



Australian Government

Department of Defence

LAVARACK BARRACKS REDEVELOPMENT STAGE 4

TOWNSVILLE, QUEENSLAND

**STATEMENT OF EVIDENCE
TO THE
PARLIAMENTARY JOINT STANDING COMMITTEE
ON PUBLIC WORKS**

**DEPARTMENT OF DEFENCE
CANBERRA ACT**

February 2007

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INTRODUCTION

1. This evidence to the Parliamentary Joint Standing Committee on Public Works presents a proposal for Lavarack Barracks Redevelopment Stage 4, Townsville, Queensland. The proposed redevelopment combines adaptive reuse and refurbishment of existing facilities and infrastructure, the construction of new buildings, civil works, temporary facilities, demolitions and services upgrading. The proposed facilities will support the Army's Ready Deployment Force.

OBJECTIVES

2. The principle objectives of this project are to improve the effectiveness and efficiency of the infrastructure in support of Defence capability, reduce facilities maintenance expenditure on buildings and infrastructure and address functional and occupational health and safety deficiencies inherent within existing facilities.
3. The majority of facilities to be addressed in this proposal were constructed in the 1960s and 1970s to support the training for deployment to Vietnam. These facilities are now substandard and no longer provide the functionality required for a modern Army. The new facilities will provide working accommodation and storage areas commensurate with the current size of the forces and their equipment holdings. Upgrades will also be made to existing vehicle workshops which do not currently satisfy best practice occupational health and safety requirements.
4. The proposal also seeks to integrate the storage and maintenance facilities works that will be required for a number of Major Capital Equipment projects to be delivered to the Army units based at the Barracks. Much of this new equipment is part of the Hardened and Networked Army initiative and will require extra storage space and an increase in the heavy maintenance requirements of the units.

BACKGROUND

5. Lavarack Barracks, situated near the southern edge of the city of Townsville at the base of Mount Stuart, is home to the Army's 3rd Brigade which is part of the Australian Defence Force Ready Deployment Force. Lavarack Barracks is also the home to the 10th Force Support Battalion and elements of the 11th Brigade. The base location in Townsville is shown on the locality plan at Annex A. The recent Defence Force Disposition Review confirmed Lavarack Barracks as a long-term Defence strategic infrastructure asset.
6. 3rd Brigade is the major land component of the Australian Defence Force Ready Deployment Force. The Brigade holds units in a high degree of readiness for a wide range of operational tasks.

These include contributing forces to defend Australia against attack (including air mobile, amphibious and mounted operations) and the defence of regional and global interests (including Services Assisted and Protected Evacuations). The close proximity of extensive training areas and the broad infrastructure network existing at Townsville assist in sustaining 3rd Brigade's readiness requirements.

7. The development of Lavarack Barracks began in 1965-66 as a result of a Government decision to locate a task force base at Townsville. It provided permanent living and working accommodation for a task force of three battalions with supporting arms and services, based on personnel and equipment establishments current at that time. In 1980-81 further development was undertaken to provide working accommodation for several additional logistics units to support the Operational Deployment Force responsibility assigned to the Brigade.

8. In 1988, as part of an Australia-wide program to upgrade Other Ranks living-in accommodation, 2,880 dormitory style bed spaces were converted to 1560 bedrooms. In addition, 540 high density bed spaces were retained for training, transit, pre-deployment and contingency accommodation. In the period to 1991, various medium and minor works projects, some of a temporary nature, were undertaken for other units at Lavarack Barracks.

9. Significant redevelopment of Lavarack Barracks commenced in 1992 as a multi-stage project. Stage 1 of the redevelopment provided operational and support facilities for Lavarack Barracks. In particular, new facilities were provided for elements of the 3rd Brigade Administrative Support Battalion, the Lavarack Barracks Medical Centre and 162nd Reconnaissance Squadron. Stage 2 of the redevelopment replaced existing living-in accommodation with modern facilities, provided three messes collocated with the living-in accommodation precincts and included working accommodation at the Eastern end of Lavarack Barracks. Stage 3 of the redevelopment started the process of replacing the working accommodation for 3 Brigade, other Land Command force elements, Training Command units and area facilities at Lavarack Barracks. In addition, it provided for the future relocation of 11th Brigade.

10. Components of the redevelopment of 3rd Combat Engineers Regiment and B Squadron 3rd/4th Cavalry Regiment were considered by the Committee in the May 2001 Lavarack Barracks Redevelopment Stage 3. The estimated cost of the scope of the Stage 3 submission exceeded the approved funding level and implementation of the entire scope was dependent on achieving significant savings through value management. While some additional scope was able to be implemented the redevelopment of 3rd Combat Engineer Regiment and B Squadron 3rd/4th Cavalry Regiment could not be accommodated.

IDENTIFICATION OF THE NEED

Prioritisation of Works

11. The facilities at Lavarack Barracks have been progressively updated over three redevelopment stages. Defence has reviewed the remaining facilities at Lavarack Barracks and has identified that there is still considerable works that are required to fully refurbish the facilities at the Barracks. Army has determined that the preferred options for redevelopment should focus on the support infrastructure for combat capability. The priority elements for redevelopment are 3rd Combat Engineer Regiment, 4th Field Regiment, B Squadron 3rd/4th Cavalry Regiment, Area Gymnasium upgrades and the consolidation of medical support facilities in the eastern precinct of the barracks.

3rd Combat Engineer Regiment

12. The 3rd Combat Engineer Regiment provides geospatial, mobility, counter-mobility, survivability and limited sustainability support to 3rd Brigade. Tasks include mine warfare entailing establishing and breaching minefields, explosive ordinance disposal, route clearance and rapid bridging as well as provision of hardened shelter and limited resource winning. The 3rd Combat Engineer Regiment consists of four squadrons: two Combat Engineer Squadrons, a Support Squadron including tradesman and plant operators and an Operations Support Squadron including logistics and maintenance support. 3rd Combat Engineer Regiment conducts limited individual and small group, task based training, within the barracks.

13. The 3rd Combat Engineer Regiment is accommodated in facilities constructed in the early 1970s that are a mixture of offices, stores, training and maintenance facilities which have reached the end of their functional life. The existing facilities are generally in poor condition, inefficient in layout and have occupational health and safety and environmental health issues stemming from substandard, cramped and temporary working accommodation. The facilities do not reflect the functional relationships or work practices of the Regiment.

14. New facilities are required for appropriate maintenance and storage of plant and equipment and to provide sufficient office accommodation, training facilities and storage area for the Regiment. The current facilities will not accommodate new vehicles to be provided under the Major Capital Equipment upgrade of Defence's wheeled vehicle fleet.

4th Field Regiment

15. 4th Field Regiment, the Royal Regiment of Australian Artillery provides offensive support to the manoeuvre units of 3rd Brigade. 4th Field Regiment is also responsible for the provision of Joint Offensive Support Coordination including offensive Air and Naval Gunfire support. 4th Field

Regiment maintains expertise in the conduct of civil-military coordination during conflict periods. The Regiment consists of two Gun Batteries and an Operational Support Battery responsible for the provision of logistic and maintenance support to the Regiment. The Regiment conducts limited rehearsal and training for Gun Line operations in the barracks.

16. 4th Field Regiment is accommodated in facilities that are a mixture of offices, stores, training and maintenance facilities chiefly constructed in the 1960's. Interspersed throughout the area are redundant living in accommodation blocks and messes that have been converted as temporary working accommodation and for storage of equipment. The majority of facilities are in a poor and deteriorating condition and have occupational health and safety and environmental health issues stemming from substandard, cramped and temporary working accommodation and do not reflect the functional relationships or work practices of the Regiment.

17. A central focus of 4th Field Regiment is the gun bay area which, in its current form, is unsuitable both for storage of equipment and for training. The current facilities will become unusable in the short term due to the introduction of a new larger gun for the Regiment.

18. New facilities are required for appropriate maintenance and storage of plant and equipment and to provide sufficient office accommodation, training facilities and storage area for the Regiment. The current facilities will not accommodate new vehicles to be provided under the Major Capital Equipment upgrade of Defence's wheeled vehicle fleet.

B Squadron 3rd/4th Cavalry Regiment

19. B Squadron 3rd/4th Cavalry Regiment provides armoured mobility, fire power and communications in support of elements of 3rd Brigade. With the change of vehicle from M113A1 Armoured Personnel Carriers, or APC, to the new Bushmaster Infantry Mobility Vehicle, B Squadron's will role will change to provision protected mobility to the Infantry units of 3rd Brigade. B Squadron consists of three Protected Mobility troops with and a support troop responsible for logistic and maintenance support.

20. B Squadron currently utilise a mixture of offices, stores, training and maintenance facilities which have reached the end of their functional life. The existing facilities are generally in poor condition, inefficient in layout and have occupational health and safety and environmental health issues stemming from substandard, cramped and temporary working accommodation. The facilities do not reflect the functional relationships or work practices of the Squadron. The physical security provided by the facilities is inadequate and the current facilities will not accommodate new vehicles

to be provided under the Major Capital Equipment project to provide new Bushmaster vehicles to the Squadron.

Area Gymnasium

21. The current Gymnasium, which occupies a former theatre, is the only Gymnasium facility available to personnel on Lavarack Barracks. It is undersized and functionally inadequate to support adequate physical fitness training or support rehabilitation and physiotherapy activities. There are Occupational Health and Safety issues stemming from substandard and overcrowded conditions. New shelters and irrigated ovals need to be provided to facilitate outdoor team sports activities in a safe environment.

Eastern Regimental Aid Post

22. The current medical support facilities in the eastern precinct of Lavarack Barracks are inadequate to support the transport, logistic and training facilities located in this zone. Personnel based in the eastern precinct currently utilise Lavarack Barracks Medical Centre as their Regimental Aid Post. The Lavarack Barracks Medical Centre is not designed to provide Regimental Aid Post services and the distance from the eastern precinct work areas results in logistic and supervisory inefficiencies.

23. An Eastern Regimental Aid Post is required to provide a purpose built medical facility that will create efficiencies through combining current eastern precinct medical functions in one location. This will ensure that appropriate first line medical support can be provided to personnel located in the eastern precincts and reduce the pressure on the Lavarack Barracks Medical Centre.

Site Wide Infrastructure

24. Due to the age of the Lavarack Barracks infrastructure minor upgrading works are required to ensure that all new precinct facilities can be fully operational. The works for the Site Wide Infrastructure are included in the precinct plans.

OPTIONS CONSIDERED

Defence Consideration

25. Defence has considered a number of options for the provision of facilities for the identified priority elements. The primary area for consideration was the location of the three major units, 3rd Combat Engineer Regiment, 4th Field Regiment and B Squadron. A comprehensive study indicated that the best value for money for Defence was to reuse existing precincts within the Barracks for redevelopment rather than use green field sites. The consideration for development

within each precinct included the construction of new facilities for all elements, a combination of new facilities and refurbished facilities and the refurbishment of the existing precincts.

26. Redevelopment based on a mixture of new build and adaptive reuse of existing facilities for 3rd Combat Engineer Regiment, 4th Field Regiment, B Squadron, the Eastern Regimental Aid Post and Gymnasium will address all of the project objectives while providing the best value for money for Defence. Some of the existing facilities are appropriately located and of suitable construction for adaptive reuse. Studies have assessed the potential for adaptive reuse and have identified outturn cost savings of \$34m based on contributions from building structures, civil works, in-ground services and reduced design costs. A site plan showing the precincts for redevelopment is at Annex B.

27. Refurbishment of existing buildings would include repairs and maintenance, rectification of occupational health and safety deficiencies, and the general upgrading of finishes. Upgrading of building services would include compliance with building codes and standards and the provision of Building Management Systems to enable monitoring of energy use. A solution based around adaptive reuse recognises the increased Ecologically Sustainable Design value obtained from reuse of existing facilities and infrastructure.

3rd Combat Engineer Regiment

28. Facilities provided for 3rd Combat Engineer Regiment will include office accommodation, vehicle shelters and compounds, a plant compound, plant and vehicle workshops, squadron working and amenity areas, training facilities, logistic facilities, precinct infrastructure, landscaping, demolition works and increased security. The works for 3rd Combat Engineer Regiment also include a new Regimental Aid Post that will service units based at the western end of the Barracks. The proposed 3rd Combat Engineer Regiment precinct plan illustrating the mix of adaptive reuse and new build facilities is at Annex C.

4th Field Regiment

29. Facilities provided for 4th Field Regiment will include office accommodation, vehicle shelters and compounds, an gun compound, artillery and vehicle workshops, amenity areas, training facilities, logistic facilities, precinct infrastructure, landscaping and demolition works. The proposed 4th Field Regiment precinct plan illustrating the mix of adaptive reuse and new build facilities is at Annex D.

B Squadron 3rd/4th Cavalry Regiment

30. Facilities provided for B Squadron will include office accommodation, vehicle shelters and compounds, vehicle workshops, troop working and amenity areas, training facilities, logistic facilities, precinct infrastructure, connecting road works and landscaping. The proposed B Squadron precinct plan illustrating the mix of adaptive reuse and new build facilities is at Annex E.

31. The existing B Squadron facilities will be released for potential logistical or transiting unit compounds. It is proposed to not demolish the vacated facilities so that the facilities can be subject to future adaptive re-use. Funding for such work is not included in this project.

Area Gymnasium

32. An upgraded Gymnasium is proposed to provide adequately sized and functional facilities in support of physical fitness training and support rehabilitation and physiotherapy activities. Proposed facilities include a cardiovascular and weights training room in an extension to the existing gymnasium, and the provision of shelters and irrigated ovals. The proposed Physical Fitness Facilities plan is at Annex F.

Eastern Regimental Aid Post

33. It is proposed to provide a new Eastern Regimental Aid Post to provide effective and efficient medical services to the Logistic Command and Training Command units housed in the eastern precinct. The vacated buildings will be used to expand the current administrative functions of the 3rd Combat Services Support Battalion which are currently working out of cramped conditions. The proposed Eastern Regimental Aid Post plan is at Annex G.

TECHNICAL AND DESIGN CONSIDERATIONS

Site Planning and Approvals

34. Lavarack Barracks is a cluster of freehold land parcels all of which are owned by the Commonwealth and controlled by Defence. The redevelopment does not require the acquisition of additional land. The proposed redevelopment is regulated within the *Public Works Committee Act 1969* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Site Selection and Description

35. It is proposed to redevelop 3rd Combat Engineer Regiment and 4th Field Regiment over their respective existing precincts as the existing precincts can readily be adapted to reflect the current structure and functional relationships of the units and many of the existing facilities and much of the in-ground infrastructure is suitable and cost effective for re-use.

36. It is proposed to relocate B Squadron to alternate existing facilities as opposed to redeveloping over their current precinct as the alternate facilities provide a close fit to the requirements of B Squadron and are in reasonably good condition with high potential for cost effective reuse. The alternate facilities also provide area for expansion of the unit which is proposed under the Hardened and Networked Army proposal. The relocation of B Squadron to the alternate facilities will also allow major heavy vehicle traffic to be confined to the extremities of the base.

37. The existing location of the Gymnasium is considered appropriate being centrally located within the Central Business Precinct. It is adjacent to an Olympic size swimming pool and a large carpark. The existing Gymnasium building is suitable for refurbishment though it is undersized and in need of significant upgrade. Adjacent land is suitable for the development of the proposed cardiovascular and weights training room.

38. The Eastern Regimental Aid Post is proposed to be located on undeveloped land between the 3rd Combat Services Support Battalion and 10th Force Support Battalion. This location is accessible to the dependants and creates a buffer between the Barrack's working accommodation and the neighbouring residential zone.

Security

39. In accordance with Government initiatives to improve physical security arrangements in Government departments generally, advice from designated security authorities will be incorporated into the design solutions for the proposed facilities.

Landscaping

40. Landscaping works will be directed towards the restoration of areas disturbed during construction and general improvement of the built environment. Precautions will be taken to avoid compromising existing environmental sensitivities including adopting landscaping practices in keeping with local environmental conditions in particular to achieve low water consumption and be compatible with local soil conditions. The landscaping of the site will also provide an opportunity to improve the environmental impact of the base through storm water runoff control.

Codes and Standards

41. Where appropriate, the design and construction of the proposed works will conform to the relevant sections of:

- a. Building Code of Australia;
- b. Relevant Australian Standards and Codes;

- c. Australian Standard AS1428 Parts 1 and 2 – Design for Access and Mobility;
- d. Australian Standard AS1170 Part 2 – Design for Cyclonic affected areas;
- e. Defence Manual of Fire Protection Engineering;
- f. Defence Security Manual;
- g. *Environment Protection and Biodiversity Conservation Act 1999*;
- h. *Occupational Health and Safety Act (Commonwealth Employment) 1991*;
- i. *Building and Construction Industry Improvement Act 2005*;
- j. National Code of Practice for the Construction Industry 2005;
- k. Commonwealth Government Employment Code of Practice (Office and Amenities Guidelines);
- l. Australian Building Greenhouse Rating Scheme (ABGR); and
- m. Workplace Health and Safety Act and Regulations.

Design Philosophy

42. The general philosophy to be adopted with the design of the proposed facilities shall incorporate the following considerations:

- a. The provision of cost effective and utilitarian facilities of energy efficient design suitable for the climate (including cyclonic) conditions, and of a style compatible with the previous redevelopment stages;
- b. Adoption where possible of conventional construction techniques and materials, in particular those commonly used by the construction industry in the Townsville area;
- c. The maximum use of existing infrastructure and facilities to minimise capital facilities costs;
- d. Utilisation of readily available and durable materials that combine long life while minimising maintenance;
- e. Recognition of site constraints, security requirements, functional relationships to existing facilities and operational determinants; and
- f. Planning, services and structure designed to accommodate flexibility.

Engineering Services

43. The existing infrastructure and building engineering services at Lavarack Barracks date from the time of the development of each area, however some improvements have been made over time. Engineering investigation surveys have confirmed that the in-ground services are in reasonable condition and suitable for the redevelopment works. All engineering work proposed will comply with all relevant Codes and Standards.

44. The mechanical services works involve a number of systems. The primary means of cooling will be via natural ventilation through the use of louvre windows. Air-conditioning will be provided to areas where personnel are required to congregate such as conference rooms and training facilities. Mechanical services to workshops and vehicle maintenance bays will be upgraded to meet current occupational health and safety requirements.

45. The data and communications services for the project include new fibre trunk services to each precinct and an upgrade of the copper communications services within the precincts.

46. Hydraulic services for water supply, sewerage, and storm water within each precinct involve extension of infrastructure and building services to suit the redevelopment.

Fire Protection

47. The design of the fire protection systems will, as a minimum, be in accordance with the provisions of the Building Code of Australia, the Defence Manual of Fire Protection Engineering and other applicable Codes and Standards. Certification will be provided that the design and construction meet the requirements of the relevant Codes and Standards and appropriate State, Local Government and Defence requirements and the Queensland Fire and Rescue Service will be invited to visit the site and offer comment on the design.

Occupational Health and Safety

48. In general the existing facilities are not compliant with either general industry best practice, the Department of Defence Occupational Health and Safety Manual, *Occupational Health and Safety (Commonwealth Employment) Act (1991)* or guidance available from the State of Queensland *Occupational Health and Safety Act (1995)*. The current shortfalls are currently addressed by management procedures; the proposed works will address the shortfalls in occupational health and safety to ensure safe working conditions for Defence personnel.

COSTS

Cost of Works

49. The estimated outturn cost for the redevelopment works currently proposed is \$207.2 million, which includes all planning and approval costs, management and design fees, construction costs, furniture, fittings and equipment, contingencies and escalation.

50. Net Personnel and Operating costs for the project are projected to increase due to the construction of new facilities and the extra costs of maintenance for new facilities containing more technical and environmentally compliant equipment.

Revenue

51. There is no revenue to be derived from this project.

ENVIRONMENTAL AND SOCIAL IMPACTS

Construction Workforce

52. Over the envisaged construction period of three and a half years, approximately 200 personnel will be directly employed on construction activities. Defence anticipates that construction will generate further job activities off-site in the prefabrication, manufacture and distribution of materials.

Hours of Work

53. It is planned that all works will be undertaken between the hours 6.00am to 6.00pm, Monday to Friday and 6.00am to 12.00pm Saturday. It is not expected that works will occur on Public Holidays and Sundays.

Impact on local community

54. The experience of recent previous projects at Lavarack Barracks and other Defence projects in Townsville has shown that local contractors secure approximately 90 per cent of the sub-contract work. The proposed delivery strategy includes competitive tendering in a manner that enables local business to participate, with subcontract packages of an appropriate size that are within the capabilities of the local businesses in Townsville.

Provisions for People with Disabilities

55. Access and facilities for the disabled would be provided in accordance with the Building Code of Australia, Australian Standards, and the Defence Estate Management Guide “Disabled Access and Other Facilities for Disabled Persons”.

Consultation

56. Consultation has occurred, or will occur with the following stakeholders during development of the project:

- a. The Federal Member for Herbert;
- b. The State Government Member for Burdekin;
- c. Department of Environment and Heritage;
- d. Townsville City and Thuringowa Councils;
- e. Queensland Fire Brigade; and
- f. Townsville and Thuringowa Chambers of Commerce.

Environmental and Heritage Considerations

57. The Initial Environmental Review for Lavarack Barracks Redevelopment Stage 4 has indicated that the siting of the works will overlay existing developed areas there are no flora or fauna impacts and it is not anticipated that an environmental referral under the *Environment Protection and Biodiversity Act (1999)* will be required. The proposed works will, however, address organochlorine and hydrocarbons contamination, and erosion and bank stabilisation problems with the barracks drainage network.

58. Matters associated with the preservation of the heritage of Lavarack Barracks regarding deployment of Australian forces to Vietnam during the 1960s are not considered to warrant the preservation and maintenance of the physical buildings. Records will be developed consistent with the approach taken during earlier stages. It is anticipated that a heritage referral under the *Environment Protection and Biodiversity Act (1999)* is not required.

59. Defence's Environment Heritage and Risk Branch have considered the project in relation to the *Environment Protection and Biodiversity Act (1999)* with reference to the impacts of National Environmental Significance as defined under the Act. It is anticipated that a referral under the *Environment Protection and Biodiversity Act (1999)* will not be required. However, Defence has undertaken to inform the Department of Environment and Heritage (DEH) of the project.

Ecologically Sustainable Design

60. Design will be developed to ensure effective achievement of Ecologically Sustainable Design (ESD) principals in accordance with the Green Star rating system for office buildings and the Australian Building Greenhouse Rating (ABGR) in response to the Defence Green Building

Requirements. A 4-Star Green Star rating and a 4½-Star ABGR will be applied as a target to all Project Works. Buildings including those adaptively reused will be assessed against management practices, indoor environment quality, waste avoidance; and resource conservation (energy and water).

Whole of Life

61. Capital construction costs and on going costs for maintenance, energy, and water will be considered as part of the whole of life planning for the facilities. The useful life spans, and reliability during their lifespan, of facilities and facility components will be analysed over the whole of the building life to ensure that Defence is achieving value for money for the capital investment in this project.

62. During the further development of design the whole of life focus will be on building facades and cladding for the purposes of minimising the heat load transferred into buildings and shading opportunities as well as building services to ensure efficient use of resources. The facilities performance will be modelled for energy, daylight, artificial light, heating, ventilation and air-conditioning and thermal comfort.

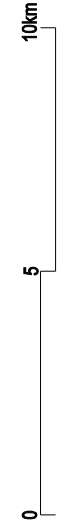
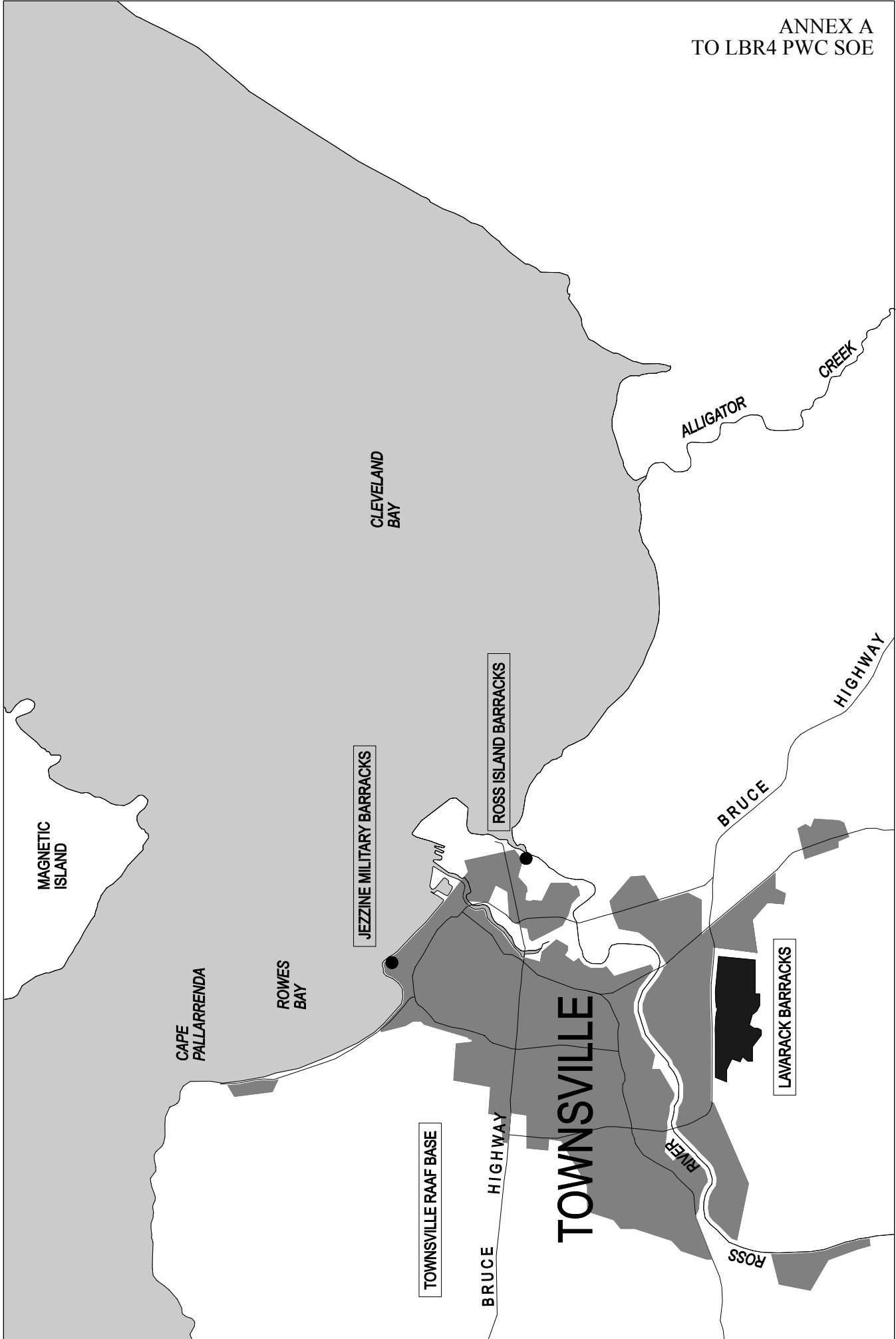
PROJECT DELIVERY AND PROGRAM

Staging and Decanting

63. Staging and decanting will be a major consideration for the redevelopment project as there is a requirement to ensure that the Units can maintain their operation requirements and their ability to continue training. The current planning for the project shows the staging of the project can be achieved without the need to erect temporary facilities with all staging achieved within existing facilities. This plan will be tested and modified as required during the development of the project.

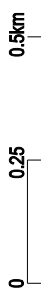
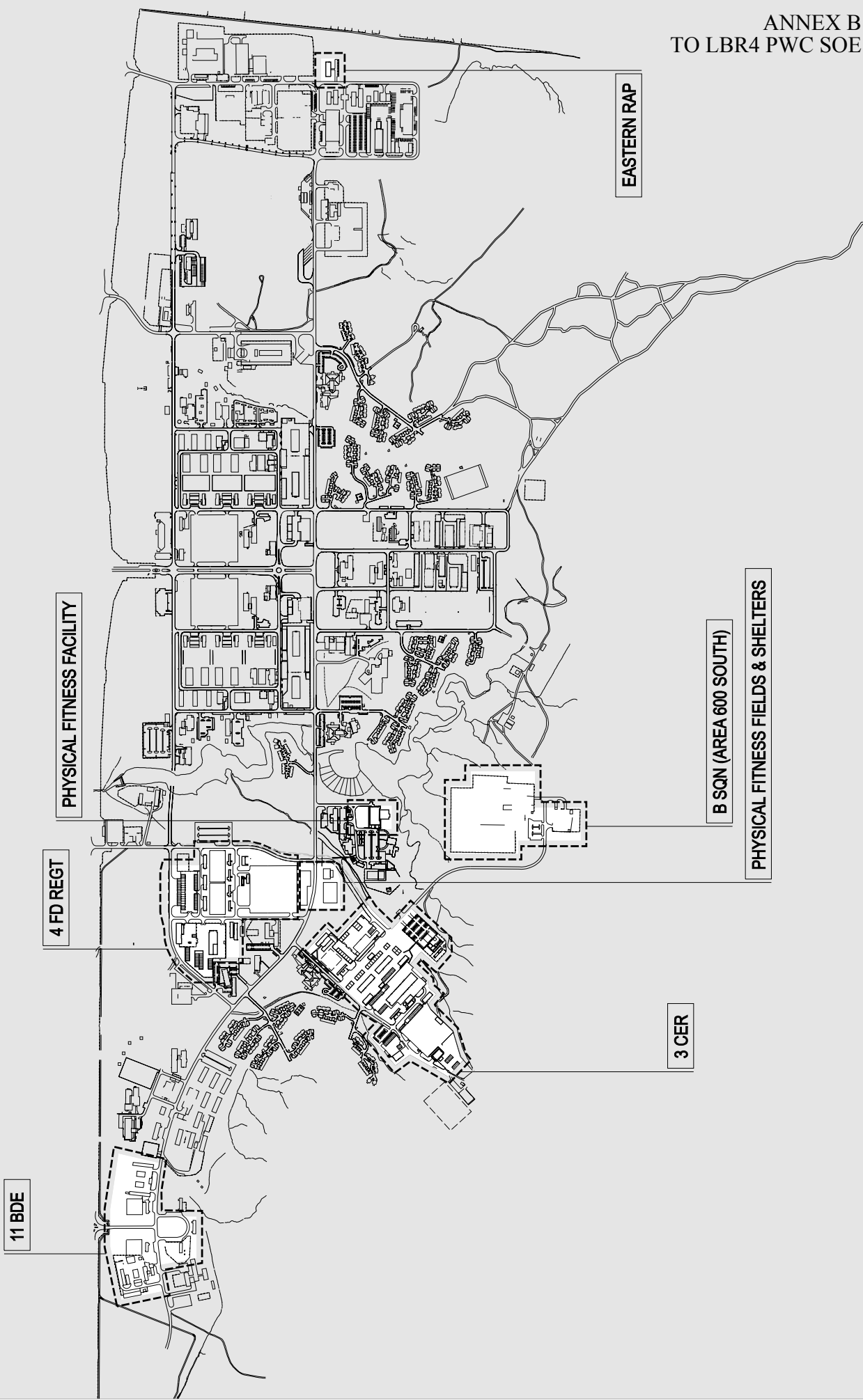
Schedule

64. Construction of the facilities for the 11th Combat Services Support Battalion and B Squadron 3rd/4th Cavalry Regiment are expected to begin in August 2007 and be complete by mid 2008 and late 2008 respectively. The 3rd Combat Engineer Regiment works will begin in mid 2008 and be progressively completed until late 2010. The works for 4th Field Regiment will begin in early 2009 and be progressively completed and staged until mid 2011. Works for the Eastern Regimental Aid Post and the Area Gymnasium will be programmed to allow for the best distribution of resources across the project.



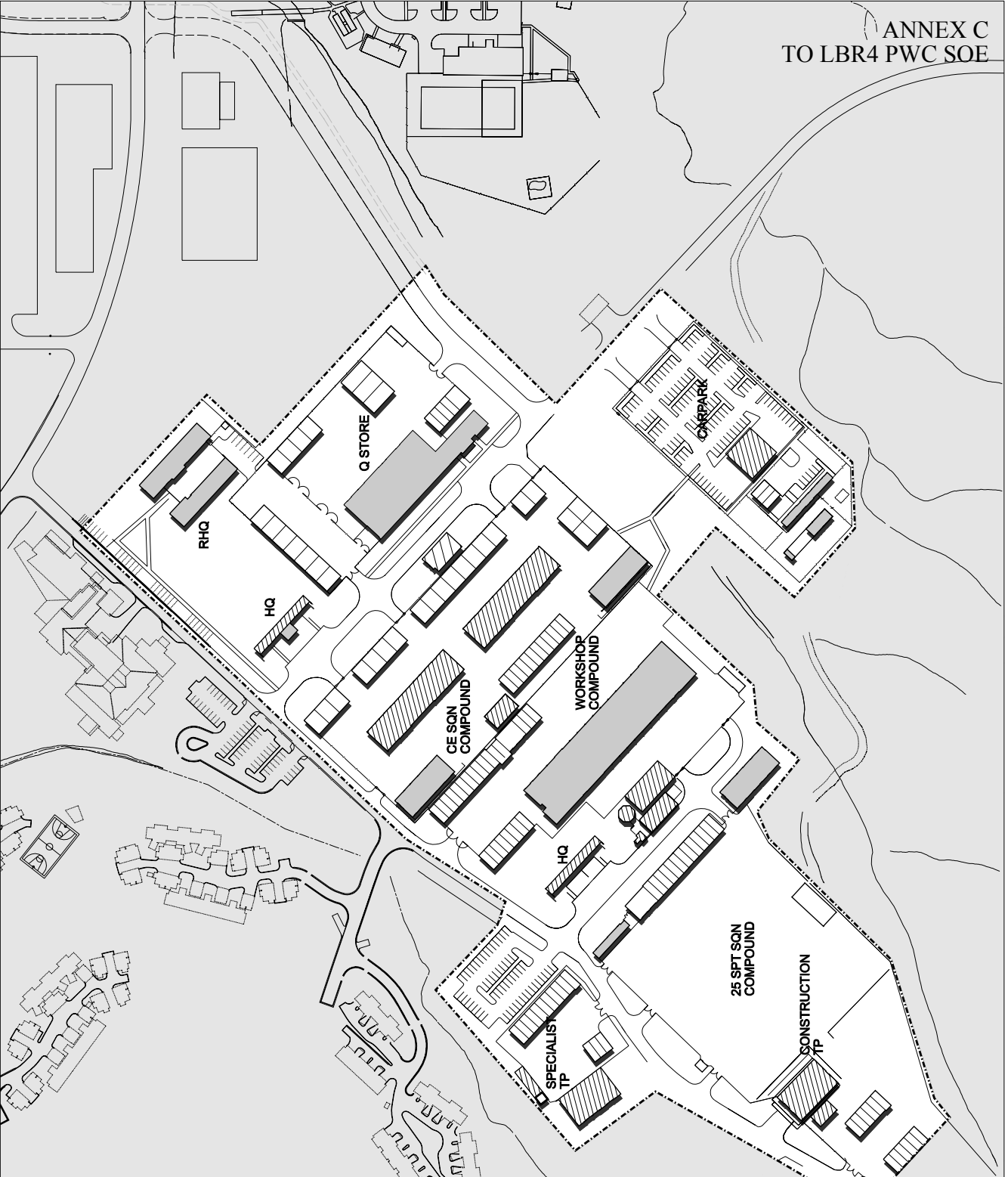
LAVARACK BARRACKS REDEVELOPMENT STAGE 4
LOCALITY PLAN

ANNEX B
TO LBR4 PWC SOE











LAVARACK BARRACKS REDEVELOPMENT STAGE 4 PLAN

ANNEX C
TO LBR4 PWC SOE



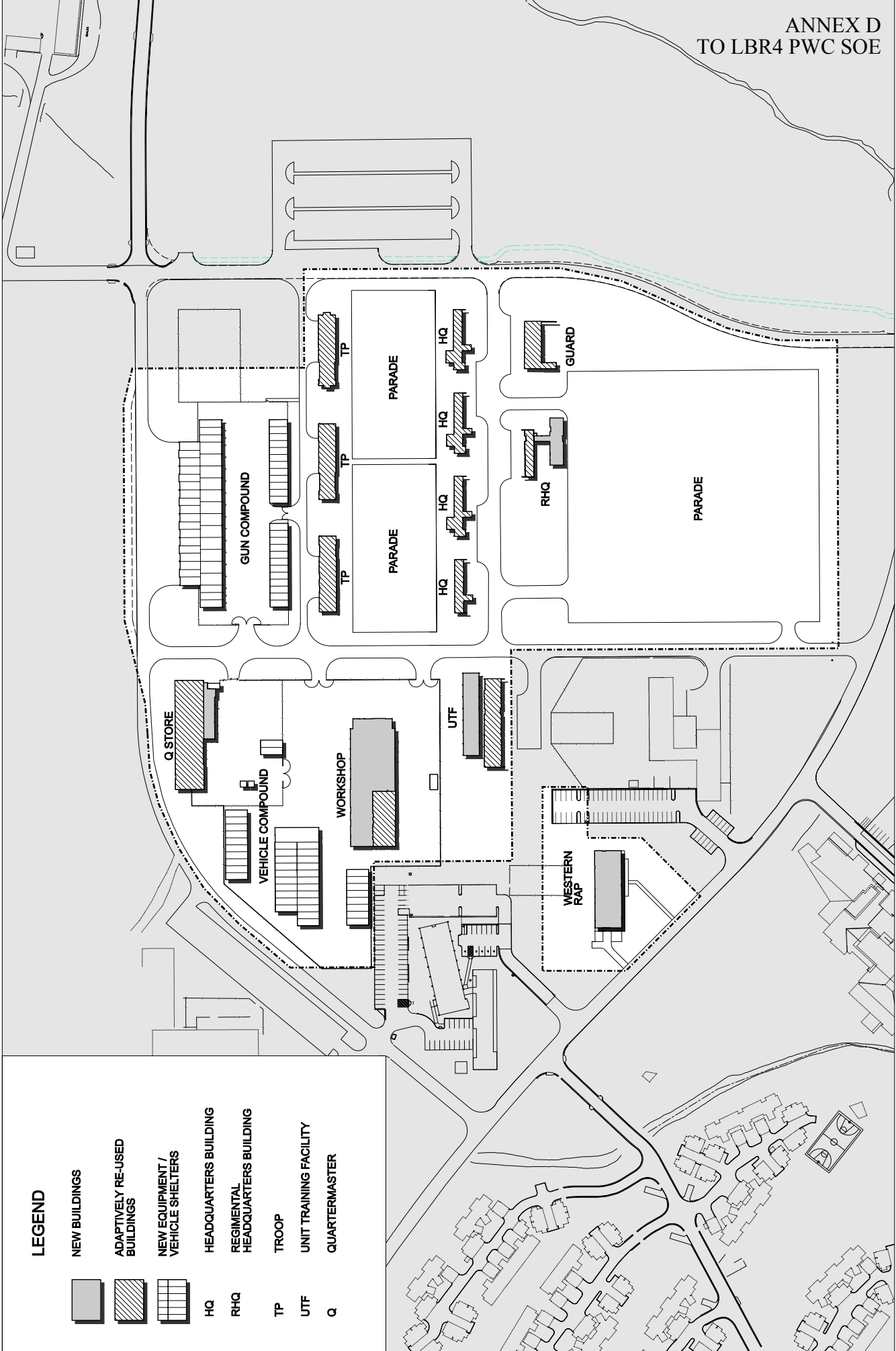
LEGEND

-  NEW BUILDINGS
-  ADAPTIVELY RE-USED BUILDINGS
-  NEW EQUIPMENT / VEHICLE SHELTERS
-  HEADQUARTERS BUILDING
-  REGIMENTAL HEADQUARTERS BUILDING
-  TROOP
-  COMBAT ENGINEERS
-  SQUADRON









**LAVARACK BARRACKS REDEVELOPMENT STAGE 4
3rd COMBAT ENGINEERS REGIMENT PLAN**



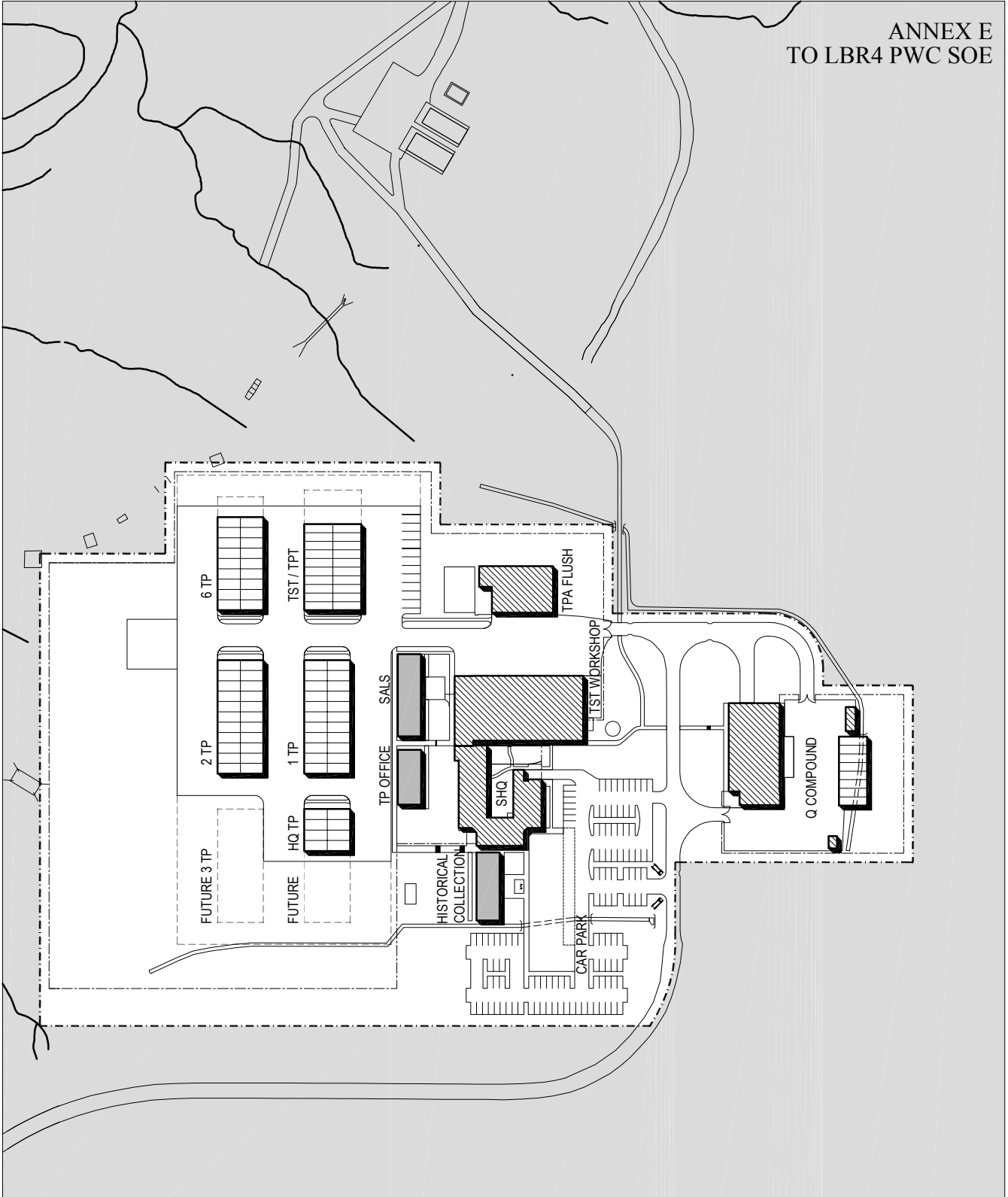
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




LEGEND

-  NEW BUILDINGS
-  ADAPTIVELY RE-USED BUILDINGS
-  NEW EQUIPMENT / VEHICLE SHELTERS
-  HQ HEADQUARTERS BUILDING
-  RHQ REGIMENTAL HEADQUARTERS BUILDING
-  TP TROOP
-  UTF UNIT TRAINING FACILITY
-  Q QUARTERMASTER

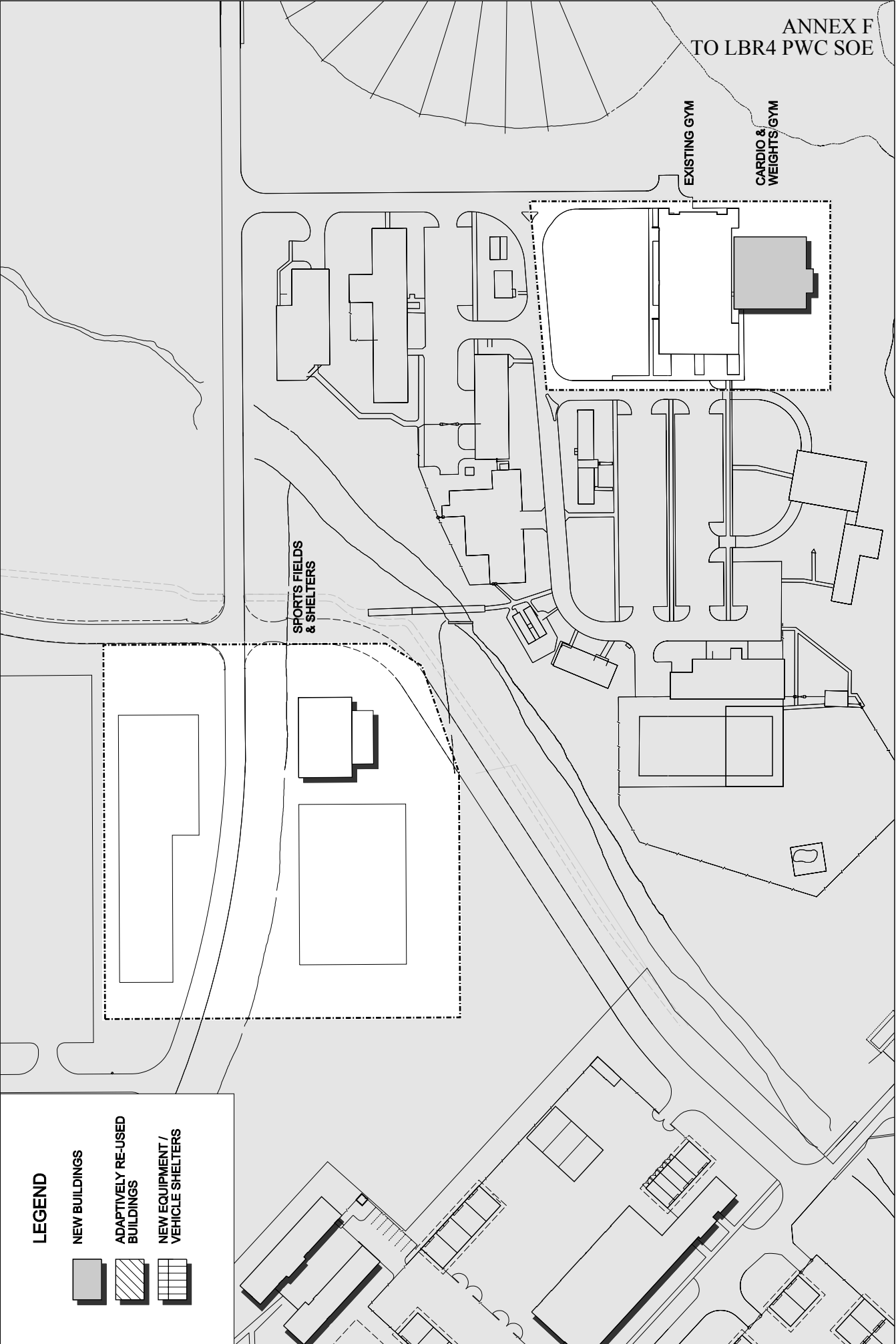
ANNEX E
TO LBR4 PWC SOE



LEGEND

-  NEW BUILDINGS
-  ADAPTIVELY RE-USED BUILDINGS
-  NEW EQUIPMENT / VEHICLE SHELTERS
-  TROOP
-  TECH SUPPORT TROOP
-  TRANSPORT TROOP
-  TANK PUMP ASSEMBLY FLUSH
-  SQUADRON HEADQUARTERS

ANNEX F
TO LBR4 PWC SOE



LEGEND

NEW BUILDINGS



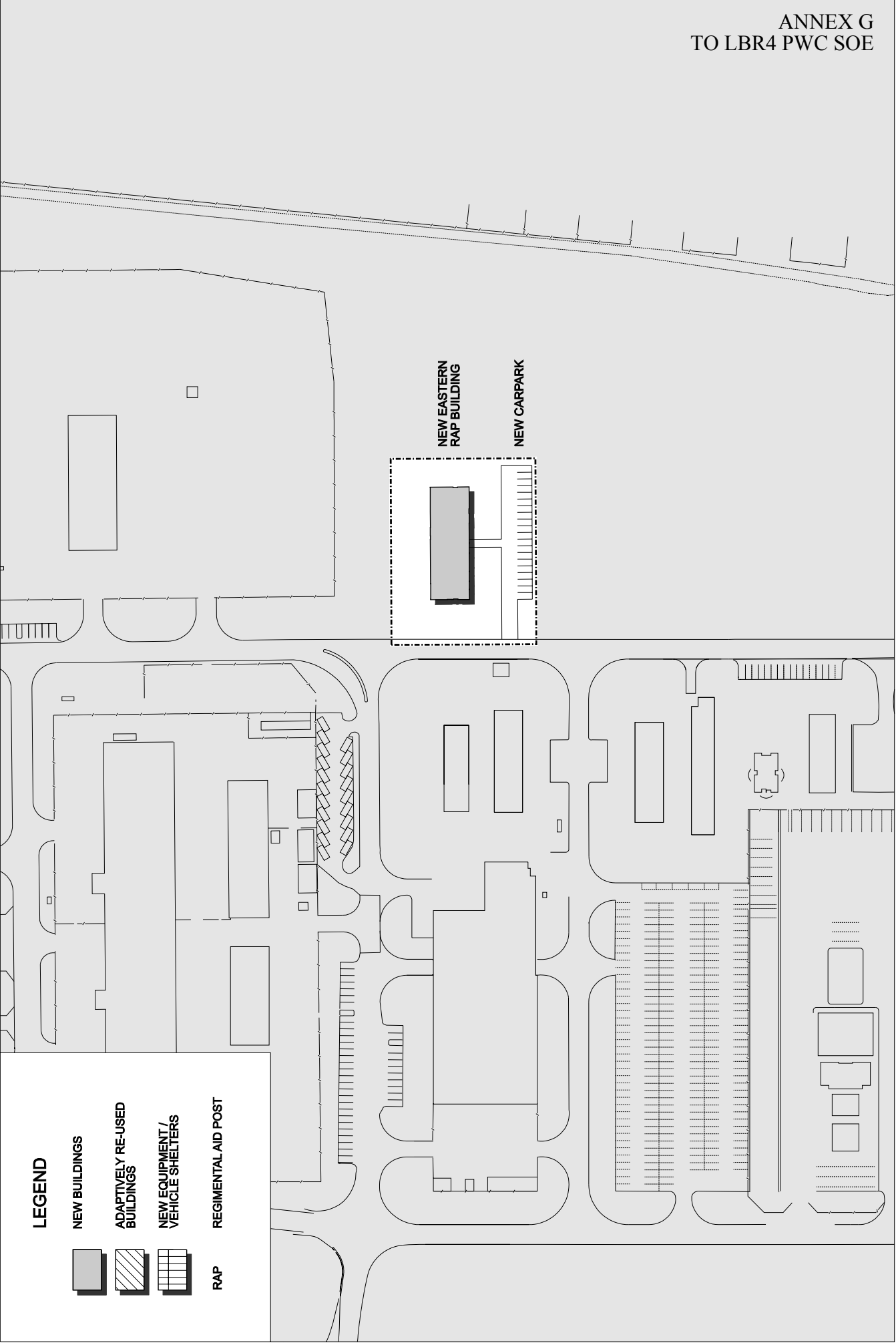
ADAPTIVELY RE-USED BUILDINGS








NEW EQUIPMENT / VEHICLE SHELTERS



**LAVARACK BARRACKS REDEVELOPMENT STAGE 4
PHYSICAL FITNESS FACILITIES PLAN**



LEGEND

-  NEW BUILDINGS
-  ADAPTIVELY RE-USED BUILDINGS
-  NEW EQUIPMENT / VEHICLE SHELTERS
-  REGIMENTAL AID POST
-  RAP

**LAVARACK BARRACKS REDEVELOPMENT STAGE 4
EASTERN REGIMENTAL AID POST PLAN**