically suitable, feasible, acceptable or affordable alternative site for the relocation of the GIDP, including the CCGD, let alone the entire network of interlinked Navy training and support facilities in Sydney. The 2016 Defence White Paper refers to significant planned investment in the GIDP, consistent with its role as a vital and enduring naval base.

Importance of the Cruiser Wharf

13. The Cruiser Wharf was constructed in 1933 and underwent major refurbishments in 1976 and 1997.

14. The Cruiser Wharf has been the primary production wharf used by the RAN and its contractors to conduct ship maintenance and repair work. At 270 metres in length, it is one of three wharves at GIDP capable of berthing all current RAN ships. Its location further from external residential areas, including the Woolloomooloo Finger Wharf residences, enables the full scale of ship replenishment, maintenance and repair work to be undertaken without restriction due to noise impacts (when in a fully operational state). This is in stark contrast to the majority of the other GIDP wharves, particularly FBE wharves 2-5, where noise restrictions imposed under Defence's good neighbour policy exclude major production works.

15. The flexibility offered by the Cruiser Wharf, when in a fully operational state, complemented the docking and deeper level maintenance of ships using the CCGD. The Cruiser Wharf has therefore been integral to the efficient repair and refit of ships to ensure the RAN is adequately prepared to achieve Government-directed tasks within required timeframes.

Importance of the Oil Wharf

16. The Oil Wharf was constructed in 1895 and was refurbished in 1997 and 2013.

17. Similarly to the Cruiser Wharf, the Oil Wharf has been a key production wharf used by the RAN and its contractors to conduct ship maintenance and repair work. This is primarily because of its location furthest from residential areas, which enabled these works to occur without restriction due to noise impacts. At 157 metres in length, the present wharf is unable to berth the larger RAN ships now in service.

Identified Issues with the Cruiser and Oil Wharf

18. The GITA identified the following issues with the Cruiser Wharf and Oil Wharf:

    a. **Significant reduction in structural capacity.** The Cruiser Wharf and Oil Wharf structures are comprised of supporting piles topped with a concrete deck. The structures' original deck loading capacity was 24 kilopascals (kPa) (2.4 tonnes per

square metre). As a result of deterioration, the Cruiser Wharf's current capacity is now as low as 2.4kPa over large areas, which is the equivalent of two people standing in one square metre. Similarly, the Oil Wharf's current capacity is as low as 12kPa over large areas. Importantly, the original deck capacity of the wharves is insufficient to support production activities required on modern warships.

b. **Unserviceable crane.** The Cruiser Wharf was previously serviced by a 64 tonne portal crane mounted on rails that ran the full length of the wharf structure. The crane was decommissioned in late 2014 due to the diminished strength of the wharf piles required to support it. The crane is now fully unserviceable as a result of the collapse of under wharf beams in mid-2015, which destroyed its power supply cables. The inadequate strength of the piles similarly precludes the use of a large mobile crane on both the Cruiser and Oil Wharves

c. **Inadequate shore engineering services and wharf furniture.** The Cruiser Wharf and Oil Wharf include a range of shore engineering services and wharf furniture to support berthed ships. These services include electrical, communications, potable water, seawater, compressed air and sewerage services while furniture includes bollards, fenders and ladders. These services and furniture are currently either non-compliant with Defence standards or are of inadequate capacity, quantity, location or configuration to adequately service the full range of RAN's current ships. In addition, the Cruiser Wharf has no ship fuelling services.

19. In response to the severity of the issues outlined above, Defence implemented a range of measures to limit use of the Cruiser Wharf. The Cruiser Wharf is now physically fenced off to limit pedestrian and vehicular access, and is unable to be fully used to berth, maintain and repair ships.

20. In addition to the above issues, there are two key general constraints on RAN's use of the Cruiser Wharf and Oil Wharf:

a. **Inadequate alongside water depth.** The depth of the water alongside the current Cruiser Wharf and Oil Wharf is approximately nine metres at its shallowest point. This depth is insufficient to berth the full range of RAN's current ships, particularly HMAS *Sirius* at full load displacement and the LHD in a docked down condition where the ship

is lowered to enable its amphibious craft to directly enter and exit the hull. An alongside water depth of at least 12.2 metres is required to enable these ships to berth at their full capacity, which is deeper than the length of the current piles supporting the wharf deck. Without an alongside depth of 12.2 metres, the wharves cannot fully support the RAN's largest ships.

b. **Inefficient wharf configuration.** The current configuration of the Cruiser Wharf and Oil Wharf forms a 'dog leg' arrangement which is highly inefficient, as the corner where they intersect effectively results in unusable berth space.

21. As a result of the above issues and constraints, Defence has experienced the following impacts:

a. **A significant reduction in functioning wharves at the GIDP.** The restrictions on the Cruiser Wharf have effectively reduced functioning wharf space at the GIDP from 1,678 metres to 1,408 metres. This is regularly resulting in ships being unable to berth alongside the wharves and being directed to secure to a RAN buoy in waters adjacent to the GIDP. The use of buoys increases the RAN's duty watch manning requirements, plus fuel and maintenance costs, and complicates logistic support and ship security arrangements. Additionally, there is also a regular requirement to shuffle ships between wharves depending upon available wharf space and their maintenance and production requirements, which is disruptive and similarly increases the RAN's personnel, tug and cranage costs. This results from limitations on use of wharves across the GIDP for these purposes are as follows:

i. **Oil Wharf.** The Oil Wharf cannot be fully used to conduct production works on all RAN ships due to insufficient length, inadequate alongside water depth, and reduced deck loading capacity which prevents use of large cranes and heavy vehicle access.

ii. **FBE Wharves 4-5.** The FBE 4-5 wharves are located directly adjacent to the Woolloomooloo Finger Wharf residences and therefore no external ship production is generally permitted.

iii. **FBE Wharves 2-3.** The FBE 2-3 wharves are located in close proximity to the Woolloomooloo Finger Wharf and Potts Point residences. Noise arising from an

LHD at these berths has proven an irritant to local residents, and ship production activities are heavily restricted to reduce noise impacts.

iv. **FBE Wharf 1.** The FBE 1 wharf has traditionally been used to conduct maintenance; however, it is now the primary LHD berth and is frequently not available to maintain other ships. Additionally, the LHD must be moved to enable larger ships to access the FBE Wharves 2-5. These movements may result in up to one day's work being lost, depending on conditions.

v. **East Dock Wharf and West Dock Wharf.** The East and West Dock Wharves sit aside of the entrance to the critical CCGD. These wharves are able to berth most RAN ships, excluding the LHD and HMAS *Sirius* due to insufficient length and alongside water depth. These wharves have become the de-facto primary production wharves at GIDP in the absence of the Cruiser Wharf, although neither has a functioning portal crane which constrains ship production activities. These wharves must be cleared whenever larger naval or commercial ships enter/exit the CCGD. Such movements have resulted in a loss of approximately 6% of ship maintenance and production days since early 2015.

22. Given the adverse operational impacts identified above, Defence completed urgent maintenance works on the Cruiser Wharf in August 2016. These works involved strengthening a small number of piles to enable a ship to berth at the Cruiser Wharf in light wind conditions to ease berthing congestion at GIDP. Importantly, these works represent a temporary solution as they have a very minimal design life and the crane remains unserviceable, the shore engineering services and wharf furniture remain inadequate, and ship production and maintenance activities are still unable to be undertaken. Access to the wharf face by emergency vehicles is possible only along a narrow strengthened deck area, while mobile crane and heavy vehicle access is not permitted.

Description of the Proposal

23. The Garden Island (East) Critical Infrastructure Recovery Program (Production Wharves) project ('the project') will provide a fully functioning and future-proofed wharf at the north-west end of the GIDP capable of berthing and facilitating work on all current and future planned RAN ships.

24. The proposed works include:

    a. demolishing the existing Cruiser Wharf and Oil Wharf structures including removing the existing wharf furniture, shore engineering services and crane;

    b. dredging the surrounding seabed to create a suitable berthing pocket;

    c. constructing a new single continuous wharf structure in place of the demolished Cruiser Wharf and Oil Wharf in a new alignment;

    d. extending the existing adjoining East Dock Wharf to limit the new realigned wharf's protrusion into Sydney Harbour;

    e. installing engineering services including fuel, communications, electrical, water and compressed air along the new realigned wharf's length;

    f. installing wharf furniture including bollards, fenders and ladders along the new realigned wharf's length; and

    g. installing a new rail mounted crane along the new realigned wharf's length.

Project Location

25. The GIDP is located between Woolloomooloo Bay and Elizabeth Bay, approximately two kilometres north-east of the centre of Sydney's Central Business District. The works proposed by the project are located on both Defence-owned land and land leased from the NSW Government which owns the seabed surrounding the GIDP.

26. The Cruiser Wharf, Oil Wharf and East Dock Wharf are located on the north-western side of the GIDP.

Options Considered to Fulfill the Identified Need

27. Defence considered four options to address condition, capacity and compliance issues with the existing Cruiser Wharf and Oil Wharf.

Option 1 – Refurbish the Cruiser Wharf Only

28. Option 1 proposed:

a. repairing and replacing the piles supporting the wharf deck;

b. constructing mooring strong points;

c. refurbishing the existing crane;

d. installing new shore engineering service; and

e. installing new wharf furniture.

29. These basic repairs would only reinstate the original 24kPa capacity of the Cruiser Wharf and extend its life by approximately 15-20 years. The refurbished wharf would still not be capable of supporting all current RAN ships; would still need to be adapted to support future planned RAN ships during its extended life; would still incur ongoing and increasing maintenance costs given the age of most of the wharf infrastructure; and would still require limitations on use after completion given the nature of modern ships requires an increased deck capacity of 47kPa to support maintenance activities.

Option 2 – Rebuild the Cruiser Wharf Only

30. Option 2 proposed:

a. demolishing the existing Cruiser Wharf structure, wharf furniture, shore engineering services and crane;

b. dredging the surrounding seabed to create a suitable ship berthing pocket for all current RAN ships;

c. constructing a new wharf structure within the same spatial footprint of the existing wharf;

d. installing a new crane;

e. installing new shore engineering services; and

f. installing new wharf furniture.

31. Two structural designs were considered for the new Cruiser Wharf:

a. supporting steel piles topped with a reinforced concrete deck; or

b. a number of core-filled reinforced concrete blocks stacked on top of each and topped with a reinforced concrete deck.

Option 3 – Rebuild and Realign the Cruiser Wharf and Oil Wharf

32. In addition to the Cruiser Wharf, this option considered the adjoining Oil Wharf to the north as it is suffering similar deterioration issues and requires significant maintenance or a rebuild within five years.

33. Option 3 proposed:

    a. demolishing the existing Cruiser Wharf and Oil Wharf structures, wharf furniture, shore engineering services, and Cruiser Wharf crane;

    b. dredging the surrounding seabed to create a suitable ship berthing pocket for all current RAN ships;

    c. constructing a new wharf structure in place of the existing Cruiser and Oil Wharves in a new alignment to remove the existing corner where they intersect;

    d. constructing an extension of the existing East Dock Wharf to limit the new realigned wharf's protrusion into Sydney Harbour;

    e. installing a new crane;

    f. installing new shore engineering services; and

    g. installing new wharf furniture.

34. Two structural designs were considered for the new realigned wharf and East Dock Wharf extension:

    a. supporting steel piles topped with a reinforced concrete deck; or

    b. a number of core-filled reinforced concrete blocks stacked on top of each and topped with a reinforced concrete deck.

Preferred Option

35. Option 3 was assessed as providing the best value for money solution:

    a. **Achieves RAN's Current and Future Planned Requirements.** Option 3 meets the RAN's current and future planned operational requirements by addressing the significant deterioration in the Cruiser and Oil wharf structures, and associated berth capacity and compliance issues with its existing shore engineering services. It also

addresses identified limitations in the current configuration of these wharves by increasing the alongside water depth to enable all RAN ships to berth in maximum draft conditions; increasing the wharf's deck loading capacity to enable all required ship production and maintenance activities to be undertaken including using a crane; and provides greater berthing flexibility with the removal of the corner where the existing wharves intersect, plus the extension of the adjoining East Dock Wharf.

b. **Provides Capital and Whole of Life Cost Effectiveness.** Option 3 provides the most cost effective solution per linear metre of upgraded wharf when compared with Options 1 and 2 in terms of both capital and whole of life expenditure.

c. **Increases RAN's Berthing Flexibility.** While the works will only increase overall wharf space at the GIDP by approximately 16 metres, the revised wharf geometry will enable all current RAN ships to berth at the new realigned wharf and the extended East Dock Wharf. This will considerably improve berthing flexibility at the GIDP.

36. The preferred structural design for Option 3 is supporting steel piles topped with a reinforced concrete deck as it has the lowest total capital cost and lowest whole of life cost, at a standard discount rate, of the two structural designs investigated.

37. A comparison of the existing Cruiser Wharf, Oil Wharf and East Dock Wharf alignments against those proposed under Option 3 are provided at Attachment 3. A perspective and site plan are provided at Attachments 4 and 5 respectively.

Environment and Heritage Assessment

38. 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 *Environment Protection and Biodiversity Conservation Act 1999* is not considered to be necessary.

39. Defence has engaged an independent Environmental Consultant to complete an Environmental Review, which has highlighted environmental and heritage risks to be addressed in the Detailed Design Report and in the Construction Environmental Management

Plan (CEMP). Defence will require a detailed CEMP to be developed by the construction contractor prior to any construction work commencing. The CEMP will address the environmental and heritage management during construction.

Environment

40. The Environmental Report has confirmed the proposed works will have no impacts on flora and fauna. Underwater investigations found the area consists of soft-bottom, open sandy un-vegetated substrate. No seagrass communities were found in the works area, however two seabed communities were found in Woolloomooloo and Elizabeth Bay. The sediment dispersion modelling indicated that the dredge plume would not reach these meadows.

41. During construction, the greatest noise impact will be from concrete breaking and impact piling activity. The effects will only be during normal construction hours, with the greatest impacts likely to be in the catchment areas in Potts Points and Elizabeth Bay. These impacts will only be temporary with mitigation measures taken during construction.

42. On occasions when the wharves are fully occupied, noise increases are likely to be insignificant at Woolloomooloo, Kurraba Point, and Mrs Macquarie's Chair, particularly if LHDs can berth at the proposed new wharf. Impacts on the local community at Potts Point are likely to continue on occasions when an LHD is alongside at FBE 2-3 berths.

43. The proposed wharf design will not affect the overall water circulation, and tidal patterns in Sydney Harbour. Furthermore, the project is unlikely to cause any significant physical changes to the seabed.

Heritage

44. The Sydney Opera House is a declared property on the World Heritage List. GIDP is located within the Sydney Opera House buffer zone which includes sites identified as *"offering critical views to and from the Sydney Opera House that contribute to its World Heritage Significance."* A Heritage Impact Assessment determined that the Project would be consistent with the guidelines / criteria (EPBC Significant Impact Criteria 1.1), and would not result in a significant impact on the Opera House. The ongoing use of the wharves in this precinct would be a positive heritage outcome for Garden Island, and consistent with the heritage values of

the Sydney Opera House which has always existed against the backdrop of an operational Naval Defence facility.

45. The current Cruiser and Oil Wharves are assessed as making a high contribution to heritage values of Garden Island. Prior to construction of the proposed new wharf, an archival record will be completed in accordance with Appendix A, Section 8 of the Heritage Handbook[1]. Additionally, if early fabric of the existing wharves is identified during demolition or reconstruction, this will also be recorded.

46. The Project also has the potential to directly impact on Building 104 (boiler shop) and 108 (Locker Storage). Provided that the Project does not affect the exterior, or aspects of the interior form that recall historic uses and layout are not physically changed, modifying the interior to suit operational requirements would not impact on heritage values.

47. There is the possibility that archaeological remains of former buildings are located below the Oil and Cruiser Wharves. Should any relics be uncovered, an archaeologist will be engaged to record the findings prior to any disturbance, with the results of the finds presented in a report.

48. With respect to vibration resulting from construction works, it was determined that non-heritage areas outside the base were not likely to be impacted during activities that generated the most vibration impacts. A number of heritage structures were identified within the estimated buffer areas of 20 metres and 150 metres. These structures are not likely to be impacted by the construction program, however, they will be continually monitored with appropriate mitigation measures to be put in place should deterioration be detected.

Asbestos

49. Defence's Asbestos Register for Garden Island has recently been reviewed and updated in June 2016, and will guide the identification and removal of asbestos during the construction phase of the project.

Contamination

[1] Godden Mackay Logan, Garden Island Naval Base Heritage Management Plan, Prepared for the Directorate of Heritage and Biodiversity Conservation, Department of Defence, August 2008, amened June 2012.

50. Following extensive geotechnical testing to the dredge footprint, it has been found areas of the seabed contain concentrations of general solid waste including heavy metals, chemical compounds and other debris such as anti-fouling paint. These contaminants account for 38% of the overall estimated dredge volume, and will be required to be disposed of in an appropriately licensed land waste disposal facility which has an appropriate leachate management system. Non-contaminated dredge spoil will be disposed at sea after the project has achieved the appropriate permit.

Native title / Indigenous Land use Agreements

51. The proposed works at GIDP have no known Native Title or Indigenous Land Use Agreement issues.

Key Legislation

52. The following key legislation is relevant to the Project:

    a. *Environment Protection and Biodiversity Conservation Act 1999 (Cth),*

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

    c. *Control of Naval Waters Act 1918,*

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

    e. *Disability Discrimination Act 1992 (Cth),* and

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

Applicable Codes and Standards

53. 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. DEF(AUST) 5000 – ADF Maritime Material Requirements Set;

    c. Manual for Infrastructure Engineering Electrical (MIEE);

    d. Smart Infrastructure Manual;

    e. Defence Estate Quality Management System; and

f. Defence Manual of Fire Protection Engineering.

Consultation with Key Stakeholders

54. Defence has developed a comprehensive consultation and communications strategy that recognises the importance of providing local residents, community groups, statutory authorities, and other interested stakeholders with the opportunity to provide input into, or raise concerns relating to, the proposed works.

55. As part of this strategy, the following communication methods have been or will be adopted:

a. letterbox drops to neighbouring residential areas confirmed as affected from either the Construction Works, or general RAN operations in the Noise Impact Assessment;

b. project-specific website with project specific email and public enquiries hotline;

c. community information sessions; and

d. local newspaper advertisements.

56. In addition to the above, Defence has conducted or plans to offer verbal briefings through written correspondence to:

a. Federal Member for Wentworth, Prime Minister of Australia, Hon Malcolm Turnbull MP

b. Federal Member for Warringah, Hon Tony Abbott MP

c. Member for Sydney, New South Wales, Hon Tanya Plibersek MP

d. Lord Mayor of Sydney, Ms Clover Moore

e. Member of the NSW Legislative Assembly seat of Sydney, Mr Alex Greenwich MP

f. Member for Sydney, State Member for North Shore – to be advised

g. Premier of NSW, Hon Mike Baird

h. relevant community groups including:

i. Naval Historical Society of Australia;

ii. Potts Point and Kings Cross heritage and Residents' Society;

iii. 2011 Residents Association Inc.;

iv. Friends of Sydney Harbour; and

v. National Trust of Australia.

i. relevant authorities including:

i. NSW Roads and Maritime Services (RMS);

ii. Environmental Protection Authority (NSW Department of Planning and Environment);

iii. Port Authority of NSW;

iv. Department of Planning and Environment (DP&E);

v. City of Sydney Council;

vi. Sydney Harbour Federation Trust; and

vii. Property NSW (formerly Sydney Harbour Foreshore Authority).

57. Defence plans to convene at least two community information sessions for the project prior to the conduct of the Joint Parliamentary Standing Committee on Public Works Hearing.

Purpose of the Works

Project Objectives

58. The project aims to provide a fully functioning and future-proofed wharf at the north-west end of the GIDP capable of berthing and facilitating work on all current and future planned RAN ships.

Details and Reasons for Site Selection

59. The project will address issues and constraints with the existing Cruiser Wharf and Oil Wharf at the GIDP by demolishing these wharves and constructing a single wharf in a new alignment in their place, including a minor extension to the East Dock Wharf.

Detailed Description of the Proposed Works

60. The project comprises six scope elements. The proposed scope of each element is outlined in the following paragraphs.

Project Element 1: Demolition of Wharf Structures

61. The existing Cruiser Wharf and Oil Wharf structures will be demolished. Where possible, materials from the demolition will be re-used on site with all other waste items disposed of in accordance with applicable environmental regulations.

Project Element 2: Construction of Wharf Structures

62. The project proposes constructing a single wharf structure in a revised alignment in place of the demolished Cruiser Wharf and Oil Wharf structures. The realigned wharf will be 372 metres in length which is 55 metres shorter than the total Cruiser Wharf at 270 metres and Oil Wharf at 157 metres. Nonetheless, the ability to utilise the complete 372 metres of wharfage without a “dog leg” significantly increases the RAN’s flexibility to berth more practical configurations of all current and future planned RAN vessels.

63. To reduce the realigned wharf structure’s protrusion into Sydney Harbour, the project proposes to also extend the existing adjoining East Dock Wharf. The East Dock Wharf will therefore be increased from 187 metres to 255 metres in length thus generating 68 metres of additional wharfage. Importantly this will allow for berthing an LHD at this berth for short periods if necessary.

64. The proposed structural design for the realigned wharf structure and extended wharf structure is a suspended deck on piles which will consist of 256 tubular steel piles spaced 7.5 metres apart. Of these, 240 piles will be driven vertically into the seabed while 16 will be installed at an angle (raked) for storm moorings. The deck will consist of precast concrete beams, precast

concrete panels and an in-situ concrete topping capable of supporting anticipated loadings up to 47 kPa (4.7 tonnes per square metre). The front of the wharf structure will be supported by a sheet pile wall, which will provide support and protection from the underwater wash and scouring effects generated by RAN ships with azipod propulsion systems (notably the LHDs and LSD).

65. Attachment 6 provides details of the proposed wharf structure.

Project Element 3: Seabed Dredging

66. The seabed is currently nine metres deep at its shallowest point. Ships manoeuvring alongside require a minimum 1.2 metres under keel clearance for safety purposes. Thus for ships with a maximum draft of 11 metres, the seabed along the entire length of the realigned wharf is to be dredged to 12.2 metres below Chart Datum to ensure a capacity to berth all current and planned future RAN ships. No dredging is proposed at the East Dock Wharf.

67. An estimated total dredging volume of 38,400 cubic metres comprised of 38% general solid waste (GSW), 56% virgin excavated natural material, and 6% rock is forecast based on investigations completed to date. Rock may be re-used as part of the revetment, subject to acceptable geotechnical characteristics, and value for money. The revetment has a gradient of ratio 1 vertical to 1.5 horizontal, and will be located along the length of the new realigned wharf behind the sheet pile wall.

68. All virgin excavated natural material is proposed to be disposed of at sea, subject to approval of a Sea Dumping Permit. Should rock not be re-used in the revetment, it is also anticipated this material will be disposed of at sea. All GSW will be disposed of in an appropriately licensed land waste disposal facility which has an appropriate leachate management system.

69. Attachment 7 provides details of the proposed dredging footprint.

Project Element 4: Wharf Furniture

70. The existing wharf furniture on the Cruiser Wharf and Oil Wharf will be replaced as it is out-dated and inadequate to fully service current and planned future RAN ships. New wharf furniture will also be installed on the East Dock Wharf extension

71. The proposed wharf furniture to be installed along the new realigned wharf includes:

a. 11 waterside ladders spaced equally along the wharf;

b. 33 foam filled fenders;

c. four storm bollards and 32 cope side bollards;

d. 11 first aid points and life buoys located adjacent to ladders;

e. general signage including speed limits and load limits of the wharf; and

f. hazardous materials shed and wash-down space.

Project Element 5: Portal Crane

72. The Cruiser Wharf's existing portal crane will be dismantled and parts may be re-used.

73. A new electric rail-mounted portal harbour crane is proposed to be installed to run the length of the new realigned wharf. The proposed minimum specification for the crane is as follows:

a. capacity to lift a 40-foot container (maximum 31 tonne) to a height of 27.5 metres at a maximum radius of 35 metres;

b. capacity to lift an LHD Landing Craft (LLC) (maximum 59 tonnes at ballast) out of the water at a radius of eight metres;

c. capacity to lift a Boeing CH-47 Chinook (CH-47A) (maximum 11 tonne) to/from an LHD flight deck; and

d. capacity to lift a 'manbox' to an LHD mast (46.4 metres).

Project Element 6: Shore Engineering Services

74. All existing shore engineering services located within the Cruiser Wharf and Oil Wharf will be demolished and replaced to meet relevant standards and RAN operational requirements.

75. The new services will run in a combined services trench located along the rear landside edge parallel to the new realigned wharf. Electrical and communications services will be physically segregated from the hydraulic and fuel services.

76. Services runs will be installed within in-built ducts cast into the new realigned wharf structure, with the exception of fuel services which are proposed to be underslung to the wharf. These will run from the trench to cope points located at the new realigned wharf's edge.

77. All services will be connected into the existing base infrastructure surrounding the new realigned wharf, and will be limited by existing network capabilities. All new pipework, valves, flow meters, instruments and pumps are specified for a design life of 25 years.

78. Attachment 8 includes a plan showing the engineering services layout.

79. All existing wharf cope points will be replaced and designed to comply with relevant standards and operational requirements. Cope point boxes will be grouped by service type (i.e. hydraulic services, electrical services, and fuel). Hydraulic and electrical cope points will be of a standard size, with fuel having a larger stand-alone cope box size. Refer Attachment 9 for cope point details.

80. The proposed services are as follows:

    a. **Electrical.** The three 50 hertz and 60 hertz electrical substations currently serving the existing Cruiser Wharf and Oil Wharf do not comply with Defence requirements and will be upgraded to meet applicable standards. The realigned wharf will be upgraded with adequate power supply to cater for all current and planned RAN ships. This includes the provision of five 50 hertz and nine 60 hertz cope points along the length of the realigned wharf. The works also include for the existing 11 kilovolt supply to Fort Denison to be retained.

    b. **Lighting.** The lighting design will ensure both security and operational lighting is adequately provided along the new realigned wharf. Seven 30m high light poles will be provided to the rear of the new realigned wharf to maintain a clear and obstruction free deck area.

    c. **Information and Communication Technology (ICT).** RAN communications and infrastructure network services at the existing Cruiser Wharf and Oil Wharf do not currently function. The existing ICT services will be upgraded to meet the requirements

of all current and future planned RAN ships while the following network service connections will be provided at four data cope points along the new realigned wharf:

i. two Defence Secure Network (DSN) connections;

ii. two Defence Restricted Network (DRN) connections;

iii. two Integrated Platform Management System (IPMS) connections for ship management, information and monitoring; and

iv. two Defence Voice Network (DVN) connections.

d. **Electronic Security.** Existing security cameras will be retained and reinstated with additional cameras installed where required to ensure adequate coverage of the new realigned wharf area.

e. **Compressed Air.** The current low pressure compressed air pipework servicing the existing Cruiser Wharf and Oil Wharf will be replaced. The new compressed air system will consist of a stainless steel header pipe with polyethylene pipe branches to eight cope points along the length of the new realigned wharf.

f. **Sewerage.** The existing sewerage infrastructure at the GIDP caters for discharge and disposal of black water from ships. Four sewerage cope points will be established along the new realigned wharf to enable a ship to connect a hose to a cope point to discharge black water. Whilst there is no grey water (sullage) treatment plant at the GIDP, spare capacity to allow for the provision of a sullage treatment plant in the future will be provided.

g. **Fuel.** There is no existing fuel capability at the Cruiser Wharf. A new fuelling system will enable the fuelling and de-fuelling of F76 or ADF10 (Diesel) and F44 (Aviation) fuels to all current and planned RAN ships at the new realigned wharf. Fuelling and de-fuelling will be via five cope points located along the length of the new realigned wharf with a pressure and flow rate sufficient to support simultaneous fuelling from one cope point only.

h. **Sea (Salt) Water.** The existing sea-water infrastructure for on-board fire protection and filling ballast tanks within the footprint of the existing wharves will be replaced. The

new infrastructure will consist of two seawater pumps capable of delivering the required pressure and flow rate to four cope points along the length of the new realigned wharf.

i. **Fire-fighting Water.** The existing fire-fighting infrastructure (potable water) within the footprint of the existing wharves will be replaced. Landside fire water supply, with dual-headed fire hydrant landing valves (for use during an emergency by Fire and Rescue NSW) will be provided for landside protection to berthed ships and buildings located adjacent to the new realigned wharf.

j. **Potable Water.** The existing potable water infrastructure within the footprint of the wharves will be replaced with a new system capable of providing the required pressure and flow rate to four cope points along the length of the new realigned wharf.

Public Transport, Local Roads and Traffic Concerns

81. The GIDP is well served by public transport with bus stops located at the front entry on Cowper Wharf Road, and the Kings Cross railway station located approximately 1.25 kilometres away.

82. A Traffic Impact Assessment is being undertaken to determine any traffic impacts, via both land and sea, as a result of the proposed works during the construction phase.

83. To alleviate any potential impacts of additional traffic identified by this assessment at the GIDP during construction of the works, Construction Traffic Management Plans and Green Travel Plans will be prepared and implemented. Heavy machinery used during construction is also expected to have minimal impact on the local road network as such machinery is expected to remain on site for prolonged periods of time.

Zoning and Local Approvals

84. The proposed works are consistent with uses prescribed in relevant Defence and non-Defence zoning instruments including the HMAS *Kuttabul* Zone Plan, GIDP Strategic Accommodation Management Plan, and Defence Estate Principles of Development.

Seabed Lease Considerations

85. The NSW Government, through the NSW Government Roads and Maritime Services (RMS),

owns the seabed surrounding the GIDP. Defence leases the seabed from RMS, with the lease footprint generally following the island's existing shoreline and covering approximately 43,434 square metres.

86. The project includes a proposed extension to the existing seabed lease of 5,300 square metres to accommodate the new realigned wharf footprint. Defence has, and continues to, actively engage with RMS on seabed lease issues including obtaining licenses to conduct invasive seabed investigations during geotechnical activities and amending the lease to include the proposed extension footprint.

Naval Waters Considerations

87. Naval Waters are declared around the GIDP through the *Control of Naval Waters Act 1918.* As a consequence of the project, the RAN will need to seek amendment to the coordinates of declared Naval Waters at the northern most part of the new realigned wharf.

Childcare Provisions

88. There is no requirement for additional childcare facilities as this project will not increase personnel population on the GIDP.

Impacts on the Local Community

89. **Traffic**. The project will not result in any net increases in permanent military or civilian personnel. There will, however, be an increase in contractor personnel accessing and working at the GIDP during the construction phase. A Traffic Impact Assessment is being undertaken to determine any traffic impacts, via both land and sea, as a result of the proposed works during construction.

90. Contractor access to the construction site within the GIDP will be tightly controlled for security reasons and to minimise the impact of construction traffic movements and construction activities on RAN operations and the local community.

91. **Business Opportunities.** The construction phase of the project will provide opportunities for local businesses to provide services as sub-contractors to the Managing Contractor.

92. **Noise Impacts on Local Residents.** Both LHD ships are currently being berthed at FBE 1 (North and South) and FBE 2-3. As noted at paragraph 42, Potts Point residents have complained about noise when an LHD is berthed at FBE 2-3. Noise impacts to the local community have been reduced by the Cruiser Wharf Temporary Upgrade project, which has enabled one LHD to be alternatively berthed at the Cruiser Wharf in very limited wind conditions as an interim measure.

93. The finalisation of the project will see new wharf space for the LHD Ships located further away from local residents than current berthing arrangements, significantly reducing noise impacts on neighbouring residents.

Planning and Design Concepts

94. The general philosophy adopted for the design of the works is based on the following:

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

    b. conventional construction techniques (particularly off-site pre-fabrication), mostly those commonly used in the local construction industry, will be adopted where practicable;

    c. due consideration of the extremely exposed and aggressive coastal environment of the GIDP will be a primary factor driving material and detailing choices;

    d. application of appropriate durability measures to reduce ongoing maintenance and to ensure the proposed design life is met; and

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

Structural Design

95. The proposed system of tubular steel piles (with either precast concrete deck panels and an in-situ topping slab, or a fully cast in-situ concrete deck) on removable formwork is a very common standard form of construction, and utilised in almost all new wharves. The site conditions at the GIDP are suitable for a deck on piles structural system.

96. Maritime contractors are familiar with this form of construction and will have the appropriate plant and equipment. Construction work can be competitively tendered to Australian maritime

contractors with the experience and capability to deliver pile supported concrete deck structures.

97. Some other specific features of the deck on pile method compared with other methods are that:

    a. it is less susceptible to the impacts of depth changes in the seabed with the piles simply needing to be extended as opposed to needing significant structure and fill requirements for gravity structures;
    b. it is more economical to construct; and
    c. it allows greater flexibility with transitioning to adjoining structures.

Electrical Services

98. Electrical services are designed to meet Australian Standards and Defence's Manual of Infrastructure Electrical Engineering (MIEE) compliance requirements. The system is designed to service all current and future planned RAN ships for both power and information and communications technology (ICT) requirements. To ensure service life, the ducts will be cast into the new realigned wharf deck such that they are not exposed to salt air and water.

99. Lighting services are broken into two components: security and operational lighting. Security lighting is designed to comply with the MIEE while the requirements for wharf task lighting are designed to comply with standards specified by the International Commission on Illumination for Shipyards and Docks. The design allows for manual switching between operational and security lighting.

Hydraulic and Mechanical Services

100. Hydraulic and mechanical services consist of sewerage, compressed air, and fuel. Hydraulic services are designed to Australian Standards and relevant Defence requirements including DEF (AUST) 206E (Handbook of Liquid Fuels, Lubricants and Allied Products), DEF (AUST) 5695 (Minimum Standards of Practice for the Storage, Handling and Quality Control of Fuels, Lubricants and Allied Products), and MIEE compliance requirements.

101. The sewerage shore connections will be capable of receiving black water from ships and discharging to shore side infrastructure.

102. The compressed air system is capable of supplying all light tools for maintenance. Fuelling and de-fuelling capabilities at the new realigned wharf will be provided by the provision of F76 or ADF10 (diesel) and F44 (aviation) fuel.

Fire Protection

103. The fire protection design will comply with Defence's Manual of Fire Protection Engineering (MFPE) and relevant Australian Standards.

104. The proposed fire protection system for the new realigned wharf will provide two separate capabilities: one for on-ship firefighting and the other for land firefighting. On-ship firefighting will be enabled via the provision of salt (sea) water at designated cope points while existing potable water firefighting infrastructure at the Cruiser Wharf and Oil Wharf will be reinstated to cater for land firefighting.

Security Measures

105. The security design caters for the reinstatement of existing security cameras as well as new cameras on light poles along the new realigned wharf. The design will comply with Electronic Defence Security Manual (eDSM) requirements.

Environmental Sustainability

106. Defence is committed to Ecologically Sustainable Development (ESD), and reducing 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.

107. The project has adopted cost effective ESD measures as a key objective in the design and development of project elements. These measures have been incorporated into the design of most aspects of the proposed works and include:

    a. energy metering will be installed in accordance with the requirements of the Defence National Sub-meter Program (NSP) and will be suitable for connection to Defence National Resource Data Management System (RDMS);

b. hydraulic metering will be installed for future connection directly to a building management system (BMS);

c. security and operational lighting will include efficient light-emitting diode (LED) fittings;

d. spare capacity within infrastructure services trenches has been included for future expansion;

e. the deck is sloped landward by 1% gradient to provide run-off away from the ocean to a strip-drain at the landward side minimising run-off into harbour;

f. provision of interceptors / separators to collect and treat contaminants such as oil, grease, litter and sediment, including pollution controls for all deck run-off and wash bays;

g. spill containment for fuel services at each cope point, and double contained pipe with leak prevention; and

h. recycling waste by re-using the existing concrete deck as fill in the revetment.

Energy Targets

108. All proposed infrastructure will have sub-metering installed in accordance with the requirements of Defence's SMART Infrastructure Manual.

Workplace Health and Safety

109. The project 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.

110. In accordance with Section 35 (4) of the *Building and Construction Industry Improvement Act 2005 (Cth)*, project 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.

111. Safety aspects of this project have been addressed during the design development process and have been documented in a Safety in Design Report. A Work Health Safety Plan will be required to be developed for the construction phase prior to the commencement of any construction activities.

Provision for People with Disabilities

112. Access for people with disabilities will be provided in accordance with the Building Code of Australia, Australian Standard AS1428[2], and the *Disability Discrimination Act 1992*.

Cost Effectiveness and Public Value

Outline of Project Costs

113. The estimated total capital out-turned cost of the project is $213.4 million (excluding Goods and Services Tax). This includes management and design fees, construction costs, information and communications technology, furniture, fittings, equipment, contingencies and a provision for escalation.

114. A net increase in operating costs is expected as a result of the works due to the demolition and rebuild of wharf infrastructure which is currently not fully fit for purpose. The estimated cost of operating and maintaining the new realigned wharf will inform future budgeting by Defence. In addition to these operating costs, the existing seabed lease with RMS will need to be extended by, in the order of, 5,300 square metres to accommodate the new realigned wharf footprint. The estimated cost of the amended lease will inform future budgeting for the Defence Lease Program.

115. Notwithstanding the net increase in operating costs, the project will improve the ability of the GIDP to meet its key operational support obligations, improve workplace health and safety on the base, improve the capacity and effectiveness of the existing maintenance and support facilities, and reduce or eliminate potential risks to the local environment and personnel as a result of the wharves current deteriorated state.

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[2] AS 1428 – 2010: Design for access and mobility

Details of the Project Delivery System

116. Subject to Parliamentary approval, a Managing Contractor form of contract is planned to deliver the works. A Project Manager and Contract Administrator will therefore be appointed to manage the delivery phase of the works while a Managing Contractor will be appointed to complete design development, procure trade contractors, and construct the works.

117. The Managing Contractor form of delivery provides the Commonwealth with buildability input into the design while promoting opportunities for small to medium enterprises by sub-contracting design and construction trade packages.

Construction Program

118. Subject to Parliamentary approval, design activities are expected to be completed by early to mid-2017, with construction then expected to commence in mid-2017 for completion in late 2020.

Public Value

119. The project will significantly contribute to both Defence preparedness and RAN capability outputs by ensuring key production wharves at the GIDP are fit for purpose and fully available to support operations.

120. The project will employ a diverse range of skilled consultants, contractors and construction workers during the construction phase to deliver, and manage the delivery of, the works.

121. Once complete, the project is expected to reduce the impact of noise generated by current ship berthing and maintenance arrangements on local residences, as the works will increase the RAN's ability to alternatively conduct these functions at the northern-most wharves when appropriate.

Revenue

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

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROGRAM - STAGE 1

GARDEN ISLAND

ATTACHMENT 1 - LOCATION PLAN

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT - STAGE 1

ATTACHMENT 2 - GIDP MAP

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT - STAGE 1

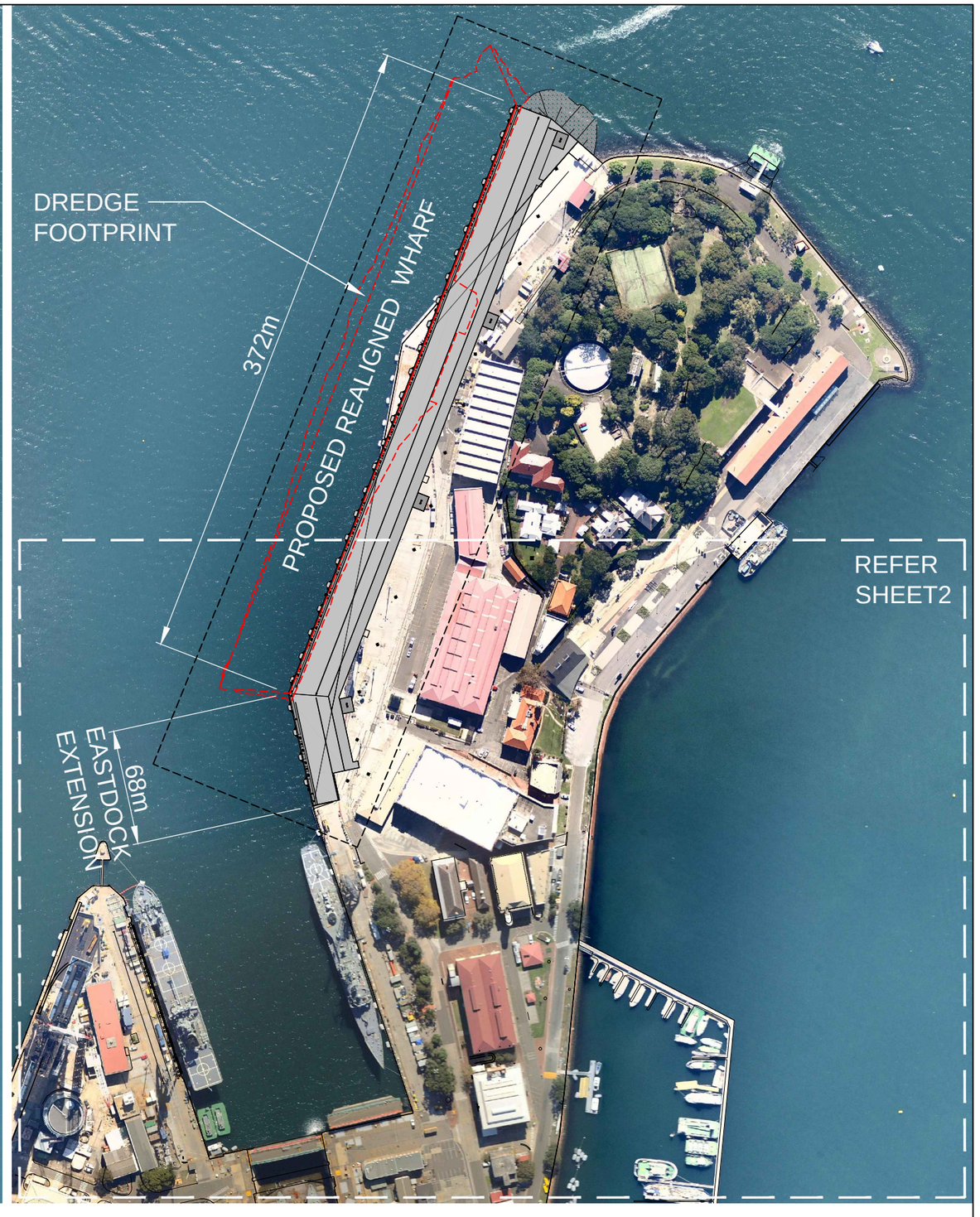
ATTACHMENT 3 - EXISTING AND PROPOSED WHARF ALIGNMENT

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT - STAGE 1

ATTACHMENT 4 - EXISTING AND PROPOSED WHARF PERSPECTIVE

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT - STAGE 1

DEMOLITION PLAN



SITE PLAN

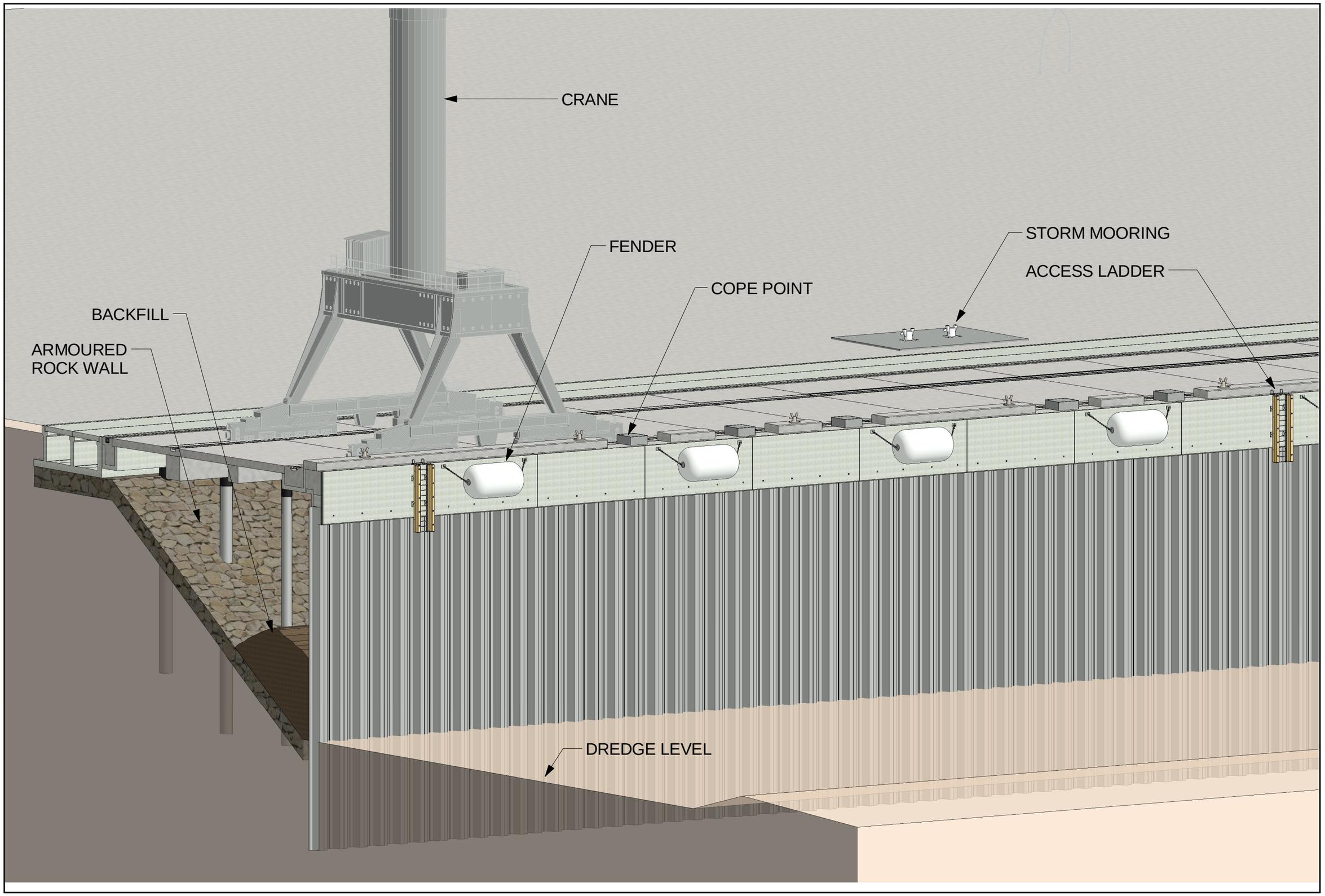
NORTH

ATTACHMENT 5 - CRUISER AND OIL WHARF SITE PLANS SHEET 1

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT - STAGE 1

ATTACHMENT 5 - CRUISER AND OIL WHARF SITE PLANS SHEET 2

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROGRAM - STAGE 1



ATTACHMENT 6 - WHARF STRUCTURAL DESIGN LAYOUT

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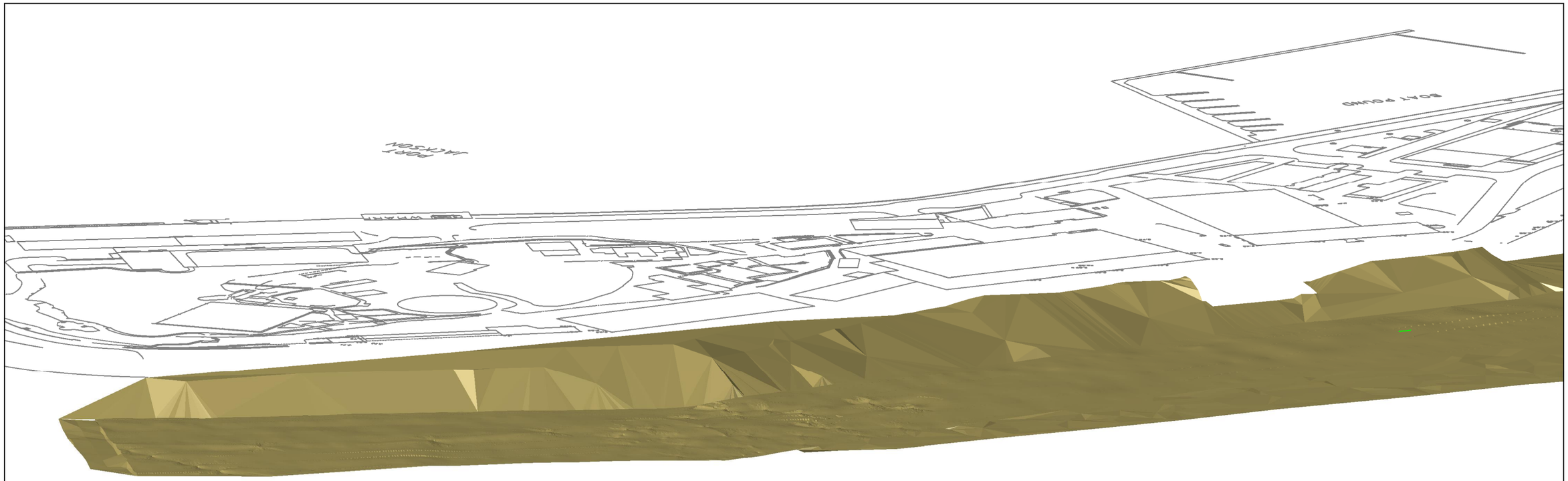
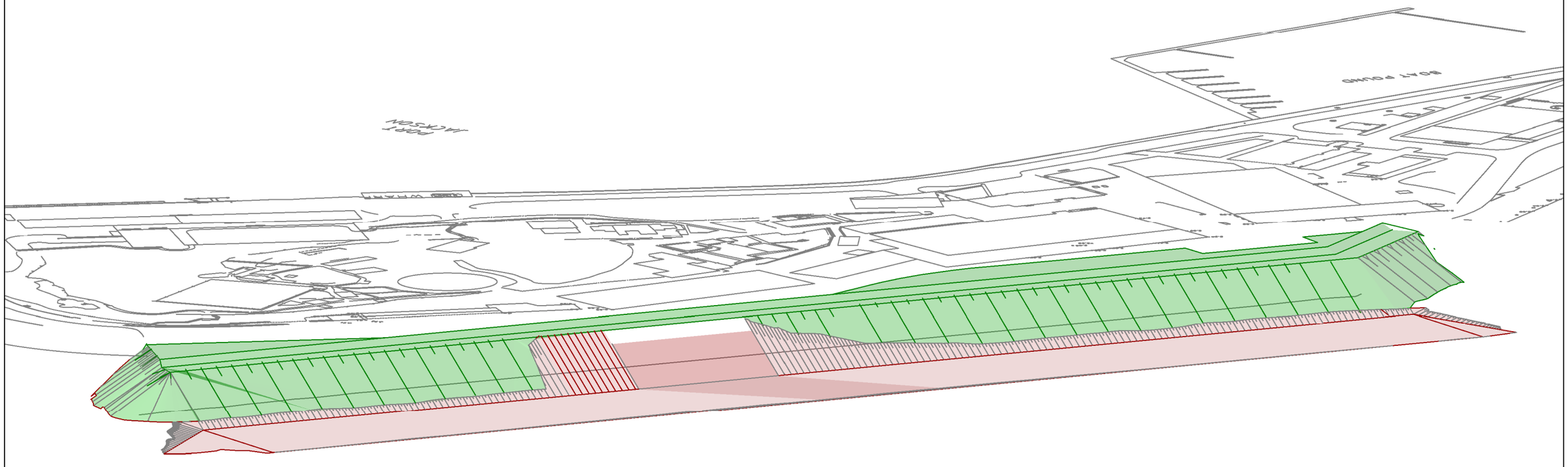


EXISTING SURFACE



PROPOSED SURFACE

ATTACHMENT 7 - WHARF SIDE DREDGING SHEET 1

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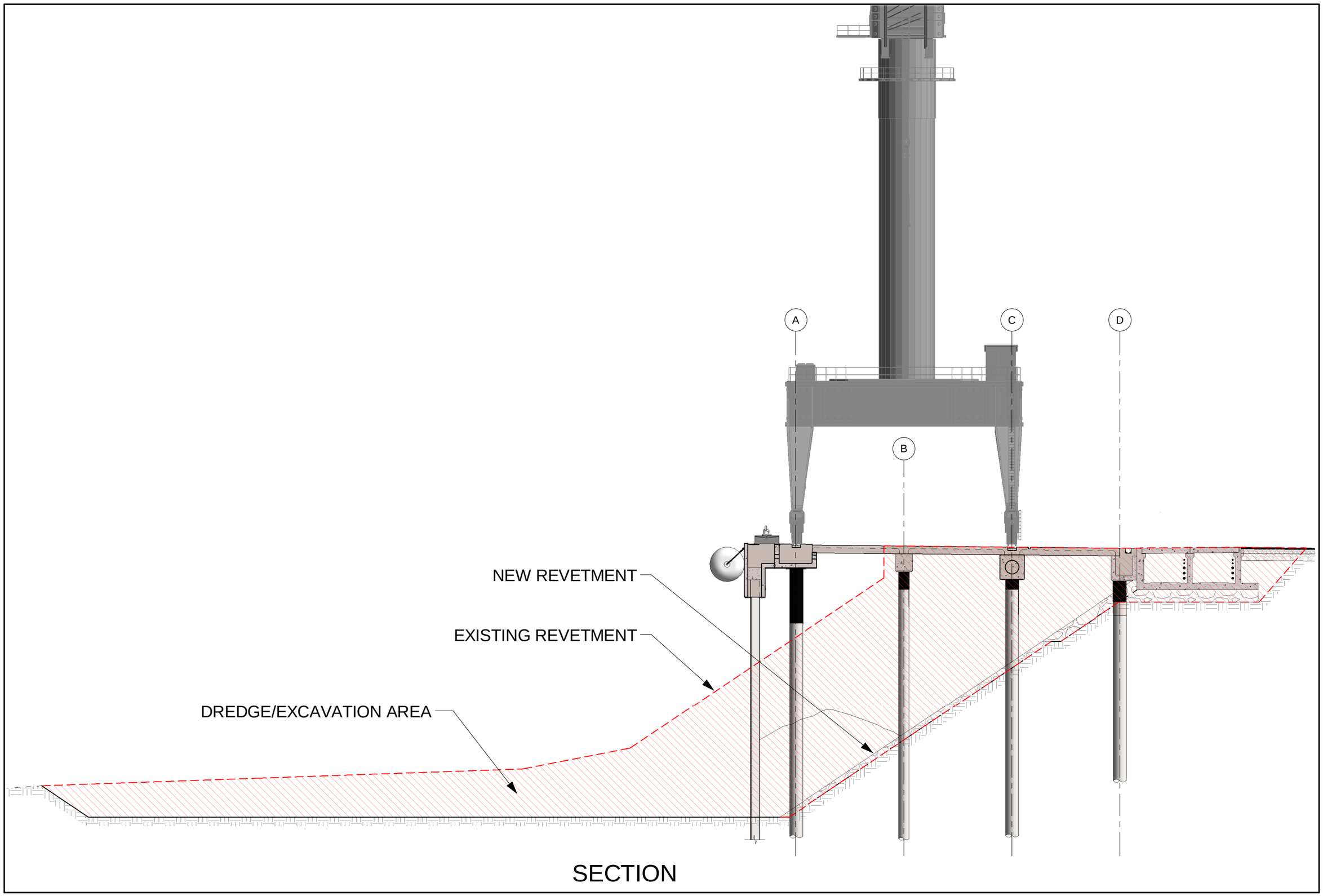
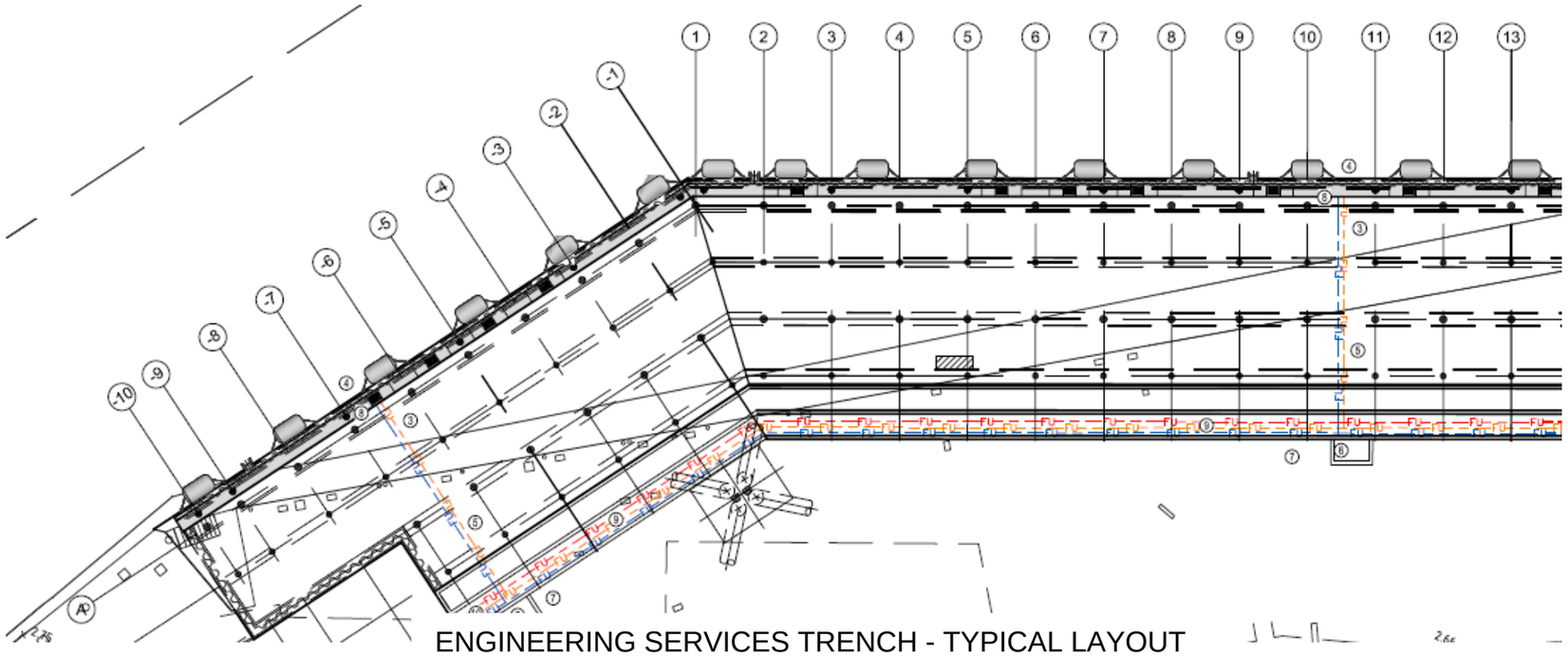


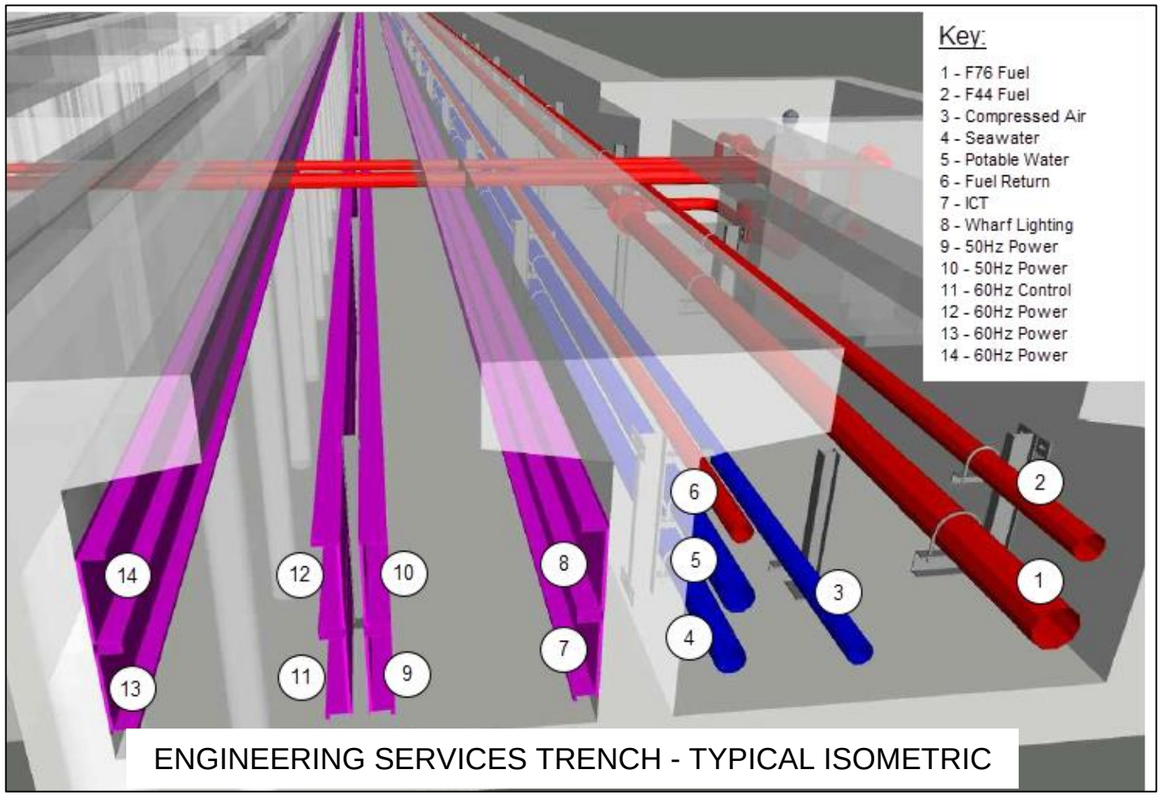
SECTION

ATTACHMENT 7 - TYPICAL WHARF SIDE DREDGING SHEET 2

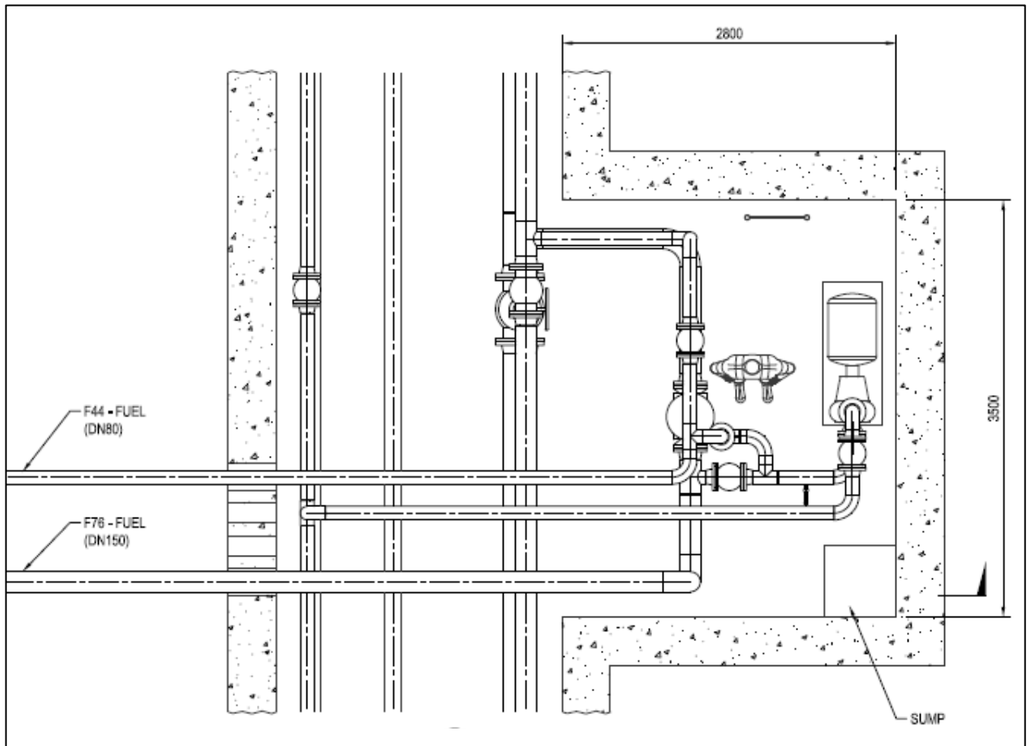
N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT, STAGE 1



ENGINEERING SERVICES TRENCH - TYPICAL LAYOUT

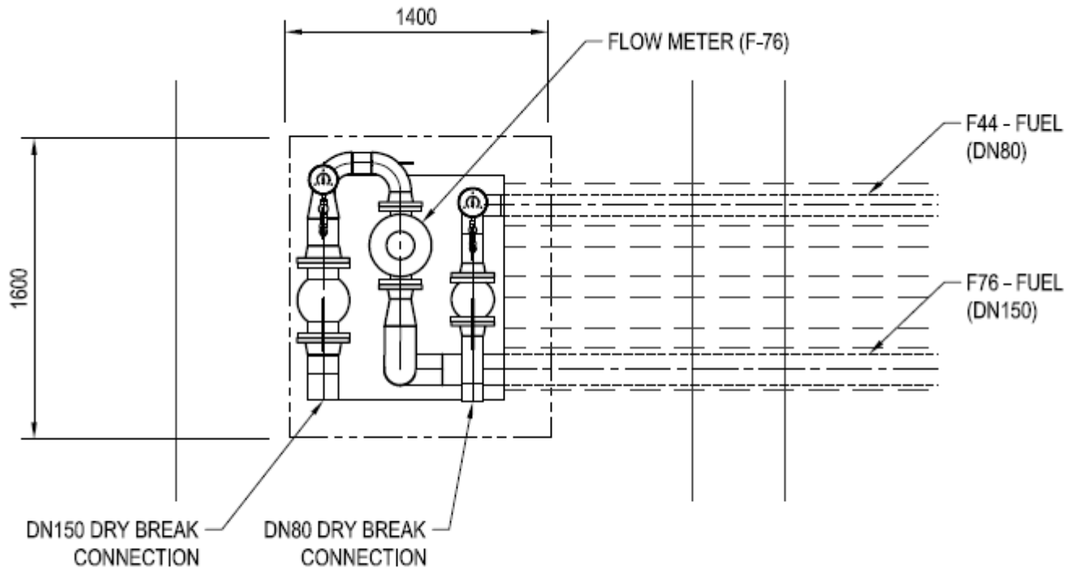


ENGINEERING SERVICES TRENCH - TYPICAL ISOMETRIC

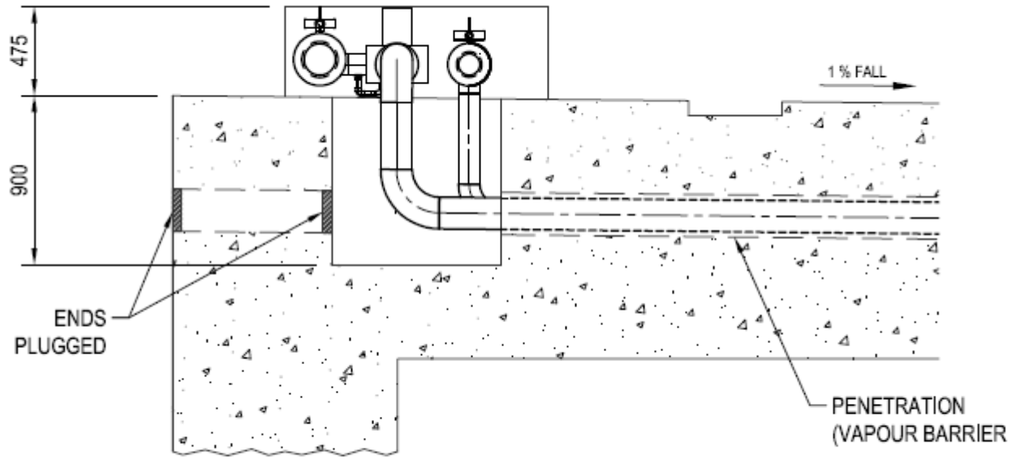


ENGINEERING SERVICES TRENCH - TYPICAL FUEL CROSSOVER

N2253 1 GARDEN ISLAND REDEVELOPMENT, CRITICAL INFRASTRUCTURE RECOVERY PROJECT, STAGE 1



TYPICAL COPE POINT BOX - LAYOUT



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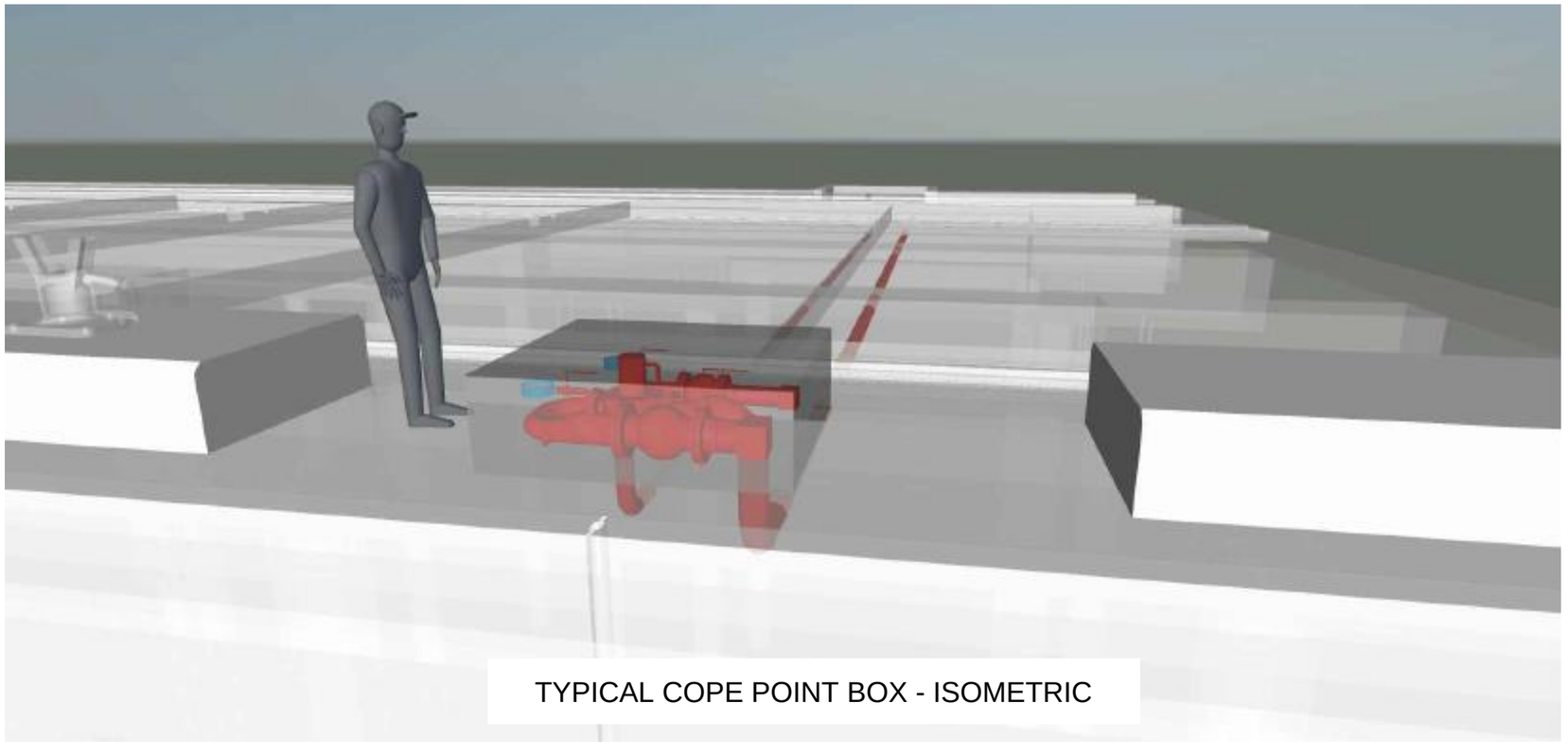

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